



US Army Corps
of Engineers®

Inland Waterway Navigation

Value to the Nation

Federal Role Supporting Navigation

As the world's leading maritime and trading nation, the United States relies on an efficient Maritime Transportation System (MTS) to maintain its role as a global power. The Federal government's involvement in navigation projects dates to the early days of the United States, when rivers and coastal harbors were the primary paths of commerce in the new country. Federal interest in navigation stems from the Commerce Clause of the Constitution and subsequent Supreme Court decisions defining the Federal government's authority to regulate commerce and navigation, and to provide navigation improvements.

Today, navigable inland waterways provide a cost-effective means for moving major bulk commodities, such as grain, coal and petroleum. Inland navigation is a key element of State and local government economic development and job-creation efforts, and is essential in maintaining economic competitiveness and national security.

The Federal agencies most directly involved in the development and operation of the Nation's navigation system are the U.S. Army Corps of Engineers and the U.S. Department of Transportation (DOT). The responsibilities of both agencies are part of their broader jurisdictions that include both maritime and inland waterways transportation. The DOT, through the U.S. Coast Guard, has responsibility for vessel and navigation safety and provides navigation aids and search and rescue services. The DOT's Maritime Administration supports the development of U.S. ports, intermodal systems, and domestic shipping.

The responsibility of the U.S. Army Corps of Engineers (the Corps) is to facilitate the safe, reliable and economically efficient movement of vessels, and it does so by constructing and maintaining navigation channels and harbors, and regulating water levels on inland waterways. The system of harbor channels and waterways developed and maintained by the Corps is an integral link in the Nation's intermodal transportation system. The inland waterway system carries one-sixth of the Nation's volume of intercity cargo. Meanwhile, on the coasts and Great Lakes, the importance of maintaining channel depths at more than 900 deep and shallow draft harbor projects is underscored by the estimate that nearly 25 percent of the nation's economic activity depends on foreign trade handled by these ports. The MTS also provides critical national defense value by supporting the mobilization and sustainability of America's military.

U.S. Inland & Intracoastal Waterways



Inland and Intracoastal Waterways

Of the 25,000 miles of inland, intracoastal and coastal waterways and channels in the United States, approximately 12,000 miles constitute the commercially active inland and intracoastal waterway system maintained by the Corps. This network includes nearly 11,000 miles of the "fuel-taxed inland waterway system." Commercial waterway operators on these designated

waterways pay a fuel tax, deposited in the Inland Waterways Trust Fund, which funds half the cost of new construction and major rehabilitation of the inland waterway infrastructure.

