Federal Oversight of the America’s Marine Highway Program

in Response to the Mandates of the Energy Independence and Security Act of 2007

by

Brian D. Smith

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Thesis Advisor: Dr. Shmuel Yahalom, Ph.D.
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Abstract

The America’s Marine Highway Program is an initiative that seeks to ease traffic congestion in landside transportation corridors by moving freight from those highways and railroads to waterborne vessels that travel on nearby rivers and coasts. The program markets itself as an ambitious, national-scale initiative that seeks to drive economic growth and improve quality of life. Its genesis, however, is a three-page section of a 310-page Congressional act that provided for no funding and little oversight. Given this juxtaposition of good intentions and bureaucratic constraints, this paper will examine the historical context for commercial use of the nation’s inland waterway system, analyze the objectives and mechanics of the program in its current state, explore the government’s legal basis for engaging in such activities, and make specific recommendations for the program going forward.
I. Introduction

The America’s Marine Highway Program (the “Marine Highway Program,” the “Marine Highway,” the “Program,” or the “AMHP”) is an initiative by the United States Department of Transportation (the “DOT,” the “Department,” or “Transportation”) that seeks to promote the usage of America’s inland waterways, with the goals of reducing landside traffic congestion, creating jobs, protecting the environment, strengthening the country’s strategic sealift capabilities, and promoting public safety. Since 2010, it has issued 40 grants to state and local transportation authorities for specific projects but has shown no apparent consideration for the results of the Program as a whole or for its achievement of those objectives. This thesis will seek to provide an overview of the Program in its current state and demonstrate ways in which the Department may improve its operation of the Program with respect to those goals under the mandates of its engendering legislation and the government’s own Constitutional boundaries.

This thesis is organized as follows: first, it will provide an overview of and historical context for inland waterway transportation in the United States today. It will then examine the extent to which the federal government may involve itself in the promotion of the waterways as a means of commercial transport. The objectives and structure of the America’s Marine Highway Program will then be reviewed, with attention given to specific examples demonstrative of the Program as a whole. It will then examine Program in its current state and conclude with recommendations to improve the Program going forward.

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II. Literature Review

Transportation policy is a discipline that is rooted in theory. Its practice, however, quickly draws the discussion away from the ivory tower and into a “real world” of deep historical context, complex government processes, and the practical realities of economics. Accordingly, this study of the America’s Marine Highway Program drew on a diverse set of literature. Academic journals provided important, peer-reviewed data and analysis that formed the basis for much of this paper’s discussion of the problems that Congress seeks to address with the Program. Published books were a valuable source of historical context and policy frameworks. Government databases, formal reports, and less formal (but no less accurate) web pages provided key information regarding specific government programs and functional units. Industry groups, through formal reports and their own web pages, provided ancillary information regarding the same. Legal resources, including but not limited to the United States Constitution, Congress’s online record of bills and laws, and the National Archives’ Federal Register were critical primary sources for this study. Newspaper articles and the press releases of government agencies supplied timely and reliable information on new developments, and a colleague’s thesis on the America’s Marine Highway Program’s social rate of return aspects provided foundational research upon which this paper draws.

Academic Journals

Scholarly works published in peer-reviewed academic journals were drawn upon to form several supporting discussions of the America’s Marine Highway Program’s objectives. Albalate et al.’s On the Relationship between Congestion and Road Safety in Cities, Levy et al.’s The Public Health Costs of Traffic Congestion: A Health Risk Assessment, and Zhang and Batterman’s Air Pollution and Health Risks Due to Vehicle Traffic all provided high quality, data-driven analyses of transport policy’s effects on public safety (see Section V.B.5: Passenger and Freight Safety). Frischmann et al.’s Retrospectives: Tragedy of the
Commons after 50 Years discussed the Tragedy of the Commons, which this paper considers along with environmental policy in a modern context. Jiang and Marggraf’s *The Origin of Cost-Benefit Analysis: A Comparative View of France and the United States* provided ancillary information on the history and use of benefit-cost analysis, an important tool used in transportation planning to account for externalities (see Section V.B.3: Environmental Concerns for both).

Academic journals were of similar use in forming this paper’s arguments with regard to transportation policy and the law. Colby’s *Revitalizing the Forgotten Uniformity Constraint on the Commerce Power* provided expert discussion on the United States Constitution’s Port Preference Clause, and Lépine’s *A Journey through the History of Federalism* provided similar color on the subject of federalism and how it relates to transportation and infrastructure (see Section IV.B: Port Preference Clause of the United States Constitution and Section IV.C: Federalism, respectively).

Books

Several books, both scholarly and non-scholarly in nature, contained key insights that this paper drew upon to form its core discussions of the America’s Marine Highway Program’s background, objectives, and recommendations going forward. Parkman’s *History of the Waterways of the Atlantic Coast of the United States*, commissioned by the U.S. Army Corps of Engineers Water Resources Support Center’s Institute for Water Resources, provided valuable historical context for the role of America’s East Coast inland waterways in the country’s formative years. Larson’s *History of Great Lakes Navigation,*


commissioned by the same Army institute, and Lynch’s *Beyond the Golden Gate: A Maritime History of California*, a National Park Service publication, provided similar context for the Great Lakes and West Coast, respectively (see Section III.A: America’s Inland Waterway Network for all).⁸

Gibson and Donovan’s *The Abandoned Ocean: A History of United States Maritime Policy* provided a unique look at America’s maritime industry with specific attention paid to maritime policy throughout history (see Section V.B.2: Economic Competitiveness, Section V.G.5: Future Legislation, and Section IV: Legal Basis for Federal Oversight of Transportation Infrastructure).⁹ Stopher and Stanley’s *Introduction to Transport Policy: A Public Policy View* gave a more contemporary approach to transport policy in general, which aided in building some of this paper’s arguments for policy recommendations regarding transportation externalities (see Section V.B.3: Environmental Concerns).ⁱ⁰ Stopford’s *Maritime Economics* provided valuable overall background context, as well as specific details that supported this paper’s conclusions regarding Marine Highway service scheduling (see Section V.G.6: Other Challenges).¹¹ Rodrigue’s *The Geography of Transport Systems* and Sutherland’s *Logistics from a Historical Perspective* supported this paper’s discussions of supply chain redundancy and strategic sealift capabilities, respectively (see Section V.G.4: Supply Chain Redundancy and Section V.B.4: Strategic Sealift Resources, respectively).¹² Michael Lewis’s tome *The Real Price of Everything: Rediscovering the Six Classics of Economics*, contained the full text along with value-adding commentary on Adam Smith’s *An Inquiry Into⁸

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the Nature and Causes of the Wealth of Nations, which provided a theoretical basis for this paper’s introduction to transportation policy.\textsuperscript{13}

**Government Databases**

Government statistical organizations were important sources of information used to support this paper’s conclusions. The National Transportation Research Center’s *Freight Analysis Framework Version 5 (FAF5)* provided valuable information regarding the usage of America’s inland waterway network, and the Federal Reserve Bank of St. Louis’s *FRED Economic Data* and the World Bank Group’s *DataBank* databases provided gross domestic product figures that helped illustrate the importance of transportation in the American economy and the achievements of free market economies in general (see Section III.B: *Usage of the Waterways* and Section III.D.2: *The Need for Transportation Policy*).\textsuperscript{14}

**Government Reports**

Government agencies prepare regular reports that compile information from disparate sources that may otherwise not be readily accessible. Of particular value to this paper was Hecker’s *Freight Transportation: Short Sea Shipping Option Shows Importance of Systematic Approach to Public Investment Decisions*, and the United States Maritime Administration’s (“MARAD” or the “Administration”) *America’s Marine Highway: Report to Congress*.\textsuperscript{15} The former, prepared on behalf of the United States Government Accountability Office in 2005 at the behest of Congress, laid the foundations for what would become the America’s Marine Highway Program. The latter, produced in 2011 in accordance


with a provision in its engendering legislation, provided a core outline of the Program’s objectives, benefits, and mechanics (see Section V.B: Program Objectives and Section V.A: Program Overview, respectively).

The Congressional Research Service, a nonpartisan research institute that supports members of Congress in their decision making processes, collected valuable context for inland waterway transport policy in its 2020 publications *Inland and Intracoastal Waterways: Primer and Issues for Congress* and *Distribution of Harbor Maintenance Trust Fund Expenditures* (see Section V.A: Program Overview for both). The Department of Transportation’s aptly-named Bureau of Transportation Statistics contained important information regarding the usage of America’s inland waterway system in its *Transportation Statistics Annual Report 2020* and *50th Anniversary Edition of the National Transportation Statistics* (see Section III.C: Inland Waterway Infrastructure for both).

