STATEMENT OF CATHERINE CHASE

PRESIDENT
ADVOCATES FOR HIGHWAY AND AUTO SAFETY

ON

"DRIVING AUTOMOTIVE INNOVATION AND FEDERAL POLICIES"

SUBMITTED TO THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

JANUARY 24, 2018

Introduction

Advocates for Highway and Auto Safety (Advocates) is a coalition of public health, safety, and consumer organizations, insurers and insurance agents that promotes highway and auto safety through the adoption of federal and state laws, policies and regulations. Advocates is unique both in its board composition and its mission of advancing safer vehicles, safer drivers and safer roads. We respectfully request that this statement be included in the hearing record.

Motor Vehicle Deaths are Climbing

According to the federal government, each year motor vehicle crashes kill tens of thousands of people and injure millions more at a cost to society of over $800 billion.[i] Unfortunately, deaths resulting from motor vehicle crashes have been on the rise. According to the latest statistics from the National Highway Traffic Safety Administration (NHTSA), 37,461 people were killed on our nation's roads in 2016. This is an increase of over five percent from 2015.[ii] This follows a seven percent increase from 2014 to 2015.[iii] Preliminary figures for the first six months of 2017 show no significant change.[iv]

Advocates firmly believes that automated vehicle (AV) technology has the potential to make significant and lasting reductions in this mortality and morbidity toll. However, the process created in the AV START Act will allow untested and unproven AVs to be sold to the public without appropriate independent or governmental oversight to provide necessary protections to both those in the AVs and those sharing the roads with them.[v] In addition, the AV START Act will potentially allow the sale of hundreds of thousands of AVs that are exempt from existing federal motor vehicle safety standards (FMVSS). In fact, longstanding federal law was recently amended to allow for an unlimited number of vehicles that are not in compliance with FMVSS to

be tested on public roads,[vi] despite opposition from consumer, public health and safety organizations.[vii] This was a massive increase from the previous limit of 2,500 vehicles for most manufacturers.[viii] Therefore, AVs can already be sold to the public as long as they are in compliance with FMVSS, and AV manufacturers can already put an unlimited number of AVs that are not required to comply with FMVSS on public roads for testing purposes. The AV START Act "takes a wrong turn" by allowing for the sale of potentially millions of AVs to the public without minimum safety standards, without necessary consumer information so that the public understands their capabilities and limitations, and without cybersecurity standards to protect against hackers.

Instead of creating an unchecked, wide-open path for the entry of AVs exempt from safety standards into the marketplace, academic facilities and testing grounds should be utilized as the proper venues for evaluating AV technology. Research centers, such as those already established in Michigan and Florida, among others, should serve as the incubators for this unchartered technology. In fact, a number of automakers themselves readily admit that AV technology is still in its infancy. As Bryan Salesky, the Chief Executive Officer of Argo AI, a company partnering with Ford on the development of AV technology recently noted:

> *We're still very much in the early days of making self-driving cars a reality. Those who think fully self-driving vehicles will be ubiquitous on city streets months from now or even in a few years are not well connected to the state of the art or committed to the safe deployment of the technology. For those of us who have been working on the technology for a long time, we're going to tell you the issue is still really hard, as the systems are as complex as ever.*[ix]

Additionally, Gill Pratt, chief executive officer of Toyota Research Institute, stated, *"It's a mistake to say that the finish line is coming up very soon. Things are changing rapidly, but this will be a long journey."*[x]

Whether it is children's toys, new medication or innovative vehicle technologies, radically different products should first be assessed in a controlled environment instead of allowing widespread public distribution in order to determine whether they are safe or have unintended consequences. The AV START Act, which could govern AVs for years to come, fails to include several critical and commonsense protections that will help to ensure the safe development and deployment of this technology.

