

**Federal Highway Administration**

[Docket no. FHWA-2017-0049]

**Automated Driving Systems**

**AGENCY:** Federal Highway Administration (FHWA), DOT.

**ACTION:** Request for Information (RFI).

**SUMMARY:** Automated Driving Systems (ADS) are increasingly being tested and introduced onto the public roadways. The FHWA is interested in hearing from the public, including stakeholders (e.g., State and local agencies, vehicle manufacturing industry, road hardware and intelligent transportation systems industry, related associations, transportation advocates, ADS hardware and software platform developers, etc.), on a range of issues related to assessing the infrastructure requirements and standards that may be necessary for enabling safe and efficient operations of ADS.

**DATES:** Comments must be received on or before [Insert date 45 days after date of publication in the Federal Register].

**ADDRESSES:**

To ensure that you do not duplicate your docket submissions, please submit all comments by only one of the following means:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov> and follow the online instructions for submitting comments.
- Mail: Docket Management Facility, U.S. Department of Transportation, 1200 New Jersey Ave., SE., W12-140, Washington, DC 20590-0001.
- Hand Delivery: West Building Ground Floor, Room W12-140, 1200 New Jersey Ave.,

SE., between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The telephone number is (202) 366-9329.

- Instructions: You must include the agency name and docket number at the beginning of your comments. All comments received will be posted without change to <http://www.regulations.gov>, including any personal information provided.

**FOR FURTHER INFORMATION CONTACT:** For questions about this notice, contact Martin C. Knopp, Associate Administrator for Operations, Federal Highway Administration, (202) 366-9210, or via email at [Martin.Knopp@dot.gov](mailto:Martin.Knopp@dot.gov); for legal questions: Mr. William Winne, Office of the Chief Counsel, (202) 366-1397, or via email at [William.Winne@dot.gov](mailto:William.Winne@dot.gov); 1200 New Jersey Ave., SE., Washington, DC 20590. Business hours for FHWA are from 8:00 a.m. to 4:30 p.m., e.t., Monday through Friday, except Federal holidays.

#### **SUPPLEMENTARY INFORMATION:**

##### **Electronic Access and Filing**

A copy of this document is available for download and public inspection under the docket number noted above at the Federal eRulemaking portal at: <http://www.regulations.gov>. You may also submit or retrieve comments online through the Federal eRulemaking portal. The Web site is available 24 hours each day, 365 days each year. Electronic submission and retrieval help and guidelines are available under the help section of the Web site.

An electronic copy of this document may also be downloaded from Office of the Federal Register's home page at: [http://www.archives.gov/federal\\_register](http://www.archives.gov/federal_register) and the Government Publishing Office's Web page at: <https://www.gpo.gov/fdsys/>. Late comments will be considered to the extent practicable.

##### **Background**

Automated Driving Systems are increasingly being tested and introduced onto the public roadways. Many road owners and operators are trying to determine whether, and which, modifications or enhancements to the infrastructure are needed to eliminate barriers to ADS technology or to further accelerate its adoption, as well as to ensure highway safety. Some vehicle manufacturers have expressed an interest in greater uniformity of lane markings, signage, and other traffic control devices as being helpful for ADS operation. Infrastructure providers have expressed an interest in understanding which traffic control device materials and other characteristics present challenges for ADS, specifically the machine vision technologies' ability to interpret some roadway markings over others.

The FHWA is interested in hearing from the public, including stakeholders (e.g., State and local agencies, vehicle manufacturing industry, road hardware and intelligent transportation systems industry, related associations, transportation advocates, ADS hardware and software platform developers, etc.), on a range of issues related to assessing the infrastructure requirements, ADS-infrastructure interface standards and operating practices that may be necessary for enabling safe and efficient operations of ADS. The FHWA invites the public to provide comments to inform the development of an agency strategy on ADS.