A report provided by the Organisation for Economic Co-operation and Development, an intergovernmental economic organization which studies economic progress and world trade, provided valuable context regarding the methods with which governments balance policy tools to achieve their objectives.

**Government Web Pages**

Government web pages were key primary sources of information on specific Department of Transportation grant programs and other details on federal and state activities which may not have been compiled elsewhere. The Maritime Administration’s website provided background on the America’s
Marine Highway Program and other grant programs. It also provided specific information on the Marine Highway Program itself, including its designated routes, an accounting of the Program grants issued to date, a practitioner’s guide for applying for such grants, and a discussion on the United States Merchant Marine’s strategic sealift capabilities which supported that discussion (see Section V.B.4, Strategic Sealift Resources).

The websites of the United States Department of Transportation, MARAD’s parent organization, and the DOT’s Federal Highway Administration (“FHWA”), contained additional information on other grant programs. The FHWA’s web page also provided information regarding benefit-cost analysis, the Interstate Highway System, and the traffic planning principles which this paper recommends the extension of to the Marine Highways (see Section V: America’s Marine Highway Program for all).

The Great Lakes Commission, a U.S.-Canadian international policy organization; the Great Lakes St. Lawrence Seaway Development Corporation, which manages that seaway system; and the United States Army Corps of Engineers published specific details on the ports, locks, and canals that enable trade on the

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Great Lakes and St. Lawrence Seaway System. The Army Corps also published information on the country’s inland waterway system as a whole, as well as its own history (see Section III.A.3: The Great Lakes and the St. Lawrence Seaway).

The Tennessee Department of Transportation’s website described the Interstate 40 Hernando de Soto Bridge fracture incident, which, this paper cites as a prime example of the threats of disinvestment facing the inland waterways. The Tennessee-Tombigbee Waterway Development Authority, the Port Authority of New York and New Jersey, the Port of Richmond, and the Port of Virginia all provided information regarding the demonstrative projects of the Marine Highway Program discussed herein which was not readily available elsewhere (see Section V.F: Selected Projects).

Industry Reports

Reports published by professional bodies and lobbying groups provided useful, specific information regarding the state of America’s infrastructure investments. The American Society of Civil Engineers’ 2021 Report Card for America’s Infrastructure (published in 2020) contained a topical overview of the state of the country’s transportation assets, a section of which was drawn upon to support this paper’s...
cautionary discussion on the effects of a lack of investment in public waterway infrastructure (see Section III.C: Inland Waterway Infrastructure). Business Roundtable, a lobbying group comprised of executives from various industries, provided important statistics on the inland waterways’ freight usage in its 2015 publication Road to Growth: The Case for Investing in America’s Transportation Infrastructure (see Section III.B: Usage of the Waterways and Section III.C: Inland Waterway Infrastructure). Transportation for America, a transportation- and land use-focused policy organization, provided details on the dynamics of traffic flows in its 2020 publication The Congestion Con: How More Lanes and More Money Equals More Traffic (see Section V.B.1: Landside Congestion).

**Industry Web Pages**

Industry web pages, which are not necessarily compiled into report form but still hold valuable data, provided important information in support of the America’s Marine Highway Program. INRIX Inc. gave data on highway traffic which was used to support the America’s Marine Highway Program’s objective of shifting freight traffic in part from highways to water. The Association of American Railroads provided the same for rail traffic (see Section V.B.1: Landside Congestion). The Center for Biological Diversity and Friends of the Earth provided necessary information on short sea transportation’s positive and negative effects on the environment (see Section V.B.3: Environmental Concerns).

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Union Pacific Railroad Company provided details on precision scheduled railroading, an operational framework used in the railroad industry which this paper relies upon to form one of its concluding recommendations regarding Marine Highway service scheduling (see Section V.G.6: Other Challenges and Section VI: Recommendations). Wissler, writing for The Heritage Foundation, provided important background on the use of military logistics in defense operations, which constitutes one of the Maritime Administration’s stated objectives for the Program (see Section V.B.4: Strategic Sealift Resources). Finally, Ress, writing for the Encyclopedia of Alabama, and Virginia Maritime Bulletin, a trade publication, provided important Marine Highway project-specific information which was not readily available elsewhere (see Section V.F: Selected Projects).

Legal Resources

Various legal resources, publicly available via the internet, formed a critical backbone of much of the research supporting this paper’s conclusions. The Maritime Administration provided key information regarding the America’s Marine Highway Program’s internal mechanisms (see Section V.D: Funding and Allocation and Section V.E: Administration and Monitoring). Available via the National Archives’ Federal

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Register, MARAD’s publications include draft and final Program rules and Notices of Funding Opportunity ("NOFOs") which describe in detail the bidding and approval processes that form the foundation of the Program.

The United States Congress provided an online compendium of bills and compiled law which this paper directly relied upon for its foundations and subsequent conclusions, including but certainly not limited to the test of the Energy Independence and Security Act of 2007 which mandated the creation of the America’s Marine Highway Program. Other relevant legislation included the National Defense Authorization Act for Fiscal Year 2016, the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, and the various annual Consolidated Appropriations Acts which provide funding for the Program (see Section V.D.2: Congressional Appropriations).

Important color on the current status of the Program was derived from the Hearing Before the Subcommittee on Coast Guard and Maritime Transportation and Short Sea Shipping: Rebuilding America’s Maritime Industry hearing, both held in 2019 before the House of Representatives Committee on Transportation and Infrastructure, and historical context for the Program was derived from the Library of Congress’s The Laws of the United States: Acts of the First Congress of the United States, an important historical reference documenting the activities of the nation’s first Congress (see Section V.B: Program Objectives, Section III.C: Inland Waterway Infrastructure, and Section IV.D: The Definition of Control, respectively). The United States Constitution, of course, acted as a key reference for this paper’s


discussions of its Commerce Clause and Port Preference Clause (see Section IV.A: *Commerce Clause of the United States Constitution* and Section IV.B: *Port Preference Clause of the United States Constitution*, respectively). \(^{39}\)

*Justia US Supreme Court Center*, an online resource listing historical United States Supreme Court cases along with expert commentary, provided important background on the *Gibbons v. Ogden* (1824) and *State of South Carolina v. State of Georgiia* (1876) Supreme Court cases which clarified the role that the federal government would be able to take in promoting trade decades later for the Marine Highway Program. \(^{40}\) The Legal Information Institute provided additional important commentary on the United States Constitution’s Commerce Clause, while Jensen and Lawson and Schapiro, writing for the nonprofit *National Constitution Center’s* online resource, provided the same for the Port Preference Clause and Tenth Amendment, which forms the basis for American states’ rights, respectively (see Section IV.A: *Commerce Clause of the United States Constitution* and Section IV.B: *Port Preference Clause of the United States Constitution*, respectively). \(^{41}\) The United States Congress’s *Constitution Annotated* resource provided valuable color regarding the Constitution’s Spending Clause, which forms the basis for much of the policy that Congress implements to improve the lives of its constituents (see Section III.D.2: *The Need for Transportation Policy*). \(^{42}\)

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Newspaper Articles and Press Releases

Newspaper articles and press releases from government agencies presented valuable and timely information on port activities and new grants which had not yet been incorporated into more formal periodic reporting from governments, port authorities, or industry groups. The *New York Times* and the *Wall Street Journal* are two mainstream publications serving contemporaneous accounts of specific port projects and traffic congestion issues (see Section V.F.2: *New York Harbor Container and Trailer on Barge Service* and Section V.B.1: *Landside Congestion*). *Bloomberg News, Journal of Commerce,* and *The Waterways Journal* provided similar coverage oriented towards those with specific industry knowledge (see Section V.F: *Selected Projects*). These sources also provided information on the America’s Marine Highway Program’s implications for regional economic competitiveness (see Section V.B.2: *Economic Competitiveness*) and supported this paper’s recommendations regarding the container positioning problem (see Section V.G.6: *Other Challenges*).

Local newspapers gave important color for specific Marine Highway projects which may not have been deemed newsworthy by larger outlets: *Daily Memphian, Richmond Times-Dispatch, The Virginian-

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*Pilot* and *Virginia Business* all provided timely and salient information for the projects discussed herein (see Section V.F: Selected Projects).44

Government press releases, similar in format to newspaper articles, also provided timely information relevant to this project. The United States Department of Transportation’s online newsroom contains specific information on recent grants under the America’s Marine Highway Program and the related Port Infrastructure Development Program which had not yet been incorporated into the Department’s primary program material as of this writing (see Section V.G.2: Targeting and Funding of Future Projects and Appendix C: List of America’s Marine Highway Program Grants).45

**Theses**

Jorgenson, in his master’s thesis *The Justification for Federal Assistance in Emerging United States Surface Freight Transportation Modes: The Case for America’s Marine Highways*, provided valuable historical context for the America’s Marine Highway Program through an examination of the factors contributing to the construction of the first transcontinental railroad and the Interstate Highway System (see Section V.B: Program Objectives, Section IV: Legal Basis for Federal Oversight of Transportation Infrastructure, and Section VIII: Considerations and Future Research).46 He advocated for further research

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into the design and calculation of a social rate of return (i.e., the return on investment inclusive of social costs such as pollution) in addition to the development specific key performance indicators to aid in managing the Program and allocating future funds.