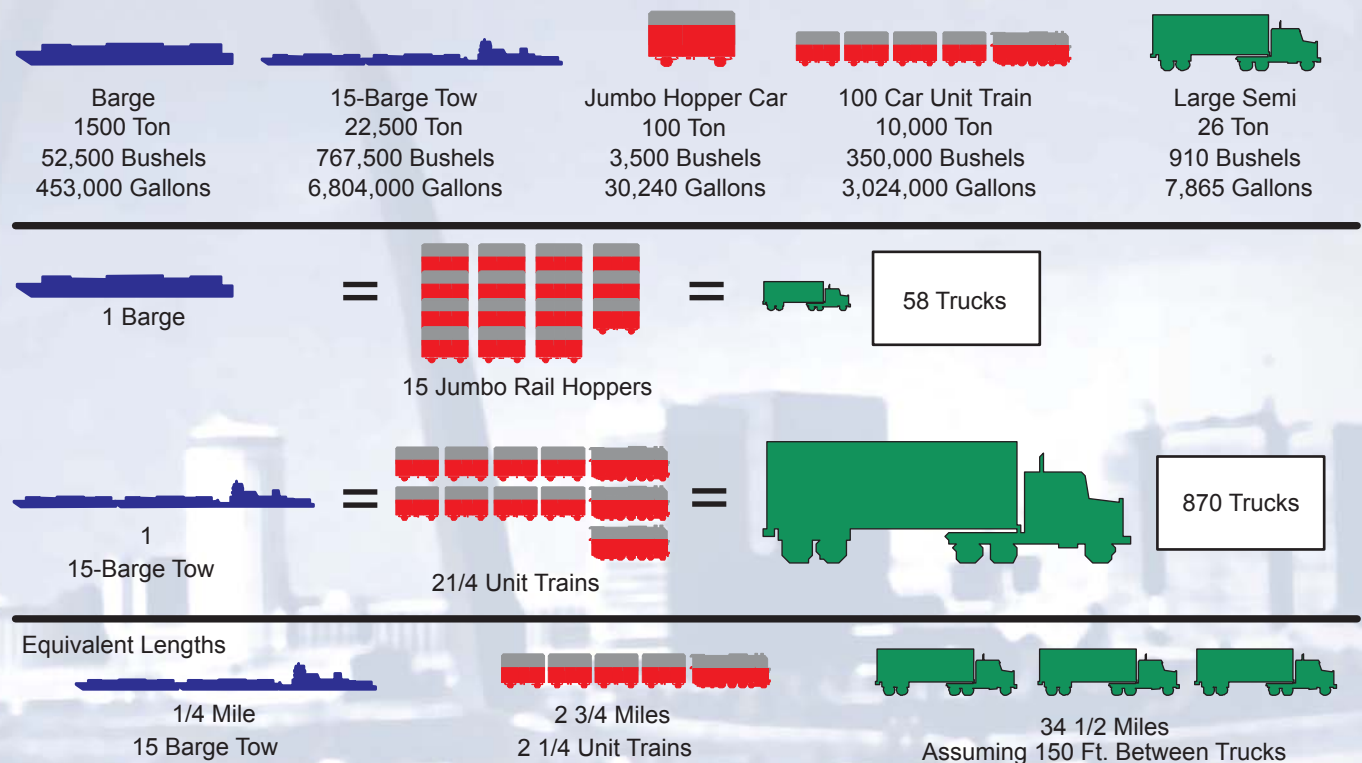
The Mississippi River and its tributaries and the Gulf Intracoastal Waterway (GIWW) connect Gulf Coast ports, such as Mobile, New Orleans, Baton Rouge, Houston, and Corpus Christi, with major inland ports, including Memphis, St. Louis, Chicago, Minneapolis, Cincinnati and Pittsburgh. The Mississippi River from Baton Rouge to the Gulf of Mexico allows ocean shipping to connect with the barge traffic, thereby making this segment vital to both the domestic and foreign trade of the United States. In the Pacific Northwest, the Columbia-Snake River System allows navigation 465 miles inland to Lewiston, Idaho.

Waterways: The Most Efficient Mode of Freight Transportation

A principal value of the inland waterways is their ability to efficiently convey large volumes of bulk commodities moving long distances. Towboats push barges lashed together to form a “tow”. A tow may consist of four or six barges on smaller waterways up to over 40 barges on the mighty Mississippi below its confluence with the Ohio. A 15-barge tow is common on the larger rivers with locks, such as the Ohio, Upper Mississippi, Illinois and Tennessee rivers. Such tows are an extremely efficient mode of transportation, moving about 22,500 tons of cargo as a single unit. As can be seen in the graphic, a single 15-barge tow is equivalent to about 225 rail cars or 870 tractor-trailer trucks. If the cargo transported on the inland waterways each year had to be moved by another mode, it would take an additional 6.3 million rail cars or 25.2 million trucks to carry the load. Imagine adding this traffic with the associated air pollution to the already congested rail lines and highways that pass through our communities.

The ability to move more cargo per shipment makes barge transport both fuel efficient and environmentally advantageous. On average, a gallon of fuel allows one ton of cargo to be shipped 59 miles by truck, 202 miles by rail, and 514 miles by barge. Carbon Dioxide emission from water transportation were 10 million metric tons less in 1997 than if rail transportation had been used. Inland waterways allow America to realize tremendous savings in fuel consumption, reduced air emissions from fuel combustion, reduced traffic congestion, fewer accidents on our rail lines and highways, and less noise and disruption in our cities and towns.

