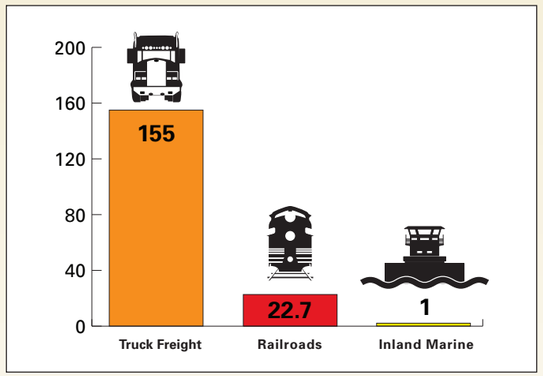
SAVING LIVES

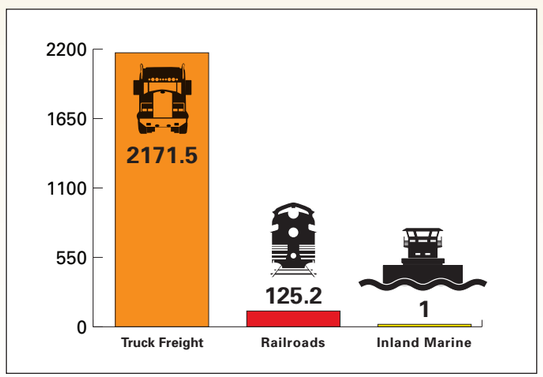
Water Transportation Has Fewer Fatalities and Injuries than Other Modes

Safety-related statistics for all modes of freight transportation show, on a rate per ton mile basis, that there is 1 fatality in the inland marine sector for every 22.7 fatalities in the rail sector and 155 fatalities in the highway sector. With respect to a comparison of injuries among these sectors, there is 1 injury in the inland marine sector for every 125.2 in the rail sector and 2,171.5 in the highway sector.

Ratio of Highway and Rail to Inland Marine Fatalities



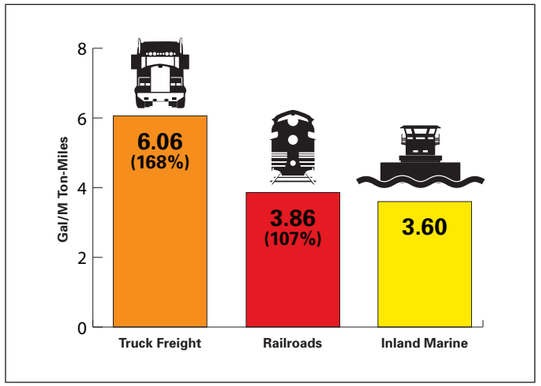
Ratio of Highway and Rail to Inland Marine Injuries



SAFEGUARDING OUR COMMUNITIES

Water Transportation Has Good Safety Record in Moving Hazardous Materials

The study evaluates large spills (of over 1,000 gallons) as a measure of the overall safety of transportation modes. The rate of spills in gallons per ton-mile was found to be similar for both marine and rail transportation. All the modes work hard to prevent accidents, human errors and other causes of spills, including groundings in the case of barge transportation. Overall, spill rates are very low - with trucks losing only 6.06 gallons per 1 million ton-miles, railcars only 3.86 gallons and barges 3.6 gallons per million ton-miles.