Advocates Has Consistently Promoted Advanced Technologies in Vehicles to Save Lives and Prevent Injuries

Advocates has always enthusiastically championed vehicle safety technology and for good reason. It is one of the most effective strategies for preventing deaths and injuries. NHTSA has estimated that since 1960, over 600,000 lives have been saved by motor vehicle safety technologies.[xi] In 1991, Advocates led the coalition that supported bipartisan legislation sponsored by former Senators John Danforth (R-MO) and Richard Bryan (D-NV) that included airbag technology in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991.[xii] As a result, by 1997, every new car sold in the United States was equipped with a front seat airbag and the lives saved have been significant. In fact, airbags save over 2,000 lives annually,[xiii] and have saved an estimated 44,869 lives since 1987, according to NHTSA.[xiv]

Advocates continued to build on this success by supporting additional lifesaving technologies as standard equipment in all vehicles in other legislation and regulatory proposals. These efforts include: tire pressure monitoring systems;[xv] rear outboard 3-point seat belts;[xvi] electronic stability control;[xvii] rear seat belt reminder systems;[xviii] rear view cameras;[xix] brake transmission interlocks;[xx] seat belts on motorcoaches;[xxi] electronic logging devices;[xxii] and, crash avoidance

systems such as automatic emergency braking.[xxiii] These safety advances have saved hundreds of thousands of lives and many have been accomplished because of the bipartisan leadership of the Members of the Senate Commerce, Science, and Transportation Committee.

NHTSA Has a Statutory Duty to the Public to Ensure the Safety of Autonomous Vehicles

Over fifty years ago, Congress passed the National Traffic and Motor Vehicle Safety Act of 1966 because of concerns about the death and injury toll on our highways.[xxiv] The law required the federal government to establish minimum vehicle safety performance (not design) standards to protect the public against "unreasonable risk of accidents occurring as a result of the design, construction or performance of motor vehicles."[xxv] While motor vehicles have changed dramatically since that time and will continue to do so in the future, the underlying premise of this prescient law and NHTSA's safety mission have not.

Unfortunately, recently NHTSA has chosen to issue only "voluntary guidelines" for the development of AVs.[xxvi] Voluntary guidelines are not enforceable because they are not legally binding, and, therefore, are inadequate to ensure safety and protect the public. Manufacturers may unilaterally choose to deviate from the guidelines or ignore them entirely at any time and for any reason including internal corporate priorities such as cost or marketing considerations. In addition, some entities may choose to follow the guidelines while others may not, creating a dangerous and unreliable patchwork of safety protection. Consumers and NHTSA also have no legal recourse against a manufacturer's failure to follow the guidelines. NHTSA cannot bring an enforcement action, force a statutory recall, or even influence a voluntary recall for failure to abide by the guidelines.

Opinion polls already show strong public skepticism and reticence about AVs and those doubts are warranted. Over the last few years, automakers have hidden from the American public and regulators safety defects that have led to numerous unacceptable and unnecessary deaths and injuries as well as the recall of tens of millions of vehicles.[xxvii] Consumer acceptance of AV technology is critical to its success and to fully realizing the lifesaving potential of AVs. Advocates recently commissioned a CARAVAN public opinion poll that revealed intense apprehension regarding the widespread deployment of AVs. In fact, two-thirds of respondents (64%) expressed concern about sharing the roads with driverless cars.[xxviii] Moreover, a recent study conducted by the Massachusetts Institute of Technology garnered similar results. Only 13 percent of those polled reported that they would be comfortable with vehicle "features that completely relieve the driver of all control for the entire drive."[xxix] In addition, 59 percent of respondents reported that the maximum level of automation that they would be comfortable with were "features that actively help the driver, while the driver remains in control."[xxx] Similarly, in a national survey commissioned by Kelley Blue, 80 percent of those polled believed that people should always have the option to drive themselves, and nearly one in three respondents said they would never buy a level 5 (entirely automatic) vehicle.[xxxi] Furthermore, a poll by the Pew Research Center found a majority of U.S. adults would not want to ride in a driverless car (56%).[xxxii] The reluctance and hesitation of the public to embrace AVs will not be overcome unless the development of the technology is transparent and AV failures are not widespread.

