

## FEDERAL AUTOMATED VEHICLES POLICY

### Overview and Comments

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### Background

In May 2013, the USDOT National Highway Traffic Safety Administration (NHTSA) initiated discussion of federal automated vehicle policy when it issued a “Preliminary Statement of Policy Concerning Automated Vehicles.” This policy statement introduced a 5-level (0-4) hierarchy of automated vehicles and provided basic regulatory guidance to states. NHTSA published a brief update in January 2016, essentially promising that more complete guidance would be forthcoming. The promised *Federal Automated Vehicles Policy* document was published September 19, 2016. NHTSA has pledged to update the policy document annually. This memo highlights key elements of the NHTSA policy document.

In its current form, the September 2016 policy document has no force of law or regulatory authority. Thus, the document has no impact on existing statutory or regulatory requirements; however, the document implies that NHTSA is seriously considering initiating future rulemaking activity. One potential mandate would be to require manufacturers of automated vehicles to submit a 15-point safety assessment to obtain approval to introduce an automated vehicle to consumers. In the meantime, NHTSA is asking that manufacturers voluntarily provide them with the 15-point safety assessment.

The policy statement relies heavily on frameworks developed by the Crash Avoidance Metrics Partnership (CAMP) and relevant SAE International standards, particularly SAE J3016, *Taxonomy and Definitions for Terms Related to On-Road Motor Vehicle Automated Driving Systems*. Most notably, NHTSA has abandoned its previous 5-level framework and adopted the SAE J3016 6-level framework.

- Level 0: No Driving Automation
  - Level 1: Driving Assistance
  - Level 2: Partial Driving Automation
  - Level 3: Conditional Driving Automation
  - Level 4: High Driving Automation
  - Level 5: Full Driving Automation
- } **Highly Automated Vehicles (HAVs)**

NHTSA’s adoption of SAE J3016 comes at a time when an update to the standard is forthcoming. Unfortunately, until the update to J3016 is published, some elements of how NHTSA defines automated vehicles remains unclear, at least without further clarification.

The new NHTSA framework considers the jump between Level 2 and Level 3 to be very important. Most of the guidance in its document applies only to Levels 3-5, which NHTSA identifies *as highly automated vehicles* (HAVs).

To date, NHTSA has not introduced an objective test or method by which to identify an HAV. Manufacturers will be responsible to appropriately classify the level of automation for a particular system based on SAE J3016. NHTSA has stated an intent to provide objective methods for determining automation levels sometime in the future.

#### Key Points:

- *Federal Automated Vehicles Policy* provides guidance only. NHTSA has not yet explicitly introduced or proposed specific new regulations.
- NHTSA has retired its previous 5-Level classification of automation in favor of adopting the (6-Level) SAE J3016 taxonomy; however, SAE J3016 currently is being revised, leaving precise understanding of NHTSA’s framework partly in limbo until the revised standard is published.
- This policy document introduces a new concept of *Highly Automated Vehicle* (HAV), corresponding to SAE Levels 3, 4, and 5. Most of this policy applies only to HAVs.
- Manufacturers of HAVs will be requested to submit a *15-point Safety Assessment* before a vehicle is operated on public roads. This applies to deployment and testing. Initially, this is request for voluntary submission of an assessment, but NHTSA indicates that it intends this assessment to become mandated via future rulemaking.
- Manufacturers will be responsible for determining if a vehicle is classified as an HAV. NHTSA might adopt objective tests to formalize this determination at a later date.
- NHTSA has pledged to update this policy annually.

The policy document is divided into four components, each of which is discussed below.

#### Vehicle Performance Guidance for Automated Vehicles

Under current law, NHTSA’s authority over vehicle safety systems is generally limited to enforcement of compliance with Federal Motor Vehicle Safety Standards (FMVSS). Thus, as long as a vehicle complies with FMVSS, it could include various automated features, including full self-driving ability. NHTSA has no clear regulatory authority to review the safety of such features beyond FMVSS compliance. In *Federal Automated Vehicles Policy*, NHTSA introduces a new reporting process that could be “made mandatory through future rulemaking.” In the meantime, NHTSA will ask manufacturers to voluntarily submit a safety assessment report covering 15 points:

1. Data Recording and Sharing
2. Privacy
3. System Safety
4. Vehicle Cybersecurity
5. Human Machine Interface
6. Crashworthiness
7. Consumer Education and Training
8. Registration and Certification
9. Post-crash Behavior
10. Federal, State, and Local Laws
11. Ethical Considerations
12. Operational Design Domain (ODD)
13. Object and Event Detection and Response (OEDR)
14. Fall Back (Minimal Risk Condition)
15. Validation Methods

NHTSA indicates that it will provide a more complete template for submission of this report at a future date. NHTSA is requesting that (once the reporting process is adopted) manufacturers provide this safety assessment four-months in advance of deploying any new automated feature or “significant update.” This is intended to apply to prototype test vehicles, as well as to vehicles deployed to consumers. Notable aspects of this guidance document are discussed below.

