NATIONAL WATERWAYS FOUNDATION

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# WATERWAYS: *Working for America*

*Waterways transportation keeps commerce on the move, with fewer societal impacts than truck or rail.*

Texas Transportation Institute

Highlights of "A Modal Comparison of Freight Transportation Effects on the General Public"

A study by the Texas Transportation Institute, Center for Ports and Waterways

*America's Waterways:*

# Easing Rail and Highway Congestion in Our Communities

Our waterways provide great capacity to ease congestion by carrying cargo that would otherwise travel by truck or rail. The annual traffic on America's inland navigation system, including the Gulf Intracoastal Waterway and the Ohio, Mississippi and Columbia-Snake River systems, carries the equivalent of 58 million truck trips each year.

*A Costly Scenario:*

## *If waterborne cargo were diverted to highways or rail*

Diverting waterborne cargo to the nation's Interstates would cause heavy truck traffic to nearly double. Or, if the current waterway freight traffic were diverted to rail, the tonnage on the nation's railroad system would increase by nearly 25%, with the heaviest burden being placed on the Eastern U.S. railroads, which are already operating at near capacity.

- **To highways:** Two inches of asphalt would be needed to increase the pavement thickness of 126,000 lane-miles of intercity Interstate. The effects would be greater for highways parallel to the waterways.
- **To rail:** To transport coal used in more than 50 electric generating plants adjacent to the Ohio River System, CSX railroad would need 156 new locomotives and 5,616 new coal cars. The system's average train velocity would drop by one-third.

*Hypothetical Case Study:*

## *Waterways Closure on the Mississippi & Illinois Rivers*

What would happen if the Mississippi and Illinois Rivers were shut down in the vicinity of St. Louis? Using the Federal Highway Administration's HERS_ST model, the Texas Transportation Institute estimated the resulting impacts of shifting millions of tons of cargo from the river system to the city's already crowded Interstate arteries.

Assuming that cost-effective roadway improvements were undertaken, the analysis concluded that highway costs over 10 years would increase from $345 million to over $721 million.

- *Truck traffic on St. Louis roadways would increase by* **200%**
- *Traffic delays would increase by almost* **500%**
- *Injuries and fatalities on Interstates would increase by* **36%** *to* **45%**
- *Maintenance costs would increase by* **80%** *to* **93%**

**While a permanent river shutdown cannot be anticipated, this case study demonstrates that the loss of river transportation would have a dramatic negative impact.**

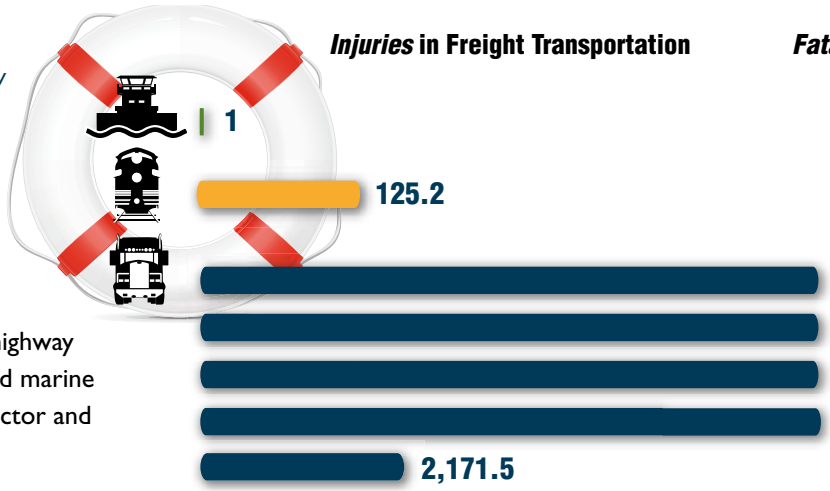
*Advantages of Inland Waterways Transport:*

# Safeguarding Our Health and the Environment

## Maintaining Safety

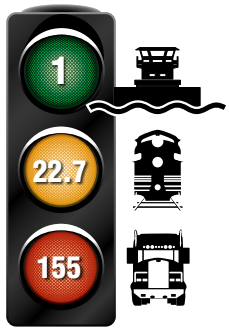
*Inland waterways transport has a low injury and fatality record compared to rail or truck.*

Safety-related statistics for all modes of freight transportation show one injury in the inland marine sector for every 125.2 in the rail sector and 2,171.5 in the highway sector, and one fatality in the inland marine sector for every 22.7 in the rail sector and 155 in the highway sector.