Conclusion

The literature surrounding the genesis, structure, operation, and future of the America’s Marine Highway Program is as diverse as the scope of the program itself. Academic journals provide critical, peer-reviewed synthesis of data that supports some of the Program’s objectives. Scholarly and non-scholarly works formed the bulk of the Program’s historical background, in addition to augmenting some of the more technical discussions. Government databases provided information which government reports drew upon to produce unbiased and productive literature to guide lawmakers and inform the public. Government web pages filled in the blanks, of which there are many: such is the nature of the Program. Industry reports and web pages provided similar information supporting this paper’s discussion of the Marine Highway Program’s objectives. Legal resources, both primary and secondary in nature, formed the backbone of this paper’s discussions of Constitutional rights and permissible paths forward. Finally, other thesis papers formed the theoretical basis upon which this paper builds.
III. Inland Water Transportation in the United States

Inland and coastal water transportation, also known as short sea transportation, short sea shipping, or cabotage, enjoys a rich, if fragmented, history in the United States. The country’s geography includes countless natural waterways that played fundamental roles in creating settlement patterns as we know them today, linked together and to the open ocean by supplemental man-made waterways. Waterways are supplemented by infrastructure, including ports and locks, all of which require some degree of investment and maintenance. This section will provide a topical overview of America’s inland waterway network and its history as it relates to the commercial shipping environment today, examine the uses of those waterways, and enumerate the infrastructure assets that support the network. It will then explore the role of the government in its creation and operation and examine options for the improvement of this role.

A. America’s Inland Waterway Network

America’s inland waterway network is a diverse one, consisting of rivers, man-made canals, natural channels, and five Great Lakes that are linked to the Atlantic Ocean via the St. Lawrence River. It is supplemented by Atlantic and Gulf Coast Intracoastal Waterways, which span much of those two seabords and provide protection from open waters with coast-adjacent protected waterways, and by the open waters themselves of the oceans that bookend the nation.

1. Rivers and Canals

Early 17th century Virginian settlers staked claims to farmland along the James, York, Rappahannock, and Potomac Rivers, and those routes became the primary means through which tobacco and other agricultural goods were traded. Settlements were founded along rivers such as the Hudson and Delaware that grew to become major cities: New York and Philadelphia, respectively. The Mississippi River
and its tributaries later provided a direct link between America’s agricultural heartland and markets abroad, and the Great Lakes and St. Lawrence River did the same for the country’s Upper Midwest.

Rivers allowed for settlement deeper inland than was possible with roads and horses at the time, and low-friction water transport was an obvious, economical alternative to landside wagon carriage. Canals were eventually built starting in the late 18th century by private entrepreneurs who saw the value that they served in connecting rivers to one another back home in Europe. They were expensive, but worth the investment: a team of four horses could tow a 100-ton barge 24 miles down a canal in a single day, the same time in which an identical team carrying just a single ton of cargo could cover just half that distance by road.

The American terrain was decidedly more complex than that of the old country. Building canals required significantly more investment in construction equipment and labor, not to mention the construction of more locks and dams. Dozens of companies were formed to build ambitious canal projects throughout the states, and many failed. Those that did survive, including the operators of New York’s Erie Canal and Massachusetts’s Middlesex Canal, tended to remain in fiscally tenuous positions throughout their existences. State and federal governments, aware of the canals’ economic importance, provided significant support to the canal operators in the form of land grants, capital contributions, and financial guarantees to compensate.

Canals remained popular as a mode of transport throughout the first half of the 19th century when American expansion spread further inland and railroads became more advanced. Rail could be used year-round, was unaffected by droughts or (generally) floods, and could link “last mile” starting and ending points more easily than canals. It was also simply faster: railroads at the time could reach speeds of 20 miles per hour, the equivalent of a horse’s light gallop (which may have been sustainable over long distances in the

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49 Parkman.
50 Parkman.
51 Parkman.
Pony Express era of mail carriage but is not reasonably possible with heavy cargo in tow). Canal abandonments exceeded new builds by the 1850s, and the industry succumbed to rail for good by the end of the century.

2. Coastal Waterways

America’s coastal shipping network is the product of an equally fragmented history. Manmade canals exist along the northern East Coast that allow short sea traffic to bypass the open waters of the Atlantic Ocean. A combination of similar canals and natural channels runs along the remainder of the coast, providing shippers and recreational boaters alike a near-continuous, protected, coast-adjacent route from the Northeast to Florida. The Gulf of Mexico enjoys a similar “intracoastal waterway” system that spans from southern Texas to northern Florida. The West Coast is not as well-endowed, though its ports play an integral role in domestic and international ocean shipping. Finally, the Alaskan Coast plays a critical role in connecting the state internally and to the lower 48 states.

The Atlantic Coast and the Gulf of Mexico. Supplementing the Atlantic Ocean and the Gulf of Mexico are a number of canals and channels built to bypass those open waters and provide safe internal passage to shippers down the coast. Some of the canals also exist to provide a more direct route between coastal population centers, which would otherwise have to be served by circumnavigating the major landmasses of Cape Cod, southern New Jersey, and the Chesapeake Peninsula; and the tidewaters south of Norfolk, Virginia to Albemarle Sound in North Carolina (see Figure III-A, next page). Coastal waterways are considered as part of the country’s waterway network due to their nature as complementary to the inland routes, and the line is often blurred in the situation of coastal canals and channels.

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53 Parkman.
When completed in 1914, the Cape Cod Canal cut an eight-mile path through the neck of the cape that replaced a 130-mile open ocean voyage. The Delaware and Raritan Canal, completed in 1834, links the lower New York harbor to Philadelphia via the Delaware and Raritan Rivers, avoiding a 240-mile ocean trip around Cape May. The 1829 Chesapeake and Delaware Canal does the same for vessels travelling between Philadelphia and Baltimore, with a 17-mile shortcut replacing a 400-mile trip around the

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54 Parkman.
peninsula. The 1805 Dismal Swamp Canal, the oldest in the United States, links Norfolk, Virginia to the protected waters of Albemarle Sound in North Carolina, where ships may continue south down the coast.

South of North Carolina, the American coastal geography is more generous. Natural barrier islands protect much of the southern East Coast from the ocean, creating inland channels adjacent to much of the shore. Bridging the gaps between these natural inlets are an additional series of canals built in the early 19th century that, together with the channels and northern canals, form the Atlantic Intracoastal Waterway that spans from Boston to Key West, Florida. A similar Gulf Intracoastal Waterway exists along the northern rim of the Gulf of Mexico, linking Brownsville, Texas (near the Mexican border) to Saint George Sound (in the Florida Panhandle).

**The Pacific Coast.** The Pacific Coast of the United States does not naturally lend itself to such a waterway. Notable for its long beaches and rocky cliffs, its geography is almost the opposite of the Atlantic’s. Natural harbors are fewer and further between, and meaningful inland riverine access is limited to the Columbia River that separates Washington from Oregon and the Sacramento River which stretches inland to that city from the San Francisco Bay.

After making landfall, accessing the inland West Coast states may be challenging. Small mountain ranges directly abut the coast along much of its length, from the Olympic Mountains to the north in Washington to the King, Santa Cruz, Santa Ynez, and Santa Ana Ranges that extend south along California’s coast. Access to the western United States from the east is also an issue—an arid desert and the Rocky Mountains separate the West from the rest of the country.

Geography aside, navigation along the Pacific Coast is also generally more difficult. The so-called California Current runs at a strong quarter knot, and treacherous northwesterly winds may add to sailing difficulties. Tides of up to seven feet and heavy coastal fogs can also interfere with marine operations.

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*Parkman.*

*Lynch.*

*Lynch.*
Pacific Coast cabotage enjoyed a period of popularity in the early days of western settlement.\textsuperscript{a} Though early explorers made only minor use of the natural ports and waterways, a surge of Gold Rush prospectors starting in 1848 led to the development of large settlements in areas with easy sea access including San Francisco, from which points they would trek inland in search of the metal. Coastal trade was quickly supplanted by roads and railroads, which remain the most popular north-south means of transportation today.