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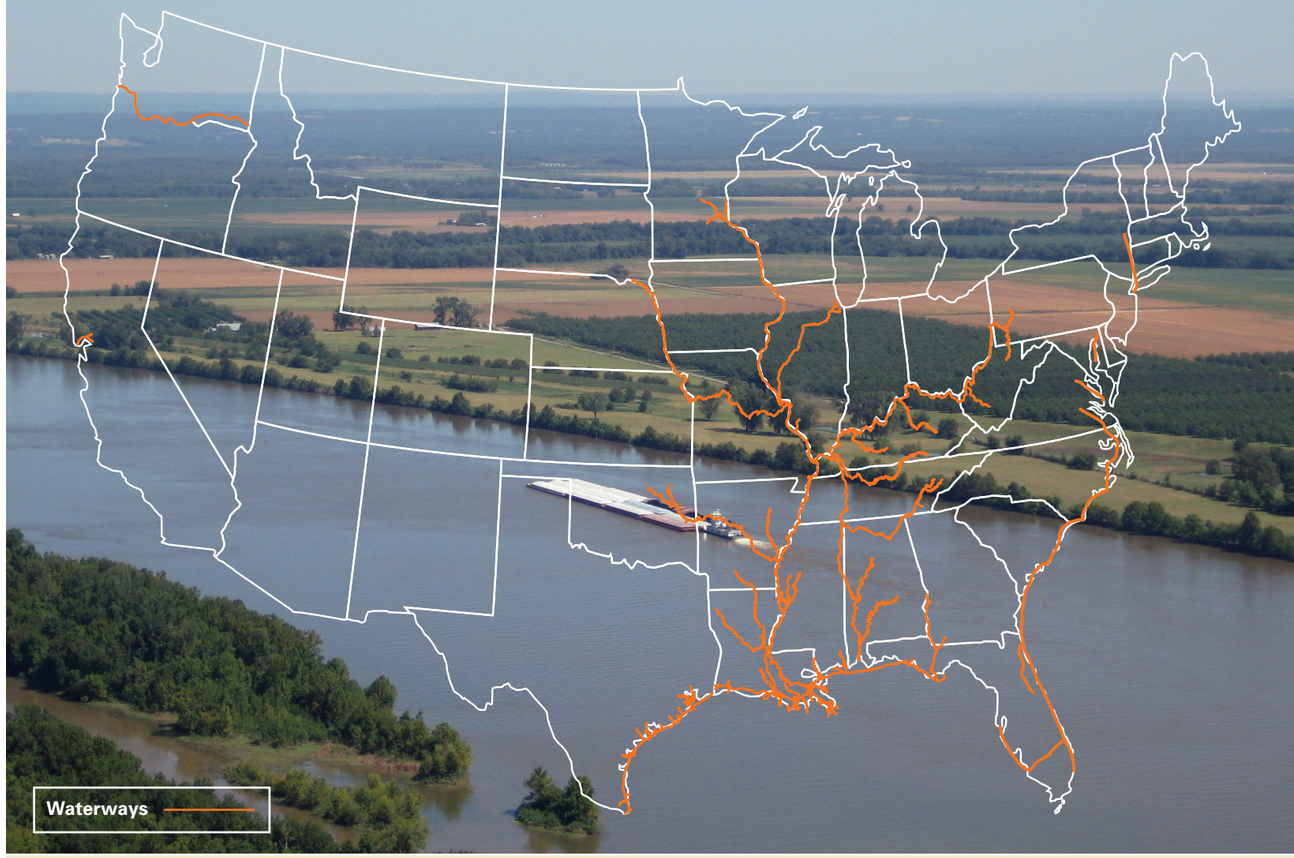
Waterways: Working for America

Highlights of "A Modal Comparison of Freight Transportation Effects on the General Public," a study by the Texas Transportation Institute, Texas A&M University.



This report updates and quantifies the environmental, selected societal, and safety impacts of utilizing inland river barge transportation and compares these impacts to highway and rail transportation.

- The inland waterways system is a key component of the nation's freight transportation network and includes about 12,000 miles of commercially navigable channels and some 240 lock sites. America's "marine highways" move commerce to and from 38 states, from Canada to the Gulf, from the Atlantic almost to the Rockies and in the Pacific Northwest, too.
- Every year, about 624 million tons of waterborne cargo transit the inland waterways, a volume equal to about 14% of all intercity freight. This commerce has an overall value of about $70 billion, substantially contributing to America's economic strength.
- Waterways transport more than 60% of the nation's grain exports, about 22% of domestic petroleum and petroleum products, and 20% of the coal used in electricity generation. Barges are ideal for hauling bulk commodities and moving over-size equipment.
- Except for a few congested locks scheduled for replacement, the waterways have lots of unused capacity – capacity which could be used to relieve growing transportation congestion, with lesser impacts on air quality, public safety and the environment than the other modes.

