PILLAR LEGAL

# NHTSA Issues Updated Automated Driving Systems Guidance

**U.S. TECH LAW UPDATE**[1]
October 25, 2017

By: Greg Pilarowski | Lu Yue

The National Highway Traffic Safety Administration ("NHTSA") of the United States Department of Transportation ("DOT") issued Automated Driving Systems: A Vision for Safety on September 12, 2017 (the "2017 Guidance"). This 2017 Guidance updates and replaces the Federal Automated Vehicles Policy ("2016 Policy") released by NHTSA on September 20, 2016 and serves as NHTSA's current operating guidance for automated driving systems ("ADSs"). NHTSA indicated that they will update the 2017 Guidance periodically to reflect advances in technology, increased presence of ADSs on public roadways, and any regulatory action or statutory changes that might occur on the federal or state levels.[2]

## 1. Scope and Purpose

The 2017 Guidance, like the 2016 Policy, divides automated vehicles into five (5) levels based on the definitions developed by the Society of Automotive Engineers ("SAE"). The 2017 Guidance focuses on Automated Driving Systems ("ADSs"), which refers to vehicles that incorporate SAE automation levels three (3) through five (5). ADSs may include systems for which there is no human driver or for which the human driver can give control to the ADSs and would not be expected to perform any driving-related tasks for a period of time.

| SAE Level | NHTSA Descriptions |
|---|---|
| Level 0 | Human driver performs all driving tasks. |
| Level 1 | Vehicle is controlled by the human driver, but some driving assist features may be included in the vehicle design. |
| Level 2 | Vehicle has combined automated functions, but the human driver must remain engaged with the driving task and monitor the environment at all times. |
| Level 3 | Human driver is necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice. |
| Level 4 | The vehicle is capable of performing all driving functions under certain conditions. The human driver may have the option to control the vehicle. |
| Level 5 | The vehicle is capable of performing all driving functions under all conditions. The human driver may have the option to control the vehicle. |
| Level 3 to 5: ADSs | |

The 2017 Guidance notes that nine (9) out of ten (10) serious roadway crashes occur due to human behavior, and that the NHTSA sees great potential for significant improvements in

[1] This U.S. Tech Law Update is provided by Pillar Legal, P.C. (the "Firm") as a service to clients and other readers. The information contained in this publication should not be construed as legal advice, and use of this memorandum does not create an attorney - client relationship between the reader and the Firm. In addition, the information has not been updated since the date first set forth above and may be required to be updated or customized for particular facts and circumstances. This U.S. Tech Law Update may be considered "Attorney Advertising" under applicable law. Questions regarding the matters discussed in this publication may be directed to the Firm at the following contact details: +1-925-474-3258 (San Francisco Bay Area office), +86-21-5876-0206 (Shanghai office), email: greg@pillarlegalpc.com. Firm website: www.pillarlegalpc.com. 

[2] See page 25 of the 2017 Guidance.

roadway safety through the development of ADSs.[3] The 2017 Guidance seeks to "facilitate the integration of ADSs technology by helping to ensure its safe testing and deployment, as well as encouraging the development of system that guard against cyber-attacks and protect consumer privacy".[4]

## 2. Voluntary Guidance

NHTSA drives its regulatory authority from the National Traffic and Motor Safety Act of 1966 ("Vehicle Safety Act"). The Vehicle Safety Act grants NHTSA the power to issue Federal Motor Vehicle Safety Standards ("FMVSS"),[5] which manufacturers must certify compliance with for new motor vehicles and motor vehicle equipment.[6] As long as a vehicle complies with the existing FMVSS framework and maintains a conventional vehicle design, the vehicle can be sold to the public. As a result, there is currently no federal legal barrier to the sale of ADSs. In the commercial vehicle sector, however, according to Federal Motor Carrier Safety Regulations issued by Federal Motor Carrier Safety Administration, an institution established within DOT on January 1, 2000, a trained commercial driver must be behind the wheel of a commercial vehicle at all times, irrespective of whether any automated driving technologies are incorporated into the vehicle, unless a petition for a waiver or exemption has been granted.[7]

