RESEARCH BRIEF

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Toward greener freight: Overview of inland waterway transportation in the United States

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INTRODUCTION

Inland waterway transport (IWT) plays an important role in the U.S. freight transportation system, especially for liquid and dry bulk cargo and for products in containers.[1] The IWT system includes 12,000 miles of inland and intracoastal shallow-draft waterways with depths of 9 to 14 feet and 13,000 miles of coastal channels greater than 14 feet deep.[2] This network is mainly managed and maintained by the U.S. Army Corps of Engineers. Inland waterways connect industrial and agricultural sectors and are a vital conduit for both domestic and international trade.

This brief is an overview of waterway freight transportation development in the United States. It is based primarily on publicly available data from the Freight Analysis Framework, produced by the Bureau of Transportation Statistics with the support of the Federal Highway Administration, and the Commodity Flow Survey, a joint project of the U.S. Census Bureau and the Bureau of Transportation Statistics. We focus on IWT's role in intermodal transportation, key policy and regulatory frameworks, and the potential contributions that IWT could make to decarbonizing freight in the United States. Most of the sources we used reported freight data in U.S. short tons. When metric numbers are presented in this brief, the data has been converted using the following: 1 short ton = .907185 metric tons and 1 ton-mile = 1.459972 ton-kilometers.

1 "The Role of US Inland Waterways," Archway Marine Lighting, accessed January, 2025, https://www.archwaymarinelighting.com/inland-waterway/the-role-of-us-inland-waterways/.

2 "Navigation," U.S. Army Corps of Engineers, accessed January 10, 2025, https://www.usace.army.mil/Missions/Civil-Works/Navigation/.

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KEY FACTS

State and local economies benefit substantially from IWT. In 2021, inland waterways in the United States carried approximately 500 million tons (453.6 million metric tons) of cargo with a value of more than $158 billion and a volume equal to about 14% of all intercity freight.[3] According to the U.S. Department of Agriculture, shipping agricultural products by inland waterways saves farmers between $7 billion and $9 billion annually; water-based transport has higher capacity and lower costs compared with sending products by road or rail.[4]

Additionally, IWT emits fewer air pollutants and has a smaller carbon footprint on an energy-equivalent basis than road and rail transport. Every ton-mile of cargo transported by an inland towing barge produces fewer emissions of nitrogen oxides than rail cars and trucks (-29% and -36%, respectively), particulate matter (-29% and -35%), carbon monoxide (-28% and -66%), and hydrocarbons (-28% and -13%).[5] This mode of transport also has an advantage in fuel efficiency and cost. With 1 gallon of fuel, 1 ton of cargo (0.9 metric ton) can travel 576 miles by barge, 413 miles by rail, and 155 miles by truck.[6] For each ton-mile of shipment, a barge would only cost $0.01, while rail would cost $0.04 and a diesel truck would cost $0.12.[7]

In addition, IWT has an advantage in shipping capacity. Figure 1 shows the capacity for carrying dry cargo and liquid cargo by barge, rail car, and truck.[8] One standard dry cargo barge can carry as much freight as 70 tractor-trailer trucks and 16 rail cars. One liquid cargo barge can transport an amount equal to 46 rail cars and 144 tractor-trailers.

3 "Economic Impact by State," National Waterways Foundation, accessed January 2, 2025, https://nationalwaterwaysfoundation.org/foundation-studies/economic-impact-by-state; "Waterways System," Waterways Council, Inc., accessed January 2, 2025, https://www.waterwayscouncil.org/waterways-system.

4 Agribusiness Consulting, *Importance of Inland Waterways to U.S. Agriculture* (Agricultural Marketing Service, U.S. Department of Agriculture, 2019), https://www.ams.usda.gov/sites/default/files/media/ImportanceofInlandWaterwaystoUSAgricultureFullReport.pdf.

5 Maritime Administration, *Waterways Report – Working for America* (U.S. Department of Transportation, 2018), https://www.maritime.dot.gov/sites/marad.dot.gov/files/docs/resources/3711/waterworksrev.pdf; U.S. Environmental Protection Agency, *2024 SmartWay Online Shipper Tool: Technical Documentation*, 2024, https://www.epa.gov/system/files/documents/2024-11/420b24048.pdf.

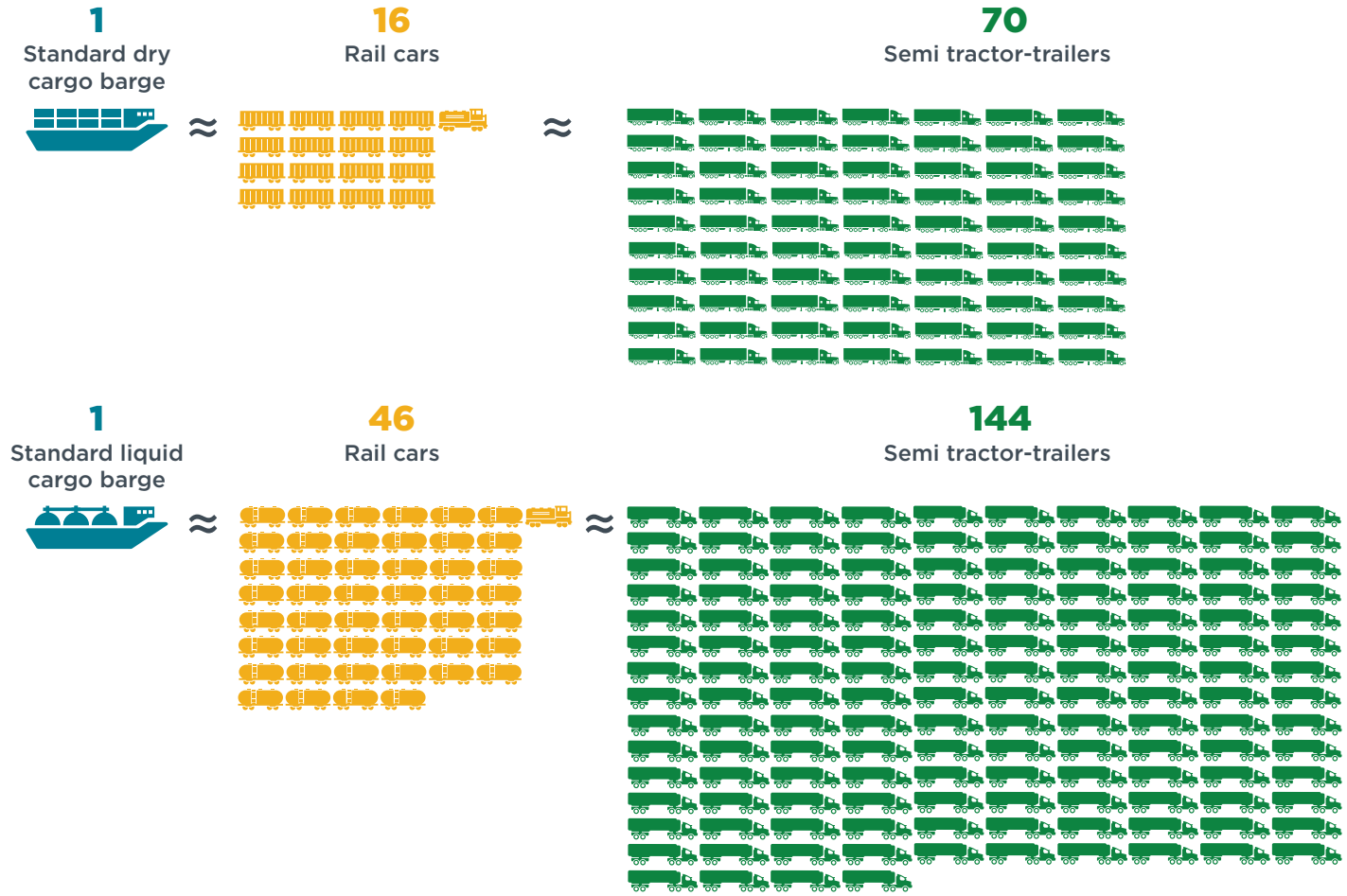
6 Maritime Administration, *Waterways Report*.