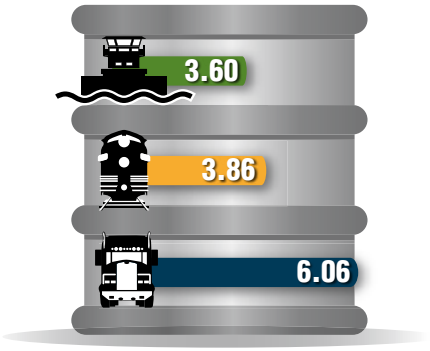



***Injuries*** **in Freight Transportation**

***Fatalities*** **in Freight Transportation**




**Rate of Spills in Gallons per Million Ton-miles**

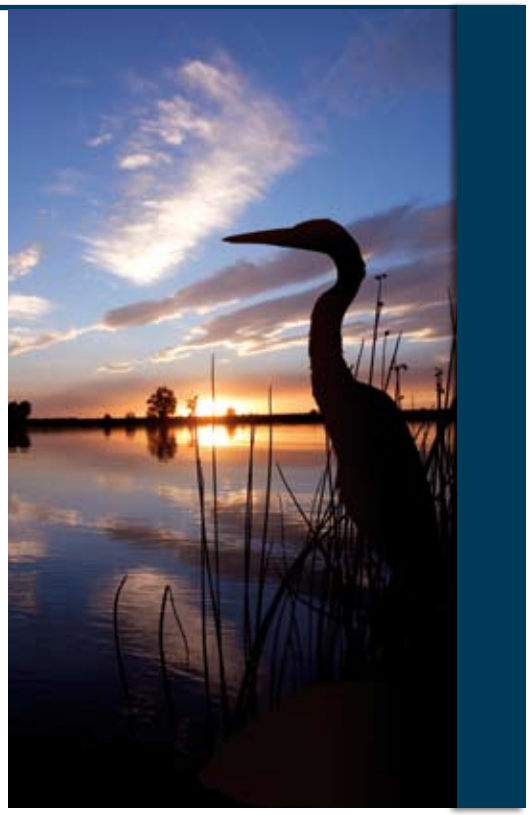



Spills of more than 1,000 gallons

## Protecting Communities

*Inland waterways transport moves hazardous materials safely.*

All transport 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 one million ton-miles, rail cars only 3.86 gallons and barges 3.6 gallons per one million ton-miles.



## Ensuring Cleaner Air

*Inland waterways transport generates fewer emissions than rail or truck.*

The emission comparison between inland towing, rail and truck transportation shows that fewer air pollutants are generated by moving products on America's inland navigation system. These pollutants include:

- Particulate matter (PM)
- Hydrocarbons (HC)
- Carbon monoxide (CO)
- Nitrogen oxides (NOx)

**Emissions (Grams/Ton-mile)**


PM = Particulate matter ▪ HC = Hydrocarbons ▪ CO = Carbon monoxide ▪ NOx = Nitrogen oxides

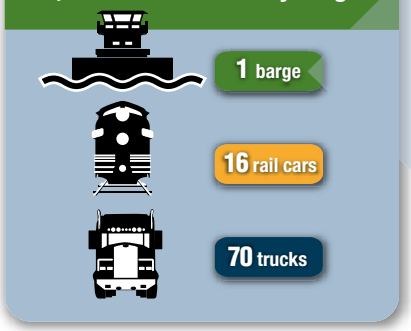
*Advantages of Inland Waterways Transport:*

