



Multimodal Systems Research & Analysis

Safety Management Systems

**Environmental & Energy Systems**

Freight Logistics & Transportation Systems

Physical Infrastructure Systems

CNS & Traffic Management Systems

Human Factors Research & System Applications

Advanced Vehicle & Information Network Systems

# Environmental and Energy Systems Center of Innovation

**Volpe National Transportation Systems Center  
U.S. Department of Transportation  
Research and Innovative Technology Administration**

*Innovation for a Nation on the Move*

## Trends and Issues

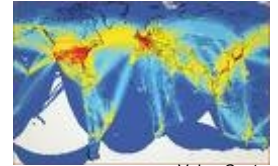
*New policy and technological innovations will be needed to improve the way people and goods move around the country and the world without dependence on petroleum, thereby reducing America's carbon footprint. With energy independence on the front burner, the future transportation system will need to efficiently and cost-effectively accommodate new energy saving technologies. Our transportation system will need to minimize greenhouse gas emissions and be prepared for the potential impacts of climate variability and climate change.*

## COI Profile

The Environmental and Energy Systems COI provides technical and analytical support for decision making at all levels of government and industry on: a) transportation-related environmental and energy policies, including those pertaining to climate variability, air, noise, environmental compliance, engineering and remediation, and hazardous materials, b) transportation's role in achieving energy independence both as a consumer of energy and as the critical element in the energy supply chain, and c) research and development capabilities supporting all modes of transportation and other COIs within the Volpe Center.

## Project Snapshots

- Designed and developed for the Federal Aviation Administration (FAA), the Aviation Environmental Design Tool, which assesses aviation-related noise, emissions, and fuel burn on a local, national, and global level. The tool supports national decisions related to the Next Generation Air Transportation Systems (NextGen), as well as international policymaking within the International Civil Aviation Organization (ICAO).



Volpe Center

- Supported the development of Corporate Average Fuel Economy (CAFE) standards to regulate and increase the average fuel economy of cars and light trucks sold in the U.S. The Volpe Center, in support of the National Highway Traffic Safety Administration (NHTSA), developed the CAFE Compliance and Effects Modeling System, which calculates fuel savings and compliance costs.

- Supported the Federal Highway Administration (FHWA), Traffic Noise Model (TNM) development, a software program used to predict highway noise and aid in highway noise barrier design.



Volpe Center

- Developed an alternative fuels roadmap on the transportation implications of natural gas, hydrogen, biomass, and electricity. The roadmap will provide strategic guidance to DOT and the Research and Innovative Technology Administration (RITA).

- Supports the Environmental Protection Agency Libby Asbestos Project, a top-priority Superfund site, through management of large-scale environmental cleanup operations. Supports other environmental projects that capitalize on these developed talents, and develops comprehensive approaches to remediation challenges.



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& Analysis

Safety  
Management  
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**Environmental  
& Energy  
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Freight  
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Systems

Physical  
Infrastructure  
Systems

CNS &  
Traffic  
Management  
Systems

Human  
Factors  
Research &  
System  
Applications

Advanced  
Vehicle &  
Information  
Network  
Systems

- Works with the FAA in cooperation with the National Park Service to develop Air Tour Management Plans (ATMPs) for all National Parks with commercial air tours. In support of the ATMPs, prepares environmental assessments and impact statements to mitigate or prevent significant adverse impacts from such tours on natural and cultural resources, visitor experiences, and tribal lands within the Parks.

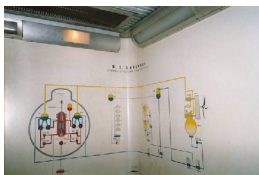


National Park Service

- Developed analytical methodologies and estimates of the environmental impacts associated with Commercial Motor Vehicle (CMV) collisions for the Federal Motor Carrier Safety Administration. This will allow policy analysts to develop better estimations of congestion-induced air-quality impacts under different safety and operational scenarios.

- Supported environmental analysis efforts for the FAA William J. Hughes Technical Center, a potentially large environmental liability for the FAA. This included studying mercury contamination in water body sediments and biota.

- Produced a strategic and implementation plan for Aids to Navigation (AToN) battery removal for the United States Coast Guard (USCG). For approximately 20 years, USCG had disposed of AToN batteries, which contained small amounts of mercury, at 11,000 sites in the water and on land. The Volpe Center prioritized risks associated with these sites and developed a removal plan.



Volpe Center

- Provided environmental engineering expertise, marine engineering, naval architecture, logistics, acquisition support, and program management to the Maritime Administration in its decommissioning of the nuclear ship *Savannah*, including decontamination and remediation programs. Actively participates in the *Savannah* Review and Audit Committee meetings, and prepared Port Operating Plans for the vessel to enter civilian ports on the U.S. east coast.

## About the Research and Innovative Technology Administration

The Research and Innovative Technology Administration (RITA) coordinates U.S. DOT's research programs and is charged with advancing the deployment of cutting-edge technologies to improve our Nation's transportation system. RITA was established as a U.S. DOT Operating Administration by the Norman Y. Mineta Research and Special Programs Improvement Act of 2004.

## About the Volpe Center

An innovative, Federal, fee-for-service organization, the Volpe Center, part of the U.S. DOT's RITA, is an internationally recognized center of transportation and logistics. The Volpe team represents a world-class transportation resource with multidisciplinary expertise in all modes of transportation. The Volpe Center plays a unique role in looking across the transportation enterprise to anticipate future transportation issues and challenges. The Center also has a highly skilled team of acquisition professionals. For nearly 40 years, the Volpe Center has lent critical support to all U.S. DOT's modal administrations and offices, other Federal agencies, state and local governments and organizations, foreign governments and entities, and the private sector.

The Volpe Center is organized into eight Centers of Innovation (COI). Each COI applies its technical capabilities to U.S. DOT strategic goals and national transportation priorities. The COIs expand U.S. DOT's horizon and show how innovation can arise from creative and collaborative use of internal and external assets. The COIs include:

- **Multimodal Systems Research and Analysis**
- **Safety Management Systems**
- **Environmental and Energy Systems**
- **Freight Logistics and Transportation Systems**
- **Physical Infrastructure Systems**
- **Communication, Navigation, Surveillance (CNS) and Traffic Management Systems**
- **Human Factors Research and System Applications**
- **Advanced Vehicle and Information Network Systems**

## For more information

Name: Gregg G. Fleming  
 Director, Center of Innovation for Environmental and Energy Systems  
 Email: [Gregg.Fleming@dot.gov](mailto:Gregg.Fleming@dot.gov)  
 Phone number: 617-494-2018

<http://www.rita.dot.gov>

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