



U.S. Department of Transportation
Federal Motor Carrier Safety Administration

Preparing for Automated Commercial Motor Vehicle (CMV) Driving Systems

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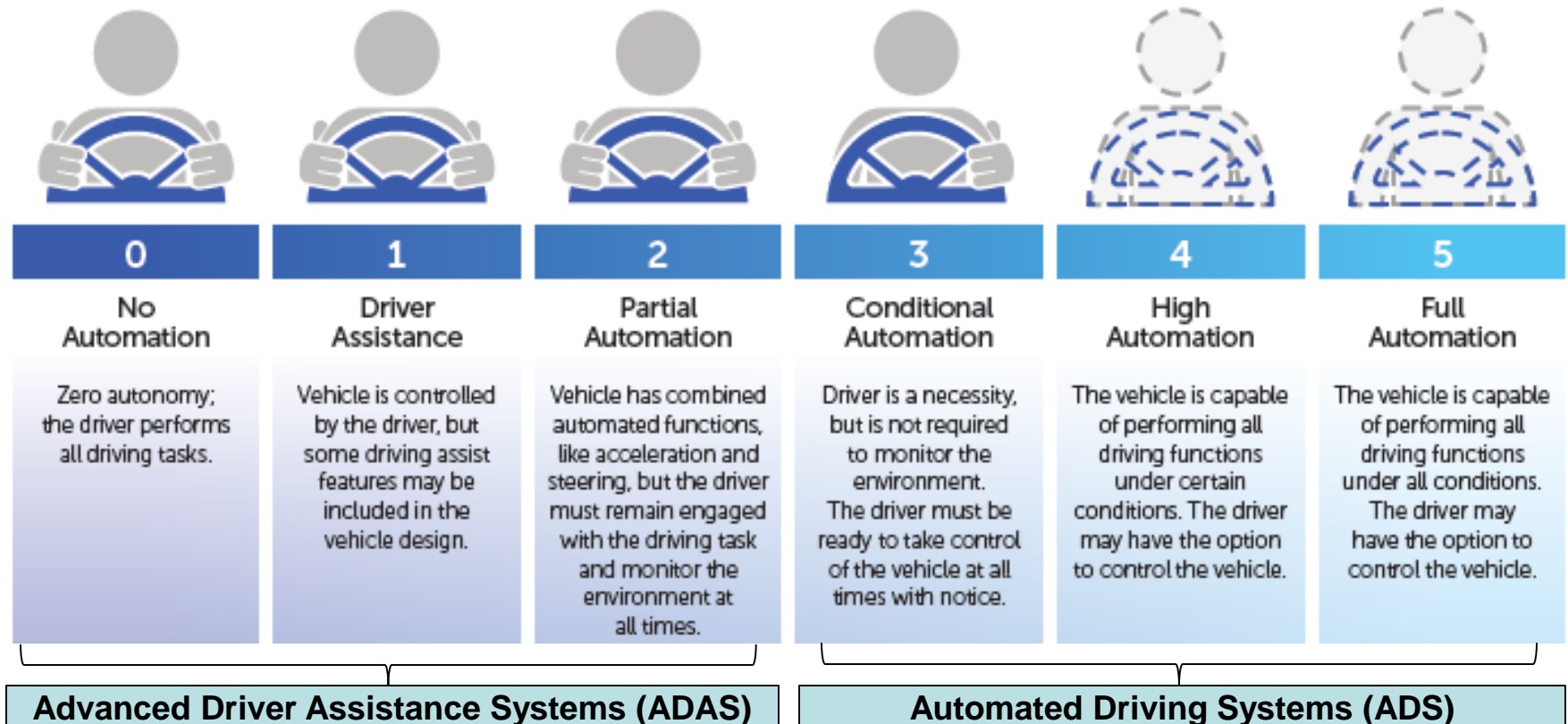
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What are Automated Driving Systems?

Automated Driving Systems aid in the driving task. There are varying levels of automation, ranging from forward collision detection and automatic emergency braking to full autonomy, where the vehicle is capable of driving itself without human interaction. The Society of Automotive Engineers (SAE) has established five “levels” of automation:



Why Automation? Potential for Improved Safety.

