



Federal Motor Carrier Safety Administration

FMCSA

FMCSA's AV Research Program Overview

Jeff Loftus



AUTOMATED CMV RESEARCH

VISION

Commercial motor vehicles (CMVs) equipped with automated driving systems (ADS) will improve safety, prevent crashes, and efficiently move passengers and commerce.

MISSION

Working closely with other USDOT modes, States, industry stakeholders, and automated vehicle technology implementers, lead research efforts to support the safe introduction of ADS-equipped CMVs to the Nation's transportation system.

PRIMARY AV RESEARCH AREAS



Provide Voluntary Best Practices to States and Industry Automated Vehicle (AV) Implementers



Research CMV Driver Factors and Vehicle Safety Components



Develop Cybersecurity Guidance for CMVs


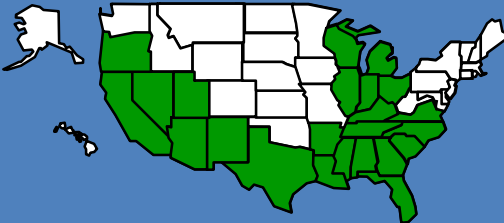



Establish Data Elements and Data Sharing Guidance to Support Testing




Engage and Communicate with State and Industry Stakeholders

PROVIDE VOLUNTARY GUIDANCE TO STATES & INDUSTRY AV IMPLEMENTERS

<p>Support Regulatory Updates</p>	<ul style="list-style-type: none"> Complete research to support updated Federal Motor Carrier Safety Regulations, ensuring flexibility for entities working to test and deploy truck platoons and automated CMVs. 	
<p>Support Pilot Tests, Safe Deployments</p>	<ul style="list-style-type: none"> Aid in development, execution, oversight of pilot programs/tests. Help States develop consistent platooning and automated CMV regulations and standards for technology deployments. 	
<p>Support Safe Enforcement of Automated CMVs, Platoons</p>	<ul style="list-style-type: none"> Develop new inspection procedures, tools for enforcement. Provide basis for updated inspection standards, out-of-service criteria. 	<p> States Supporting Truck Platoon Demonstrations and Testing as of November 2018 (23 States)</p>

RESEARCH CMV DRIVER FACTORS AND VEHICLE SAFETY COMPONENTS

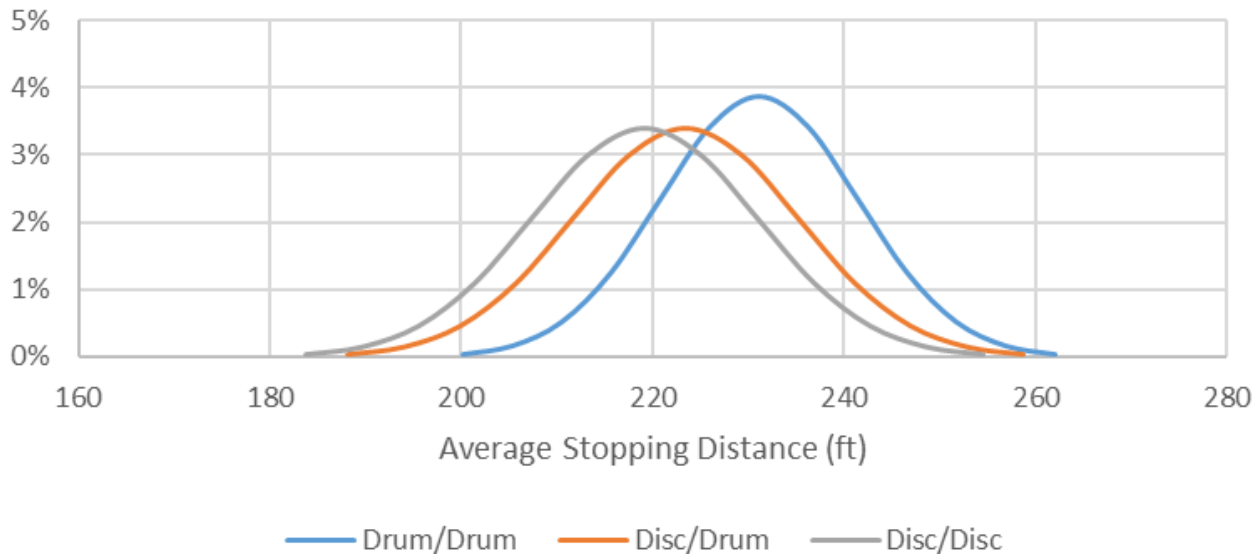
Platooning and Automated CMV Test Track Evaluations	<ul style="list-style-type: none">▪ Conduct truck platooning and ADS-equipped CMV safety, human factors, and cybersecurity testing on a closed test track.
Evaluate In-Service Truck Platoons	<ul style="list-style-type: none">▪ Measure the safety and operational impacts of truck platooning on truck drivers, surrounding traffic, and infrastructure on select public roadways.