Waterways, An Integral Part of America's Freight Transportation System

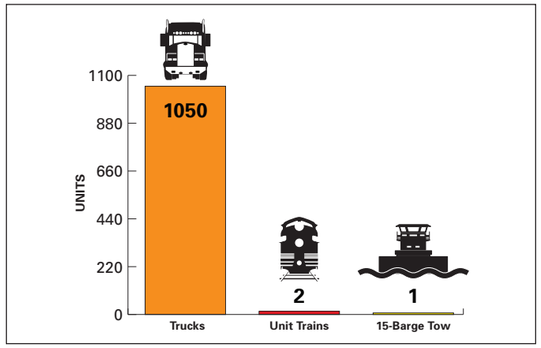
While our freight transportation system promotes economic development and national security, freight movements affect traffic congestion, air quality, energy usage, pavement and roadbed deterioration, and public safety.

COMPARING CARGO CAPACITY

A Standard Dry Cargo Barge Can Move as Much Cargo as 70 Trucks or 16 Rail Cars

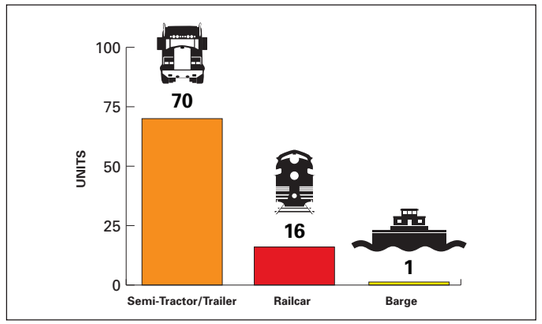
It is difficult to appreciate the carrying capacity of a barge until one understands how much tonnage a single barge can move. For example, one loaded covered hopper barge carries enough wheat to make almost 2.5 million loaves of bread. A loaded tank barge carries enough gasoline to satisfy the annual demand of about 2,500 people.

Carrying Capacity of a 15-Barge Tow of Dry Cargo

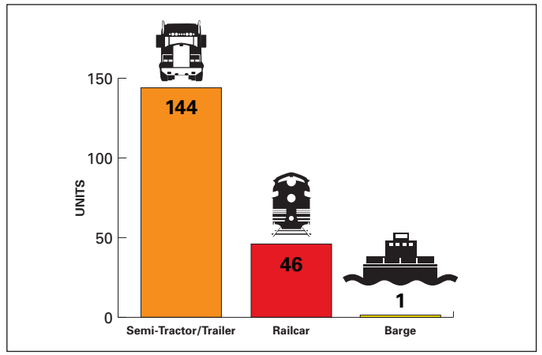


15 barges is a common tow size on the inland rivers. This graphic depicts the number of trucks and trains needed to equal a single 15-barge tow.

Dry Cargo Capacity



Liquid Cargo Capacity

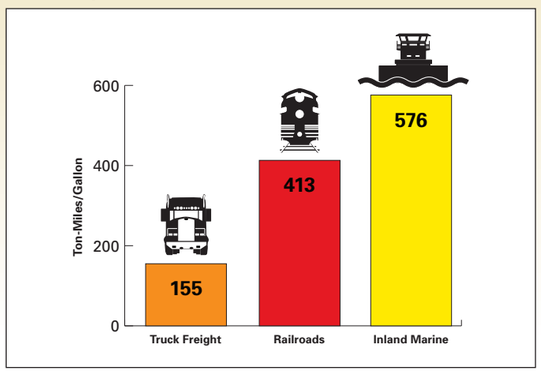


MOVING FORWARD, SAVING ENERGY

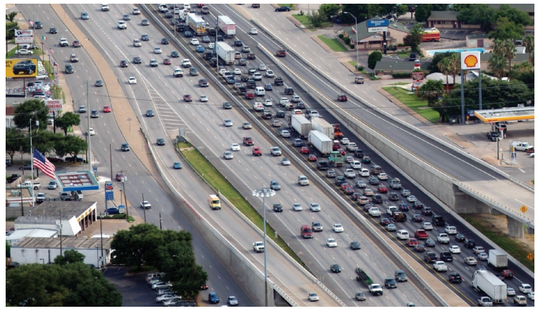
Moving Freight on America's Rivers is the Most Energy-Efficient Mode of Surface Transport

Moving America's coal, grain, petroleum and chemical products, iron and steel, aggregates, and containers on the nation's navigable rivers is the most energy-efficient way to transport freight. Barges can move 1 ton of cargo 576 miles for the same amount of fuel as it takes a rail car to carry the same amount of cargo 413 miles, and a truck to haul it 155 miles.

