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

Automated Commercial Motor Vehicles:
State of the Industry and Potential Safety Impacts

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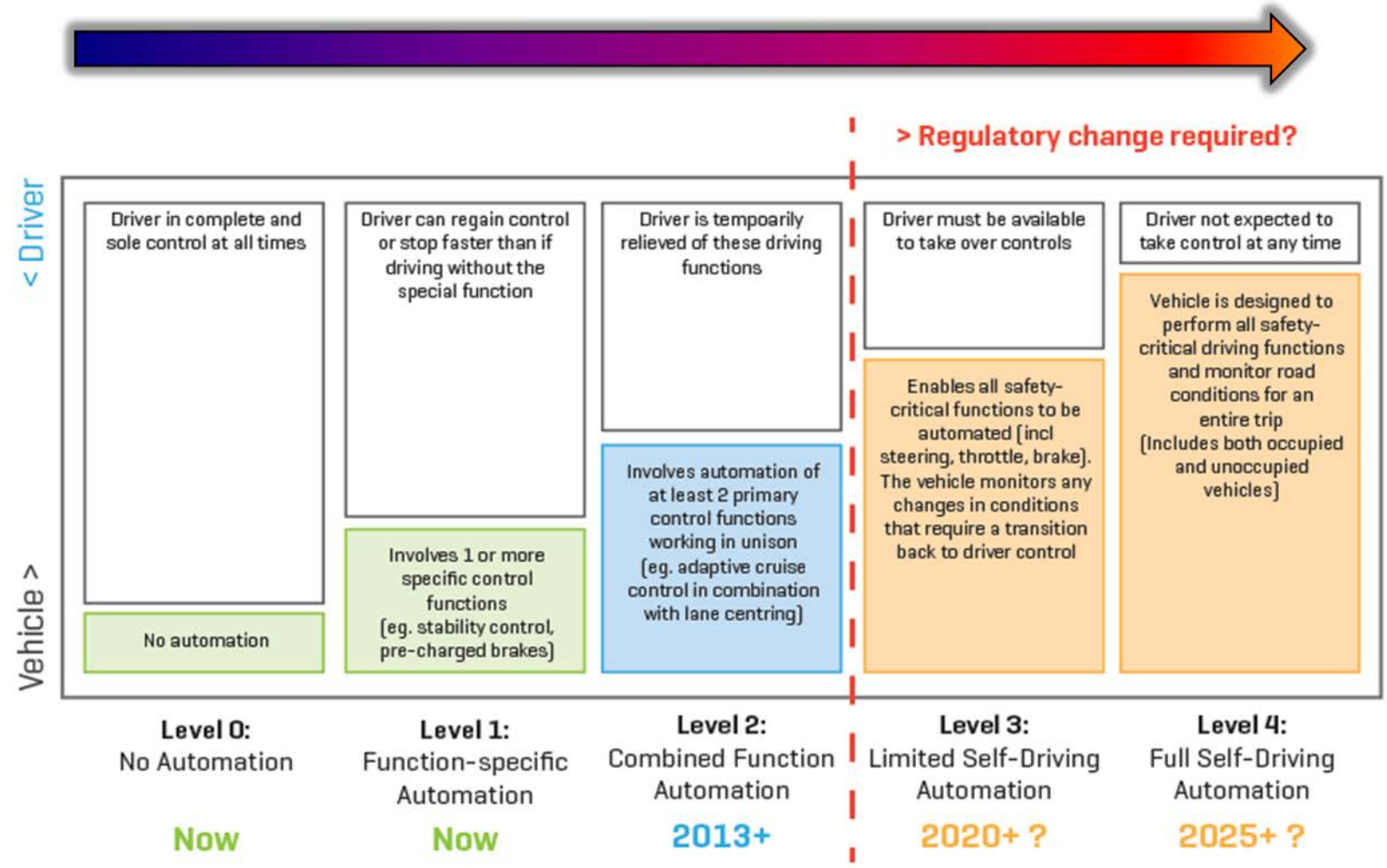
Office of Research and Information Technology

NHTSA Automation Levels



Source: NHTSA (Modified)

Commercial Vehicle Automation Today: Level 2

- Automatic emergency braking (AEB) now required on heavy trucks in Europe.
- “Optioned In” today, along with:
  - Forward collision warning (FCW).
  - Lane departure warning (LDW).
  - Smart Cruise.

Advanced Automation: Near-Term Implementation—Level 3

- "Low-hanging fruit"
- Constrained environments:
  - Port queues.
  - Distribution warehouses.
  - Mine hauling.

Platooning

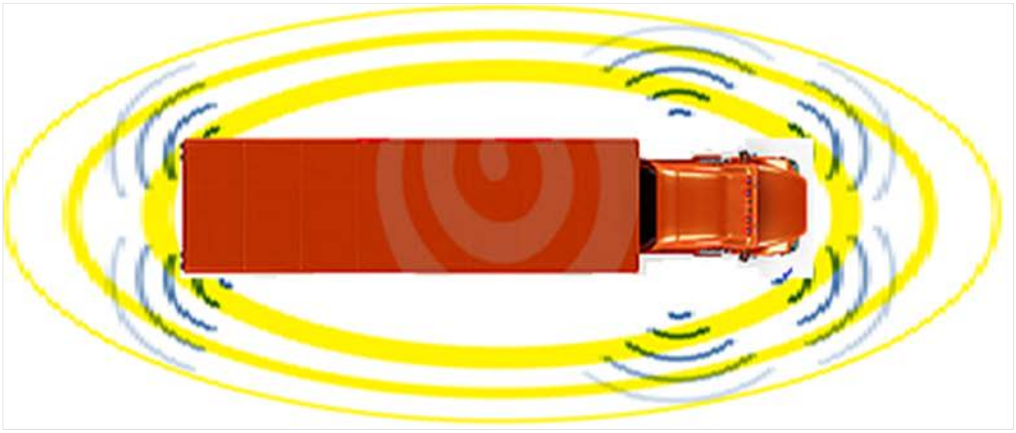
- Driver-operated first vehicle.
- Following under lateral and longitudinal control.
- Under ideal conditions, platooning trucks can travel as close as 36 feet from each other.