The National Highway Traffic Safety Administration (NHTSA) recently released the "Automated Driving Systems 2.0: A Vision for Safety" document. It replaces the 2016 Federal Automated Vehicles Policy. This new document focuses on two sections: voluntary guidance for ADS and technical assistance to States. The FHWA aims to complement NHTSA's guidance and will continue to coordinate across the U.S. Department of Transportation in its automation activities. For information about the recent guidance, please visit the Department's Web site at: [www.transportation.gov/av](http://www.transportation.gov/av).

The FHWA seeks information directly from the public and stakeholders to better understand FHWA's role in automation and inform future Agency research and activities. In addition, FHWA seeks comments more broadly on planning, development, maintenance, and operations of the roadway infrastructure necessary for supporting ADS, including any information detailing the costs associated with implementation.

Comments are requested on the following questions:

1. What roadway characteristics are important for influencing the safety, efficiency, and performance of ADS? Are there certain physical infrastructure elements (e.g., lane markings, signage, signals, etc.) that are necessary for ADS? If so, what current challenges exist for ADS to interpret them? Are these characteristics important for all levels of automation, or only specific levels? (For levels of automation, see [https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/13069a-ads2.0\\_090617\\_v9a\\_tag.pdf](https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/13069a-ads2.0_090617_v9a_tag.pdf), page #4)
2. What challenges do non-uniform traffic control devices present for ADS technologies and how does this affect the costs of ADS systems?
3. How does the state of good repair (e.g., pavement and road markings quality) impact ADS, including technology or safety costs, if at all?
4. How should FHWA engage with industry and automation technology developers to understand potential infrastructure requirements? Are there specific issues that FHWA should engage with industry directly?
5. What is the role of digital infrastructure and data in enabling needed information exchange between ADS and roadside infrastructure? What types of data transmission between ADS and roadside infrastructure could enhance safe and efficient ADS operations? What type of

infrastructure and operations data, if available, would help accelerate safe and efficient deployment of the ADS on our Nation's public roadways? How might the interface between ADS and digital infrastructure best be defined to facilitate nationwide interoperability while still maximizing flexibility and cost effectiveness for ADS technology developers and transportation agencies and minimizing threats to cybersecurity or privacy?

6. What concerns do State and local agencies have regarding infrastructure investment and planning for ADS, given the level of uncertainty around the timing and development of this technology? How should FHWA engage with its State and local partners as they consider impacts on infrastructure, transportation funding, finance, and revenue? Are changes to any of the programs that comprise the Federal-aid Highway Program needed to enable State and local agencies to more effectively make infrastructure investments to support deployment of ADS?

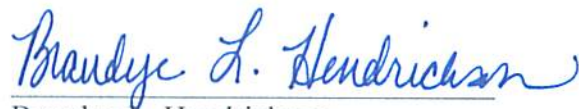
7. Are there existing activities and research in the area of assessing infrastructure-ADS interface needs and/or associated standards? What is the current thinking on where potential revisions may be necessary? How should FHWA work with existing research partners (e.g., American Association of State Highway and Transportation Officials, Transportation Research Board, etc.) in sharing research results and information?

8. What are the priority issues that road owners and operators need to consider in terms of infrastructure requirements, modifications, investment, and planning, to accommodate integration of ADS and to derive maximum system efficiency benefits from ADS additional capabilities?

9. What variable information or data would ADS benefit from obtaining and how should that data be best obtained? Examples might include information about zone locations, incidents, special event routing, bottleneck locations, weather conditions, and speed recommendations.

10. What issues do road owners and operators need to consider in terms of infrastructure modifications and traffic operations as they encounter a mixed vehicle fleet (e.g., fully-automated, partially-automated, and non-automated; cooperative and unconnected) during the transition period to a potentially fully automated fleet? What are likely the most significant impacts of ADS on other motorized and non-motorized users of public roadways? What plans do stakeholders have to address these impacts, and are there possible roles for road owners and operators to support the interaction of ADS with those users through infrastructure changes or operational strategies?

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