

Railroad 101

KEY TAKEAWAY

America's privately owned freight railroads are the safest and most fuel-efficient way to move goods over land and are the most productive and cost-effective in the world, connecting consumers and businesses across the nation and the world.

Getting Safer Every Day

Safeguarding the well-being of their employees and the communities along their train routes is a top priority for freight rail companies. Thanks in part to ongoing private investments into technology, infrastructure and equipment, freight rail is the [safest way to move goods over land](#) and is working to get safer every day. The train accident rate is down 28% since 2000, and the last decade was the safest ever, with the 2022 hazmat accident rate among the lowest ever.

Railroads work daily with their employees, suppliers and customers, and federal, state and local officials to safeguard the rail network and the people who operate it and interact with it. Railroads' holistic approach to rail safety focuses on:

- Maintaining and modernizing infrastructure and equipment.
- Rigorously training employees and improving operations.
- Developing and deploying technology.
- Safeguarding communities and supporting first responders.
- Monitoring and protecting physical and digital networks.

[Technology](#) is imperative to rail's safety progress, and railroads constantly develop and implement new technologies to address safety challenges. Just a few examples:

- Trains pass through inspection stations without slowing down.
- Positive Train Control (PTC) helps reduce certain types of human-caused errors.
- Sophisticated detectors along tracks identify defects on passing rail cars.
- Ground-penetrating radar identifies problems below ground, such as excessive moisture, that could destabilize track.
- Specialized rail cars use sophisticated instruments to find defects in tracks.

Essential to a Greener, Less-Congested Future

Thanks to targeted investments, innovative technology and evolving operations, railroads are the most fuel-efficient way to move freight over land. Railroads want to be — and must be — a part of the [solution to climate change](#). With policies grounded in data that encourage innovation, leverage market-based competition, and allow for varied approaches among multiple stakeholders, freight railroads will deliver a more sustainable future for all.

- **Lower Greenhouse Gas Emissions:** Greenhouse gas emissions are directly related to fuel consumption. According to preliminary EPA data for 2022, freight railroads account for just 0.5% of total U.S. greenhouse gas emissions and just 1.7% of transportation-related greenhouse gas emissions.
- **More Fuel Efficient:** U.S. freight railroads, on average, move one ton of freight nearly 500 miles per gallon of fuel. On average, railroads are three to four times more fuel efficient than trucks. That means moving freight by rail instead of trucks lowers greenhouse gas emissions by up to 75%, on average.
- **Reducing Highway Congestion:** A single freight train 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.

Critical For the Economy

Every year, railroads save American consumers billions of dollars thanks to their safety, reliability, and cost-effectiveness. Millions of Americans work in industries that are more competitive in the tough [global economy](#) thanks to the affordability and productivity of America's freight railroads. And by linking businesses to each other here and abroad, freight railroads play a crucial role in America's economic development and modern way of life.

Vital Employer

Freight rail employees are highly skilled professionals who are among the [best-compensated workers](#) in the nation. In 2022, Class I freight rail employee compensation, including benefits, averaged about \$145,000 per year. Freight railroads are committed to safeguarding their workforce and investing in training and new technologies to help make sure railroaders go home safely. The freight rail employee injury rate is lower than in most other industries and is at an all-time low.

Affordable & Reliable

Optimizing operations has resulted in greater capacity, reliability and productivity across the rail network. Efficiency and productivity gains that improve the cost-effectiveness of rail also benefit rail customers. The affordability of freight rail saves rail customers (and, ultimately, American consumers) billions of dollars each year and enhances the global competitiveness of U.S. products. Average rail rates (measured by inflation-adjusted revenue per ton-mile) are 40% lower since 1980, meaning the average rail shipper can move much more freight for the same price it paid more than 40 years ago.

Investing for the Future

As America's economy grows, the need to move more freight will grow too. The Federal Highway Administration forecasts that total U.S. freight shipments will rise from an estimated 19.3 billion tons in 2020 to 25.1 billion tons in 2040 — a 30% increase. Railroads are getting ready today to meet this challenge.

From 1980 to 2022, America's freight [railroads privately spent](#) approximately \$780 billion — their funds, not taxpayer funds — on capital expenditures and maintenance expenses related to locomotives, freight cars, tracks, bridges, tunnels, technology and other infrastructure and equipment. That is close to 39 cents out of each revenue dollar. In fact, freight railroads have spent an average of \$23 billion a year over the last five years on their networks.

Moving What America Needs

From the food on our tables to the cars we drive, freight rail is part of an integrated network of trains, trucks and barges that ships around 61 tons of goods per American every year. Railroads carry enormous amounts of finished goods and raw materials.

- **Auto:** [Cars, trucks and motorcycles](#) ride the rails before they ever hit the road — as raw materials, auto parts and fully assembled vehicles. To accommodate the needs of automakers, we developed a flexible rail car, adjustable to two or three levels based on the manufacturer's needs. Freight rail moves nearly 75% of the new cars and light trucks purchased in the U.S.
- **Energy:** From ethanol to crude oil and coal, railroads move nearly every [U.S. energy product](#) and many of the raw materials needed to produce them. As energy sources and consumption patterns have changed, the freight rail industry has adjusted to customer needs to continue safely and efficiently moving energy products.
- **Chemicals:** Thanks to the [chemicals](#) railroads ship each year, Americans get their bottled water, thriving garden, hand sanitizer and toilet bowl cleaner safely and efficiently. Some chemicals are hazardous, and freight railroads are committed to safely transporting them. More than 99.9% of hazmat shipments reach their destination without incident.

- **Construction:** Freight rail is the foundation for the nation's [construction](#) industry, moving steel, cement, lumber and much more. Railroads' lumber transport has become a bellwether for the American dream as rail carloads strongly correlate to housing starts.
- **Food:** Railroad shipments of [farm and food products](#) fill grocery store shelves every day. To preserve the nation's role as the world's top grain exporter, railroads have invested in high-capacity covered hoppers and "shuttle trains" so U.S. corn, soybeans and wheat can efficiently reach a hungry world. Railroads typically carry more than 60,000 carloads of food and agriculture products per week.
- **Intermodal:** [Intermodal](#) combines the best attributes of different transportation modes to yield an efficient, cost-effective total movement. Intermodal transports various goods Americans use daily — from many products on a retailer's shelves to industrial and agricultural goods like auto parts and grain. Together with other transportation providers, railroads carry nearly 61 tons of freight per American each year.