Connected Vehicles

- Vehicle-to-vehicle (V2V)
- Vehicle-to-infrastructure (V2I)

Connected/Automated Vehicle

- Combining V2V, V2I with AV systems.



Connected Automated Vehicle

Leverages autonomous and connected vehicle capabilities

Technical and Policy Challenges

- Public expectations.
- Human factors.
- Cybersecurity.
- Testing and certification complexity.
- Harmonizing State and local regulations.
- National Highway Traffic Safety Administration (NHTSA) mandates?
- Federal Motor Carrier Safety Regulations (FMCSRs).
- Inspections.

Proposed FMCSA Projects

- Commercial Motor Vehicle (CMV) Automated Vehicle Research:
  - Develop a research roadmap to identify the impact to the FMCSRs.
- Low-Speed Automated Truck Queue at Ports and Warehouses:
  - Research of studies.
  - Feasibility study.

Active Federal Highway Administration Projects

- Partial Automation for Truck Platooning:
  - Prime Contractor: California Department of Transportation.
  - Partners: Partners for Advanced Transit and Highways (PATH) (main technical partner, lead); Volvo Technology America; Cambridge Systematics; LA Metro; Gateway Cities; Peloton.
- Heavy Truck Cooperative Adaptive Cruise Control (CACC)—Evaluation, Testing, and Stakeholder Engagement for Near-Term Deployment:
  - Prime Contractor: Auburn University.
  - Partners: Peterbilt; Meritor Wabco; Peloton; American Transportation Research Institute (ATRI).

FMCSA Joint Projects

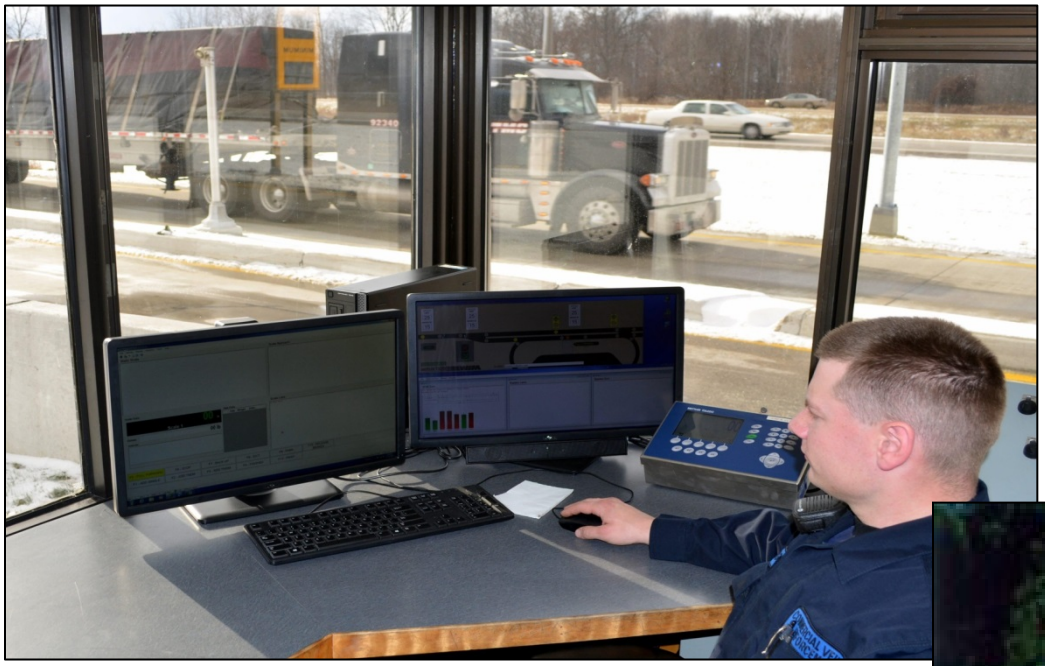
- Intelligent Transportation Systems (ITS) Joint Programs Office (JPO) Analysis of Automated Vehicles on FMCSA Enforcement.
- Proposed analysis* in the following areas:
  - Commercial driver's license (CDL) licensing.
  - Safety Measurement System (SMS) algorithm.
  - Hours of service.
  - Investigation/inspection criteria.
  - Advanced inspection tools and techniques.
  - Skill sets for roadside inspectors.

**Proposed within the ITS JPO Automated Vehicle Policy Research Plan.*

How Do We Inspect Advanced Technology?

VISUAL INSPECTION?

How Do We Inspect Advanced Technology?



WIRELESS INSPECTION?

Example of Proposed Project: Antilock Braking System (ABS) Test Tool

- Mandate of electronic stability control (ESC).
- FMCSRs revision.
- Inspection criteria.
- Roadside analysis of the system(s).
- A tool for use by the inspector to quickly and accurately check the “health” of the ABS.
- What about even more advanced technologies if they become ubiquitous?
  - Smart Cruise, Lane Keeping Assist, Automatic backing, etc.

Roadside Inspection?

Contact Information

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Credits

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  - California PATH
  - Federal Highway Administration
  - NHTSA
  - Peloton
  - North American Council for Freight Efficiency