

What Railroads Haul: Intermodal

Rail intermodal is the long-haul movement of shipping containers and truck trailers by rail, combined with a truck or water movement at one or both ends. Intermodal utilizes the best attributes of different transportation modes to yield an efficient, cost-effective total movement. Intermodal is used to transport a huge variety of goods Americans use every day — from just about everything on a retailer's shelves to industrial and agricultural goods like auto parts and grain. Together with trucks and maritime shippers, freight railroads annually carry nearly 57 tons of freight per American each year — much of it via intermodal rail.

The domestic share of intermodal traffic is larger than it once was because large volumes of freight that used to move solely by truck have been converted to rail intermodal because shippers wanted to take advantage of the many benefits intermodal brings. Chicago and Los Angeles/Long Beach are by far the top U.S. metropolitan areas for rail intermodal. Major intermodal markets have large populations and extensive highway feeder systems.

Containers accounted for 47% of intermodal volume in 1990, 69% in 2000, and 92% in 2019. Unlike trailers, containers can be “double stacked,” sharply increasing productivity and helping to ensure there is enough traffic density to keep intermodal competitive with all-truck movements. Containers can also be easily transferred to and from ships and trucks, further enhancing productivity.

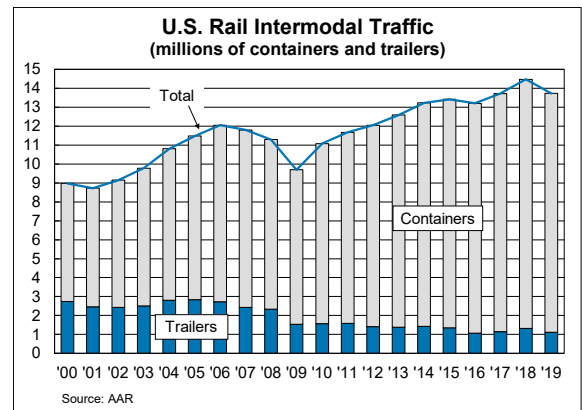
U.S. railroads created the world's most advanced intermodal network.

Successful intermodal corridors need sufficient line haul and terminal capacity to keep trains moving and to avoid congestion or delay. Knowing this, U.S. railroads have created the most advanced intermodal network in the world by maximizing existing capacity and spending tens of billions of dollars on new infrastructure and equipment directly connected to intermodal operations, such as:

- New or expanded inland terminals to facilitate the transfer of containers and trailers between rail and truck; New near-dock intermodal terminals to facilitate ship-to-rail container transfers.
- Raising clearances along rail routes to accommodate the additional height required for doublestack trains.
- Adding track capacity and advanced signaling to allow faster, more frequent trains on the rail network.
- Introducing a variety of new intermodal car types and modernizing the locomotive fleet to enhance reliability for rail customers.

Key Takeaways

- If it fits in a shipping container, there is a good chance railroads move it.
- Intermodal provides a competitively priced, environmentally friendly alternative to excessive reliance on highways to transport freight.
- Intermodal is the largest single source of U.S. freight rail revenue.
- Exports and imports account for about half of U.S. rail intermodal traffic.
- Thanks in part to freight rail's massive private investments, rail intermodal has been growing rapidly for years, with 2018 volumes at a record 14.5 million containers and trailers before falling to 13.7 million in 2019.



Top 15 Markets for Intermodal Traffic Handled in the United States in 2018*

Market	Containers and Trailers
1. Chicago / Elwood / Joliet, IL	6,453,000
2. Long Beach / San Pedro / San Bernardino / City of Industry, CA	5,424,000
3. Atlanta, GA	1,454,000
4. Dallas / Ft. Worth / Saginaw, TX	1,450,000
5. Seattle / Bremerton / Tacoma / Everett, WA	1,022,000
6. Little Ferry / North Bergen / South Kearny / Jersey City / Newark / Elizabeth, NJ / Staten Island, NY	1,295,000
7. Memphis, TN / West Memphis, AR	887,000
8. Kansas City, MO / Kansas City, KS	411,000
9. Harrisburg, PA	701,000
10. Stockton, CA	629,000
11. Jacksonville, FL	583,000
12. Norfolk / Portsmouth, VA	628,000
13. Detroit / Pontiac, MI / Toledo, OH	567,000
14. Houston, TX	365,000
15. Columbus / Marion / Marysville, OH	429,000

*Originated and terminated Source: AAR analysis of 2018 STB Waybill Sample

Advanced technologies improve freight efficiency and environmental sustainability.

For example, many intermodal terminals have automated gates, driver-scanning technology and digital cameras that photograph and record images of containers entering and leaving a facility. Multiple railroads now offer mobile apps that cut wait times by using automated gate kiosks to get shipments from trains to trucks more quickly, thereby helping businesses get what they need faster while sharply reducing truck idling and the time it takes for trucks to enter or exit a terminal.



Many terminals also have upgraded lift equipment that reduce emissions, including zero-emission electric cranes at many terminals. Some railroads also offer apps that provide truck drivers with their gate entry before arriving at a terminal, allowing them to check beforehand if the container they are to pick up is available, helping them to avoid unnecessary delays, and providing safety information.

Additionally, many railroads are using new e-commerce tools that let customers track shipments in real time while application programming interfaces, or APIs, can be integrated into customers' systems to automate rail car ordering. These types of solutions are making it easier than ever before for rail customers to plan and optimize their operations.

Freight rail's intermodal investments have led to a surge in growth.

U.S. rail intermodal volume has surged: 5.6 million containers and trailers in 1990; 9 million in 2000; 11.1 million in 2010; and a record 14.5 million in 2018 before falling a bit to 13.7 in 2019. In 2019, intermodal accounted for close to 25% of revenue for major U.S. railroads, more than any other traffic segment. Railroads know that reliability is crucial to successful intermodal operations. That is why they have put enormous effort into improving their intermodal service. Today, rail intermodal is far more efficient and productive than it used to be. Rail intermodal has grown because it offers so many benefits:

- ✓ **Massive spending:** Railroads' intermodal investments — including many new terminals across the nation over the past 10 years — have led to more productive and reliable intermodal operations, thereby improving overall supply chain performance for intermodal customers.
- ✓ **Truck driver shortages:** Hiring and retention is a constant challenge for trucking companies. When rail intermodal is used, truck driver shortages are less of a problem because rail intermodal service takes millions of trucks off our highways each year.
- ✓ **Sustainable transportation:** On average, railroads are three to four times more fuel efficient than trucks. Because greenhouse gas emissions are directly related to fuel consumption, moving freight by rail instead of truck reduces greenhouse gas emissions by up to 75%, on average. Conversion to intermodal is a concrete way for rail customers to improve their sustainability efforts.
- ✓ **Conversion of boxcar traffic:** Some rail traffic that used to move in boxcars now moves in containers. Boxcars used to account for more than 10% of rail traffic. Today, it is under 3%. Part of this decline is due to lost traffic (for example, rail shipments of newsprint in boxcars have fallen as newspaper readership has fallen), but some of the decline is conversion. Auto parts, for example, now often move by container instead of boxcar.
- ✓ **Fighting highway gridlock:** One intermodal train can carry up to several hundred containers and trailers, which removes that many trucks off the road and helps shippers eliminate wasted time and fuel from their trucks sitting in traffic. Shifting freight from trucks to rail also reduces the pressure to build costly new roads and helps cut the costs of maintaining the roads we already have.
- ✓ **International trade:** Intermodal helps U.S. firms connect with the rest of the world. About half of U.S. rail intermodal volume consists of imports and exports. Experts predict continued growth in international trade in the years ahead.