As with any segment of American society, people with disabilities have varying needs. While AVs may be part of the answer to increasing mobility for people with disabilities, it is certainly not the only solution, and it is by no means "one size fits all." AVs will help some people but provide little or no assistance to others based on their circumstances. The cost of a vehicle

retrofit or utilizing a taxi or ride-sharing company on a regular basis remains out of reach for many people with disabilities. Installing an automated system in a vehicle or removing the driver from an automated ride sharing service does not necessarily reduce or eliminate cost barriers that inhibit mobility. Moreover, there is no guarantee that the current designs of automobiles that do not easily allow for a ramp or lift system to be integrated into the body of the vehicle, or for a wheelchair to be stored safely in the trunk or passenger area, will be changed once AVs are introduced. The AV START Act allows for potentially catastrophic scenarios in which hundreds of thousands of cars could be allowed to operate that do not meet federal safety standards, including those that provide occupant protection. Allowing AVs that do not meet critical federal safety standards puts all roadway users at risk, but poses particular problems for people with disabilities who may be especially vulnerable when AVs are involved in a crash, do not function as intended, or have a defect.

Federal Oversight is Essential if Autonomous Vehicles Are to Ensure Public Safety

The AV START Act unnecessarily eviscerates the current federal regulatory scheme that has been in place for decades to ensure the safety of motor vehicles traveling on American roads. AV technology can be expeditiously developed while not jeopardizing public safety. In order to achieve that end, several provisions of the AV START Act should be revised or deleted.

Section 6 of the AV START Act will allow millions of vehicles to be sold to the public that are exempt from existing critical safety standards, the FMVSS. Providing broad statutory exemptions from the FMVSS for AVs is both unnecessary and unwise. As mentioned above, there is already a statutory process in place for manufacturers to seek an exemption from the FMVSS which Congress amended only three years ago. Section 24404 of the Fixing America's

Surface Transportation (FAST) Act[xxxiii] permits auto manufacturers to test or evaluate an unlimited number of vehicles exempt from one or more of the FMVSS. Exempt vehicles under this provision may not be sold or resold to the public. Furthermore, the exemption provision in current law, 49 USC Section 30113(a), provides that manufacturers may receive an exemption from compliance with the FMVSS for the sale of 2,500 vehicles to be sold in the United States in any 12-month period. There has simply been no demonstrable evidence presented that the development and deployment of AVs requires that an untold number of AVs should be exempt from such critical federal safety standards that are essential to protecting public safety.

Furthermore, the legislation currently contains no prohibition on AVs receiving an exemption from crashworthiness or occupant protection standards which protect the vehicle's passengers. Such exemptions can diminish the level of occupant protection that has been established through years of research under the existing regulations. For example, removing the steering wheel should not eliminate the requirement to protect the occupant from injury using safety systems such as airbags. Prohibiting such exemptions will in no way inhibit the development of AV technology but will ensure that passengers of AVs are properly protected in a crash.

Advocates supports the provision in Section 6 of the AV START Act that requires NHTSA to evaluate the safety performance of the AVs which have been granted an exemption(s) before an additional or greater number of vehicles may be granted a subsequent set of exemptions. However, the time period before the total number of vehicles that are exempt from the FMVSS should be lengthened from 12 months to 24 months, at a minimum. This will allow for NHTSA to gather the data it needs to make an accurate assessment of the AVs that have already been granted exemptions.

Finally, Section 7 of the AV START Act drastically alters current federal law which prohibits manufacturers from rendering safety systems, such as the brakes and brake pedal, inoperable. This provision is a dangerous change in settled law because it would allow automakers to turn off safety systems while the AV is being driven by the computer. This could unnecessarily dilute safety at the discretion of the manufacturer and sets a precedent of Congress allowing manufacturers to circumvent many of the existing safety standards. Currently, automakers cannot turn off safety systems without government oversight. As such, Section 7 should be removed entirely.