7 Tasha Keeney, "Autonomous Electric Trucks Could Disrupt Rail and Transform Logistics," *ARK Investment Management LLC*, October 10, 2017, https://www.ark-invest.com/articles/analyst-research/autonomous-trucks.

8 Maritime Administration, *Waterways Report*.

Figure 1

Bulk and liquid cargo carrying capacity of waterway barge, rail car, and on-road truck



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MAIN RIVER BASINS AND PORTS

Inland waterways are mostly concentrated on the Eastern, Midwestern, and Southern United States (Figure 2). The Mississippi River, which originates in northern Minnesota and flows more than 2,000 miles south into the Gulf of Mexico, is the most important freight corridor in the IWT system. In 2022, the Mississippi accounted for the highest tonnage of all inland rivers, transporting 257 million tons (233 million metric tons), and the highest freight turnover, about 148 billion ton-miles (216 billion ton-kilometers); the Ohio River and the Illinois River follow with 46.8 billion ton-miles (68.3 billion ton-kilometers) and 18.0 billion ton-miles (26.2 billion ton-kilometers), respectively.[9]

9 Institute for Water Resources, *2022 Cargo All Regions*, dataset, U.S. Army Corps of Engineers, 2024, https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/14573/rec/1; Bureau of Transportation Statistics, *Navigable Waterway Network Lines*, dataset, U.S. Department of Transportation, updated October 29, 2024, https://geodata.bts.gov/datasets/usdot::navigable-waterway-network-lines/explore.

Figure 2

Major U.S inland waterways and ton-miles of freight transported in 2022

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Ports situated along major rivers are key logistics hubs for multistate regions and help to transport bulk goods across the Midwest, South, and East Coast.[10] The Ports of Cincinnati-Northern Kentucky form an inland port jurisdiction that spans more than 220 miles of navigable waterways along the Ohio River, and includes five counties in Ohio and 10 in Kentucky.[11] This district handled 36.2 million tons (32.8 million metric tons) of cargo in 2022, making it the busiest inland U.S. port statistical area in the United States.[12]

10 Institute for Water Resources, *The U.S. Ports and States Data*, database, U.S. Army Corps of Engineers, 2024, and https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/14425.

11 Bureau of Transportation Statistics, Ports of Cincinnati-Northern KY (U.S. Department of Transportation, 2017), https://www.bts.gov/sites/bts.dot.gov/files/portprofiles/2017/Cincinnati-Northern%20KY.pdf.

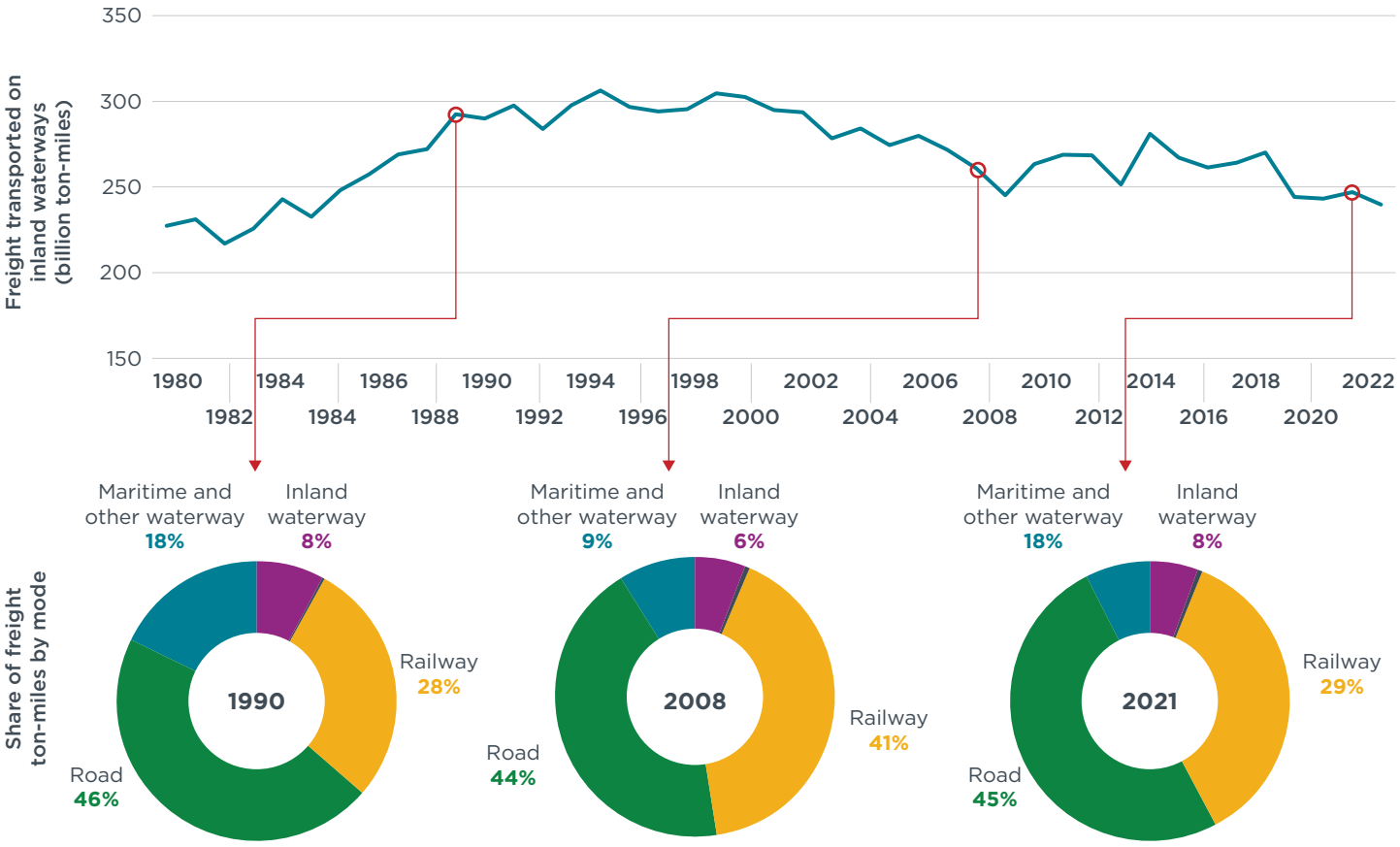
12 Institute for Water Resources, Waterborne Commerce Statistics Center, *CY 2022 Waterborne Tonnage by State*, dataset, U.S. Army Corps of Engineers, 2022, https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/14589/rec/3.

