



NHTSA

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

Automated Driving System Safety Overview of NHTSA Activities

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January 20, 2022

Agenda

- **Bi-Partisan Infrastructure Law (BIL)**
 - Vehicle Safety
 - Crash Data
- **Vehicle Safety Research**
- **Regulatory Activities**
- **International Activities**
- **Standing General Order**
- **Other ADS Activities**
- **Voluntary Information/Data Efforts**
- **Recent Publications**

Bipartisan Infrastructure Law



Provides the Department of Transportation \$660 billion over five years between FY 2022 through FY 2026.



Provides NHTSA a substantial increase over the next 5-years.

- Increases by \$517 million in FY 2022, 53% more than the FY 2021 enacted level

Vehicle Safety



Rulemakings

- At least 12 additional vehicle safety rulemaking mandates

New Car Assessment Program (NCAP)

- Request For Comment
- Roadmap Requirement

Supplemental Appropriations for Vehicle Safety Research

- Expanded research on emerging light- and heavy-vehicle ADAS technologies to support policy and NCAP roadmap decisions
- Advanced frontal and side impact female crash dummies

Crash Data



Crash Data

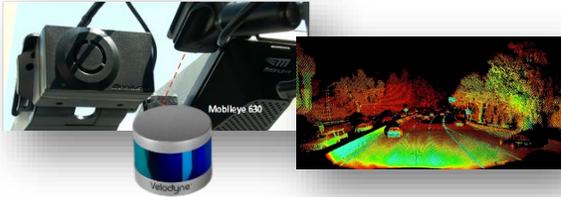
- Provides an additional \$750 million over 5 years to expand reporting of roadway crash data through new State Electronic Data Transfer grants and enhancements to NHTSA's Crash Investigation Sampling System

NHTSA Automated Driving System Research



System Safety Performance

Test track, simulation, & on-road tools development;
Testable cases; safety metrics and measures



Subsystems Testing and Functional Safety

Sensor capabilities/limitations, fusion, redundancies;
Perception, maneuvers & execution



Crashworthiness

Alternative seating configurations, advanced test dummies;
Unoccupied vehicle compatibility



Human Factors

Human-Machine Interface; Driver Monitoring Systems;
Communication of intent; accessibility; teleoperations

NHTSA ADS-Related Regulatory Activities

Fall Regulatory Agenda: <https://www.reginfo.gov/public/do/eAgendaMain>

- Facilitating New ADS Vehicle Designs for Crash Avoidance Testing ANPRM
- Considerations for Telltales, Indicators & Warnings in Vehicles With ADS ANPRM
- Occupant Protection for ADS Final Rule
- Framework for ADS Safety ANPRM



Temporary Exemptions



Volume 1: Near-Term Research		Volume 2: Mid-Term Research		
Crash Avoidance	Crashworthiness	Crash Avoidance	Crashworthiness	
102 Transmission shift position sequence, starter interlock, and transmission braking effect	201 Occupant protection in interior impact	101 Controls and displays	124 Accelerator control systems	214 Side impact protection
108 Lamps, reflective devices, and associated equipment	202a Head restraints	103 Windshield defrosting and defogging systems	125 Warning devices	216a Roof crush resistance
114 Theft protection and rollaway prevention	203 Impact protection for the driver from the steering control system	104 Windshield wiping and washing systems	126 Electronic stability control systems for light vehicles	219 Windshield zone intrusion
118 Power-operated window, partition, and roof panel systems	204 Steering control rearward displacement	110 Tire selection and rims and motor home/recreation vehicle trailer load carrying capacity information	207 Seating systems	222 School bus passenger seating and crash protection
138 Tire pressure monitoring systems	205 Glazing materials	111 Rear visibility	208 Occupant crash protection	225 Child restraint anchorage systems
141 Minimum Sound Requirements for Hybrid and Electric Vehicles	206 Door locks and door retention components	113 Hood latch system	210 Seat belt assembly anchorages	226 Ejection Mitigation

Framework for ADS Safety ANPRM – Publication History



78058 Federal Register / Vol. 85, No. 233 / Thursday, December 3, 2020 / Proposed Rules

or in any other area where the EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, the proposed rule does not have tribal implications and will not impose substantial direct costs on tribal governments or preempt tribal law as specified by Executive Order 13175 (65 FR 67249, November 9, 2000).

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Ammonia, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Particulate matter, Reporting and recordkeeping requirements, Sulfur dioxide, Volatile organic compounds.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: November 17, 2020.

John Buserud,

Regional Administrator, Region IX.

