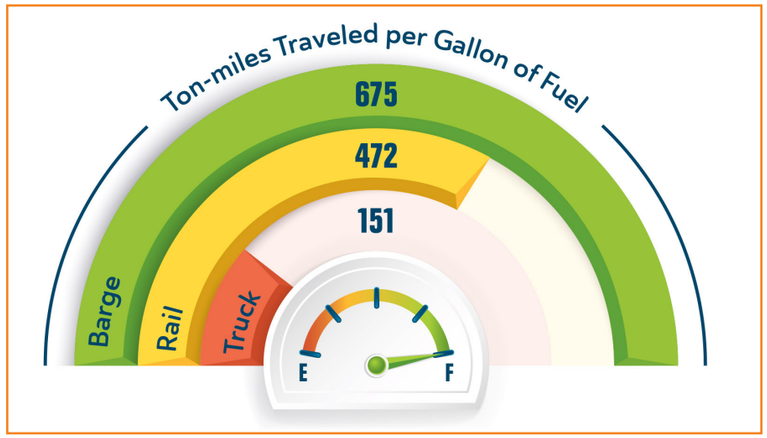
# Barge Transportation Wins Out Over Truck and Rail

As our nation continues to address climate concerns, decarbonization, and sustainability, transportation is a key sector to consider. The National Waterways Foundation (NWF), for which I serve as chairman, exists to develop the intellectual and factual arguments for an efficient, well-funded and secure inland waterways system.

In pursuit of that mission, it has been comparing efficiency, emissions, safety and other factors across the surface modes for a number of years. Our inland waterways continue to excel in each respect and are clearly part of the solution for a nation that is looking to move more cargo with fewer emissions in the future.

In January 2022, the NWF released an update of its study comparing impacts of utilizing inland waterways barge transportation to truck and rail transportation. *A Modal Comparison of Domestic Freight Transportation Effects on the General Public: 2001–2019 (January 2022)* was conducted by the Texas A&M Transportation Institute's Center for Port and Waterways. Originally conducted and peer reviewed in 2007, the study was also previously updated in 2011 and 2017 when later data sets were available.

The study addresses cargo capacity, congestion, emissions, energy efficiency, safety and infrastructure impacts across barge, truck and rail, underscoring the environmental benefits of the three modes. The recent update confirms that inland waterways transportation generates far fewer emissions of greenhouse gases (GHG), hydrocarbons, carbon monoxide and nitrous oxide than rail or truck, per-million-ton-miles of cargo moved (*see image below*).




The updated study also addresses the amount of cargo currently transported on major rivers and waterways and underscores the traffic congestion impacts Americans would experience if cargo carried by water was diverted to truck or rail.

Waterways cargo is equivalent to more than 43 million truck trips annually on the U.S. roadways. If you diverted current waterways freight traffic to highways, it would add 867 trucks to the current 960 trucks per day per lane on a typical rural interstate. The percentage of trucks in average annual daily traffic would rise 11% (from 17% to 28%). These additional truck trips would cause the weighted average daily trucks per lane on certain interstate segments to rise to 138% of current levels nationwide. These somewhat complicated statistics convey what is, in reality, a fairly simple message: If not for all the cargo that moves by barge in this country, you would be sharing the highways with a lot more trucks than you already do. And in certain areas of the country, the impact would be even more pronounced.

A key reason barges have fewer emissions per ton-mile of cargo moved is that they use less fuel to move a ton of cargo a mile (*see graphic at top of page*). According to the 2005 data, barges could move cargo 576 ton-miles per gallon. By 2009, that number had increased to 616. In 2014, it was 647 and this update, using 2019 data, shows the number has increased to 675. This is a consequence not just of new, more efficient boats entering service, but shows the benefits derived from repowering existing boats with more fuel efficient and cleaner burning engines, a process that has been ongoing throughout that time period.