- For both testing and operational vehicles, NHTSA requests a documented process regarding how data will be collected in the event of a crash. Such data should be “readily available for retrieval ... by NHTSA.” NHTSA would also like the manufacture to collect—and allow NHTSA to access—non-crash events (e.g., near crashes).
- NHTSA suggests establishing a platform for extensive data-sharing between developers, such that the lessons learned by one manufacturer can be adopted by others with the end goal of improving safety performance to all HAVs.
- NHTSA is clear that all data collection should be within the bounds of all applicable consumer disclosure agreements; however, such an agreement might require non-trivial amendment to existing data-sharing practices. In regard to data privacy, NHTSA references advisory documents such as the White House Consumer Privacy Bill of Rights, among others. It might be difficult to balance typical privacy principles with NHTSA’s request for open data regarding the operation of HAVs, though this will be of less concern for testing (and more so for deployment to consumers).
- NHTSA’s preference for open data seems to extend to design, testing, and validation of the entire system. Under the “System Safety” requirement, NHTSA states that “all design decisions ... should be fully documented and all, changes, design choices, analyses, associated testing and data should be fully traceable.” Similar guidance is provided with respect to cybersecurity.
- Some aspects of system design, NHTSA suggests, should be developed publicly, i.e., those involving “ethical dilemmas.”
- Some, but not all, of these points also apply to Level 2 vehicles. Further advice regarding Level 2 vehicles includes providing for monitoring of driver state (e.g., are they alert).

### Model State Policy

The Modal State Policy section of the document clarifies the division of traditional federal and state roles in vehicle and traffic regulation. NHTSA lists states responsibilities as:

- Licensing (human) drivers and registering motor vehicles
- Enacting and enforcing traffic laws and regulations
- Conducting safety inspections
- Regulating motor vehicle insurance and liability.

NHTSA expects that these roles will remain largely unchanged with the advent of HAVs. One exception is that NHTSA expects the federal role to expand, because the federal role of certifying safety equipment will increasingly encompass tasks similar to “licensing” of the non-human “driver.” Some states might view this position as usurping state authority. Furthermore, NHTSA “strongly encourages” states *not* to regulate “performance of HAV technology and vehicles,” and reminds that state laws could be preempted if they conflict with federal regulations.

State seeking clear policy guidance might be disappointed. NHTSA identifies a series of legislative and regulatory frameworks that could be affected by HAVs, but it does not provide model language

or recommended approaches. NHTSA’s overall advice is that states “create a . . . committee” to advise on any future legislation or regulation.

More concretely, NHTSA encourages individual states to develop a regulatory framework to allow for *testing* in each state and provides model language for such requirements. Among NHTSA’s suggestions is that states require manufacturers and developers to participate in NHTSA’s (otherwise voluntary) 15-point Safety Assessment reporting program. If states agree and adopt this stance, state-specific rules could effectively make such assessments mandatory (at least in some states) even prior to the existence of a federal mandate.

### NHTSA’s Current Regulatory Tools

Under current statutes, NHTSA has four regulatory tools that could be used to regulate HAVs, as described below. This section is targeted to manufacturers and developers wishing to navigate current federal requirements to introduce non-typical features onto consumer vehicles.

**Letters of Interpretation:** NHTSA, on request, can clarify how it interprets an existing regulation in a specific context. For example, such a letter has been used to confirm that hands-free parking systems are allowable under current FMVSS.

**Exemptions:** Manufacturers can seek temporary exemptions (up to three years) from specific FMVSS standards upon petition. Typical reasons include significant financial burden of compliance or small-scale deployment of prototype systems. NHTSA has pledged to expedite requests for exemptions, as well as interpretations, to facilitate the deployment of novel automated vehicle technologies.

**Rulemaking:** Substantial changes to the FMVSS will require formal rulemaking. These procedures typically take several years or more. NHTSA previously identified that FMVSS standards would impact certification of HAVs and found that HAVs could be deployed under current regulations so long as traditional vehicle functions (i.e., a manual foot brake) were retained.

**Enforcement:** Irrespective of any FMVSS standard, NHTSA has the authority to determine that a vehicle has a defect and order the manufacturer to conduct a recall. In other words, if NHTSA had reason to believe that a consumer-driven vehicle was unsafe due to an automated driving function, it could order a recall. In typical recalls, manufacturers must physically repair the defect on a vehicle. With an HAV, it is likely that automated driving systems could be remotely disabled. Critically, NHTSA does not have any authority to determine that an HAV is unsafe for deployment *before* it is sold to consumers.

### Modern Regulatory Tools

In the section pertaining to modern regulatory tools, NHTSA imagined how it might ideally regulate automated vehicles, regardless of its current authority (or lack thereof). NHTSA suggests several possible regulatory approaches. The most significant idea is for “Pre-market Approval Authority.” Such an authority would give NHTSA the power to approve HAVs *before* they are offered to consumers. This would require an act of Congress, because it would be a non-trivial expansion of NHTSA’s regulatory scope and would likely require an increased department budget. NHTSA references Federal Aviation Administration (FAA) frameworks as a potential model. The FAA, another DOT agency, has the power to approve or deny aircraft and major components from being publicly deployed. Yet, NHTSA also admits that, due to the variety and update-sequence of

consumer vehicles, NHTSA's potential pre-market approval authority could become far more complex than FAA's.

### Next Steps

While revealing of potential future agency actions, NHTSA's discussion of modern regulatory tools is largely a hypothetical exercise, at least in the short term. The "next steps" given in Appendix III are generally more limited in scope. Beyond procedural public commenting and more research, NHTSA plans the next concrete actions:

- **Publish Safety Assessment Template:** NHTSA will provide a template for manufacturers to (voluntarily for now) submit the 15-point Safety Assessment. NHTSA expects manufacturers to begin submitting documentation four-months after availability of the template.
- **Automated Vehicle Classification:** NHTSA will publish an objective method that manufacturers may use to classify their automated vehicle systems.
- **Mandate Safety Assessment:** NHTSA will initiate rulemaking to *require* 15-point safety assessments for HAVs.