Alternate Transportation Mode Comparison

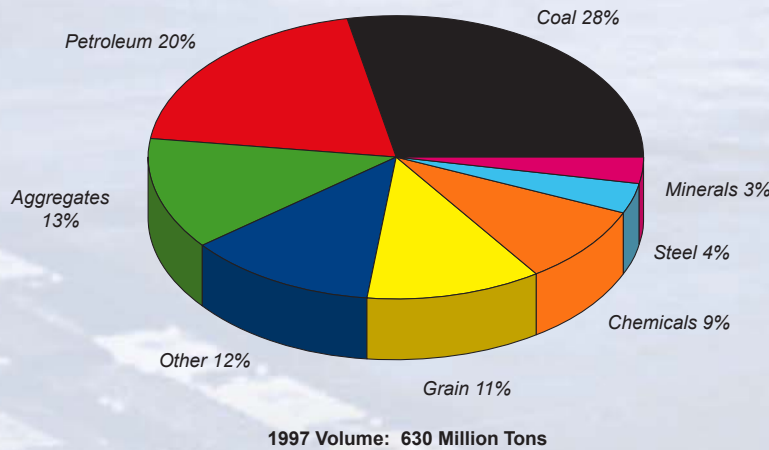


Major Commodities

Barges are well suited for the movement of large quantities of bulk commodities and raw materials at relatively low cost. The inland and intracoastal waterway system handles about 630 million tons of cargo annually – or about 17 percent of all intercity freight by volume. These are raw materials or primary manufactured products that are typically stored for further processing or consumption, or transhipped for overseas markets.

- Coal is the largest commodity by volume moving on the inland waterways. America’s utility industry depends on the inland waterways for over 20 percent of the coal they consume to produce the electricity we depend on to run our homes, offices and industries.
- Petroleum is the next largest group, including crude oil, gasoline, diesel fuel, jet fuel, heavy fuel oils and asphalt.
- Another large group includes grain and other farm products, most of which moves by waterway to ports on the Lower Mississippi or Columbia rivers for export overseas. In fact, America’s farmers depend on the inland waterways for more than 60 percent of our farm exports.
- Other major commodities include aggregates, such as stone, sand and gravel used in construction; chemicals, including fertilizers; metal and mineral ores and products, such as steel; and many other manufactured products.

