



# Case Study LNG #17

Rail – LNG Tender Car



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## Highlights:

Location — Jacksonville to Miami  
Rail Lines

## Scope of Project:

- Full diesel horse power and operating characteristics are maintained in the locomotives with LNG
- All equipment built in the USA
- Designed to displace up to 80% of the diesel fuel required to power the locomotive
- US Factory built & tested rail tender car for class 1 railroad
- LNG rail tender car for original pilot project
- Designed with ability to support locomotives built by various manufacturers

## Application:

With a 20+ year history of engineering and manufacturing LNG rail equipment for various US and Canadian pilot projects, Chart was approached to design and supply the full LNG tender car. The tender car would need to support one to two locomotives that could displace 80% of the diesel fuel and meet or exceed the current FRA and AAR requirements. It was designed with the ability to refill with minimal effort.

## Tender Car Configuration:

- Designed to fuel 1 to 2 locomotives
- PLC manages the supply mode from the tender
- On-the-tender LNG storage provides ~5,900 DGE (diesel gallon equivalents; 10,000 gallons LNG)
- Gas transfer from the tender can be by liquid pump transfer, liquid pressure transfer or gas pressure
- 130 psig at the tender end plate
- 119,000 lbs (~53,977 kg) tare weight

## Accomplishments:

- Extremely robust safety features
- Design withstands the longitudinal and side impact crash scenarios as specified in Section 10 of the March 31, 2015 NGFT Draft Standard
- Includes custom, purpose built, platform car per end user specifications
- PLC manages the supply mode from the tender
- Gas supply from either end of tender and liquid fill and vapor return connections can be accessed from either side of the unit
- Connections located at center of the unit; meets the side impact requirements
- Initial conversion from diesel to LNG occurred November 2014 on GE ES44C4 440 HP 'dual fuel' locomotive
- 12 additional Chart manufactured LNG tenders put into service
- These locomotives, together with the LNG fuel, meet Tier 3 emissions