**The Alaskan Coast.** Alaska’s maritime culture is an integral part of its history. Its inhabitants have long lived near its coasts and rivers, and its piers and shipyards date back to its 19th century Russian settlements, before the United States’ 1867 purchase of the territory.\textsuperscript{b} Its coastal villages were home to large fish canneries, and they later became gateways for gold prospectors during the Klondike Gold Rush at the end of that century. During that time the federal government began investing in port infrastructure: lighthouses, harbors, and piers that enabled coastal commerce and trade with the south. The state today remains heavily dependent on the coast and its southerly linkages for trade and travel.

3. **The Great Lakes and the St. Lawrence Seaway**

The Great Lakes are a defining feature of North America’s geography. The system consists of the five Great Lakes themselves (Superior, Michigan, Huron, Erie, and Ontario, from west to east), smaller lakes and bays (e.g., Lake St. Clair and Georgian Bay), and numerous rivers and straits feeding and connecting them. They are as important commercially as they are naturally: the Great Lakes form the core of a $6 trillion regional economy that supports over 1.5 million jobs and pays over $60 billion in annual wages.\textsuperscript{c} Connecting them to the global economy is the St. Lawrence Seaway (the “Seaway”), a system of locks and channels that augments the natural St. Lawrence River to carry over 200 million tons of freight.

\textsuperscript{a} Lynch.
\textsuperscript{c} Great Lakes Commission.
annually between the lakes and the Atlantic Ocean. The lakes and the Seaway are collectively known as the Great Lakes St. Lawrence Seaway System for administrative and operational purposes.

Figure III-B: The Great Lakes

The Great Lakes played a key role in the country’s westward settlement. Early French missionaries and fur traders explored the area in the early 18th century, building settlements in areas including today’s Montreal, Detroit, and Green Bay (see Figure III-B, above). British settlers shortly followed, building Fort Oswego in 1727 at today’s city of the same name on the southeast shore of Lake Ontario in New York. The British used Oswego as their base to build a fleet of sloops and schooners, eventually using it to conquer New France in 1753. American independence eventually brought about more vessels on the Great Lakes, and waterborne commerce started to blossom in the early 1800s.

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*Great Lakes St. Lawrence Seaway Development Corporation, ‘The St. Lawrence Seaway’.*

*Larson.*
Economic growth continued to take hold on the Great Lakes in the 19th century as the once-fledgling settlements of Buffalo, Cleveland, Detroit, and Chicago became centers for manufacturing and steel production. Iron ore travelled by rail from the interior where it could be processed into steel and exported via the lakes and rivers. The Great Lakes also became a hub for agricultural exports, as commodities such as grain and lumber were moved easily and economically via ship.

The United States Army Corps of Engineers (the “Corps of Engineers,” the “Corps,” or the “USACE”), established in 1775 to aid in Revolutionary War efforts, played an important civil role in making the Great Lakes the commercial waterway that it is today. They were themselves established in part to enable civil transportation and to build a system that could be used for national defense—a sort of spiritual precursor to today’s Marine Highway Program. Funds were appropriated over the decades by the federal government to the Corps in a piecemeal effort to build the waterway system: harbor dredging, lighthouse construction, and the raising of breakwaters and piers.

Today, the American side of the system counts 140 harbors (60 of them commercial), two U.S.-operated locks (both located near Massena, New York on the St. Lawrence Seaway), 104 miles of breakwaters, and over 600 miles of dredged navigation channels in addition to 2,400 miles of open waterway. The Canadian side of the network is comparatively smaller, with major ports at Thunder Bay, Windsor, Hamilton, and Toronto in Ontario and Montréal, Trois-Rivières, and Québec City along the St. Lawrence Seaway in Québec. The other five of the Seaway’s seven major locks sit on the Canadian side of the system, and the government of that country also maintains Ontario’s Welland Canal that bypasses Niagara Falls to link Lake Erie to Lake Ontario. Five smaller canals link the rest of the system on the

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63 Larson.
64 United States Army Corps of Engineers, ‘A Brief History’.
65 Larson.
68 Great Lakes St. Lawrence Seaway Development Corporation, ‘Locks, Canals & Channels’.
Canadian side, with an additional 15 smaller locks spread throughout. The Great Lakes St. Lawrence Seaway System is a quintessential model of U.S.-Canadian cooperation.

**B. Usage of the Waterways**

America’s inland waterways are primarily dedicated to commercial freight transportation. The network carries one quarter of the country’s total freight movements by value, and 35 percent of exports by value start their journey on it—a number that increases to three quarters of exports when measured by tonnage.\(^6\) 2019’s (the most recent year available for statistics) domestic tonnage of 818 million tons was lower than in prior years, down moderately from 894 million tons in 2000 and 1,070 million tons at the beginning of the century.\(^7\) The economy, in turn, has grown by half since the new millennium, implying that substantially all of that new economic activity has either been generated with other modes of transportation, has come from the service sector, or has come from abroad.\(^8\)

Haulage on inland rivers including the Mississippi River and its tributaries dominates the system, comprising 68 percent of the 818 million total tons moved over water during 2019.\(^9\) Coastal trades accounted for 21 percent of tonnage, and ports on the Great Lakes moved 11 percent of the same.\(^10\) During 2020 (different available datasets allocate freight between geographies and commodities shipped), oil and gas products and unprocessed petroleum accounted for 41 percent of domestic waterway shipment tonnage, followed by 24 percent for coal and 17 percent for metals, minerals, and other aggregates (see Figure III-C, next page).\(^11\) Agricultural goods, despite coming largely from the “breadbasket” states that line the Mississippi River, only accounted for 16 percent of shipments by tonnage. Containerized freight was not

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\(^6\) Business Roundtable.
\(^7\) Bureau of Transportation Statistics, ‘50th Anniversary Edition of the National Transportation Statistics’.
\(^8\) Federal Reserve Bank of St. Louis.
\(^9\) Bureau of Transportation Statistics, ‘50th Anniversary Edition of the National Transportation Statistics’.
\(^10\) The BTS’s statistics include an additional 80 million tons of “intraport” and “intraterritory” tonnage that moved within the confines of a port during the year, which was not included in this analysis.
\(^11\) National Transportation Research Center.
available as its own statistic, but one may assume that it comprised some portion of the 2 percent of “other” freight.

Figure III-C: Inland Waterway Freight Shipment Types by Tonnage in 2020

Substantially all of the freight transported domestically via short sea transportation is already bulk in nature (i.e., non-containerized goods that the Program does not address), and the economics of this bulk shipping already favor water or rail. Despite this, America’s inland waterways are decidedly underused, especially relative to its roads and rails. Yet the value proposition for moving containerized freight over water is clear: a single barge can carry the same cargo volume as 58 tractor-trailer trucks, and a 15-barge convoy (common on the larger rivers) can carry the equivalent of 870 trucks. A single ton of cargo can

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*United States Army Corps of Engineers, ‘Inland Waterway Navigation: Value to the Nation’.*
move at a fuel-efficient rate of 670 miles per gallon of fuel over water versus 202 miles per gallon via rail and just 59 miles per gallon via truck. The economics of the America’s Marine Highway Program support short sea transportation once port linkages are established and economies of scale are reached.

C. Inland Waterway Infrastructure

With over 23,000 miles of interior and coastal shipping lanes in addition to the Great Lakes and the St. Lawrence Seaway System, the United States is endowed with an exceptionally rich navigable inland waterway network. The Mississippi River System, which includes that river and its Missouri, Red, Arkansas, Ohio, and Illinois River tributaries, serves the eastern and central areas of the country while the Columbia, Sacramento, and San Joaquin Rivers serve the West. The Atlantic and Gulf Intracoastal Waterways serve those coasts, respectively, through networks of coastal and coast-adjacent lanes designed to shield vessels from rough ocean waters. The Great Lakes and the St. Lawrence Seaway System that connects them to the Atlantic Ocean stretches as far inland as Chicago and Duluth, Minnesota, which both enjoy strong rail links to America’s agricultural hinterland.

A waterway’s mere existence does not, by itself, qualify it for inland transportation. All but the smallest of pleasure craft require some degree of water depth for navigability, and locks and dams exist throughout the network to control water levels. The United States Army Corps of Engineers, an engineering unit of the United States Army that is responsible for civil works, is responsible for regularly dredging the system and maintaining its infrastructure throughout the country. The Corps’ portfolio of 239 individual lock chambers occupies a total of 193 lock sites throughout the system, which transited over 9,300 commercial vessels and almost 33,000 barges in 2018.