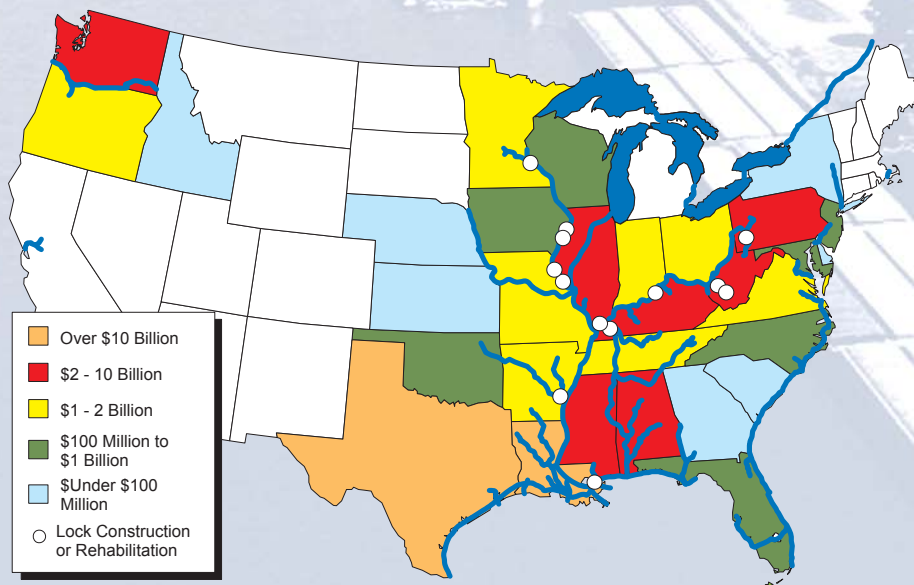
Principal Inland Waterway Commodities



Value to the Economy

Inland and intracoastal waterways directly serve 38 states throughout the nation’s heartland as well as the states on the Atlantic seaboard, the Gulf Coast and the Pacific Northwest. The shippers and consumers in these states depend on the inland waterways to move about 630 million tons of cargo valued at over \$73 billion annually. States on the Gulf Coast and throughout the Midwest and Ohio Valley especially depend on the inland and intracoastal waterways. Texas and Louisiana each ship over \$10 billion worth of cargo annually, while Illinois, Pennsylvania, West Virginia, Kentucky, Mississippi, Alabama, and Washington state each ship between \$2 billion and \$10 billion annually. Another eight states ship at least \$1 billion annually. According to research by the Tennessee Valley Authority, this cargo moves at an average transportation savings of \$10.67 per ton

Value of Inland Waterborne Trade (by State of Origin, 1997)



over the cost of shipping by alternative modes. This translates into over \$7 billion annually in transportation savings to America's economy. Virtually all American consumers benefit from these lower transportation costs.

Modernizing America's Inland Waterway Infrastructure

The nearly 12,000 miles of U.S. inland and intracoastal waterways include 191 commercially active lock sites with 237 lock chambers. Some locks have more than one chamber, often of different dimensions. These locks provide the essential infrastructure that allows tows to “stair-step” their way through the system and reach distant inland ports such as Minneapolis, Chicago and Pittsburgh. The locks can generally be categorized by three different sizes, as expressed by length. About 15 percent of the lock chambers are 1000 to 1200 feet long, 60 percent are 600-999 feet long, and 25 percent are less than 600 feet long. Lock widths are mostly 110 feet. The 1200-foot locks can accommodate a tow of 17 barges plus the towboat, while the 600-foot locks can accommodate at most eight barges plus the towboat. The lock size and tow size are critical factors in the amount of cargo that can pass through a lock in a given period of time.

Over 50 percent of the locks and dams operated by the Corps are over 50 years old. Many of the 600-foot locks on the system were built in the 1930s or earlier, including those on the Ohio, Upper Mississippi, Illinois and Tennessee rivers. These projects are approaching the end of their design lives and are in need of modernization or major rehabilitation. Since many of today's tows operate with 12 or more barges, passing through a 600-foot lock requires the tow to be “cut” into two sections to pass the lock. Such multiple cuts can be time consuming and cause long queues of tows waiting for their turn to move through the lock.

In the 1960s the Corps began to modernize the locks on the Ohio River and add 1200-foot chambers that permit a typical tow to pass in a single lockage. This modernization process continues today with the construction of a new dam with twin 1200-foot locks at Olmsted located at the confluence of the Ohio and Mississippi rivers and a second 1200-foot chamber at McAlpine Locks and Dam near Louisville. Modern 1200-foot chambers are also being constructed at Kentucky Lock on the Tennessee River and at Inner Harbor Lock on the Gulf Intracoastal Waterway at New Orleans. Other projects are underway in Pennsylvania, West Virginia, and Arkansas. In addition, several major rehabilitations are also underway. Altogether, this ongoing work represents an investment of over \$3.5 billion in inland waterway modernization that will be completed over the next decade. Half this investment will come from fuel taxes paid by the inland towing industry. These projects include not only modern navigation facilities, but also important investments in environmental restoration and management.

Several key navigation improvement feasibility studies are underway throughout the inland waterway system, including on the Upper Mississippi River and Illinois Waterway, Ohio River, the Gulf Intracoastal Waterway, the Black Warrior River and the Tennessee River. Over the next few years, these studies will identify the navigation and environmental actions needed to support the inland waterway system. While annual capital spending for the inland waterway system has averaged about \$170 million in recent years, the income stream from fuel tax revenues can support an annual capital investment program of about \$250 million without reducing the surplus in the Inland Waterways Trust Fund (whose balance was \$385 million at the end of 1999). It has been estimated that postponing waterway modernization projects has already cost the Nation in excess of \$1 billion in lost economic value. Timely completion of current inland navigation projects and justified future navigation improvements would allow America to meet the transportation challenges of the 21st Century while protecting and enhancing our Nation's treasured river heritage.

Inland Waterway Projects Underway