The recommendations and suggestions contained in the 2017 Guidance are entirely voluntary, without any compliance requirements or enforcement mechanisms. This voluntary guideline approach does, however, encourage the ADSs industry to follow the guidance on safety standards, and encourage state policymakers to follow the guidance on best practices when developing their own approaches to ADSs regulation.[8]

## 3. ADSs Safety Elements for Developers and Manufacturers

The 2017 Guidance outlines twelve (12) safety elements, which NHTSA believes are the priorities to consider and address when developing, testing and deploying ADSs on public roadways. ADSs industry participants are encouraged to consider and document their use of industry standards, best practices, company policies or other methods they have employed to provide for increased system safety in real-world conditions. In addition ADSs developers and manufacturers are encouraged to:

1） System Safety. Follow a whole-system engineering approach to design ADSs free of unreasonable safety risks.

2） Operational Design Domain. Define and document the specific conditions under which ADSs are designed to operate.

[3] See the Page II of the 2017 Guidance.
[4] See the Page I of the 2017 Guidance.
[5] 49 U.S.C. Chapter 301.
[6] See page 38 of the 2016 Policy.
[7] See page 2 of the 2017 Guidance.
[8] See page 2 of the 2017 Guidance.

3） Object and Event Detection and Response. Implement the appropriate system response to the wide variety of circumstances, including other vehicles, pedestrians, bicyclists, animals, and other objects.

4） Fallback (Minimal Risk Condition). Establish a documented process for transitioning to a minimal risk condition when a problem is encountered or the ADSs cannot operate safely.

5） Validation Methods. Develop validation methods to appropriately mitigate the safety risks associated with their ADS approach, since the scope, technology, and capabilities vary widely for different automation functions.

6） Human Machine Interface. Keep information and control passing smoothly between human drivers and the ADSs control system, including informing the human operator through various indicators that the ADS is functioning properly, currently engaged in ADS mode, currently unavailable for use, experiencing a malfunction and/or requesting control transition from the ADS to the human operator.

7） Vehicle Cyber-security. Follow a robust product development process to reduce the cyber-security threats and vulnerabilities.

8） Crashworthiness. Consider the possible scenario of another vehicle crashing into an ADS-equipped vehicle and how to best protect vehicle occupants in that situation, given that a mix of vehicles with ADSs and those without will operate on public roadways for an extended period of time.

9） Post-Crash ADSs Behavior. Consider methods of returning ADSs to a safe state immediately after being involved in a crash.

10） Data Recording. Establish a documented process for testing, validating, and collecting necessary data related to the occurrence of malfunctions, degradations, or failures in a way that can be used to establish the cause of any crash.

11） Consumer Education and Training. Ensure their own staff understand the technology and remain actively engaged in educating and training dealers, distributors, and consumers about the ADSs technology.

12） Federal, State and Local Laws. Document how they account for all applicable federal, state and local laws in the design of their vehicles and ADSs.[9]

The 2017 Guidance list of twelve (12) safety elements is reduced from the list of fifteen (15) included in the 2016 Policy, having removed privacy, ethical considerations and

[9] See page pages 5-15 of the 2017 Guidance.

registration/certification. In addition, as noted above, the 2017 Guidance is entirely voluntary. This contrasts with the 2016 Policy which required ADSs developers and manufacturers to submit a safety assessment letter to NHTSA's Office of the chief counsel at the time they intended their products to be tested or deployed on public roads, with that letter detailing how they comply with the guidance on each of the fifteen (15) point safety elements.[10]

The 2017 Guidance does encourage entities engaged in ADS testing and deployment to demonstrate how they address the twelve (12) safety elements by publishing a voluntary safety self-assessment ("Voluntary Safety Self-Assessment") prior to testing and deployment. ADSs developers and manufacturers are not required to submit a Voluntary Safety Self-Assessment, nor is there any mechanism to compel entities to do so. The Voluntary Safety Self-Assessment is, however, intended to demonstrate to the public that entities engaged in ADS testing and deployment are: (i) considering the safety aspects of ADSs; (ii) communicating and collaborating with DOT; (iii) encouraging the self-establishment of industry safety norms for ADSs; and (iv) building public trust, acceptance, and confidence through transparent testing and deployment of ADSs.

