



# Commercial Motor Vehicle Roadside Technology Corridor (CMVRTC)

The Commercial Motor Vehicle Roadside Technology Corridor (CMVRTC) is a series of specially equipped testing facilities at inspection stations located in Tennessee to demonstrate, test, evaluate, and showcase innovative commercial motor vehicle (CMV) safety technologies under real-world conditions in order to improve commercial truck and bus safety. The CMVRTC is located in Tennessee along a 70-mile stretch of I-81 and I-40 in Knox, Greene, Hamblen, Jefferson, and Sevier counties. It is anchored on the west end by the Knox County CMV Inspection Station (IS) and on the east end by the Greene County CMV IS.

The CMVRTC is operated by the Center for Transportation Analysis (CTA) at Oak Ridge National Laboratory (ORNL) for the Federal Motor Carrier Safety Administration (FMCSA).

The primary mission of the FMCSA is to reduce crashes, injuries, and fatalities involving large trucks and buses.

FMCSA's Office of Analysis, Research, and Technology (ART) is pursuing a strategic initiative to accelerate FMCSA's mission and ART's goal of expediting the deployment of safety technologies by directing research within CMVRTC to test and evaluate new safety technologies and procedures.

**Background** — FMCSA launched the CMVRTC on August 7, 2007, in partnership with the Tennessee Departments of Safety and Transportation, and ORNL to further enable the FMCSA testing of current, new to market and emerging CMV safety technologies and to promote their usage and acceptance by stakeholders.

The CMVRTC is managed via an interagency agreement with the Department of Energy (DOE)/ORNL. Since 2007, ART has established internal partnerships with the FMCSA Offices of Bus and Truck Standards and Operations, Enforcement and Compliance, and Safety Programs in Headquarters

and with the Southern Service Center in the Field. The CMVRTC is available to these and other FMCSA offices with management support provided by ORNL. The ART has established an external partnership with DOE's Office of Energy, Efficiency, and Renewable Energy to collect CMV safety sensor data from a DOE partner fleet. This data will be used to support the objectives of the CMVRTC.

Since its commissioning in 2007, testing has been conducted in the CMVRTC to:

- Study the wear and performance of brake drums/rotors and lining/pads of four different vocations of Class-8 CMVs;
- Correlate Performance-Based Brake Tester (PBBT) results with North American Standard (NAS) Level-1 inspection results relative to CMV brakes;
- Support the supplanting of the PBBT test in lieu of physical brake stroke measurements in the NAS Level-1 inspection;
- Determine the out-of-service (OOS) rate of the mainline on I-81 southbound (Greene County CMV IS);
- Determine and contrast the OOS rates for the other fixed inspection sites with that of Greene County site;
- Support the development of functional specifications for a Smart Infrared Inspection System (SIRIS) for brakes, tires, and bearings;
- Determine the OOS rate for overweight vehicles (permitted and unpermitted) in Tennessee and throughout the continental United States.
- Prove the viability of the Wireless Roadside Inspection (WRI) Concept; and
- Test system loading, end-to-end functioning, and end-user acceptance of WRI using commercial mobile radio services.

A quarterly newsletter describing the current research within the CMVRTC is published via ORNL/FMCSA and posted to the ART webpage at: <http://www.fmcsa.dot.gov/facts-research/art-CMV-Roadside-Technology-Corridor.htm>

## Research Areas

Freight Flows

Passenger Flows

Supply Chain  
Efficiency

Transportation:  
Energy  
Environment

Safety  
Security

Vehicle  
Technologies

Oak Ridge National Laboratory  
managed by  
UT-Battelle, LLC  
for the  
U.S. Department of Energy  
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**Benefits —**

1. Showcase inspection technologies and highlight their systematic integration with existing enforcement operations and highway information systems by our State partners at the Tennessee Department of Safety and Tennessee Department of Transportation;
2. Collect data on CMV safety technologies of interest to FMCSA and assess their viability for deployment;
3. Provide a technology transfer function for new to market and emerging technologies by collection operational data for the development of functional specifications to support MCSAP grant applications; and

4. Collect data to support FMCSA enforcement and compliance programs, State safety programs, policy research, and future rulemaking activities.

**Vision —** The Vision for the CMVRTC going forward is to expand the Corridor to additional inspection sites in Tennessee and other states as program level efforts, such as WRI and Smart Roadside, mature and require a larger test bed and multi-site, multi-state participation. Additionally, the CMVRTC plays a prominent role in supporting the Agency's technology transfer activities enabling the accelerated deployment of proven safety technologies.

**Commercial Motor Vehicle Roadside Technology Corridor**  
A series of fixed and mobile state-of-the-art facilities for testing and evaluating CMV enforcement technologies in a real-world setting

"The goal of this long-term collaborative effort among FMCSA, TDOS, TDOT, ORNL and UT is to develop and promote advanced truck and bus safety inspection and enforcement technologies to save lives."

**Benefits**

- Provide Quantitative Assessments of Technology Benefits and Costs
- Support Technology Deployment Decisions
- Expedite Technology Testing Process
- Flexibility to Address Multiple Technology Types
- Gratis Partnerships with Technology Vendors and Commercial Vehicle Fleets
- Test-bed for Smart Roadside for Commercial Vehicle Operations

**Field Operational Testing**  
IntelliDrive Test-Bed for Truck and Bus Safety

**Greene County Inspection Station**

**Bench-top testing**  
Hardware-in-the-loop testing  
Driving simulator testing  
Test course testing

**Active testing of infrastructure-based technologies at Inspection Stations**

**Knox County Inspection Stations**

**TDOT Region 1 Headquarters**

**Logos:** FMCSA, TDOT, Oak Ridge National Laboratory, UT

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