TRENDS IN TRANSPORT ACTIVITY

Figure 3 shows that inland waterways have maintained a 6%–8% share of freight transportation in the United States from 1980 to 2022—compared with a 2% share in the European Union—even as the total number of ton-miles has fluctuated.[13] Total freight turnover on U.S. IWT in 2022 was 240 billion U.S. ton-miles (350 billion ton-kilometers), which is 22% lower than IWT's peak year for ton-miles in 1995.[14] The significant drop in ton-miles in the years between 2000 and 2010 aligns with two recessions, one in 2000 and 2001 and the other from approximately 2007 to 2010.[15]

Figure 3

Inland waterway freight by ton-miles, 1980–2022, and modal shares in 1990, 2008, and 2021



Note: The Bureau of Transportation Statistics classifies domestic water transportation within the United States under the coastwise, lakewise, internal, and intraport categories. In this figure, inland waterway represents the internal category. The Bureau of Transportation Statistics also measures the travel of foreign ships upon entering U.S. waterways, and those are maritime in this figure. Freight shares for air and pipeline are not included here.

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13 Tianlin Niu, Zhenying Shao, and Geyi Zhu, *Toward Greener Freight: Overview of Inland Waterway Transport for Freight in the European Union* (International Council on Clean Transportation, 2024), https://theicct.org/publication/overview-of-inland-waterway-transport-for-freight-eu-aug24/; Bureau of Transportation Statistics, U.S. Ton-Miles of Freight (National Transportation Statistics, Table 1-50), U.S. Department of Transportation, accessed Jan 10, 2025, https://www.bts.gov/content/us-ton-miles-freight.

14 Bureau of Transportation Statistics, U.S. Ton-Miles of Freight.

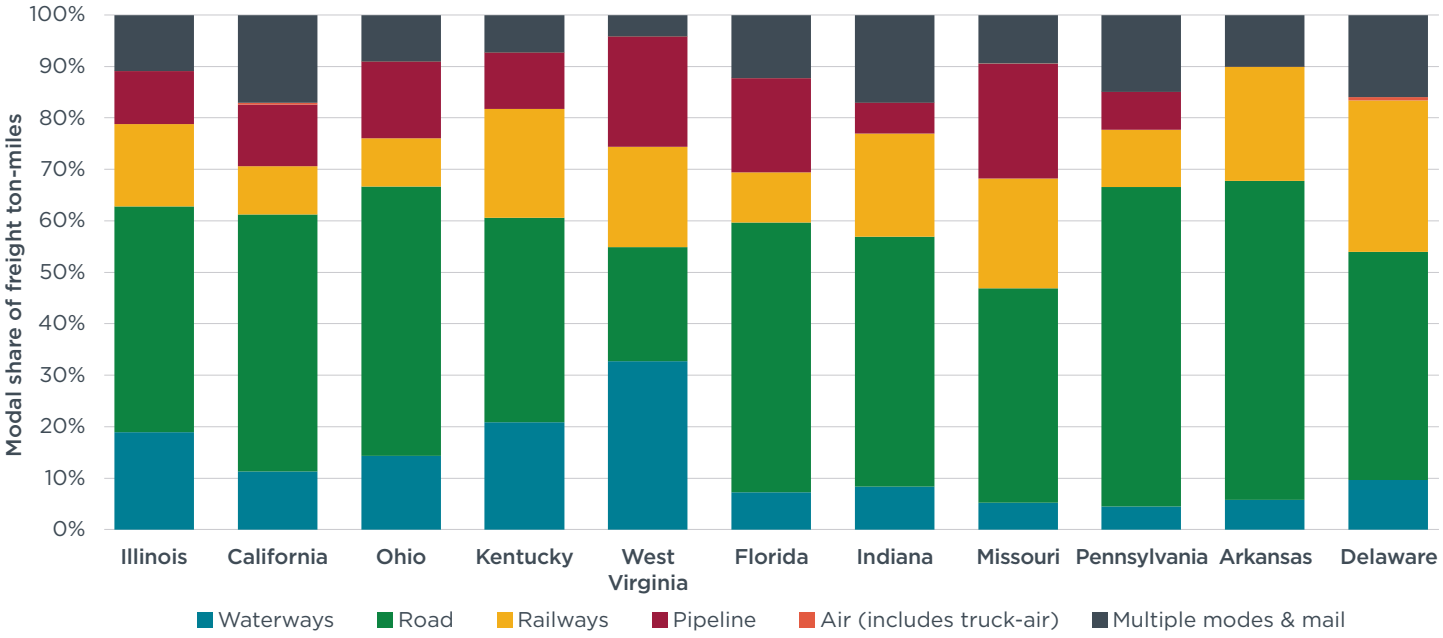
15 Zhenying Shao et al., *Toward Greener and More Sustainable Freight Systems: Comparing Freight Strategies in the United States and China* (International Council on Clean Transportation, 2022), https://theicct.org/publication/china-us-freight-systems-jan22/.

Among the categories for domestic waterborne transport, inland accounts for the largest share of freight tonnage, hauling approximately 466 million tons (422 million metric tons) in 2021. The next largest category is coastal at 136 million tons (123 million metric tons), and it is followed by intraport at 79 million tons (71 million metric tons).[16]

Rivers and other waterways play different roles in different segments of the U.S. domestic freight transportation system (Figure 4).[17] West Virginia, Kentucky, and Illinois rely heavily on water transport to move coal and agricultural products. States like California and Indiana make significant use of multiple modes, which reflects a demand for integrated, high-speed freight handling through complex supply chains and containerized freight.

Figure 4

Share of freight transported by mode for the 10 states with the most ton-miles of inbound and outbound domestic freight in 2023



Notes: The Bureau of Transportation Statistics includes mail in the multiple modes category because shippers using parcel delivery services typically do not know which modes were used to transport their products. Freight transported by air represented less than 0.1% of ton-miles in most states, 0.37% in California, and 0.62% in Delaware.

16 Bureau of Transportation Statistics, U.S. Waterborne Freight (National Transportation Statistics, Table 1-56), U.S. Department of Transportation, accessed January 10, 2025, https://www.bts.gov/content/us-waterborne-freight.

17 Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework 5 Summary Statistics, accessed January 10, 2025, https://faf.ornl.gov/faf5/SummaryTable.aspx.

ECONOMIC IMPACTS

Figure 5 shows changes in IWT in terms of total tonnage, ton-miles, value, and average hauling distance for the five most recent U.S Commodity Flow Survey years (1997, 2002, 2007, 2012, and 2017) and the estimated result of the survey in 2022; it also charts the national gross domestic product (GDP).[18] Both total tonnage and ton-miles on inland waterways continued to decrease from 1997 to 2022, with total IWT tonnage falling by 26% and total ton-miles by 18%. Meanwhile, the average hauling distance increased 11%.[19]