## 4. Best Practices for State Policymakers

The Vehicle Safety Act expressly preempts states from issuing any standard that deviates from the FMVSS that covers the same aspect of performance. The 2016 Policy includes a model state policy that emphasizes the distinction between state and federal jurisdiction and calls on states to evaluate their current laws and remove unnecessary impediments to the testing and development of highly automated vehicles or ADSs.[11]

The 2017 Guidance encourages state authorities to establish sufficient consistency of laws and regulations to promote innovation and the swift, widespread, safe integration of ADSs across the country. In addition, DOT strongly encourages states to allow DOT alone to regulate the safety design and performance aspects of ADS technology. The table below summarizes the general areas of responsibility for NHTSA and the states with respect to ADSs.[12]

| NHTSA's Responsibilities | States' Responsibilities |
|---|---|
| - Setting FMVSSs for new motor vehicles and motor vehicle equipment (with which manufacturers must certify compliance before they sell their vehicles);<br>- Enforcing compliance with FMVSSs;<br>- Investigating and managing the recall and remedy for non-compliances and safety-related motor vehicle defects nationwide;<br>- Communicating with and educating the public about motor vehicle safety issues. | - Licensing human drivers and registering motor vehicles in their jurisdictions;<br>- Enacting and enforcing traffic laws and regulations;<br>- Conducting safety inspections, where states choose to do so;<br>- Regulating motor vehicle insurance and liability. |

[10] See page 15 of the 2016 Policy.
[11] See page 39 of the 2016 Policy.
[12] See page 20 of the 2017 Guidance.

NHTSA recommends the following safety-related best practices that states should consider including in any ADSs legislation:

1） "Technology-Neutral" Environment. States should not place unnecessary burdens on competition and innovation by limiting ADSs testing or deployment to motor vehicle manufacturers only;

2） Licensing and Registration Procedures. In connection with exercising state responsibility for driver licensing and vehicle registration, states should consider licensing ADSs entities and test operators and also registering all vehicles equipped with ADSs;

3） Reporting and Communication Methods. States can take steps to monitor safe ADSs operation through reporting and communications mechanisms so that ADSs developers and manufactures coordinate with public safety agencies, including reporting crashes and other roadway incidents involving ADSs to law enforcement and first responders;

4） Review Traffic Laws. States should review their vehicle codes, applicable traffic laws and similar items to determine if there are unnecessary regulatory barriers that would prevent the testing and deployment of ADSs on public roads.[13]

The 2017 Guidance also provides best practices that describe a framework for States Highway Safety Officials, including:

1） Administrative: States are encouraged to consider establishing a new oversight activities on an administrative level to support ADSs activities;

2） Testing ADSs on Public Roads. States are encouraged to consider developing guidelines for applications and permissions to test ADSs on public roads and also for test drivers and entity-based operators;

3） Registration. States are encouraged to consider identifying ADSs on vehicle titles and registrations as well as require notification of ADSs upgrades if the vehicle has been significantly upgraded post-sale;

4） Working with Public Safety Officials. States safety officials are encouraged to be prepared to monitor public response to ADSs deployment and provide education if needed.

5） Liability and Insurance. States are encouraged to consider how to allocate liability among ADSs owners, operators and passengers when accidents occur. States are also

[13] See page 21 of the 2017 Guidance.

encouraged to clarify which entity is required to be responsible for vehicle insurance.[14]

[14] See page 22 of the 2017 Guidance.