

H2@Rail

- **Project Manager:** Pete Devlin (FCTO)
- **Objective:** Assess the capability of current and near-term technologies to meet the needs of freight locomotive hydrogen refueling
- **Areas of Focus:**
 - Evaluation of LH2 current fueling technologies including a determination of basic conditions (flow rate, temperature, pressure)
 - Capacity on locomotive and tender from collaborators at ANL
 - Basic design of LH2 refueling facility
 - Production/delivery of H2 from collaborators at ANL
 - Three example designs with different capacities, location (urban, rural, port), and effect on similar technologies (e.g., light- and heavy-duty vehicles)
 - Basic cost estimate for fueling infrastructure
 - Can be scaled or used in other analyses to estimate the overall cost of fuel

Gap Identification for Rail Applications of Hydrogen Fuel Cells

- **Project Manager:** Laura Hill (FCTO)
- **Objective:** Identify rail-specific codes and standards requirements, best practices, and gaps for the use of hydrogen fuel cells for locomotive power applications
- **Areas of Focus:**
 - Identify safety standards and regulations applicable to storage of hydrogen for *wide variety* of rail applications
 - Storage in compressed gas cylinders (passenger or switcher) or cryogenic tank cars (freight)
 - Storage on both rolling stock (locomotive, railcars) and stationary fueling infrastructure
 - Gaps in existing safety regulations and standards will be identified and recommended actions will be described (where possible)

Hydrogen and Fuel Cell for Rail Applications

- **Project Manager:** Melissa Shurland (FRA)
- **Objective:** Identify, collect, and summarize relevant domestic and global codes, standards and regulations with potential applicability for storing hydrogen on-board as a locomotive fuel.
- **Areas of Focus:**
 - Assess safety and design features for *on-board hydrogen as fuel* rather than cargo
 - E.g., fuel transfer connection on side of tender rather than top of tanker
 - Freight rail specifically
 - Best practices and gaps in existing safety regulations and standards will be identified
- **Prior Work:**
 - Collaboration with FCTO (Pete Devlin): trade-offs of fuel cell usage on different rail applications compared to other electrification options