Figure 5

Key indicators for inland waterway freight, 1997–2022

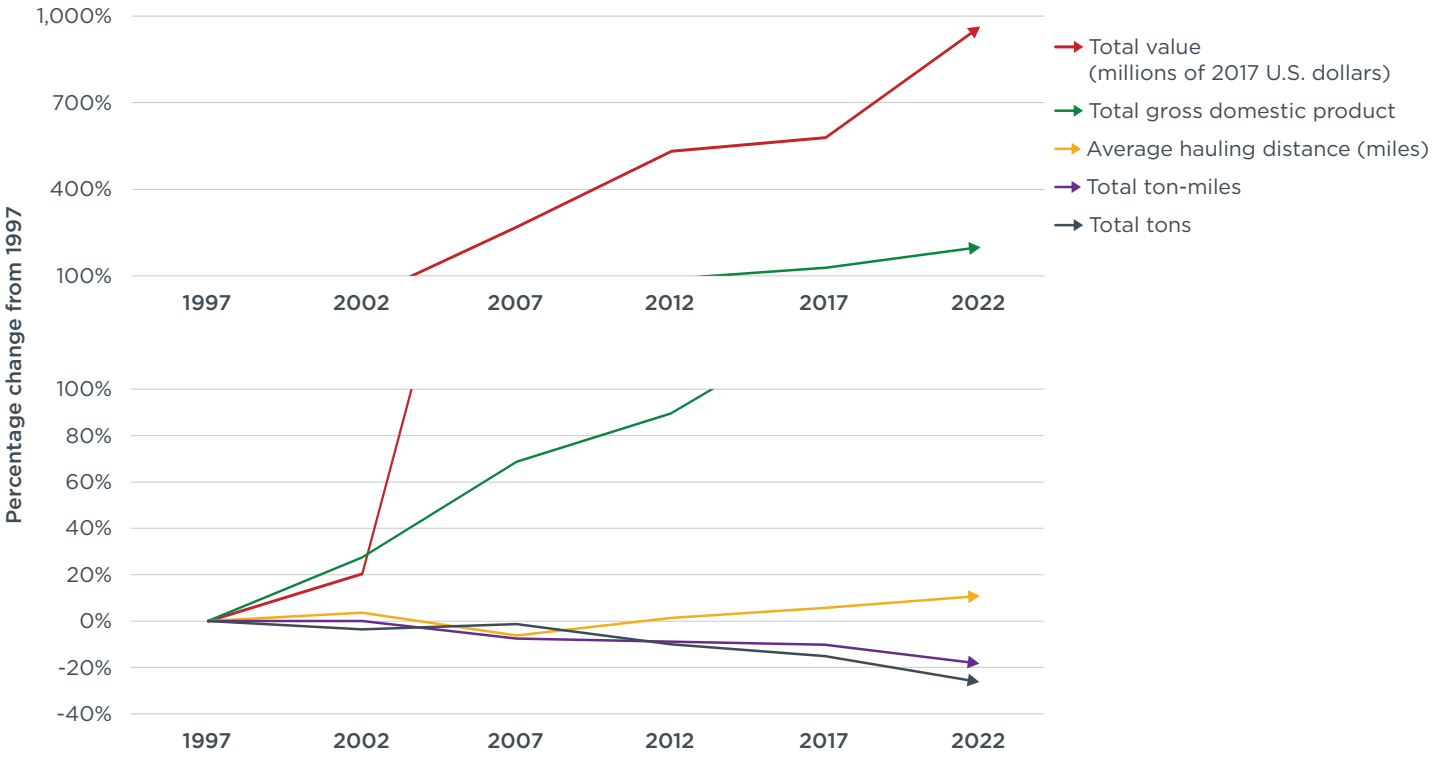


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Figure 5 also shows that even as total ton-miles and number of tons fell, the value of commodities shipped by inland waterways surged in 2007, 2012, and 2022. This was mainly caused by the increasing demand for fuel oils, petroleum, and other fossil products, as shown in Figure 6.[20] Basic chemicals accounted for the greatest share of commodity value shipped via inland waterway before 2007, but fuel oils, gasoline, crude petroleum, and natural gas dominated from 2012 through 2022. By 2017, coal was no longer among the top 10 commodities by value shipped on inland waterways.

18 Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework Version 5.6.1, database, U.S. Department of Transportation, accessed January 10, 2025, https://faf.ornl.gov/faf5/Default.aspx; Bureau of Economic Analysis, Gross Domestic Product, dataset, U.S. Department of Commerce, accessed January 10, 2025, https://www.bea.gov/resources/learning-center/what-to-know-gdp.

19 Bureau of Transportation Statistics, Average Length of Haul, Domestic Freight and Passenger Modes (National Transportation Statistics, Table 1-38), dataset, U.S. Department of Transportation, accessed January, 2025, https://www.bts.gov/content/average-length-haul-domestic-freight-and-passenger-modes-miles.

20 Bureau of Transportation Statistics and Federal Highway Administration, *Freight Analysis Framework Version 5.6.1*, database, U.S. Department of Transportation, accessed January 10, 2025, https://faf.ornl.gov/faf5/Default.aspx

Figure 6

Top 10 commodities transported on U.S. inland waterways by value, 1997–2022

Note: Share is based on value in 2017 U.S. dollars.

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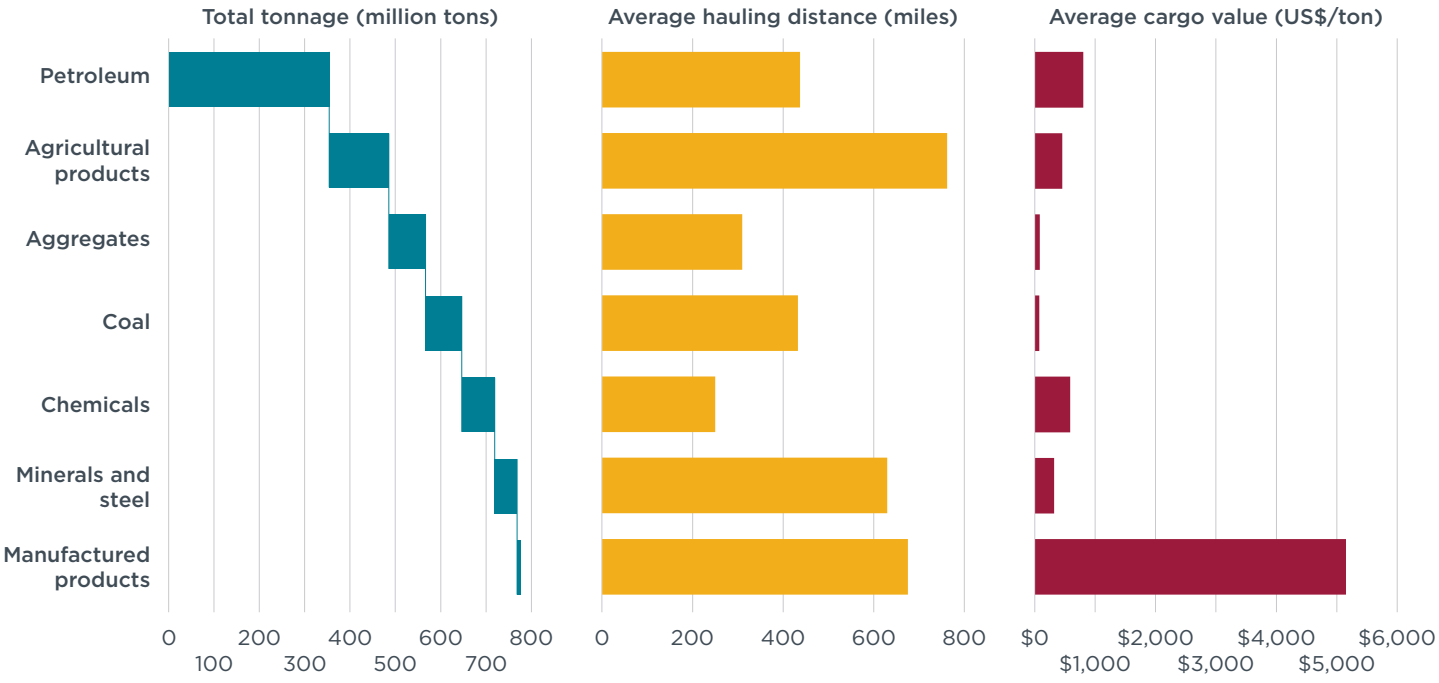
COMMODITIES SHIPPED