Ton-miles per Gallon of Fuel



Ton-miles/gallon shows how far each mode moves a ton of cargo for every gallon of fuel consumed.



EASING CONGESTION

The annual traffic on America's inland navigation system, including the Mississippi River from Minneapolis to the Gulf of Mexico, the Ohio River and its navigable tributaries, the Gulf Intracoastal Waterway, and the Columbia-Snake River system, carries the equivalent of 58 million truck trips each year.

Hypothetically, if current waterway freight traffic were to be diverted to the nation's highways, heavy truck traffic on Interstate highways between cities would nearly double. The impacts on urban Interstate highways through cities would be more severe.

Or, if the current waterway freight traffic were diverted to rail, the tonnage on the nation's railroad system would increase by nearly 25%. The burden would not be evenly distributed; a heavier burden would be placed on the Eastern U.S. railroads, already operating at near capacity.

A CASE STUDY

Impacts of a Waterway Closure on the St. Louis Metropolitan Area

To illustrate the potential impacts a waterways closure could have on an adjacent community, a case study was performed to show what would happen if the Mississippi and Illinois Rivers were shut down in the vicinity of St. Louis. The closure would shift millions of tons of cargo from the river system to the already crowded Interstate arteries.

The analysis used the Federal Highway Administration's "HERS_ST" model to estimate the resultant impacts on highway traffic. The analysis was performed under two possible scenarios: First, no improvements would be made to the road infrastructure to account for this new traffic, or secondly, road improvements would be undertaken to account for the additional traffic. Assuming all cost-effective improvements were undertaken, the analysis concluded that highway costs over 20 years would increase from $345 million to over $721 million. Significantly, truck traffic on St. Louis roadways would more than double.

Traffic delays would increase by almost 500%. Injuries and fatalities on these Interstate segments would increase by 36% to 45%. Maintenance costs would increase by 80% to 93%. While a permanent shutdown of the waterway certainly cannot be anticipated, this case study demonstrates some of the impacts a loss of vital waterways would cause.

MAXIMIZING INFRASTRUCTURE INVESTMENT

Diversion of Marine Transportation Cargo Would Impact Highway and Rail Infrastructure

- Diversion of waterborne freight to highways would necessitate the addition of approximately 2 inches of asphalt to the thickness of the pavement of 126,000 lane-miles of intercity Interstate. The effects are greater than average for highways parallel to the waterways.
- Impacts to the rail system are detailed in an example of what the CSX railroad could expect to encounter in the event of diversion of coal from the Ohio River. This coal is used in more than 50 electric generating plants adjacent to the Ohio River system. To meet the increased demand for transportation services, CSX immediately would need 156 new locomotives and 5,616 new coal cars at an estimated cost of $581 million. Identified but not quantified are additional costs of train equipment to mitigate reduced operational efficiency created by the added congestion.

BREATHING CLEANER AIR

Moving Cargo on America's River System Generates Fewer Emissions than Rail or Truck

The Environmental Protection Agency's MOBILE6 model estimates mobile source emission factors for several hazardous air pollutants in grams per vehicle mile traveled. These air pollutants include hydrocarbons (HC), carbon monoxide (CO), nitrogen oxides (NOx), particulate matter (PM), and Carbon Dioxide (CO2). The emission comparison between inland towing, rail, and truck transportation shows that fewer emissions are generated by moving products on America's inland navigation system.

Emissions (Grams/Ton-Mile)				
Mode	**HC**	**CO**	**NOx**	**PM**
Inland Towing	0.01737	0.04621	0.46907	0.01164
Eastern Railroads	0.02419	0.06434	0.65312	0.01624
Western Railroads	0.02423	0.06445	0.65423	0.01621
Truck	0.020	0.136	0.732	0.018

HC = hydrocarbon emissions CO = carbon monoxide emissions
NOx = nitrogen oxide emissions PM = particulate matter emissions