Recommendations:

- **Reduce the number of AVs that will be permitted to be exempt from critical federal safety standards. Increase the time period after granting an exemption from 12 to a minimum of 24 months so that NHTSA has an opportunity to collect enough data to make accurate safety assessments before permitting more exempt AVs to be sold.**
- **Prohibit any and all exemptions from federal safety standards that will diminish the level of occupant protection currently provided by the FMVSS.**
- **Eliminate the provision that permits manufacturers to unilaterally disable critical safety systems while the vehicle is operating in autonomous mode.**

The Development of Autonomous Vehicles Must Be Transparent or Public Confidence in the Technology Will Suffer

The development and deployment of AVs as well as NHTSA's role in regulating this technology must be open and transparent. Section 9 of the AV START Act requires manufacturers of AVs and AV technology to submit to NHTSA a Safety Evaluation Report (SER) that details the development of the technology and its expected performance in real world conditions. While Advocates support that this submission be mandatory, this provision only directs manufacturers to "describe" their AV systems. This language should be revised to require that sufficient

information and data are included in the SER to ensure that NHTSA can properly assess the safety performance of the technology. In the absence of such a legislative directive, manufacturers will continue to submit slick marketing brochures such as those recently released by two manufacturers[xxxiv] instead of providing data and documentation that will allow the public and NHTSA to accurately evaluate the safety of the technology. Advocates supports two important provisions in Section 9 of the AV START Act which require the SERs to be promptly made available to the public and which subject manufacturers who knowingly and willfully submit false information in the SER to the civil penalty provisions of 49 U.S.C. § 30165.

The AV START Act should ensure that consumers are given essential information about an AV. While the requirement in Section 12 of the bill calls for a rulemaking on consumer information, it could be years before a final rule is issued. Every manufacturer should be required to provide each consumer with information about the capabilities, limitations and exemptions from safety standards for all vehicles sold in the U.S. at the time of sale. This information should be made available to consumers from day one, even before NHTSA issues a rule. Therefore, the agency should be required to issue an Interim Final Rule immediately requiring such information be provided to consumers. Additionally, it would be useful for consumers and researchers to be able to automatically identify AVs by vehicle identification number (VIN).

NHTSA should also be required to establish a publicly-available AV database with basic safety information for consumers and for use in safety research. The database would be similar to the safercar.gov website that NHTSA maintains to inform the public about safety recalls applicable to their vehicle. The AV database would enable consumers to enter their VIN to obtain critical information about their AV such as the level of automation, any exemptions granted by NHTSA

from the FMVSS, and the operational design domain which includes limitations and capabilities of each autonomous driving system with which a vehicle is equipped. Such a database will be critical for consumers who purchase AVs, especially used vehicles that are not required to have a consumer sticker (Monroney label) on the window and may be missing an owner's manual. According to Edmonds, there were 38.5 million used cars sold in 2016.[xxxv] The database would also allow NHTSA and other research groups to perform independent evaluation of the comparative safety performance of AV systems, and identify poorly performing and unsafe autonomous driving systems, as well as those that provide greater safety performance.

Additionally, data sharing among manufacturers is essential to improve overall safety among AVs. Data and information about known flaws or problems encountered during development and while in use must be shared among manufacturers and with NHTSA and the public to ensure that all AV systems are learning about problems in real time and can benefit from the experience of other AV systems. This type of collaborative development is already taking place in the industry with the creation of the Automotive Information Sharing and Analysis Center (ISAC). Data sharing will expedite solutions to unusual or unique safety problems and ensure they are readily identified and corrected. Yet, the AV START Act does not require that the critical safety data generated by AVs will be shared or even provided to NHTSA. It is essential that the legislation require all crashes involving AVs be reported immediately to NHTSA by manufacturers. The Early Warning Reporting of crashes requires manufacturers to submit a very small portion of this information, but all crashes involving AVs should be fully reported.