Main commodity freight amount and value

Figure 7 shows the total tonnage, average hauling distance, and average cargo value by integrated commodity categories in the United States in 2022.[21] We integrated the 42 detailed commodity types from the Freight Analysis Framework into seven general commodity categories according to the U.S. Army Corps of Engineers report, with slight adjustments to category names.[22] Petroleum dominates total tonnage of IWT with a 46% share. The average hauling distance for petroleum is 437 miles, and the average cargo value is $801 per ton. Agricultural products follow with a 17% share of total tonnage; agricultural products also have the longest average hauling distance at 762 miles but are in fourth place for average value at about $453 per ton. Manufactured products have the lowest share in tonnage but the highest value at $5,153 per ton of cargo. Manufactured products include the top five commodities for average value: transport equipment, tobacco products, motorized vehicles, textiles and leather, and electronics. Coal—valued at $72 per ton—ranked fourth in total freight tonnage with a 10% share.

Figure 7

Total tons, hauling distance, and value of commodities transported on U.S. inland and coastal waterways in 2022



21 Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework Version 5.6.1, database, U.S. Department of Transportation, accessed January 10, 2025, https://faf.ornl.gov/faf5/Default.aspx; Bureau of Transportation Statistics, *U.S. Ton-Miles of Freight* (National Transportation Statistics, Table 1-50), U.S. Department of Transportation, accessed January 10, 2025, https://www.bts.gov/content/us-ton-miles-freight; U.S. Army Corps of Engineers, *Inland Waterway Navigation: Value to the Nation* (2000), https://www.mvp.usace.army.mil/Portals/57/docs/Navigation/InlandWaterways-Value.pdf.

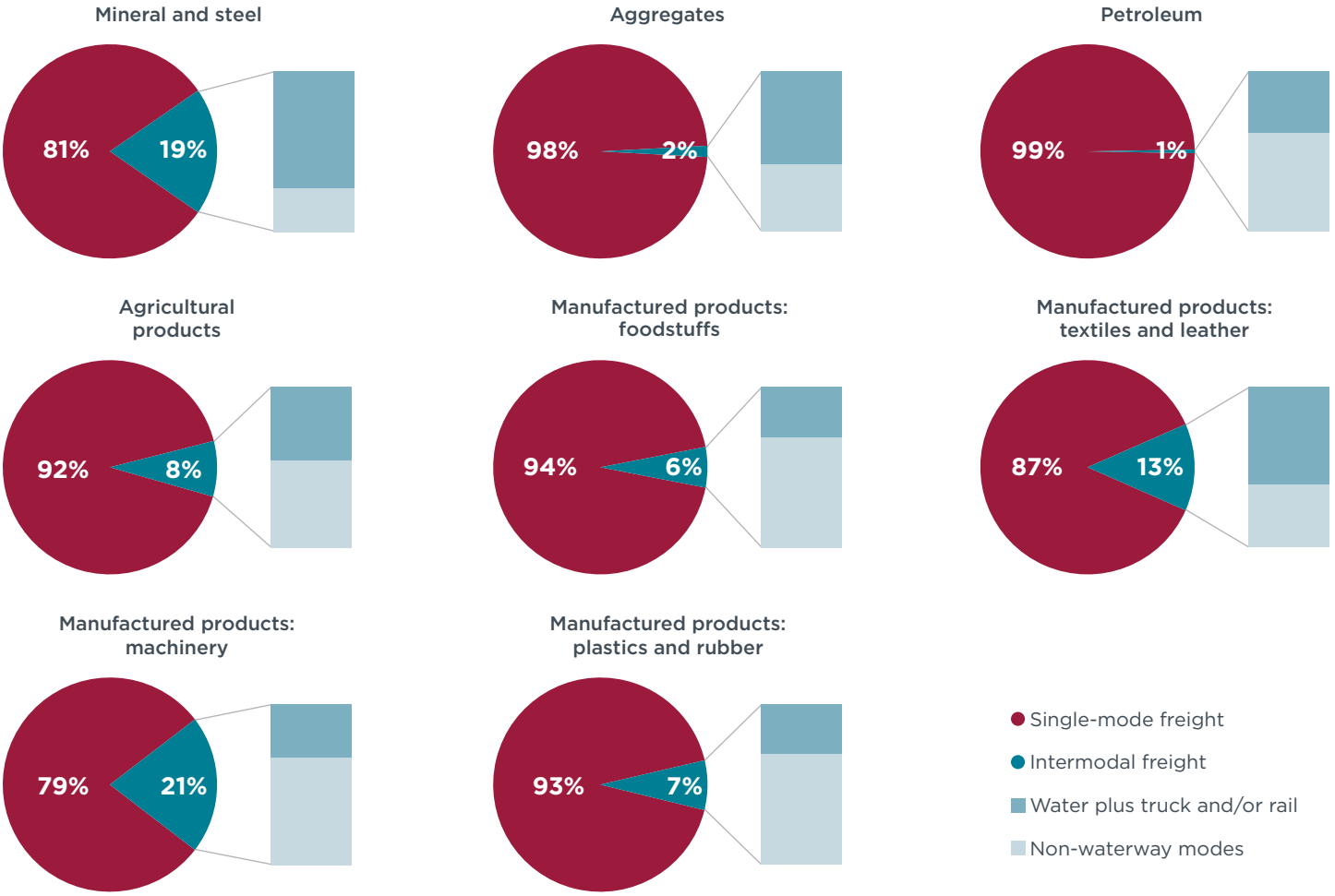
22 U.S. Army Corps of Engineers, *Inland Waterway Navigation.*

Main commodities for intermodal IWT

Intermodal transport is cargo shipped in containers or other intermodal units using at least two freight modes. As shown in Figure 8, a high percentage of minerals and steel and some manufactured products like machinery are shipped by water and rail or by water and truck.[23] Waterways are also involved in a relatively high portion of intermodal transportation of agricultural products. Some other high-value goods like electronics tend to use other modes like air or road for certain segments because they are faster.

