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FRA Alternative Fuels Research Program

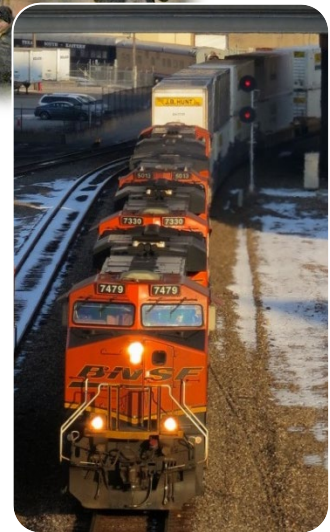
U.S. Department of Energy Hydrogen & Fuel Cells Program
2019 Annual Merit Review Meeting
Crystal City, VA • April 29, 2019 – May 1, 2019



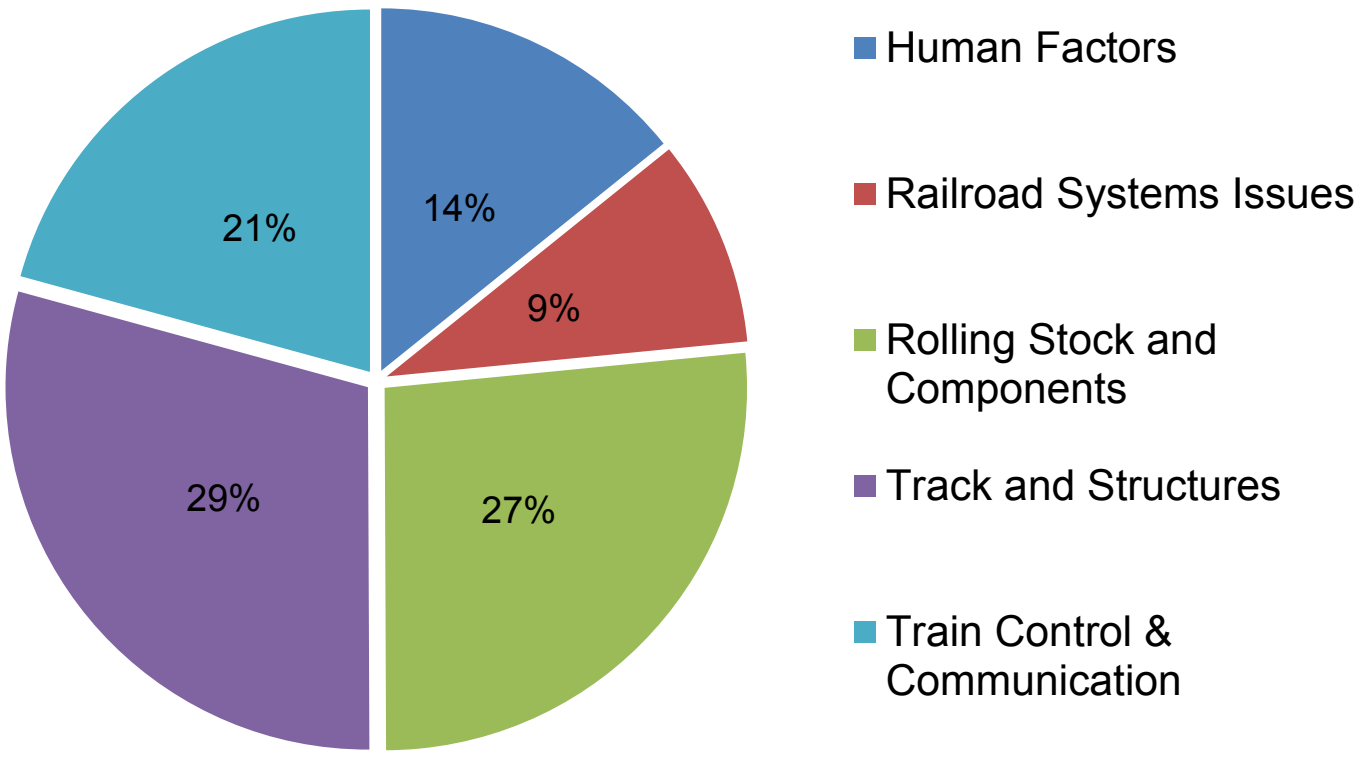
U.S. Department of Transportation
Federal Railroad Administration

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)



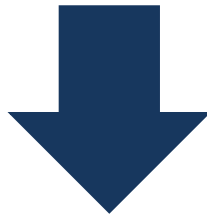
FRA RD&T Approach – Collaboration

- 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 presents the *next frontier* of alternative fuels for rail that can:
 - Reduce rail dependence on fossil fuel
 - Improve emission of rail transportation



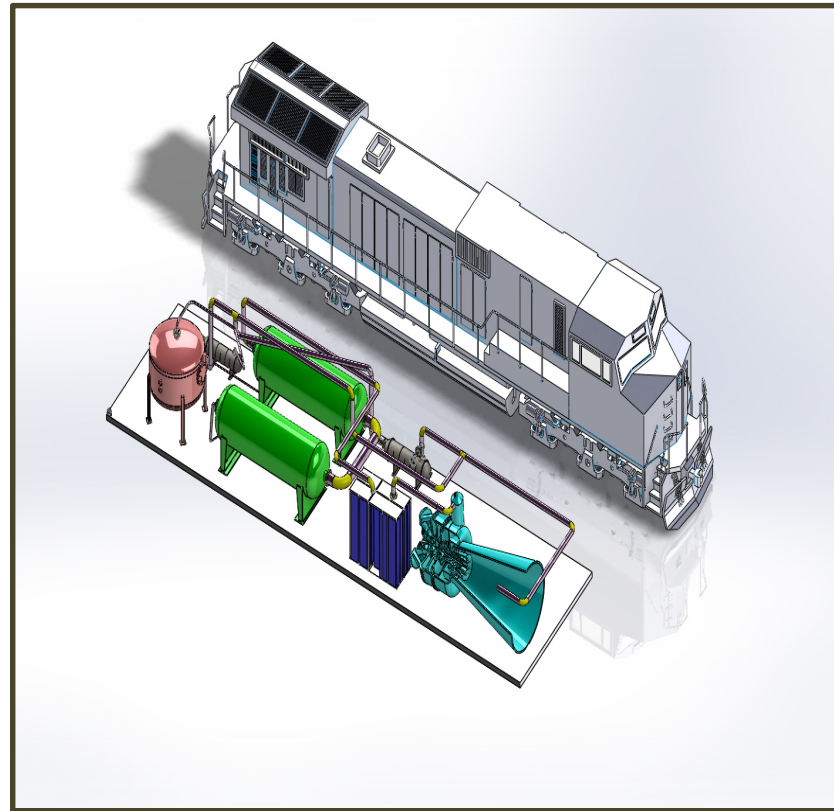
- *FRA must ensure such technologies are safe!*



FRA RD&T – Hydrogen & Fuel Cell Research

Objective: Conduct assessment of hydrogen and fuel cell technology for rail applications

- Safety, energy efficiency, and environmental impacts



FRA RD&T – Hydrogen & Fuel Cell Research (cont.)

- **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





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