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# Economic Perspectives

Improve The State Of Your Business ™

NNDA Northern Nevada Development Authority

# The Tech Side of Freight Rail

The freight railroad industry impacts the U.S. economy in a big way. According to a recent study commissioned by the Association of American Railroads (AAR), Towson University's Regional Economic Studies Institute reported that in 2017 alone, major U.S. freight railroads supported approximately 1.1 million jobs and $71 billion in wages, produced nearly $219.5 billion in annual economic activity, and generated $26 billion in tax revenues.

**Rob Hooper**
**President & CEO**

Our nation's private rail network has nearly 140,000 miles of track. 1,193 miles of that network is in Nevada and helps to support our Sierra Region economic ecosystem. The network is operated and maintained by more than 610 private railroads, which typically own their tracks and locomotives. Between 1980 and 2017, these companies have spent over $660 billion on the network, more than 40 cents of each revenue dollar. These investments save taxpayers billions of dollars each year.

An important component of the rail network is a railroad tie, the rectangular support laid perpendicular to the rails which helps hold them upright and keep them spaced correctly. I would like to offer an additional perspective.

Railroads support international *Trade*, are integral to our *Infrastructure*, and help protect the *Environment*. It gives new meaning to Railroad TIE (Trade, Infrastructure & Environment). However, along with steady, extensive spending on infrastructure and equipment, freight rail companies are making substantial investments in state-of-the-art *Technology* innovations to move freight efficiently, safely and cleanly. What we actually have is Railroad TTIE℠ (Technology, Trade, Infrastructure & Environment).

According to a recent AAR report, an estimated 35% of all U.S. exports are hauled by freight rail. Also, 50,000 rail jobs and 42% of rail carloads and intermodal units are directly associated with international trade.

The logistics industry depends on the unparalleled freight rail network infrastructure to meet its needs and those of its customers. While the March 2017 Infrastructure Report Card from the American Society of Civil Engineers gave the U.S. overall infrastructure a "D+" grade and its roads a "D," the nation's freight rail network received a "B," the highest grade in the report.

Freight rail is mindful of protecting the environment. More efficient locomotives mean trains today can move a ton of freight 479 miles per gallon of fuel, double what was possible in 1980. Moving freight by rail results in 75% fewer greenhouse gas emissions than trucks, as well as less congestion and wear and tear on our highways.

Railroads use technology innovations daily to evaluate infrastructure conditions and inspect equipment with greater precision and frequency than can be achieved manually. Problems are identified before they arise, often in real-time. Here is a sampling of the many freight rail innovations which maximize the safety and efficiency of our nationwide rail network:

- ***Track Geometry Cars*** measure every inch of track to identify problem areas: rail wear, track alignment, elevation in curves, and many others. Monitoring these geometric measurements helps to keep small problems from becoming big ones.

- ***Smart Sensors*** placed alongside railroad tracks utilize a variety of sensor technologies, including infrared and lasers, to monitor the strength and health of wheels and bearings as they travel across the nation's rail network. These special detectors help to prevent train derailments.

- ***Sonar*** technology helps railroads to assess the stability of bridge piers and the integrity of a bridge itself. Similar to the echolocation whales use to understand their surroundings, sonar sends out sound waves, which bounce off the bridge piers and the ground surface below the water. The results are used to determine any concerns about bridge pier stability.

- ***Big Data*** plays a key role as today's locomotives have supercomputers onboard which can process a billion data points per second. Coupled with thousands of smart sensors that constantly monitor track wear and tear across the national rail network, along with the health of railcars, railroads harness Big Data to improve safety and efficiency.

- ***Machine Visioning*** collects thousands of images per second and uses algorithms to identify potential issues. By providing a comprehensive view of locomotives, trains and their components, railroads can address issues faster than they could with manual inspections alone.

- ***Drones*** are utilized to inspect bridges and other areas of the network which are difficult for railroad employees to safely reach. The drones are deployed for a variety of safety and environmental purposes, and are particularly helpful in remote areas.

- ***Positive Train Control*** (PTC) is a set of innovative technologies that automatically monitors the safe operation of a train and can prevent certain kinds of human-factor incidents. By December 31, 2018, first generation PTC will be installed on all PTC-required route miles and deployed on at least 80% of these tracks, with the system being fully active and interoperable by 2020.

Consider that U.S. freight rail traffic has increased 84% over the last several decades, and overall U.S. freight demand is forecast to increase 41% by 2040. Just as we depend on each railroad tie to support the network, we depend on Railroad TTIE℠ to help meet future needs.

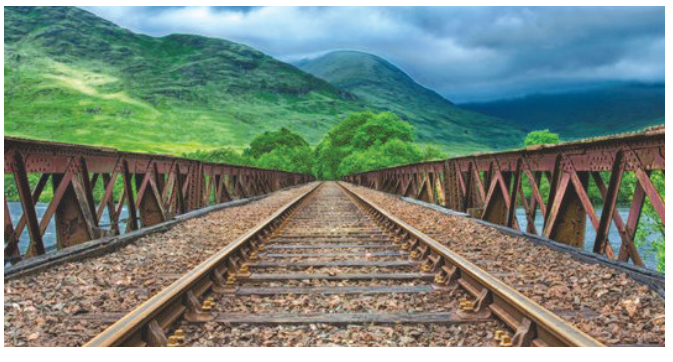
## Freight Railroad TTIE℠ ...New Meaning

Technology – Innovation & Safety

Trade – More Jobs & Stronger Economies

Infrastructure – Transportation & Logistics

Environmental Impact – Cleaner Skies





## NNDA: The Business Edge℠

**Information, Issues, and Trends for Northern Nevada Businesses**

Annual Update about the Sierra Region Counties!

**State of the Counties**
**Sierra Region County Managers**

**SAVE THE DATE**
**Wednesday, January 23, 2019**
**7:30 am – 9:30 am**

Casino Fandango, Carson City
Registration Now at NNDA.org

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