Figure 8

Share of ton-miles shipped by intermodal freight for selected commodities in 2017



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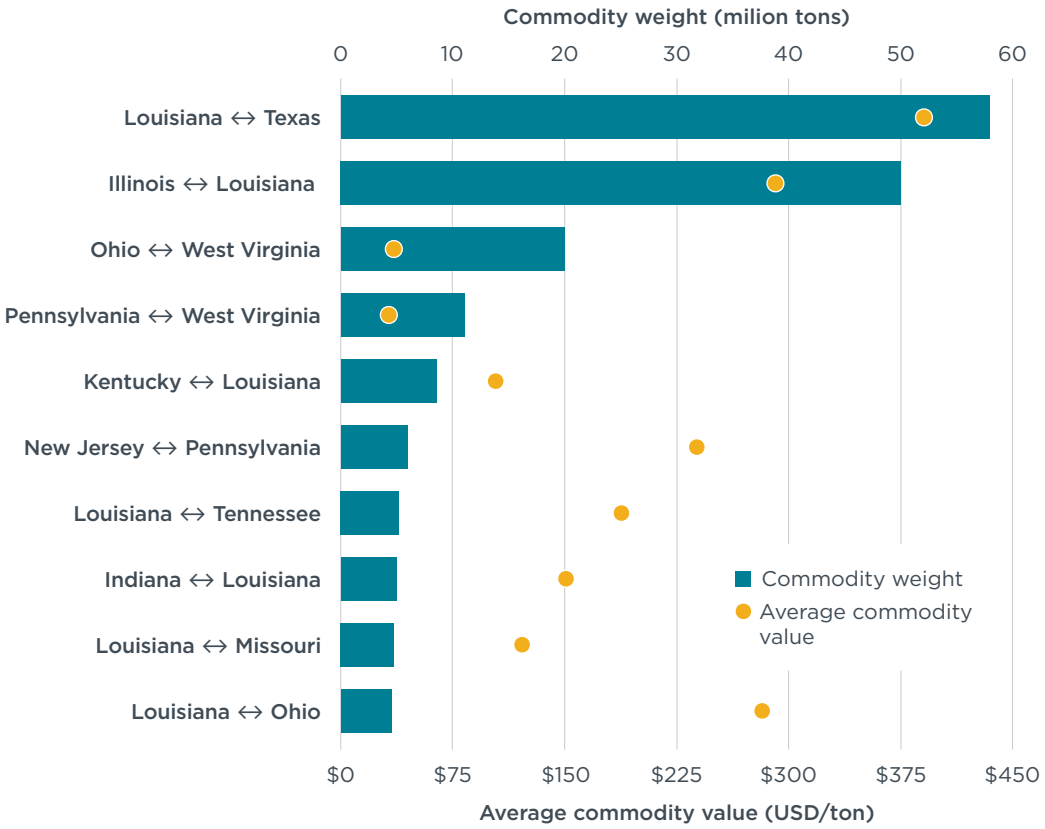
Commodities on main inland waterway freight corridors

Louisiana plays a central role in U.S. IWT, as it is where the Mississippi River connects with the Gulf of Mexico. More than 50 million tons of commodities were transported by inland waterway between Louisiana and Texas in 2017, the highest IWT by weight

23 U.S. Census Bureau and Bureau of Transportation Statistics, *Geographic Area Series: Shipment Characteristics by NAICS by Mode by Commodity for the United States: 2017*, dataset, 2017 Commodity Flow Survey, accessed November 2, 2024, https://data.census.gov/cedsci/table?q=cf1700a24&hidePreview=true&tid=CFSAREA2017.CF1700A24.

between any two states.[24] The second-highest IWT was between Louisiana and Illinois; the freight transported between Louisiana and Texas and between Louisiana and Illinois consisted primarily of bulk, lower-value goods, as indicated by relatively modest total commodity value of about $20 billion and $15 billion in 2017, respectively. Figure 9 shows the 10 busiest state pairs in waterway transportation by commodity weight, along with the corresponding value per ton.[25]

Figure 9
Top 10 state pairs by weight of inland waterway freight transportation in 2017



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The share of commodities shipped by IWT between states varies considerably. Petroleum accounted for 81% of the total tonnage shipped by IWT between Louisiana and Texas, followed by chemicals at 19%. Coal accounted for 98% of the total tonnage between West Virginia and Ohio. Waterway transport between Louisiana and Illinois showed a mix of commodity types, with 75% agricultural products, 11% chemicals, 5% petroleum, 5% manufactured products, 4% mineral and steel, and about 0.2% coal.

24 Federal Highway Administration, Freight Analysis Framework (FAF): Data Visualization Tool, Top State Freight Pairs, database, U.S. Department of Transportation, accessed January 10, 2025, https://explore.dot.gov/t/FHWA/views/FAF5_5_1VisualizationFinalv1_1_09_14_2023/StateZoneFreightPairsDashboard?%3Aembed=y&%3Aiid=2&%3AisGuestRedirectFromVizportal=y&%3Atabs=n.

25 Federal Highway Administration, Freight Analysis Framework.

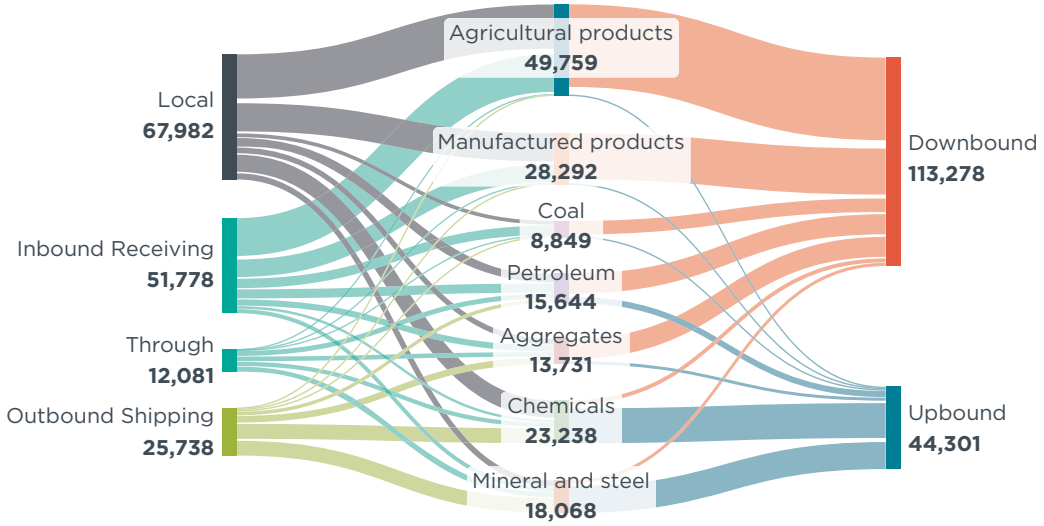
Twelve states in the Upper Mississippi River System rely on the river to carry commodities to Louisiana. In 2020, 165.5 million tons of freight moved between these 12 states and Louisiana, with more than half of this freight moving by water.[26]

Low water levels triggered by drought conditions can have a large impact on both the cost and timing of shipping commodities on the Mississippi. In the fall of 2022, dredging to maintain a navigable channel closed sections of the river and led to a backup of thousands of barges; low water also reduces the weight each barge can carry and the number of barges that can be combined in a single tow.[27]

Figure 10 shows the flow of goods on the Mississippi River in 2021.[28] Three-fourths of all freight was transported downbound, with the current of the river. Agricultural products and manufactured products were the top two commodities in terms of ton-miles on the Mississippi River, and the largest volume of goods was distributed locally.

Figure 10

Flow of commodities on the Mississippi River by millions of ton-miles in 2021



INLAND WATERWAY VESSELS AND INFRASTRUCTURE

Vessels

In 2022, there were 41,500 U.S.-flagged vessels operating on inland waterways, shown in Figure 11.[29] As required by the Jones Act of 1920, only U.S.-flagged vessels may carry cargo between U.S. ports. Except for foreign vessels delivering cargo directly from an overseas port, shipping on inland waterways is entirely conducted by U.S.-flagged

26 "Low Water on the Mississippi Slows Critical Freight Flows," Bureau of Transportation Statistics, U.S. Department of Transportation, November 16, 2022, https://www.bts.gov/data-spotlight/low-water-mississippi-slows-critical-freight-flows#:~:text=In%202020%2C%20the%20river%20carried,and%20Louisiana%20(figure%201).