[FR Doc. 2020-26648 Filed 12-2-20; 8:45 am]

BILLING CODE 6560-50-P

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 571

[Docket No. NHTSA-2020-0106]

RIN 2127-AM15

Framework for Automated Driving System Safety

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

ACTION: Advance notice of proposed rulemaking (ANPRM).

SUMMARY: NHTSA is requesting comment on the development of a framework for Automated Driving System (ADS) safety. The framework would objectively define, assess, and manage the safety of ADS performance while ensuring the needed flexibility to enable further innovation. The Agency is seeking to draw upon existing Federal and non-Federal foundational efforts and tools in structuring the framework as ADS continue to develop. NHTSA seeks specific feedback on key components that can meet the need for motor vehicle safety while enabling innovative designs, in a manner consistent with agency authorities.

DATES: Written comments are due no later than February 1, 2021.

ADDRESSES: Comments must refer to the docket number above and be submitted by one of the following methods:

- **Federal eRulemaking Portal:** Go to <http://www.regulations.gov>. Follow the online instructions for submitting comments.

- **Mail:** Docket Management Facility, M-30, U.S. Department of Transportation, West Building, Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

- **Hand Delivery or Courier:** U.S. Department of Transportation, West Building, Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC, between 9 a.m. and 5 p.m. Eastern time, Monday through Friday, except Federal holidays. To be sure someone is there to help you, please call (202) 366-9322 before coming.

- **Fax:** 202-493-2251.

Regardless of how you submit your comments, you must include the docket number identified in the heading of this document.

Note that all comments received, including any personal information provided, will be posted without change to <http://www.regulations.gov>. Please see the "Privacy Act" heading below.

You may call the Docket Management Facility at 202-366-9322. For access to the docket to read background documents or comments received, go to <http://www.regulations.gov> or the street address listed above. To be sure someone is there to help you, please call (202) 366-9322 before coming. We will continue to file relevant information in the Docket as it becomes available.

Privacy Act: In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to inform its decision-making process. DOT posts these comments, without edit, including any personal information the commenter provides, to <http://www.regulations.gov>, as described in the system of records notice (DOT/ALL-14 FDMS), which can be reviewed at <https://www.transportation.gov/privacy>.

Anyone can search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.).

FOR FURTHER INFORMATION CONTACT:

For legal issues, Sara R. Bennett, Attorney-Advisor, Vehicle Rulemaking and Harmonization, Office of Chief Counsel, 202-366-2992, email Sara.Bennett@dot.gov.

For research issues, Lori Summers, Director, Office of Vehicle Crash Avoidance and Electronic Controls Research, telephone: 202-366-4917, email Lori.Summers@dot.gov.

For rulemaking issues, Tim J. Johnson, Acting Director, Office of

Crash Avoidance Standards, telephone 202-366-1810, email Tim.Johnson@dot.gov.

SUPPLEMENTARY INFORMATION:

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I. Executive Summary
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 III. Safety Framework—Core Elements, Potential Approaches, and Current Activities

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 1. Core ADS Safety Functions
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 3. UL 4600

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 VI. Preparation and Submission of Written Comments
 VII. Regulatory Notices