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76 United States Congress, ‘Short Sea Shipping: Rebuilding America’s Maritime Industry’.
77 American Society of Civil Engineers.
78 Parkman.
79 American Society of Civil Engineers.
The Corps’ efforts notwithstanding, the infrastructure supporting the United States’ inland waterway network is severely outdated. Most of the locks and dams along the routes have aged well beyond their initial 50-year design lives, with many dating back to the 1950s and many more dating back to President Franklin Delano Roosevelt’s 1930s-era New Deal public works programs. Funding restrictions have forced the Corps of Engineers to delay routine dredging of lower-use waterways, and more severe and frequent flooding is pushing sediment back into navigation channels more quickly, further straining resources.

**The effects of disinvestment.** Years of cumulative disinvestment in America’s inland waterway infrastructure have left the system increasingly vulnerable to failures. A National Waterways Foundation study of a hypothetical unplanned closure of the Illinois River’s La Grange Lock and Dam, which sits between the Mississippi River and Chicago, is estimated to affect manufacturers and farmers in 18 states and would cause them to incur almost $1.7 billion in annualized alternative shipping costs and lose an estimated $2.1 billion annually in farm income. A similar study by the Mid-America Freight Coalition, a regional planning organization, estimates that a failure of the Winfield Lock and Dam, 60 miles up the Mississippi River from St. Louis, Missouri, would result in the diversion of 12 million tons of agricultural cargoes via 500,000 truckloads over a nine-month shipping season, resulting in $283 million in extra shipping costs and releasing 22,000 additional tons of pollutants into the atmosphere. The risk of disinvestment extends beyond these hypotheticals: actual, though non-catastrophic, interruptions to lock operations resulted in over 4,300 “periods of unavailability” throughout the system in 2019 alone throughout the system.

Overall, planned and unplanned lock and dam maintenance efforts have resulted in over 150,000 operating hours of shutdowns during 2013, double the number of delay hours in 1990. The facilities are structurally obsolete, as well: a New Orleans lock connecting the Mississippi River to the Gulf Intracoastal

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* American Society of Civil Engineers.
* American Society of Civil Engineers.
* Business Roundtable.
FEDERAL OVERSIGHT OF THE AMERICA’S MARINE HIGHWAY PROGRAM
IN RESPONSE TO THE MANDATES OF THE ENERGY INDEPENDENCE AND
SECURITY ACT OF 2007

Waterway is so small that some barge convoys must be broken up and transited separately.⁸⁵ These and
other weaknesses have led the American Society of Civil Engineers to grade the system as a “D+” in its
quadrennial Report Card for America’s Infrastructure, just a modest improvement from its scores of “D” in
2017 and “D-” in 2013.⁸⁶

**Interstate 35W bridge collapse (2007).** Risks to inland water shipping are not limited to the
waterway infrastructure itself, either. In August 2007, a bridge carrying Interstate 35W over the Mississippi
River in Minneapolis collapsed into that river, killing 13 people and injuring 145.⁸⁷ The cause was ultimately
attributed to a design error, where conjoining *gusset plates* linking supportive steel beams failed under
excessive loads. Minneapolis is the northern terminus of the M-35 Marine Highway corridor, so the bulk of
that corridor’s traffic was spared. The bridge was also just feet away from the Lower Saint Anthony Falls
Lock and Dam, a USACE-maintained infrastructure asset, though that facility apparently suffered little
damage itself from the collapse. The bridge was rebuilt within a year, minimizing further disruption, but the
incident serves as a sharp reminder of the risks of underinvestment in and deferred maintenance of the
assets surrounding our waterways.

**Hernando de Soto Bridge fracture incident (2021).** A potential similar crisis was averted in 2021
when a fracture was discovered in Memphis, Tennessee’s Hernando de Soto Bridge, which carries
Interstate 40 over the Mississippi River.⁸⁸ The bridge, which spans the width of the M-55 Marine Highway
corridor (the upper and lower portions of the Mississippi River are split into two separate AMHP
designations) was shut to vehicular traffic for over two months, though river traffic was halted for only four
days. The fracture appeared to be a structural flaw in the steel beam itself, and the bridge was not deemed

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⁸⁵ Business Roundtable.
⁸⁶ American Society of Civil Engineers.
⁸⁷ Minnesota Legislative Reference Library, ‘Minneapolis Interstate 35W Bridge Collapse’, Minnesota Issues Resource
⁸⁸ Tennessee Department of Transportation.
Risks to the system may also come from further above. Floods and droughts are ancient issues, preventing mariners from being able to properly use the rivers. In 1543, Hernando de Soto himself, namesake of the Memphis bridge that crosses the Mississippi River, had his own trip up that river delayed for weeks due to flooding.\textsuperscript{89} The Mississippi itself is particularly prone to flooding due in part to its many tributaries, and particularly bad flooding can change the course of the river itself.\textsuperscript{90} The effects of both floods and droughts are often amplified by climate change, resulting in river closures or reductions in the permitted vessel and barge sizes.\textsuperscript{91}

These external and environmental risks to the inland waterway system are not within the direct purview of the Army Corps of Engineers, the Maritime Administration, or the Department of Transportation. They do, however, illustrate the need for increased cooperation with other agencies and the public to ensure system availability and quality: outside cooperation is, indeed, one of the mandates of the 2007 Act (later).

\textbf{Intangible Risks to the System.} Finally, threats to the United States’ inland waterway network may come from intangible economic forces. The transportation industry is decidedly cyclical in nature, as its “product” coincides largely with the country’s economic output itself. If the agricultural industry is performing well in a given year, so must be the transportation industry that takes its grains and beans to

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\textsuperscript{89} National Weather Service, ‘Mississippi River Flood History 1543-Present’ \<https://www.weather.gov/lix/ms_flood_history> [accessed 17 December 2021].

\textsuperscript{90} National Park Service, ‘Course Changes of the Mississippi River’, 2018 \<https://www.nps.gov/vick/learn/nature/river-course-changes.htm> [accessed 17 December 2021].

market. If the timber industry is performing well, transporters must also be in high demand to move the wood. As goes the nation, so goes the transportation industry.

Freight rates are volatile, as they are themselves functions of supply and demand. The freight volumes that they are applied against are also volatile, as those vary with the strength of the economy. These rates and volumes interact to produce revenues that carriers and port operators must use to cover costs, many of which are fixed in nature and are often quite high in the asset-intensive transportation industry. High fixed costs and variable revenues produce high profits in times of economic growth but can spell disaster during economic downturns. This variability in profits equates to risk, which may dissuade operators from entering the business. Customers may pay the ultimate price when they are left with fewer, likely lower-quality, options.

D. The Need for Transportation Oversight

American commercial life would be nothing like it is today without the market-driven choices of the countless industry participants who pursue economic success by serving identified needs in a cost-effective way. Businesses rely on transportation services to receive their raw materials, for their employees to come to work and process them, and to distribute the finished products to their customers. These actions, multiplied by the countless businesses, workers, and products which constitute the nation’s economy, are each performed in someone’s own rational self-interest: the individual’s choice to maximize their own outcomes to their own benefit, possibly at the expense of others or the greater good. This rational choice theory, originally developed by 18th century Scottish economist Adam Smith, forms the basis for much of how we think about economics—and by association, transportation—today.

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92 This relationship, first identified by Wall Street Journal founder Charles Dow in the 1850s and later formalized as part of his Dow Theory, is strong enough to have influenced decades’ worth of investment and policy decisions and has been affirmed by the Department of Transportation’s Bureau of Transportation Statistics as a meaningful correlation.

93 Smith.
The sum product of the rational choices that drive the economy, however, does not always equal a result that is in the best interests of the community. Individual market actors may, for example, choose inexpensive truck transportation without considering the costs of pollution or lost overall economic output due to traffic congestion. The answer to fixing these problems, at the margin, lies in government oversight. Policy, the set of tools with which government exercises such control, is instrumental in achieving such oversight.

1. **What is Transportation Policy?**

   Transportation policy helps shape our economic and civic life by guiding the choices of industry participants in such a way that achieves specific economic, social, and objectives, while otherwise ensuring and overall functional and high-performing transportation system.\(^9\) Transportation planning, as distinguished from policy, concerns itself with the actual implementation of those policies: the on-the-ground activities of transportation planners, engineers, industry participants, and government agencies which design and operate transportation networks (see Section V.G.1: Transportation Planning Perspectives).

   Transportation policy is not necessarily transportation regulation, either. Regulation may be a form of policy; specific rules directed towards certain industry participants with the intention of shaping the industry in a given way or achieving specific safety or technical objectives.\(^9\) Regulation is not, however, a replacement for policy, the broad mix of tools which lawmakers and government executives use to shape economic and civic life in the pursuit of given objectives.