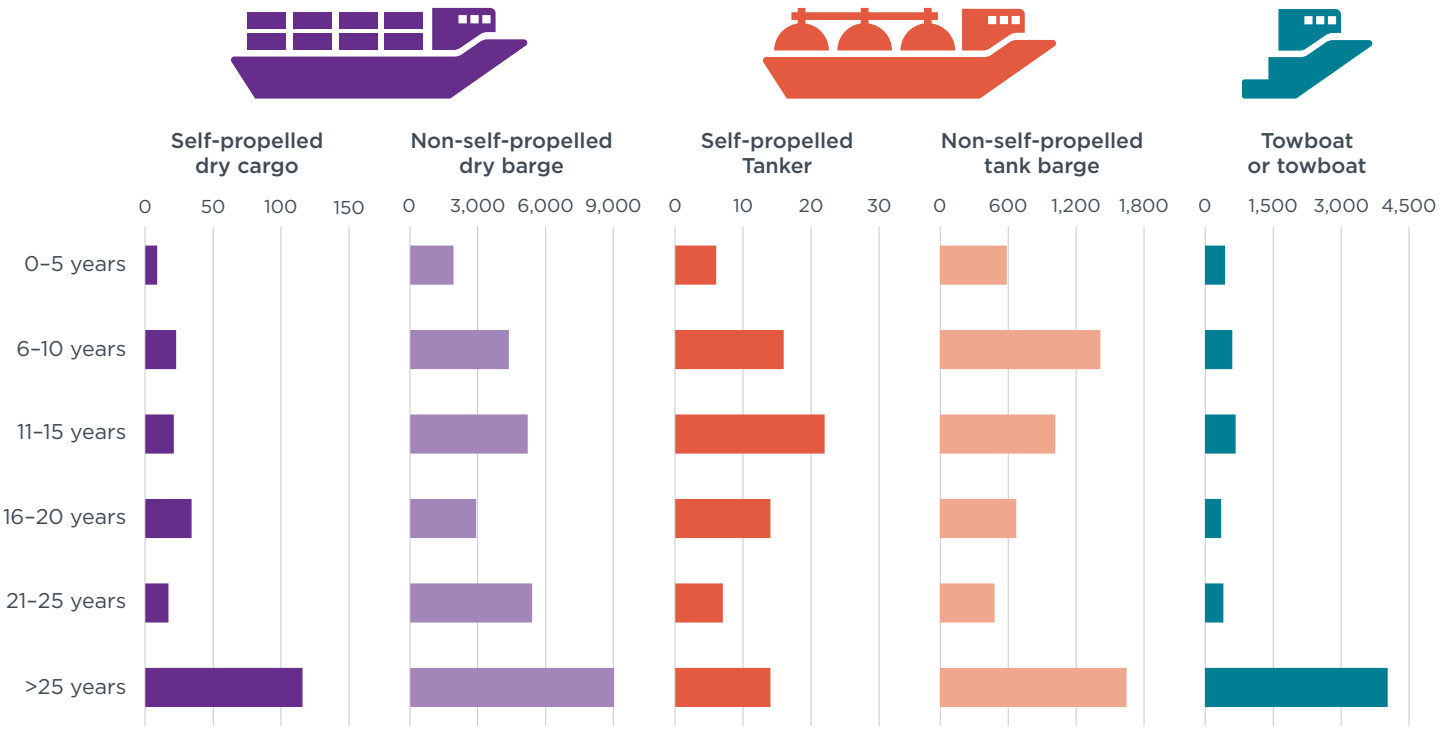
27 Bureau of Transportation Statistics, "Low Water on the Mississippi."

28 Institute for Water Resources, *Waterborne Cargo and Trips Data Files: Cargo 2021 All Regions, Trips 2021 All Regions*, database, U.S. Army Corps of Engineers, accessed December 28, 2024, https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll2/id/12773%3Cbr%20/%3E.

29 Bureau of Transportation Statistics, *U.S. Flag Vessels by Type and Age* (National Transportation Statistics, Table 1-34), U.S. Department of Transportation, accessed January, 2025, https://www.bts.gov/content/us-flag-vessels-type-and-age.

vessels. Non-self-propelled barges for carrying dry cargo are the most numerous vessels on inland waterways, numbering approximately 28,902 in 2022, compared with 5,815 non-self-propelled tank barges for carrying liquid cargo. Among self-propelled vessels, there were 220 dry cargo vessels, 79 tankers, and 6,484 towboats and tugs in 2022.[30] As shown in Figure 11, more than 50% of self-propelled dry cargo vessels and towboats or tugboats have been in service more than 25 years, and less than 10% of vessels are under 6 years old across all categories.

Figure 11
Inland waterway fleet by type and age in 2022



Infrastructure

Table 1 summarizes inland waterway infrastructure over two decades, including ports, dams and cargo handling docks, and locks.[31] The number of ports handling more than 250,000 tons of cargo declined between 2000 and 2010, along with the number of dams and cargo handling docks, but then rebounded over the following 10 years. The decline corresponded with recessions, while recent investments have helped promote waterway transport.[32] Miles of navigable waterways have remained constant, ensuring continued support for inland water transportation. A key challenge is the deterioration of infrastructure, which can result in unplanned system closures; the average age of

30 Bureau of Transportation Statistics, *U.S. Flag Vessels*.

31 Bureau of Transportation Statistics, *Transportation Statistics Annual Report 2022* (U.S. Department of Transportation, 2022), https://doi.org/10.21949/1528354

32 Bureau of Transportation Statistics, *Transportation Statistics Annual Report 2016* (U.S. Department of Transportation, 2016), https://www.bts.gov/sites/bts.dot.gov/files/docs/TSAR_2016.pdf; Ricardo J.Sanchez and Gabriel Perez Salas, "The Economic Crisis and the Maritime and Port Sector," *Facilitation of Trade and Transport in Latin America and The Caribbean*, 271, no. 3 (2009), https://repositorio.cepal.org/server/api/core/bitstreams/296d2ee6-d0a3-407d-8159-38ce3dd09bf5/content.

locks and dams are both more than 50 years. Delays cost up to $739 per hour for an average tow, or $44 million per year.[33]

Table 1

Infrastructure on U.S. inland waterways, 2000–2020

Item	2000	2010	2018	2019	2020
Ports (handling > 250,000 tons annually)	197	178	181	185	192
Waterway facilities (including dams and cargo handling docks)	9,309	8,060	8,237	8,250	8,334
Miles of navigable waterways	25,000	25,000	25,000	25,000	25,000
Lock chambers	276	239	239	237	237
Lock sites	230	193	193	192	192