Section 10 of the AV START Act establishes a technical advisory committee that will make recommendations to the Secretary of the U.S. Department of Transportation (Secretary) on the

safety standards that should be issued for AVs. Advisory committees, which may be useful in limited circumstances, are unacceptable substitutes for the agency fulfilling its statutory mission and issuing safety standards through public rulemakings. These committees often escape public scrutiny especially when the advisory committee is not subject to the Federal Advisory Committee Act (FACA), [xxxvi] as is the case with the advisory committee established under the AV START Act. In addition, the representation on these committees is often not fairly balanced and as such the committees are incapable of providing accurate and unbiased recommendations to the Secretary. Moreover, these committees are often a significant drain on agency staff time and already sparse funding. Instead of establishing an advisory committee, the AV START Act should authorize NHTSA to receive the funding it so badly needs to hire the experts it must have to properly regulate AVs and fulfill the agency's statutory mission.

Recommendations:

- **Ensure that manufacturers are required to include sufficient data and documentation in the SER to ensure that NHTSA has enough information to accurately assess the technology.**
- **Provide consumers with critical information about the capabilities and limitations of AVs. Direct NHTSA to immediately require information at the point of sale and in the vehicle's owner manual.**
- **Direct NHTSA to establish a publicly-available AV database with basic safety information for consumers and for use in safety research.**
- **Require manufacturers to report all crashes involving an AV to NHTSA.**

Commonsense Safeguards Must be in Place to Ensure the Safety of Autonomous Vehicles

Without essential changes and additions to AV START Act, this legislation will needlessly put all road users at risk. The additional improvements outlined below will in no way inhibit or even slow the development and deployment of AVs. Rather, these commonsense recommendations will ensure public safety and industry accountability.

Include Level 2 AVs

The AV START Act does not include Society of Automotive Engineers (SAE) Level 2 AVs, like the Tesla Model S which was involved in the 2016 fatal crash in Florida.[xxxvii] During a September 12, 2017, hearing on the crash conducted by the National Transportation Safety Board (NTSB), deadly failures of Tesla's Level 2 Autopilot system were readily identified.[xxxviii] NTSB found that similar problems also exist in other Level 2 AVs across many manufacturers.[xxxix] In the near term, Level 2 AVs will likely comprise the majority of the passenger vehicle AV fleet. Proper safeguards to curb Tesla-like failures must be put in place. At a minimum, Level 2 AVs should be covered by the SER safety assessment reporting, consumer information disclosure and cybersecurity provisions in the AV START Act.

Require Cybersecurity Standards

A failure to adequately secure AV systems and to protect against cyber-attacks could endanger AV passengers, non-AV motorists, pedestrians, bicyclists and other vulnerable roadway users. It could also clog roads, stop the movement of goods and hinder the responses of emergency vehicles. Problem areas could include subjects such as global position system (GPS) signal loss or degradation, spoofing, and off-line and real time hacking of single vehicles or fleets of vehicles. The real possibility of a malevolent computer hack impacting hundreds or thousands of AVs, perhaps whole model runs, makes strong cybersecurity protections a crucial element of AV design. Yet, Section 14 of the AV START Act merely requires manufacturers to have a cybersecurity plan in place with no minimum standards of protection or effectiveness. Instead, the legislation should require NHTSA to establish a minimum performance standard to ensure cybersecurity protections are required for all AVs levels 2-5. Considering the recent record of high-profile cyber-attacks,[xl] allowing manufacturers merely to have a cybersecurity plan in place

is grossly inadequate to ensure that AVs are protected against potentially catastrophic cyber-attacks and breaches.[xli]