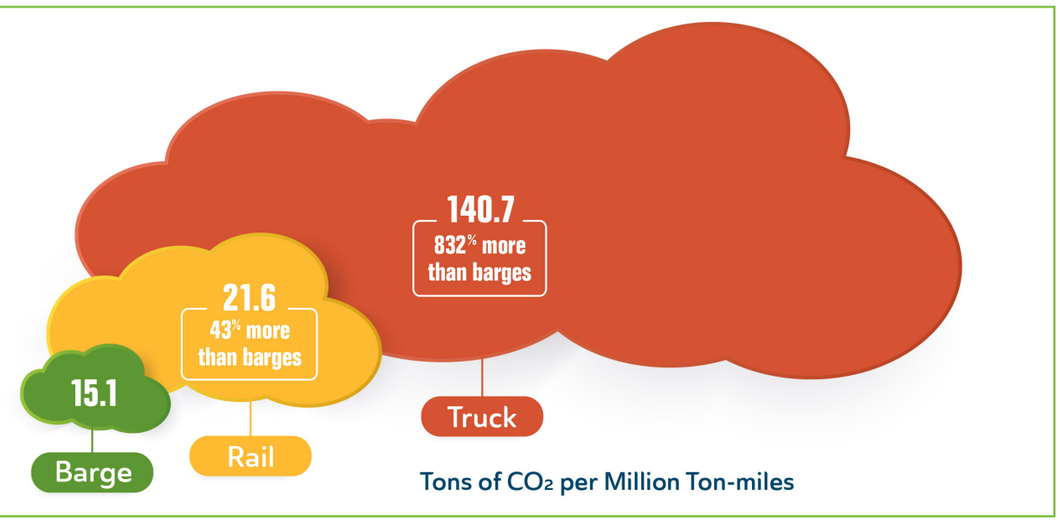
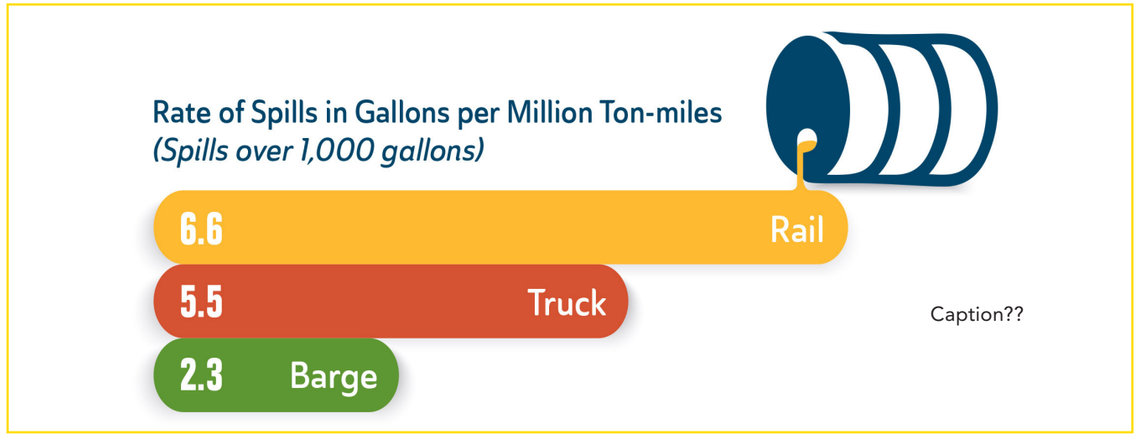


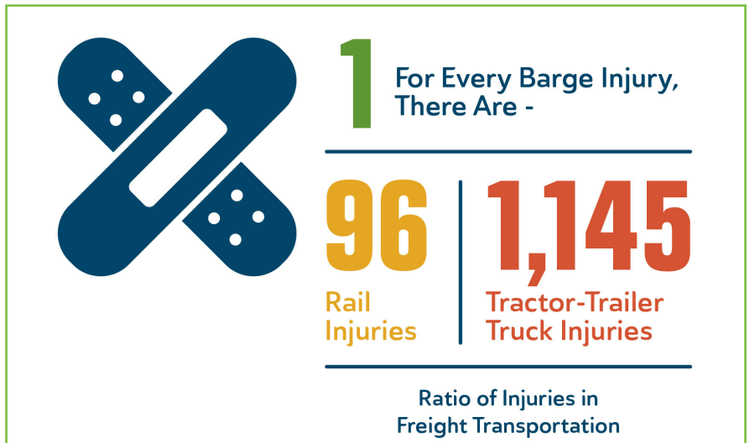

Photo Credit: National Waterways Foundation




The study also looks at spills of more than 1,000 gallons across the modes. Comparing on a per-million-ton-mile basis, spills are very low for barges compared to truck or rail (*see graph at top of page*).

Many in the inland waterways are well aware of the sheer volume and capacity of barges, with one 15-barge river tow equaling 1,050 trucks and 216 rail cars pulled by six locomotives. But to fully appreciate this, the NWF study notes says one loaded, covered hopper barge transporting wheat carries enough to make a one-pound loaf of bread for every man, woman, and child living in Oklahoma in the year 2019. A loaded liquid tank barge with 27,500 bbl (US liquid barrel) of gasoline carries enough product to satisfy the current annual gasoline demand of approximately 3,072 people.

The NWF's modal comparison study highlights the significant impacts to infrastructure if waterborne freight were to be diverted to highways or rail. If you shifted barge cargo to the highway, approximately 2 inches of asphalt would have to be added to the pavement of 119,885 lane-miles of rural interstate, given the higher levels of expected 20-year truck loadings and assuming an even truck traffic distribution over the national highway system.




The study examined a hypothetical diversion of grain shipments from water to the rail system and found our current rail system may not accommodate the shift, which would equate to 2.3 times the current number of grain carloads on both the UP system and the CN network in the U.S.

Look at the second graphic on this page. Safety impacts sustainability as well and this study has determined that barges are safer to people and the environment (after adjusting for differences in cargo quantity moved by each mode via ton-miles of freight traffic).

The National Waterways Foundation's rail, truck and inland waterways transportation comparison study underscores the many benefits and advantages of moving cargo by water. That is not to say that rail and truck transportation are not vital modes. They are and will continue to be. The message is that where inland waterways are an option, barge transportation is simply the safest, most energy efficient, and environmentally sound way to move cargo. Barges take pressure off our highway and rail infrastructure, enhance our economy, and lead America to a stronger future.

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