U.S. IWT POLICIES

TRANSPORTATION DECARBONIZATION TARGETS

In January 2023, the Departments of Energy, Transportation, Housing and Urban Development, and the Environmental Protection Agency (EPA) released the U.S. National Blueprint for Transportation Decarbonization, a landmark interagency framework of strategies and actions to remove all emissions from the transportation sector by 2050.[34] This is a first-of-its-kind strategy to decarbonize the entire U.S. transportation sector, and it offers a whole-of-government approach to addressing the climate crisis and meeting the goals of a 100% net-zero electrical grid by 2035 and net-zero carbon emissions by 2050. According to the Fiscal Year 2022–2026 Strategic Plan by the U.S. Department of Transportation (DOT), overall targets for the U.S. transportation sector include reducing transportation emissions in line of economy-wide net-zero goals and ensuring that benefits reach historically disadvantaged communities.[35]

REGULATORY FRAMEWORK FOR INLAND WATERWAYS

The U.S. regulatory framework includes laws, regulations, and agencies at the federal level that oversee various aspects of IWT, including safety, infrastructure, and environmental protection. The primary legislation governing IWT is the Rivers and Harbors Act of 1899 and the Water Resources Development Act. These laws authorize the U.S. Army Corps of Engineers (USACE) to regulate and maintain the nation's waterways and infrastructure. The USACE is responsible for maintaining navigable channels, constructing and maintaining locks and dams, and ensuring the safety and

33 American Society of Civil Engineers, *2021 Report Card for America's Infrastructure: Inland Waterways*, 2021, https://infrastructurereportcard.org/cat-item/inland-waterways-infrastructure/; Bureau of Transportation Statistics, *Transportation Statistics Annual Report 2024* (U.S. Department of Transportation, 2024), https://www.bts.gov/sites/bts.dot.gov/files/2024-12/TSAR-2024_Web_123024-1644.pdf.

34 U.S. Department of Energy et al., *The U.S. National Blueprint for Transportation Decarbonization: A Joint Strategy to Transform Transportation*, 2023, https://www.energy.gov/sites/default/files/2023-01/the-us-national-blueprint-for-transportation-decarbonization.pdf.

35 U.S. Department of Transportation, *U.S. Department of Transportation Strategic Plan FY 2022-2026*, 2022, https://www.transportation.gov/mission/us-dot-strategic-plan-fy-2022-2026.

efficiency of the waterways. The U.S. Coast Guard regulates vessel safety, navigation, and environmental protection on U.S. waterways, including the inland waterways; it enforces regulations related to vessel inspection, crew licensing, and pollution prevention. Meanwhile, EPA is responsible for enforcing environmental regulations related to water quality and pollution control on U.S. waterways and DOT works to improve the efficiency and safety of waterway transportation through infrastructure investments and regulatory oversight.

Apart from these, state-level agencies also play vital roles in keeping the system running smoothly. Agencies such as the Illinois Department of Transportation and the Louisiana Department of Transportation and Development manage crucial routes like the Illinois Waterway and the Mississippi River, while Kentucky Transportation Cabinet and the Texas Department of Transportation oversee key river systems for transporting bulk goods and petrochemicals.

POLICIES AND INITIATIVES FOR IWT

Below are details of some key policies to enhance inland water transport in the United States:

- **Fixing America's Surface Transportation (FAST) Act**, signed into law in December 2015, authorized $305 billion over fiscal years 2016 through 2020, including for statistics programs related to major U.S. inland ports and for freight projects involving inland waterways and smaller coastal ports. It also required DOT to develop a National Freight Strategic Plan to address multimodal freight transportation, and the Plan promotes the integration of various transportation modes, including inland waterways, to create a seamless and efficient freight transportation network.
- **Water Resources Development Act (WRDA)**, updated biennially, authorizes various projects managed by USACE to improve and maintain water infrastructure, including inland waterways. The modern series of WRDA bills began in 1974, with the objective of addressing a wide range of water resource challenges beyond navigation, including flood risk management, environmental restoration, and water supply. The 1986 WRDA was a landmark legislation for U.S. waterway infrastructure and one of its key provisions was the establishment of the Inland Waterways Trust Fund. The WRDA of 2024 focused on funding to improve the nation's ports, harbors, inland waterway navigation, and other aspects of water resources infrastructure.[36]
- **Infrastructure Investment and Jobs Act (IIJA)**, also known as the Bipartisan Infrastructure Law, is a federal statute signed into law in November 2021.[37] By November 2023, about $400 billion from the bill was allocated to more than 40,000 projects related to infrastructure, transport, and sustainability. The IIJA invests over $16.7 billion to improve infrastructure at coastal ports, inland ports and waterways, and land ports of entry along our border, and the focus is on modernizing ports, locks, and dams to enhance the efficiency and reliability of inland water transport, to strengthen the competitiveness of the IWT system. In addition to the economic benefits, the IIJA's investments in inland waterways are expected to have positive environmental impacts. By improving the efficiency of

36 "Water Resources Development Act of 2024," House Committee on Transportation and Infrastructure, updated January 4, 2025, https://transportation.house.gov/wrda-2024/.

37 Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, 135 Stat. 429 (2021). https://www.govinfo.gov/content/pkg/PLAW-117publ58/pdf/PLAW-117publ58.pdf.

waterborne transport, the act can help reduce greenhouse gas emissions and ease congestion on roads and railways, leading to a more sustainable transportation system. Overall, the IIJA's provisions for inland waterways represent a significant step toward modernizing the nation's infrastructure and ensuring the long-term viability of waterborne transportation in the United States.

- **Navigation and Ecosystem Sustainability Program**, managed by the USACE, is focused on upgrading the lock and dam infrastructure in the Upper Mississippi River System, including the replacement and rehabilitation of aging infrastructure and increasing capacity.[38] One feature of the program is extensive stakeholder engagement, which includes environmental groups and local communities.
- **The Inland Waterways Trust Fund** was established to direct more money toward the construction and rehabilitation of navigation projects on the inland and coastal waterways of the United States.[39] It is funded primarily through a tax on diesel fuel used by commercial vessels operating on approximately 11,000 miles of designated inland waterways, and the current tax rate is 29 cents per gallon. This tax revenue collected is used to finance up to 50% of the costs of construction and major rehabilitation projects on inland waterways, with the remaining costs covered by federal appropriations.

SUMMARY

Inland waterways play an important role in the national freight transportation system in the United States. About 8% of U.S. freight each year is moved by IWT, and this mode is uniquely positioned to handle commodities such as agricultural products, chemicals, and bulk goods. The strategic role of IWT in facilitating efficient and cost-effective freight movement is supported by a robust data infrastructure that includes detailed monitoring of commodity flows, fuel consumption, and emissions associated with freight operations. This data offer valuable insights that help to improve efficiency and reduce the environmental impact of freight transportation via IWT.

While IWT maintains a steady role within the U.S. freight sector, shifts in the broader economy and supply chains over recent years have led to a change in the types of commodities being transported along inland waterways. At the same time, the IWT fleet is aging, and the infrastructure supporting IWT, including locks, dams, and ports, is increasingly outdated. Despite some efforts to retire older, less efficient vessels, current policies lack a strong focus on expanding IWT capacity, restructuring, or fostering intermodal integration. Expanding policy goals in these areas could help unlock IWT's full potential as a cleaner, more sustainable freight option.

38 "Navigation-Ecosystem Sustainability Program (NESP), Upper Miss System," Waterways Council, accessed November 28, 2024, https://www.waterwayscouncil.org/get-involved/navigation-ecosystem-sustainability-program-nesp-upper-miss-system.

39 Congressional Research Service, Inland Waterways Trust Fund, 2018, https://crsreports.congress.gov/product/pdf/download/IF/IF10020/IF10020.pdf/.

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