Provide Standards to Prevent Driver Distraction

In AVs that require a human to take control from the AV system (Levels 2 and 3), the automated driving system must keep the driver engaged in the driving task. Research demonstrates that even for a driver who is alert and performing the dynamic driving task, there is a delay in reaction time between observing a safety problem and taking appropriate action.[xlii] For a driver who is disengaged from the driving task during autonomous operation of a vehicle, that delay will be longer because the driver must first understand the situation, 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 NTSB Tesla crash investigation. The NTSB found that the Tesla Autopilot facilitated the driver's inattention and overreliance on the system, which ultimately contributed to his death.[xliii] The Autopilot was active for 37 minutes of the 41 minute trip and of the 37 minutes the system detected the hands on the steering wheel only 7 times for a total of 25 seconds.[xliv] The NTSB also found that these problems are widespread across manufacturers with similar systems.[xlv] The AV START Act fails to address this critical safety problem, yet technology to discern distraction and provide alerts is already available, and NHTSA should be directed to establish a minimum performance standard to ensure driver engagement throughout the trip.

Provide for Standards to Protect the Electronics that Power Safety Systems

Motor vehicles and motor vehicle equipment are powered and run by highly complex electronic systems and will become even more so with the introduction of autonomous driving systems. Similar to the Federal Aviation Administration (FAA) requirements to protect the electronics in aircraft,[xlvi] NHTSA should require minimum performance standards for the electronics in all

motor vehicles, particularly AVs. Also, interference from 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 and used.[xlvii] Minimum performance requirements are essential to ensure the electronics that power and operate safety and autonomous driving systems function properly. Performance requirements are also needed to make certain these systems are not compromised by non-safety features that share the same electronics. However, the AV START Act fails to direct NHTSA to develop and issue performance standards for the electronics systems of modern motor vehicles as the FAA does for aircraft which, like AV cars, are highly dependent on electronic systems.

Require an AV "Vision Test" to Ensure Operating Safety

In order for an AV to properly interact with its surrounding environment, it must not only detect other vehicles and roadway infrastructure but also other participants using our nation's transportation systems such as pedestrians, bicyclists, construction workers in work zones, first responders providing assistance after crashes, and law enforcement officers directing traffic. A failure to properly detect and react to any of these could have tragic results. AVs and automated driving systems must be subject to objective testing to ensure that they properly detect other road users, as well as pavement markings and infrastructure, can correctly identify the type of object that has been detected, and can then also respond properly and safely. Therefore, the AV START Act should direct the Secretary to initiate a rulemaking proceeding to require automated driving systems, including SAE Level 2 automated driving systems, to meet a minimum performance standard for detecting and reacting to the AV's driving environment.

Provide NHTSA with Additional Authority to Counter Widespread Safety Problems

Regulating AVs presents unique challenges for NHTSA, and those issues warrant the agency being given additional tools to protect against potentially catastrophic defects. Flaws or viruses in computer software of AVs could adversely affect thousands of vehicles simultaneously. The agency, therefore, should be given imminent hazard authority in order to expedite the grounding of vehicles that the agency has identified as having a potentially dangerous, widespread software problem or cybersecurity threat that could lead to inordinate crashes, deaths and injuries. Also, because of the potential serious nature of any software problem that could imperil safety in thousands of vehicles, the ability to levy criminal penalties is essential. Criminal penalties will deter manufacturers and suppliers from willfully permitting the sale of AV systems with flawed software operating systems that could pose a danger to human life in the event of a crash.

Recommendations:

- **Amend the AV START Act to apply critical safety provisions to Level 2 AVs as these vehicles will likely comprise the majority of the passenger vehicle AV fleet in the early years of deployment.**
- **Direct NHTSA to issue safety standards addressing critical safety issues involving AVs including cybersecurity, driver engagement, electronics systems and the ability to detect objects in its driving environment.**
- **Provide additional legal authority to NHTSA to enable the agency to effectively respond to crises and protect public safety.**

NHTSA Needs Additional Resources

The unacceptable level of motor vehicle crashes, fatalities and injuries combined with the demands being placed on NHTSA with regard to AV technology necessitates an increase in agency funding. While the FAST Act did provide some additional resources, the agency budget is still inadequate to manage the myriad of challenges facing the agency. Today, 95 percent of transportation-related fatalities, and 99 percent of transportation injuries, involve motor vehicles

on our streets and highways.[xlviii] Yet, NHTSA receives only one percent of the overall U.S. Department of Transportation (DOT) budget.[xlix] NHTSA will face even greater challenges in the future as AVs continue to develop and are introduced into the market. For NHTSA to exercise proper oversight over AVs, and even just comply with the current requirements in the AV START Act, the agency will need to hire more staff with technical expertise.