2. **The Need for Transportation Policy**

   As the economy shifts and grows, lawmakers may see the need use policy to shape its constituent industries in a way that equitably serves the population as a whole. The transportation industry in particular, as it exists today, is the product of countless free market interactions—carriers entering and

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\(^9\) Rodrigue.
\(^9\) Rodrigue.
leaving the industry, shippers choosing one mode of transport over another—which each serve a specific need in the pursuit of profit. The sum product of these interactions is generally good: America did not grow to be the world’s largest economy by dictating these decisions centrally.⁹ There are often shortfalls at the fringes, however. Excessive use of a given transportation choice may lead to traffic congestion, costing citizens time and money. It may slow down the economy, as goods and services spend more time in transit before they may reach the marketplaces of America. It may cause pollution, as those vehicles produce harmful emissions while sitting in traffic (see Section V.B: Program Objectives for all).⁹⁷ These and other externalities, or social costs not borne by those who reap their benefits, often require government policy interventions to correct (see Section V.B.3: Environmental Concerns).

Transportation policy is not simply an exercise in redistributing social costs, either. National security capabilities, which in the case of the maritime industry amount to the strategic sealift capacities of high-quality port infrastructure and a trained and ready workforce, are another goal of policymakers which do not create themselves on their own in a purely free market environment.⁹⁸ Public safety issues are not self-solving, either: free-market operators would happily transport toxic waste through residential neighborhoods if it were the least expensive option. Government involvement, to some degree, is necessary to ensure economic equity, a clean environment, national defense, and public safety.

The nation’s founders themselves deemed it necessary to “provide for the [...] general Welfare of the United States” in Article I, Section 8 of the United States Constitution: a clause that has been widely interpreted to include the creation of government subsidies for “internal improvements” (e.g., “Lighthouses, Beacons, Buoys, and Public Piers” in the instance of one early Act of Congress) since the first presidential administrations (see Section IV.C: Federalism).⁹⁹ This Spending Clause and other clauses of Article I,

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* Maritime Administration, America’s Marine Highway: Report to Congress.
* Rodrigue.
Section 8 of the Constitution (in the case of the Marine Highways, the Commerce Clause and Port Preference Clause [see Section IV.A: Commerce Clause of the United States Constitution and Section IV.B: Port Preference Clause of the United States Constitution]) have been interpreted by lawmakers and courts over the years to grant broad latitude for public investments in maritime infrastructure that in turn support economic movement. This authority is granted in the Constitution and confirmed in subsequent case law, but the tools with which it is implemented are as varied as the maritime industry itself.

3. Types of Transportation Policy Instruments

Governments may implement policy in several ways. Specifically with regard to maritime policy, they may own and operate vessels and facilities directly, provide financial subsidies for other entities (public or private) to do so, exert regulatory control through the limitation of services offered or prices charged, fund research and development activities, impose labor regulations, or implement safety and other operating standards.\(^{100}\) The following is an overview of these tools, which may be used to varying degrees by the different levels of government to shape the way marine transportation serves the collective need.

Public Ownership of Vessels and Facilities. Direct ownership of marine vessels and port facilities is common at the state and local levels of government. The Alaska Marine Highway System, for example, owns and operates a fleet of nine ferries which serve over 35 coastal Alaskan communities along a 3,500-mile route linking the mainland to the various Alaskan islands.\(^{101}\) Similarly, The Port of Virginia owns and operates various marine terminals at ports throughout the state including the deepwater ports at Norfolk and Newport News, and an inland container terminal up the James River, five miles south of downtown Richmond (see Section V.F.1: James River Container Expansion).\(^{102}\) Ownership directly by the state,

\(^{100}\) Rodrigue.


\(^{102}\) Virginia Port Authority, ‘Who We Are’, The Port of Virginia <https://www.portofvirginia.com/who-we-are/> [accessed 6 February 2022].
through a state-owned port authority, or by municipalities is common, though the actual operation thereof is often contracted to private operators.\textsuperscript{103}

**Subsidies.** Subsidies are important tools used in the pursuit of policy goals. Often financial in nature, subsidies may take the form of financial grants to other public or private sector entities which in turn operate maritime-related services for the public.\textsuperscript{104} These grants are particularly common at the federal level of government, where lawmakers are more interested in policy than practice, and their existence recognizes that the transportation industry is often highly capital intensive in nature, meaning that the private sector may be unwilling or unable to provide services to the public without that help. The United States Department of Transportation’s Port Infrastructure Development Program and America’s Marine Highway Program are two examples of such grant programs (see Section V.A: Program Overview).

Subsidies may take other forms as well. The federal government promoted the construction of 18th century canals in part through generous land grants and did the same in the next century to support the construction of the railroads.\textsuperscript{105} Dredging of shipping channels and the placement of navigation aids may be considered as subsidies to promote shipping, as are laws such as the protectionist Jones Act, which seeks to protect American workers and the domestic shipbuilding industry.\textsuperscript{106}

**Regulatory Control.** Regulatory control of transportation activities is a direct form of oversight which is commonly used to achieve specific objectives.\textsuperscript{107} This is commonly used to shape the industry from an external perspective in a way that best serves the needs of the country. The Federal Maritime Commission, a non-DOT, independent federal agency that works to facilitate competition among ocean shippers in the interest of the American economy, exercises such power.\textsuperscript{108}

\textsuperscript{103} Rodrigue.
\textsuperscript{104} Rodrigue.
\textsuperscript{105} Parkman; Rodrigue.
\textsuperscript{106} Rodrigue.
\textsuperscript{107} Rodrigue.
Research and Development. Research and development is another policy tool which may help shape the future of the industry in a way that furthers lawmakers’ objectives.\textsuperscript{109} The Maritime Administration partners with universities, public and private sector research organizations, and nongovernmental organizations to fund research into solutions for the issues facing the maritime industry today.\textsuperscript{110} Specifically, its *Maritime Environmental and Technical Assistance* (META) Program funds research in issues such as invasive aquatic animal species, vessel emissions, multimodal transportation systems modeling, and alternative fuels, among others.\textsuperscript{111}

Labor Regulations and Safety and Other Operating Standards. Finally, governments may choose to pursue their objectives through the imposition of rules and standards.\textsuperscript{112} Specifically with regard to the maritime industry—keeping mariners and port personnel safe on the job—the Maritime Administration works with the United States Coast Guard and the Department of Labor, among other domestic and international organizations, to develop and enforce occupational health and safety standards.\textsuperscript{113}

4. Choosing Policy Tools to Achieve Objectives

Governments have wide latitude in choosing the mix of policy tools that most appropriately achieves their objectives. Direct public ownership offers control, but it may be expensive and it exposes the government to unnecessary business risks, not to mention potentially crowding out free market actors from the marketplace who may better serve customers’ needs. Subsidies remove this business risk but still cost the government (and its taxpayers) money both for financial grants and for oversight programs to ensure the funds are spent properly. Regulations may be burdensome or become outdated, while research and

\begin{itemize}
  \item[\textsuperscript{109}] Rodrigue.
  \item[\textsuperscript{112}] Rodrigue.
\end{itemize}
development may expose the government to “high risk-high reward” situations that might be better left to the private sector. Labor and safety regulations may have similar good intentions, but they must also be reviewed regularly for propriety and compliance burden. The choice of one or several of these tools must therefore be considered with the ultimate policy objectives in mind and with an eye towards the effects of those policies themselves.

The Organisation for Economic Co-operation and Development (the “OECD”), an intergovernmental economic organization that counts primarily rich countries as its members, examined this problem in its 2007 report Instrument Mixes for Environmental Policy. The OECD found that governments should assess the effectiveness of a given “instrument mix” along with its economic efficiency: the economic burden of the instruments themselves along with the costs of implementing and overseeing them. Additional impacts of the given instrument mix should be considered—specifically, when a given instrument is used in combination with another or others, what is the result? Varying instrument mixes should also be examined to ensure that the most effective and efficient one is being chosen. The report paid specific attention to environmental policy, but these tenets hold for transportation policy as well.

The OECD’s framework for creating an effective policy instrument mix is attractive, but it does not meaningfully address the realities of the political process, data availability, or funding constraints. A perfect world of transportation policy might involve a full accounting of data and costs readily available to Department of Transportation analysts who could then algorithmically determine the optimal mix of subsidies and regulation, for example, and then unilaterally adjust it in real time. Instead, the reality of America’s transportation policy mix is one of political motivations; slow, low, or no data; and limited funds.