I. Executive Summary

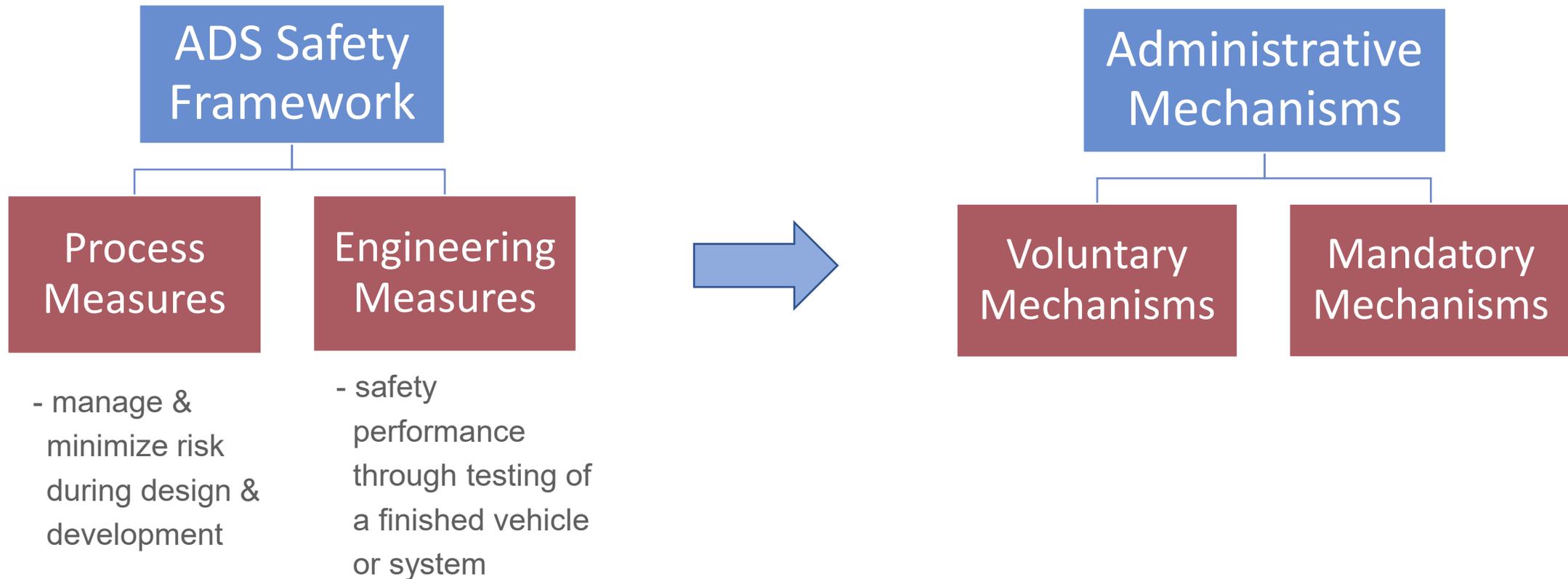
Over the past several years, NHTSA has published numerous research reports, guidance documents, advance notices of proposed rulemakings, and, on March 30, 2020 (85 FR 17624), a notice of proposed rulemaking relating to the development of vehicles equipped with Automated Driving Systems (ADS).¹ An ADS is the

¹ ADS, as defined by SAE International and as used in this document, refers to driving automation

- December 3, 2020 – ANPRM published
- January 29, 2021 – Comment period extension published
- April 1, 2021 – Comment period closed

Framework for ADS Safety

– *Safety assurance includes broad proactive approaches to minimize risk*



More info: [ANPRM - Framework for Automated Driving System Safety: https://www.regulations.gov/docket?D=NHTSA-2020-0106](https://www.regulations.gov/docket?D=NHTSA-2020-0106)

NHTSA ADS International Activities

United Nations Economic Commission for Europe

- WP 1 – Road Traffic Safety
- WP 29 – Vehicle Regulations
 - Working Party on Automated/Autonomous and Connected Vehicles (GRVA) and various sub-groups



- EU-US-Japan Trilateral Automation in Road Transport Work Group

Standing General Order – June 2021/Amended August 2021

What: Requires manufacturers and operators of ADS and SAE Level 2 ADAS equipped vehicles to report crashes to the agency.

When:

- For ADS and ADAS Level 2 – 1 calendar day, updated report 10th calendar day – for hospital treated injury, a fatality, a vehicle tow-away, an air bag deployment, or a vulnerable road user (such as a pedestrian or bicyclist).
- For ADS ONLY – 15th day of following month - reports of other crashes involving vehicles equipped with ADS and that involve any injury or property damage.

Why: Obtain timely notice of incidents that may provide information regarding potential safety defects and lead to a possible Special Crash Investigation, and/or future research projects or data analysis from trends