Moreover, in light of the fact that motor vehicle crashes impose a comprehensive cost on society of $836 billion, $242 billion of which is direct economic costs such as lost productivity, medical costs and property damage, it is imperative to provide adequate resources to advance serious measures to combat a serious problem.[l] The AV START Act requires NHTSA to take on new significant responsibilities such as: reviewing SERs filed by manufacturers; evaluating and making determinations on potentially numerous requests for thousands of exemptions from the FMVSS within 180 days of receipt; amending and issuing safety standards; and, supporting advisory committees.

In order to efficiently execute all of these tasks, an office dedicated to AV safety should be established within NHTSA. Safety should not be compromised and progress should not be slowed because the agency does not have adequate technical expertise, organization and funding to oversee the development and deployment of AVs.

Recommendation:

- **NHTSA must be given additional funding and a new dedicated office to AVs should be created to meet demands being placed on the agency with regard to the advent of AV technology.**

States Must Not be Preempted from Acting to Protect their Citizens Especially in Light of NHTSA's Failure to Regulate Automated Vehicles to Date

Advocates agrees with the statutory mission of NHTSA to regulate the design and performance of motor vehicles to ensure public safety which, in modern day terms, includes AVs and automated driving system technology. However, in the absence of comprehensive federal standards and regulations to govern the AV rules of the road, the states have every legal right, indeed a duty to their citizens, to fill the regulatory vacuum with state developed proposals and solutions for ensuring public safety. NHTSA, by issuing only guidelines, has left the field of AV safety open to the states to fulfill their traditional role of protecting the health and welfare of their citizens. As the National Conference of State Legislatures (NCSL) noted in its comments to NHTSA's first set of guidelines issued in September 2016, "Without any indication on forthcoming federal regulations regarding the safe operation of HAVs, states may be forced to fill the gap in order to ensure the safety of public roadways."[li] Moreover, the Pennsylvania Department of Transportation stated in its comments to the same guidelines:

> *Yes, there should be consistent treatment of highly automated vehicles nationwide. However, where the adoption of 'safety standards' being applied to highly automated vehicle testing is totally voluntary (as opposed to self-certifying as against a regulatory framework in the FMCSS) [sic], what level of comfort does that give to the states and their citizens that their transportation and law enforcement agencies are properly discharging their duty to ensure that highly automated vehicles are in fact safe?*[lii]

Recommendation:

- **Until NHTSA issues comprehensive standards and regulations to govern AVs, states must not be precluded from enacting state developed solutions to protect their citizens.**

Conclusion

Autonomous vehicles have the potential to address the unacceptable annual death and injury toll and associated costs reaching billions of dollars. As the Senate takes the first step to creating national policy on AVs with potentially long-lasting consequences, it is critically important that

the AV START Act include provisions that advance this life-saving technology in as safe and expeditious manner as possible. However, this technology cannot reach its full safety potential without critical safeguards put in place by Congress. Currently the process the bill creates for AV deployment is flawed, and Advocates has put forth 12 recommendations which we urge the Senate to consider moving forward. We believe the role of our nation's experts in academia to provide the needed testing and proving grounds, as opposed to exposing other highway users on public roads, is essential to both make sure the AVs are safe as well as to build confidence in a currently skeptical public. In conclusion, the current "hands off" approach to hands free driving renders our nation rudderless at a time in our nation's transportation history when leadership is needed more than ever. Advocates urges an immediate course correction to ensure the safe development and deployment of AVs.