The exact rationale for the United States Congress’s choice of subsidies for its promotion of the use of the nation’s inland waterways is outside of the scope of this paper. Subsidies, of course, are also just one

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114 Organisation for Economic Co-operation and Development.
115 Organisation for Economic Co-operation and Development.
part of Congress’s instrument mix that it uses to address America’s transportation policies as a whole, and the America’s Marine Highway Program is just one of many programs that is uses to implement those policies. A July 2005 report by the United States Government Accountability Office (the “GAO”), a self-styled “congressional watchdog,” explored the policy options for short sea transportation at the behest of Congress, noting that its practical options, based on precedence, ranged from subsidies in the form of financial grants to “promote” its usage through asset purchases and planning studies to a more limited program of regulatory relief to operators. By 2007, Congress had determined that financial grants were the most appropriate policy solution.

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IV. **Legal Basis for Federal Oversight of Transportation Infrastructure**

Promotion of investment in transportation infrastructure and by association, trade, has long been the purview of the United States federal government. Its rights originated in the Constitution, were subsequently clarified through case law, and manifest themselves today in the form of a robust system of planning and financial support that has created a world-class transportation system. The form of its support for it has been colorful and varied: protectionist laws were passed in the years following independence to protect the nation’s shipbuilders, and early postal subsidies were later authorized by Congress to move mail via steamship.\(^{117,118}\) Subsequent investments included financial and design support for the construction of the transcontinental railroad and the Interstate Highway System.\(^{119}\) Whether by law or by subsidy, federal promotion of transportation has generally involved some form of support for public facilities over which private operators may conduct business—acting as a guiding force for trade instead of being the business itself.

This section will explore the legal bases and limitations of America’s support for transportation, its associated infrastructure, and the trade that it facilitates, with specific attention paid to its constitutional foundations and the implementation thereof. It will first examine the Constitution’s Commerce and Port Preference Clauses, the former of which forms the basis for much of the federal government’s involvement in commercial life, and the latter of which has historically been invoked only rarely and in specific, unrelated situations. It will examine clarifying case law, as well as the implications of federalism in the context of the Marine Highway Program’s unique federal-and-state structure. It will close by reviewing the tools with which the federal government exercises its powers to promote trade and transportation; the balance of regulations and subsidies that guides the free market in the greater public interest.

\(^{117}\) Gibson and Donovan.

\(^{118}\) One notable mail subsidy involved the transport of letters between the country’s east and west coasts via ship and through Panama—an overland portage operation that predated the construction of the Panama Canal by 68 years.

\(^{119}\) Jorgenson.
A. Commerce Clause of the United States Constitution

“The Congress shall have power [...] to regulate commerce with foreign nations, and among the several states, and with the Indian tribes.”

—Constitution of the United States of America

The framers of the United States Constitution specifically granted the federal government the right to regulate trade among the various states through the third clause in Article I, Section 8 of the document. This Commerce Clause, as it is commonly known, has been the basis for federal involvement in the matter in different ways over the years. The Constitution does not define the word “commerce”: interpretations of the clause have ranged in scope from broad, sweeping notions of economic and social activity to stricter “transactional” depictions of specific business transactions.

Gibbons v. Ogden, an 1824 Supreme Court case that coincidentally dealt with cabotage, was the first major decision that clarified the scope of the Commerce Clause. It signaled a “broader” interpretation of the clause, where the federal government’s interest in trade extended into a transaction occurring in a single state between residents thereof, due to the activity’s downstream implications in interstate commerce. Various subsequent cases challenged this interpretation, progressively narrowing the federal government’s bailiwick until 1937, when the court again ruled in National Labor Relations Board v. Jones & Laughlin Steel Corporation that the Commerce Clause did in fact apply to certain intrastate activities. “Close and substantial relation[ships] to interstate commerce” were enough to move an intrastate transaction into the

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120 United States Constitution.
121 United States Constitution.
122 Legal Information Institute.
123 Justia US Supreme Court Center, ‘Gibbons v. Ogden, 22 U.S. 1 (1824)’.
124 Legal Information Institute.
federal eye, and the “cumulative effect” of a given local act may indeed be federal in nature. The broad interpretation of the clause held, and the United States federal government retained its power.125

B. Port Preference Clause of the United States Constitution

“No Preference shall be given [...]/ to the Ports of one State over those of another; nor shall Vessels bound to, or from, one State, be obliged to enter, clear, or pay Duties in another.”

—Constitution of the United States of America126

Article I, Section 9 of the United States Constitution presents another clue as to how far the United States federal government may go in promoting waterborne trade. Its sixth clause, commonly known as the Port Preference Clause or the No Preference Clause, indicates that “No Preference shall be given by any Regulation of Commerce or Revenue to the Ports of one State over those of another”: an apparent prohibition on the government from favoring ports in one state to the commercial benefit of another.127

The Port Preference Clause does not have the clarifying backing in case law that the Commerce Clause (see Section IV.A: Commerce Clause of the United States Constitution) enjoys, and its own language appears to be the subject of some uncertainty. “Regulation of Commerce” has not in this case been tested to refer to infrastructure funding (though the case law surrounding the aforementioned Commerce Clause clearly supports the usage there) and the federal government has, in apparent contradiction to the clause

125 The Commerce Clause has recently seen minor challenges. 1994’s United States v. Lopez denied the federal government the authority to regulate the possession of firearms in schools, and 2012’s National Federation of Independent Business v. Sebelius rebuffed the Affordable Care Act’s individual insurance mandate, which had relied on authority granted by the Commerce Clause. These challenges are not material to the federal government’s role in promoting transportation.126 United States Constitution.
127 United States Constitution; Jensen.
itself, already directed a great deal of funding towards specific ports in various states without meaningfully provoking the ire of any of the other states.

Whether the proactive planning measures recommended in this paper (see Section V.G.1: Transportation Planning Perspectives) or the coordination activities allowed by the 2007 Act constitute some unconstitutional or undue influence by the federal government onto the states is an unclear question that may eventually see its way into the courts. The federal government already provides similar planning assistance to states building Interstate highways and the nation’s founders clearly did not anticipate the invention of airplanes that require airports to take off and land, which operate under similar local control with federal funding and oversight and with no apparent Constitutional challenges.¹²⁸

Neither highways nor airports, however, fall under the literal definitions of the words used in the Port Preference Clause, and the federal government routinely shows incidental “preference” for certain ports through its Army Corps of Engineers’ port improvement projects and installation of navigation aids throughout the country.¹²⁹ States have historically invoked the Port Preference Clause only in certain cases of literal, physical “preference”, as was the case in 1876’s State of South Carolina v. State of Georgia Supreme Court decision where the State of South Carolina argued that the construction of a dam at a fork in the Savannah River illegally diverted traffic from a port in that state to one in Georgia.¹³⁰,¹³¹ Moreover, Congress’s own mandates per the 2007 Act (see Appendix A: Energy Independence and Security Act of 2007 [Excerpt]) seem to encourage such “preference” in the DOT’s implementation of the Program. The extent that the clause somehow contradicts the AMHP’s engendering legislation may be a subject for future

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¹²⁹ Jensen.
¹³⁰ Colby; Justia US Supreme Court Center, ‘South Carolina v. Georgia, 93 U.S. 4 (1876)’.
¹³¹ The construction of the dam in State of South Carolina v. State of Georgia (1876) was deemed to be a “not uncommon” means of navigation improvement for the benefit of both parties by the federal government that did not explicitly give “preference” to one port over another. The case was overturned, and the dam remained.
research, but in the meantime the Program appears to be operating under just one of many broad interpretations of the clause.

C. Federalism

Implicit in the question of how government may best serve the American people is the question of which level of government should be doing so. Should infrastructure be built by state and local governments, those bodies closest to the citizenry which can best see the problems of their people and most effectively solve them? Or should it be built by the more distant federal government, with its broader reach and larger pool of resources? Immediate benefits of such activities, such as job creation and nearby economic development, accrue to those at the local level. The extended benefits, however, such as access to global trade and its accompanying quality of life enhancements, accrue to the entire nation. This system of federalism, in which two or more autonomous bodies govern the same geographic area, is central to the American system of government.132

While drafting the Constitution of the United States, the nation’s founders drew upon Enlightenment-era thinking from the prior century to build a new system of government which could better serve its people by decentralizing power and placing control as close to the people as possible.133 State governments would be responsible for educating their citizens, administering welfare, maintaining local roads, and regulating industry, among other “local” duties.134 The federal government, in turn, would be responsible for foreign relations, national defense, and issuing currency, among other “national” duties.135,136

132 Lépine.
133 Lépine.
134 Lawson and Schapiro.
135 United States Constitution.
136 "The state responsibilities listed are not explicitly assigned in the Constitution. Instead, they defaulted to the hands of the states by their non-assignment to the federal government in the document—an arrangement that was later formalized in the Tenth Amendment to the document and subsequently confirmed through case law. The federal responsibilities, on the other hand, are specifically enumerated through clauses in Article I, Section 8 of the Constitution. Those clauses, commonly referred to as the enumerated powers, include the Commerce Clause (see Section V.A: Commerce Clause of the United States Constitution), which forms the basis of the federal government’s involvement in building infrastructure. The Constitution is silent on the rights of cities and other regional governments, which instead derive their powers from the various state governments as described in their own state constitutions."
Responsibility for the provision of port infrastructure is ambiguous under the Constitution. Article I, Section 8 of the document states that “The Congress shall have Power To [...] provide for the common Defence [sic] and general Welfare of the United States,” two items which may reasonably include the construction and maintenance of ports and navigation aids. Ports are not mentioned, however, except for the requirement of non-preference in the Port Preference Clause—a clause that apparently concerns their regulation and taxation, not their construction and maintenance (see Section IV.B: Port Preference Clause of the United States Constitution). This ambiguity may be strategic, and regardless, it seemingly plays to the benefit of all. Residents of a given state may see certain benefits of port activity—for example, employment—while residents of another state may see different benefits from that same port activity—for example, access to global markets. The distribution of these benefits is likely too abstruse and disparate to meaningfully build into one single legal framework; a case-by-case approach to funding and operation is more likely to capture the nuances of any particular situation.

