

# Freight Rail & Preserving the Environment

Preserving the natural environment and taking steps to mitigate the effects of climate change is a responsibility railroads take seriously. As a backbone of the U.S. economy for the last two centuries, freight railroads have evolved to provide efficient and advanced transportation solutions to American businesses and consumers. Today's railroads continue to modernize their operations to meet tomorrow's challenges, including improvements that increase efficiency and benefit the environment.

**Less Greenhouse Gas Emissions:** Greenhouse gas emissions are directly related to fuel consumption. Freight railroads account for just 0.6% of total U.S. greenhouse gas emissions, according to EPA data, and just 2.1% of transportation-related greenhouse gas emissions.

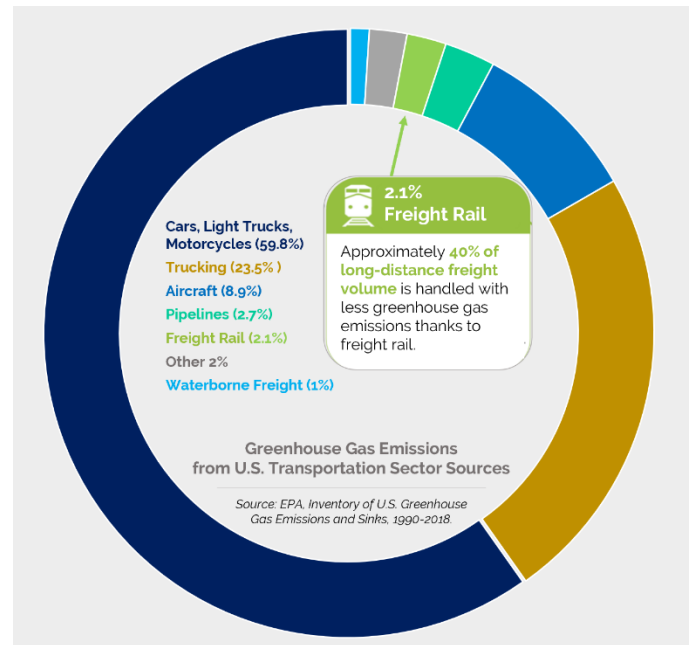
**More Fuel Efficient:** Freight rail is ahead of other land modes of surface transportation when it comes to limiting its carbon footprint. U.S. freight railroads, on average, move one ton of freight more than 470 miles per gallon of fuel.

**Sustainable Choice:** AAR analysis of federal data finds: If 25% of the truck traffic moving at least 750 miles went by rail instead, annual greenhouse gas emissions would fall by approximately 13.1 million tons; If 50% of the truck traffic moving at least 750 miles went by rail instead, greenhouse gas emissions would fall by approximately 26.2 million tons.

**Holistic Approach:** From advanced locomotive technology to zero-emission cranes, freight railroads leverage technology in all aspects of their operations to limit their impact on the environment. In 2019 alone, U.S. freight railroads consumed 656 million fewer gallons of fuel and emitted 7.3 million fewer tons of carbon dioxide than they would have if their fuel efficiency had remained constant since 2000.

**Reducing Highway Congestion & Pollution:** Railroads help reduce the huge economic costs of highway congestion. According to the Texas Transportation Institute's 2019 Urban Mobility Report, highway congestion cost Americans \$166 billion in wasted time (8.8 billion hours) and wasted fuel (3.3 billion gallons) in 2017. Lost productivity, cargo delays and other costs add tens of billions of dollars to this tab.

A single freight train, though, can replace several hundred trucks, freeing up space on the highway for other motorists. Shifting freight from trucks to rail also reduces highway wear and tear and the pressure to build costly new highways. On average, railroads are three to four times more fuel efficient than trucks. That means moving freight by rail instead of truck lowers greenhouse gas emissions by up to 75%, on average.



## Innovative Engineering & Technology Fuels Green Operations

- **Highly advanced computer software systems** calculate the most fuel-efficient speed for a train on a given route; determine the most efficient spacing and timing of trains on a railroad's system; and monitor locomotive performance to ensure peak efficiency.
- **New, more efficient locomotives** use hundreds of sensors to produce data that help railroads prioritize maintenance, minimize the impact of poor locomotive performance and emit less emissions.
- **Anti-idling technologies** such as stop-start systems that shut down a locomotive when it is not in use and restart it when needed. Distributed power (positioning locomotives in the middle of trains) helps reduce the total horsepower required for train movements.
- **Enhanced operating practices** and rail car components minimize fuel usage by improving aerodynamics and reducing overall weight, friction between wheels and rail, and total horsepower required for moving the train.
- **Zero-emission cranes** transfer goods between ships, trucks and trains in ports and rail facilities. The electric cranes recharge their own batteries each time they lower a load.
- **Improved railcar design**, specialized railcars and other factors have helped increase the amount of freight railroads carry, with an average train in 2019 hauling 3,667 tons, up from 2,923 tons in 2000.