# Moving Freight Efficiently Throughout America

## Increasing Cargo Capacity

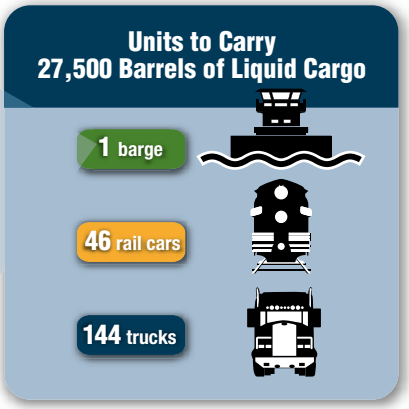
*A typical cargo barge moves much more cargo than a single truck or rail car.*

| Modal Freight Use | Standard Capacity |
|---|---|
| Barge - Liquid Bulk | 27,500 Barrels |
| Barge - Dry Bulk | 1,750 Tons |
| Rail - Bulk Car | 110 Tons |
| Highway Tractor-Trailer | 25 Tons |



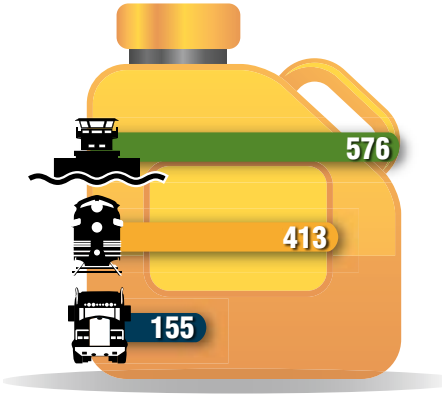

One loaded covered hopper barge carries 58,333 bushels of wheat, enough to make almost 2.5 million loaves of bread.

A loaded tank barge carries 27,500 barrels of gasoline, enough to keep about 2,500 automobiles running for an entire year.




## Moving Forward, Saving Energy

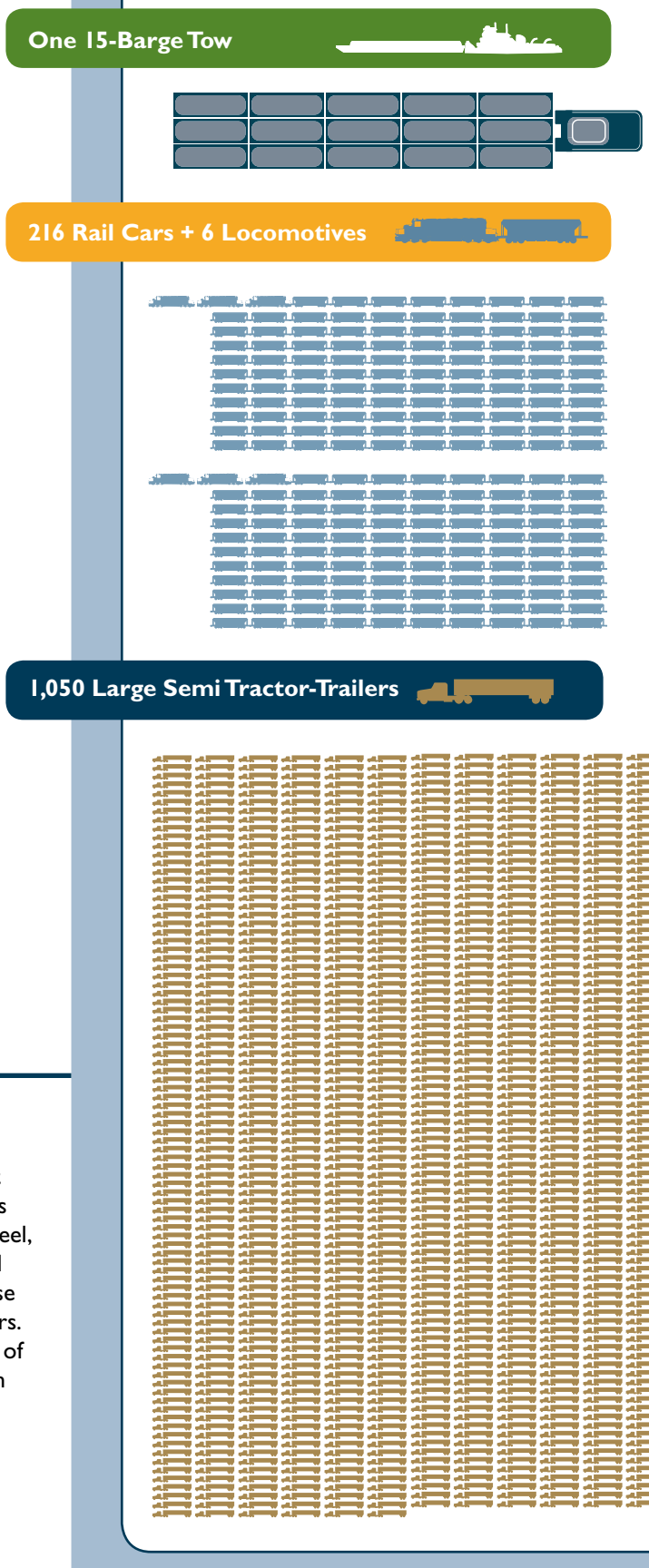
*Transporting freight by water is the most energy-efficient choice.*




