

Freight Railroads Help Reduce Greenhouse Gas Emissions

ASSOCIATION OF AMERICAN RAILROADS

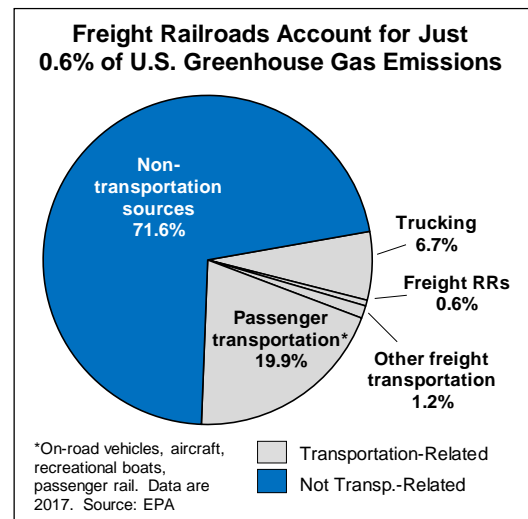
APRIL 2019

Summary

Freight rail offers a meaningful way to reduce greenhouse gas emissions. On average, railroads are approximately four times more fuel efficient than trucks. That means **moving freight by rail instead of truck reduces greenhouse gas emissions by approximately 75 percent.** According to the Environmental Protection Agency, in 2017 **freight railroads accounted for just 0.6 percent of U.S. greenhouse gas emissions from all sources and just 2.0 percent of emissions from transportation-related sources.**

Moving More Freight By Rail Would Significantly Reduce Greenhouse Gas Emissions

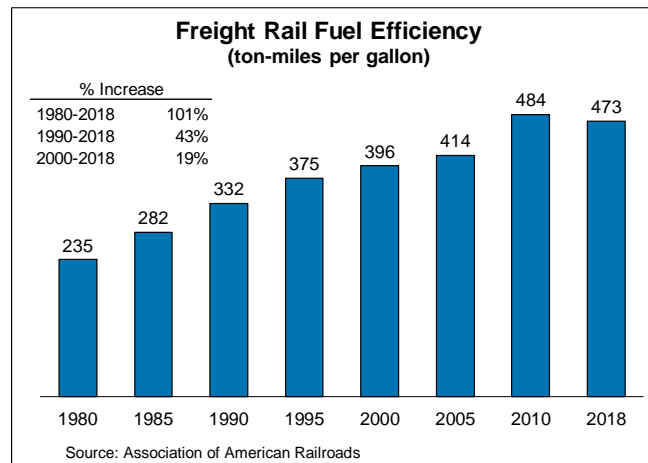
- **Railroads, on average, are approximately four times more fuel efficient than trucks.** Greenhouse gas emissions are directly related to fuel consumption. That means that moving freight by rail instead of truck reduces greenhouse gas emissions by approximately 75 percent.
- If just 10 percent of the freight that moves by Class 7 or Class 8 (the largest) trucks moved by rail instead, fuel savings would be more than 1.5 billion gallons per year and annual greenhouse gas emissions would fall by more than 17 million tons — equivalent to removing some 3.2 million cars from the highways for a year or planting 400 million trees.
- According to EPA data, non-transportation sources (power plants, manufacturers, etc.) accounted for 71.6 percent of U.S. greenhouse gas emissions in 2017; transportation accounted for the remaining 28.4 percent. Freight railroads accounted for just 0.6 percent of total U.S. greenhouse gas emissions in 2017, according to EPA data, and just 2.0 percent of transportation-related greenhouse gas emissions.
- **Moving more freight by rail also reduces highway congestion, which in 2018 cost Americans an average of 97 hours, or \$1,348, per driver just in terms of lost time, according to INRIX (a highway traffic analytics firm).** That's an \$87 billion nationwide hit. Including other costs like wasted fuel and lower productivity would add many billions more to this total. **A single freight train, though, can replace several hundred trucks.** Moving freight by rail instead of trucks also reduces highway wear and tear and the pressure to build costly new highways.



Railroads Are Constantly Working to Improve Fuel Efficiency

- In 2018, one gallon of fuel moved one ton of freight by rail an average of 473 miles — a 101 percent improvement since 1980 and a 19 percent gain since 2000.

- In 2018 alone, U.S. freight railroads consumed **710 million fewer gallons of fuel** and emitted **7.9 million fewer tons of carbon dioxide** than they would have if their fuel efficiency had remained constant since 2000. From 2000 through 2018, U.S. freight railroads consumed 9.0 billion fewer gallons of fuel and emitted 100 million fewer tons of carbon dioxide than they would have if their fuel efficiency had not improved.



- Over the years, railroads have used a variety of means to cut fuel consumption and greenhouse gas emissions:
 - ✓ **Acquiring thousands of new, more efficient locomotives.** Thousands of older, less fuel-efficient locomotives have been retired from service.
 - ✓ **Increasing the amount of freight on trains.** Thanks to improved freight car design, the use of longer trains, and other factors, the amount of freight railroads carried in an average train in 2018 was 3,661 tons, up from 2,923 tons in 2000.
 - ✓ **Developing and implementing highly advanced computer software systems** that, among other things, calculate the most fuel-efficient speed for a train over a given route; determine the most efficient spacing and timing of trains on a railroad’s system; and monitor locomotive functions and performance to ensure peak efficiency. These systems provide locomotive engineers with real-time “coaching” on the best speed for a train from a fuel-savings standpoint.
 - ✓ **Training.** Railroad fuel efficiency depends in part on how well a locomotive engineer handles a train. That’s why railroads use the skills of their engineers to save fuel. For example, some railroads offer programs through which locomotive engineers offer suggestions to their colleagues on ways to save fuel.
 - ✓ **Reduced idling.** Railroads are implementing “stop-start” idling-reduction technology that allows main engines to shut down when ambient conditions are favorable. Some railroads also use “**auxiliary power units**” that warm engines so that locomotives can be shut down in cold weather.
 - ✓ **New technologies and operational changes,** including expanding the use of **distributed power** (positioning locomotives in the middle of trains) to reduce the total horsepower required for train movements; improving **rail lubrication** to reduce friction at the rail-wheel interface; using **low-torque bearings** in rail cars to reduce weight; and aero-dynamic **drag-reducing devices** at the front of double-stacked intermodal trains.