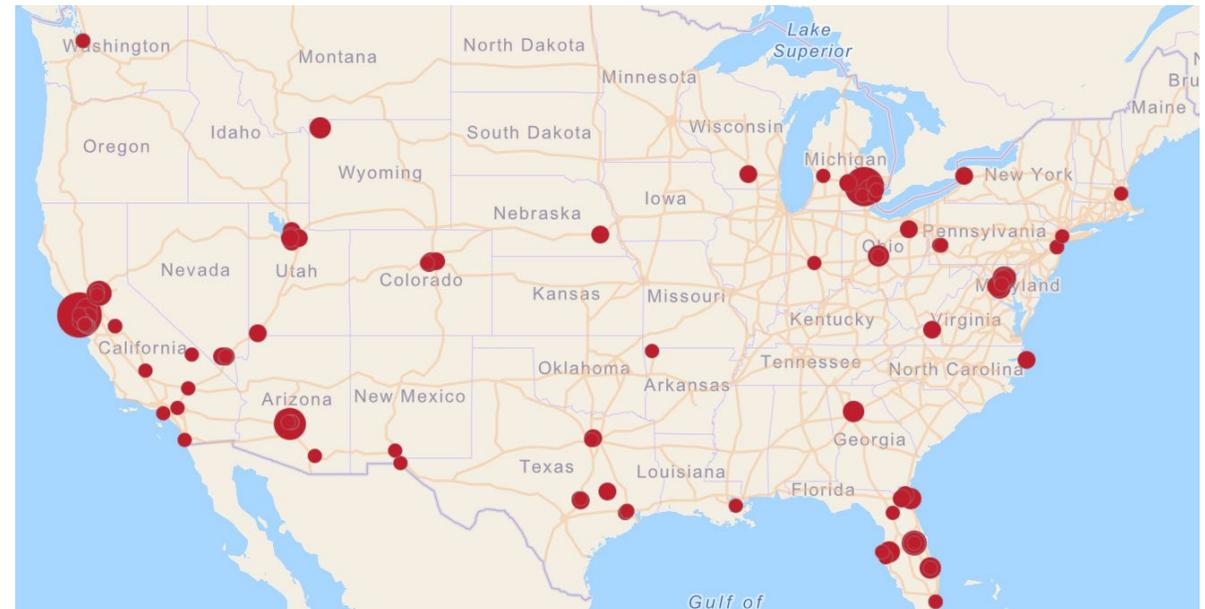
So What? Company compliance violations subject to civil penalties, possible referral to DOJ

NHTSA ADS Other Activities

- **Special Crash Investigations**

Completed cases - <https://crashviewer.nhtsa.dot.gov/SCI/SearchIndex>

- **Import Exemptions**



NHTSA ADS Voluntary Information/Data Efforts

Voluntary Safety Self-Assessments (VSSAs) Index-
<https://www.nhtsa.gov/automated-driving-systems/voluntary-safety-self-assessment>

AV Transparency and Engagement for Safe Testing (AV TEST Initiative) -
<https://www.nhtsa.gov/automated-vehicle-test-tracking-tool>

AV TEST Initiative



NHTSA ADS-Related Recent Publications



<https://rosap.ntl.bts.gov/>

- A Framework for Automated Driving System Testable Cases and Scenarios See <https://rosap.ntl.bts.gov/view/dot/38824>
- “An Approach for the Selection and Description of Elements Used to Define Driving Scenarios” See <https://rosap.ntl.bts.gov/view/dot/55465>
- “Advanced Test Tools for ADAS and ADS” See <https://rosap.ntl.bts.gov/view/dot/55991>
- Safety of the Intended Functionality of Lane-Centering and Lane-Changing Maneuvers of a Generic Level 3 Highway Chauffeur System See <https://rosap.ntl.bts.gov/view/dot/53628>
- FMVSS Considerations for Vehicles With Automated Driving Systems
 - Volume 1 – See <https://rosap.ntl.bts.gov/view/dot/54287>
 - Volume 2 – See <https://rosap.ntl.bts.gov/view/dot/54442>
- Occupant Safety in Vehicles Equipped With Automated Driving Systems, Part 2: Crash Safety Considerations for Out-of-Position Occupant Posture in Vehicles With Automated Driving Systems - Field Data Investigation See <https://rosap.ntl.bts.gov/view/dot/55730>
- Occupant Safety in Vehicles Equipped With Automated Driving Systems, Part 3: Biofidelity Evaluation of GHBMCM50-OS Against Laboratory Sled Tests (WAS Part 2) See <https://rosap.ntl.bts.gov/view/dot/50709>



Call for Abstract coming soon!

Peer Review abstracts

February 1, 2022: Call begins

April 15, 2022: Deadline for submission

Traditional abstracts

March 1, 2022: Call begins

June 1, 2022: Deadline for submission

Conference website available soon <https://www-esv.nhtsa.dot.gov/>

Contact Stephen.Summers@dot.gov for more information

NHTSA Research Days

NHTSA Safety Research Portfolio Public Meeting: Fall 2021 -

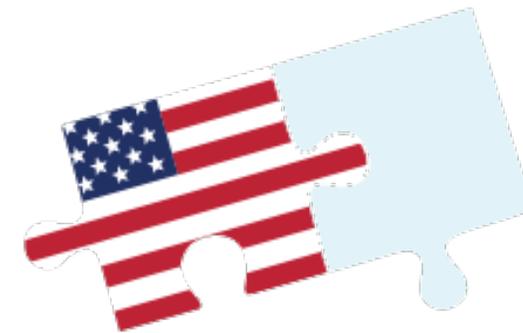
[NHTSA-2021-0060](#)

Yokohama, Japan, April 3-6, 2023



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<https://www.usajobs.gov/>