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[ii] Traffic Safety Facts Research Note, 2016 Fatal Motor Vehicle Crashes: Overview, NHTSA, Oct. 2017, DOT HS 812 456.

[iii] National Center for Statistics and Analysis, 2015 motor vehicle crashes: Overview, Report No. DOT HS 812 318, National Highway Traffic Safety Administration (Aug. 2016).

[iv] National Safety Council, NSC Motor Vehicle Fatality Estimates (June 2017).

[v] S. 1885, American Vision for Safer Transportation through Advancement of Revolutionary Technologies Act, 115th Congress, 1st Session (2017).

[vi] Fixing America's Surface Transportation Act, Sec. 24404, Pub. L. 114-94 (2015).

[vii] Examining Ways to Improve Vehicle and Roadway Safety: Hearing Before Energy and Commerce Committee, Subcommittee on Commerce, Manufacturing and Trade, 114th Cong. (Oct. 21, 2015) (Statement of Joan Claybrook).

[viii] 49 U.S.C. § 30113.

[ix] Bryan Salesky, *A Decade after DARPA: Our View on the State of the Art in Self-Driving Cars* (Oct. 16, 2017), available at: https://medium.com/self-driven/a-decade-after-darpa-our-view-on-the-state-of-the-art-in-self-driving-cars-3e8698e6afe8.

[x] David Welch and Gabrielle Coppola, Don't Worry, Petrolheads. Driverless Cars Are Still Years Away, Bloomberg News (Jan, 9, 2018), available at: https://www.bloomberg.com/news/articles/2018-01-09/toyota-to-hyundai-say-pump-brakes-on-hopes-of-robo-car-s-arrival.

[xi] Lives Saved by Vehicle Safety Technologies and Associated Federal Motor Vehicle Safety Standards, 1960 to 2012, DOT HS 812 069 (NHTSA, 2015); See also, NHTSA AV Policy, Executive Summary, p. 5 endnote 1.

[xii] Pub. L. 102-240 (Dec. 18, 1991).

[xiii] National Center for Statistics and Analysis, Lives Saved in 2015 by Restraint Use and Minimum-Drinking-Age Laws, National Highway Traffic Safety Administration, Report No. DOT HS 812 319 (Aug. 2016).

[xiv] Traffic Safety Facts 2015, Lives Saved by Restraint Use, and Additional Lives that Would Have been Saved at 100 Percent Seat Belt and Motorcycle Helmet Use, 1975-2015, DOT HS 812 384, NHTSA (2017).

[xv] Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act, Pub. L. 106-414 (Nov. 1, 2000).
[xvi] Anton's Law, Pub. L. 107-318 (Dec. 4, 2002).
[xvii] Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Pub. L. 109-59 (Aug. 10, 2005).
[xviii] *Id.*
[xix] Cameron Gulbransen Kids Transportation Safety Act of 2007, Pub. L. 110-189 (Feb. 28, 2008).
[xx] *Id.*
[xxi] Moving Ahead for Progress in the 21st Century (MAP-21) Act, Pub. L. 112-141 (Jan. 3, 2012).
[xxii] *Id.*
[xxiii] 80 FR 62487 (Oct. 16, 2015).
[xxiv] Pub. L. 89-563 (Sept. 9, 1966).
[xxv] Title 49, U.S.C. Sec. 30102.
[xxvi] NHTSA, Automated Driving Systems 2.0: A Vision for Safety (Sep. 12, 2017).
[xxvii] United States Department of Transportation, NHTSA, Docket No. NHTSA-2015-0055, Coordinated Remedy Program Proceeding; NHTSA, safercar.gov, Vehicle Owners, Consumer Alert: GM Ignition Switch Recall Information; *U.S. v. Volkswagen*, Case. No. 16-CR-20394 (E.D. Mich.).
[xxviii] Advocates for Highway and Auto Safety, *CARAVAN Public Opinion Poll: Driverless Cars* (Jan. 12, 2018).
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[xxxii] Pew Research Center, Automation in Everyday Life (Oct. 2017).
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