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FRA Alternative Fuels Research Program

U.S. Department of Energy Hydrogen & Fuel Cells Program
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FRA Research, Development & Technology’s (RD&T’s) Mission

• To ensure the safe, efficient, and reliable movement of people and goods by rail through applied research.
Investments in Research, Development & Technology (RD&T)

- Human Factors: 21%
- Railroad Systems Issues: 14%
- Rolling Stock and Components: 29%
- Track and Structures: 27%
- Train Control & Communication: 9%
FRA RD&T Approach – Collaboration

• FRA Alternative Fuels Research projects are executed through successful collaborations with industry, academia, and other Federal agencies:
  • Innovators of rail industry
  • US Railroads
  • Association of American Railroads (AAR)
  • American Public Transportation Association (APTA)
  • Original Equipment Manufacturers (OEM)
  • US DOT Modal Agencies
  • US DOE & National Laboratories
Why Hydrogen & Fuel Cell Technologies?

- Hydrogen and fuel cell technologies present the *next frontier* of alternative fuels for rail that can:
  - Reduce rail dependence on fossil fuel
  - Improve emission of rail transportation

- *FRA must ensure such technologies are safe!*
Objective: Conduct assessment of hydrogen and fuel cell technology for rail applications

- Safety, energy efficiency, and environmental impacts
Initial Research

- Define metrics to evaluate the introduction of hydrogen fuel cell technology to rail transportation
- Apply these metrics to rail applications: Long haul, switcher, or passenger
- Identify most appropriate rail applications where hydrogen fuel cell usage would be best utilized

Future Research

- Conduct safety research on hydrogen-fueled rail equipment:
  - Hydrogen fuel tenders
  - Locomotives
  - Passenger rail equipment