BRAKE PERFORMANCE RESEARCH

Distribution Derived from Test Data (Mean and Standard Deviation) for Various Brake Types

Average Stopping Distance by Brake Type
(Steer Axle/Drive Axles)

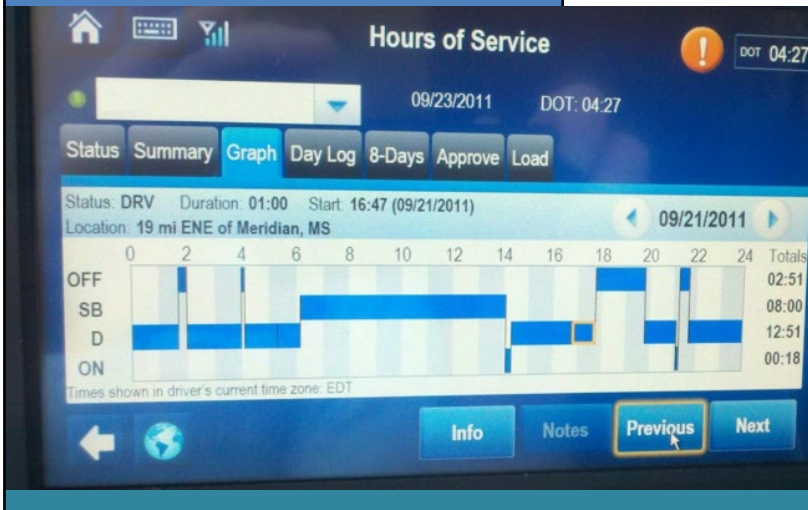


- Disc brakes associated with shorter stopping distance
- Stopping distances varies by ± 20 to 30 ft (95% confidence)
- Other factors examined: wheel base, mass
- Analysis excludes trailers


DEVELOP CYBERSECURITY GUIDANCE FOR CMVS

Develop Recommended Best Practices, Guidelines for Aftermarket Electronic Systems

- Develop a set of best practices and guidelines focused on minimizing cyber risks for **aftermarket electronic systems** intended for use in the CMV industry.
- Develop a set of cybersecurity best practices and guidelines for **original equipment manufacturers (OEMs), telematics providers.**



ESTABLISH DATA ELEMENTS AND DATA SHARING GUIDANCE TO SUPPORT TESTING

Establish Data Elements to Support Testing	<ul style="list-style-type: none">▪ Determine data parameters that should be included in future automated CMV naturalistic driving studies and pilot tests.	
Establish Data Sharing Guidance	<ul style="list-style-type: none">▪ Establish data exchange standards for secure data sharing to support relevant third-party research, evaluation, and application development.	

ENGAGE AND COMMUNICATE WITH STATE AND INDUSTRY STAKEHOLDERS

Accelerate Industry Adoption of Advanced Driver Assistance Systems (ADAS), ADS

- Partner with industry associations, original equipment manufacturers to accelerate the adoption of proven ADAS and ADS technologies on CMVs.

Encourage Open Communication and Collaboration with Stakeholders

- Host public listening sessions, organize and attend conferences and working groups, solicit comments, conduct webinars and briefings.
- Publish information on the FMCSA Web site about ongoing and completed research activities and related findings.
- Partner with States and industry to support truck platoon and highly automated CMV demonstrations and field operational tests.



USDOT PARTNERSHIPS

- Federal Highway Administration (FHWA)
- Intelligent Transportation Systems Joint Program Office (ITS-JPO)
- Maritime Administration (MARAD)
- National Highway Traffic Safety Administration (NHTSA)



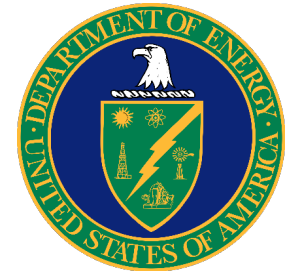
OFFICE OF THE ASSISTANT SECRETARY FOR RESEARCH AND TECHNOLOGY
Intelligent Transportation Systems
Joint Program Office



GOVERNMENT PARTNERS

FMCSA has partnered with several agencies to coordinate research efforts, allowing us to optimize and expand our resources:

- Aberdeen Test Center (ATC)
- US Army Tank Automotive Research, Development, and Engineering Center (TARDEC)
- U.S. Department of Energy (DOE)
- Oak Ridge National Laboratory (ORNL)



CONTACT INFO

Mr. Jeff Loftus

Technology Division Chief

Federal Motor Carrier Safety Administration

jeff.loftus@dot.gov

202-385-2363 (office)

www.dot.gov

www.fmcsa.dot.gov