**Ton-miles Traveled per Gallon of Fuel**

The most energy-efficient way to move commodities such as coal, grain, iron, steel, aggregates, petroleum and chemical products is to use the nation's navigable rivers. Barges can move one ton of cargo 576 miles per gallon of fuel. A rail car would move the same ton of cargo 413 miles, and a truck only 155 miles.

## One Common Barge Tow Carries the Load of Hundreds of Rail Cars or Trucks



# An "Inland Marine Highway" for Freight

America's inland river barge system moves freight more safely and more efficiently than rail or truck. It is a key component of the transportation network and essential to our country's economic strength.

## Connecting our communities

The inland waterways system includes about 12,000 miles of commercially navigable channels and some 240 lock sites. America's "inland marine highways" move commerce to and from 38 states throughout the nation's heartland and Pacific Northwest, serve industrial and agricultural centers and facilitate imports and exports at gateway ports on the Gulf Coast.

## Moving the nation's commodities

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 oversized or overweight equipment.

- Coal
- Iron & Steel
- Chemicals
- Petroleum
- Grain
- Aggregates
- Project Cargoes
- Intermodal Containers

## Strengthening our economy

Every year, roughly 624 million tons of waterborne cargo transit the inland waterways, a volume equal to about 14% of all intercity freight and valued at nearly $70 billion.

## America's Waterways Are Ready to Meet Growing Demands

Except for a few congested locks scheduled for replacement, our navigable inland waterways system has an abundance of unused capacity. Waterways will transport the bulk commodities needed today and tomorrow while also moving an increasing share of intermodal cargo in the years to come. By relieving growing transportation congestion with the least impact of any surface mode on air quality, public safety and the environment, waterways really are our transportation solution for the future.

This brochure summarizes the study titled "A Modal Comparison of Freight Transportation Effects on the General Public" by the Texas Transportation Institute, Center for Ports and Waterways. It was conducted over a one-year period and was peer-reviewed by independent university-based experts.

For the full report, visit our website:
www.nationalwaterwaysfoundation.org

NATIONAL WATERWAYS FOUNDATION

The mission of the National Waterways Foundation is to develop the intellectual and factual arguments for an efficient, well-funded and secure inland waterways system.

The Foundation needs your support. To find out how to get involved, learn how your organization can benefit from the foundation's research, or to make a tax-deductible donation, please call or visit our website.

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**National Waterways Foundation** 801 North Quincy Street, Suite 200, Arlington, Virginia 22203
703.373.2261 | NWF@vesselalliance.com | **www.nationalwaterwaysfoundation.org**