- After several years of declining highway fatalities in the United States, the **numbers are creeping upwards again**. In 2015 about 35,000 people lost their lives on our highways, and in 2016 nearly 37,500 perished.
- Automation offers the potential to **save thousands of lives**, in both passenger vehicle and commercial vehicle applications.
- For example, if equipped on all large trucks, automatic emergency braking (AEB) systems could potentially prevent over 5,200 crashes, 2,700 injuries, and as many as 55 deaths annually.¹

1. AAA Foundation for Traffic Safety, “Leveraging Large-Truck Technology and Engineering to Realize Safety Gains,” Washington, D.C., September 2017.

Why Automation? Potential for Improved Economy.

- Automated CMV driving systems also have significant potential to **benefit our economy.**
- By reducing crashes, automation can reduce congestion, improve productivity, and limit the costs associated with crashes.
- Recently completed research shows that trucks traveling in platoons can see fuel economy increases of 4 to 7 percent, depending on operational conditions.¹ Other research estimates a “team savings” of up to 6.4 percent for the vehicles operating in a truck platoon.² This is attributed to increased aerodynamic efficiencies.
- When **transportation costs decrease**, it reduces the price of goods and stimulates economic growth.

1 Roberts, J., Mihelic, R., Roeth, M.: *Confidence Report: Two-Truck Platooning*, North American Council for Freight Efficiency, 2016.

2 Lammert, M.; Duran, A.; Diez, J.; Burton, K.; Nicholson A. (2015). “Effect of Platooning on Fuel Consumption of Class 8 Vehicles Over a Range of Speeds, Following Distances, and Mass.” Prepared for the SAE Commercial Vehicle Engineering Conference, October 7–9, 2014. NREL/CP-5400-62348. Golden, CO: National Renewable Energy Laboratory.

Published Guidance

- DOT has produced a framework called **Automated Driving Systems 2.0, a Vision for Safety**.
 - Section 1: Voluntary guidance to industry.
 - Section 2: Technical assistance to States, best practices for State legislatures, those responsible for regulating vehicle operations.
 - Version 3.0 anticipated in 2018.
 - Available on the NHTSA website:
<https://www.nhtsa.gov/manufacturers/automated-driving-systems>.

What FMCSA Is Doing Now: Gathering Information

- Meeting with stakeholders in various forums (e.g., roundtables and public listening sessions) and soliciting feedback from the public.
- Reviewing the Federal Motor Carrier Safety Regulations (FMCSRs) for potential conflicts with automated CMV driving system deployments.
- Requested that the Motor Carrier Safety Advisory Committee (MCSAC) provide recommendations concerning the issues FMCSA should consider to ensure that the Federal safety regulations provide appropriate standards for the safe operation of highly automated commercial vehicles from design and development through testing and deployment.
- Participating in interdepartmental Automation-related working groups and engaging with manufacturers, engineering forums, State legislatures, and industry associations.
- Conducting site visits and ride-alongs with truck original equipment manufacturers and technology companies testing ADAS- and ADS-equipped CMVs.

What FMCSA Is Doing Now: Conducting Research

- Conducting research and collaborating with the National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration (FHWA) in the following areas:
 - **Human factors** related to drivers of CMVs, to be used in assessing the performance of automated vehicles.
 - **Components** of ADS-equipped CMVs, such as brakes and sensors.
 - **Automatic emergency braking (AEB)** is an area of emphasis for the Agency. We are working to promote the adoption of this technology, which will ultimately fit in with FMCSA's Beyond Compliance program.
 - **Cybersecurity** for telematics and aftermarket electronic systems.
 - **Data collection, sharing, and analysis**—developing baseline safety performance recommendations for highly automated commercial vehicles and developing a data framework with voluntary data principles to accelerate the safe rollout of ADS.

What FMCSA Is Doing Now: Field Demonstrations

FMCSA has and will continue to participate in and support ADS testing and deployments when available.

Examples:

- Inter-agency study with FHWA and the Maritime Administration (MARAD) to determine the feasibility of low-speed automated truck queues as a way to reduce driver detention times when unloading.
- Live joint FHWA/FMCSA and State law enforcement/DOT demonstration of truck platooning and inspection technologies.

Contact Information

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