Federal or state responsibility for any particular port lies outside of the scope of this paper (and may not have a clear answer), but the United States Government Accountability Office, Congress, and the Department of Transportation have all considered the implications of federalism in the design of the America’s Marine Highway Program. The GAO, for its July 2005 report to Congress, conducted interviews with government and industry officials to give broad recommendations as to the role the federal government may play when “promoting” (the language is conspicuously broad) short sea transportation with the states.¹³ Federalism, a Clinton-era directive that Congress, in its crafting of the 2007 Act, specifically allowed for collaboration with the states in an arrangement that, intentionally or not, may relieve the federal government of certain responsibilities should a challenge arise under a federalism argument.¹⁴ The DOT, in its Program rules, indicates that it has evaluated the Program in the context of Executive Order 13132, Federalism, a Clinton-era directive that

¹³ Hecker.
mandates reviews of such programs for conflicts in the relationships between the federal government and the states. It found no such “preemption of any State law or regulation.” Federalism, for all of its ambiguities, does not present a meaningful barrier to the America’s Marine Highway Program.

D. The Definition of Control

With federal authority over interstate commerce established, one’s attention may turn to the tools with which the government exercises such power. Regulation, the term used by the Constitution with respect to commerce, is a straightforward term that Merriam-Webster primarily defines as “governing or directing according to rule.” A secondary definition of the dictionary’s is “to bring order, method, or uniformity” to some situation: the government has an obligation to ensure some degree of economic and social balance in addition to enforcing the letter of the law. These outcomes may be achieved either by decree or by incentive, and the federal government has a history of using both.

Early American support for domestic industry came in the form of protectionist tariff laws that benefitted American shipowners and merchants; countervailing adaptations of the laws that were used against the former colonists in the years leading up to their independence. Cabotage laws were later enacted starting with the Navigation Act of 1817, which limited ocean carriage between American ports to American-built ships crewed by American citizens—the country’s merchant Navy was only then comparable to that of Britain, which had punished the colonists with similar laws mandating the use of British ships in the wake of the revolution. The Merchant Marine Act of 1920 brought with it a section known as the Jones Act, the cabotage law that is still in effect today.

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141 Gibson and Donovan.
142 The first of these laws, the Tariff of 1789, was in fact the first material act passed by the first United States Congress. A later Act for Registering and Clearing Vessels, Regulating the Coasting Trade, and for other purposes, passed by that same Congress later that year, provided rudimentary regulations governing cabotage (“coasting trade”) though the full prohibition on foreign vessels did not arrive until 1817.
Support for infrastructure investment, and by association support for private commerce, also stretches back to the early days of the nation. The same initial 1789 session of Congress that passed the first tariff law later passed a law funding “the establishment and support of Lighthouses, Beacons, Buoys, and Public Piers” from the nascent treasury. It is unclear whether those assets were actually built by government functionaries or by a private enterprise under contract. President James Madison later impressed upon Congress “the great importance of establishing throughout our country the roads and canals,” urging investment in “internal improvements” that would advance the economy, improve defense capabilities, and further unite the nation. This sentiment later gave way to government support for those roads and canals in the form of more funding, land grants, and credit guarantees, among other mechanisms—many of which were permitted under the varying interpretations of the Commerce Clause over the years (see Section III.A.1: Rivers and Canals and Section IV.A: Commerce Clause of the United States Constitution).

This tug-of-war between regulation and subsidy has remained the centerpiece of federal support for transportation, infrastructure, and overall commerce ever since. The United States is not, nor should it be, some centrally planned economy where state actors directly operate transport services for its constituents: the country is too large, and its citizenry and its needs are too diverse, for the government to do so effectively. Instead, the government rightly acts as a sort of “invisible hand” that guides the actions of the private sector and employs a guiding force in shaping those movements to achieve objectives that the free market would not otherwise accomplish on its own. Regulation forces economic participants to act in some way that is more socially optimal than the purely free-market alternative, for example by requiring low levels of vehicle emissions that benefit all when there is no immediate profit incentive to do so. Subsidies may

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143 United States Congress, ‘Chap. IX.—An Act for the Establishment and Support of Lighthouses, Beacons, Buoys, and Public Piers’.  
144 Funding for these maritime assets was subsequently renewed by later sessions of Congress in an annual process reminiscent of today’s appropriations process that funds the America’s Marine Highway Program.  
145 Parkman.
turn an unprofitable (though socially beneficial) activity into a profitable one, for example by encouraging the use of river barges to remove containers from roads and rails to ease congestion in those networks.

While effective, this model is not a “one size fits all” solution. The Department of Transportation’s Capital Construction Fund, for example, provides grants directly to private sector builders of American-flagged vessels to help them compete against foreign ones (see Section V.A: Program Overview). The benefits of the program accrue to the public through the availability of a high quality, modern merchant fleet, and the program’s grantee “fundholders” are numerous and small enough that the Department has apparently determined that the program’s intermediate benefits will not accrue disproportionately to any single one of them.

The America’s Marine Highway Program, on the other hand, places funds primarily in the hands of public sector port authorities and planning commissions who in turn purchase equipment directly or further allocate those funds as they see fit from their “ground-level” viewpoints that the federal government does not share. This structure is by design: the July 2005 GAO report that laid the groundwork for the AMHP model paid specific attention to the potential role of the federal government with respect to legal constraints and optimal outcomes, noting that direct grants to the private sector in this instance would likely benefit those private operators disproportionately at the expense of the shipping public. Whether this “intermediary” model is simply a result of lessons learned since the 1936 inception of the Capital Construction Fund or due to the fact that the Marine Highways are entirely domestic and therefore within the control of some level of American government is unclear, but the AMHP’s structure lends credence to the GAO’s recommendations to use state and local governments as intermediaries.

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146 Maritime Administration, ‘Capital Construction Fund’.
147 Hecker.
V. America’s Marine Highway Program

The federal government’s involvement in promoting transportation has long been evident. A network of highways was built to serve the nation’s citizenry, and the air, rail, and ocean shipping industries have long benefitted from generous financial backing and supportive regulation. Inland waterways, however, despite their geographic prevalence and important role in enabling the country’s early economic growth, had long been neglected by operators, regulators, and the shipping public. Increasing stress on those other systems presents a growing opportunity to put them to work. This section will discuss the genesis of the America’s Marine Highway Program and its core objectives and structure. The grant administration and monitoring process will then be outlined, followed by a survey of three specimen AMHP projects. It will conclude with an overview of the current state of the Program and its outlook towards the future.

A. Program Overview

The United States Congress, in its 2007 Energy Independence and Security Act (the “Act,” the “2007 Act,” or “EISA”), prescribed a national short sea transportation program with the primary stated goal of providing relief to traffic congestion in landside transportation corridors (see Appendix A: Energy Independence and Security Act of 2007 [Excerpt]). For purposes of the law, and consistent with common parlance, short sea transportation, or “short sea shipping,” refers to the maritime carriage of cargo between ports within the local region, in contrast with “deep sea,” “blue water,” or simply “ocean shipping” which operates globally. The Act notably includes voyages originating from or ending in Canadian ports located on the Great Lakes and along the St. Lawrence Seaway in its definition of short sea transportation. The term is also often used interchangeably with cabotage, which refers more specifically to transportation via air

or water between two points within the same country.\textsuperscript{151} The law was amended in 2020 to use the term “Marine Highway” throughout instead of “short sea transportation” to reflect the Maritime Administration’s usage of the term in practice, though this paper uses the two terms separately to distinguish the Marine Highway grant program from the actual practice of short sea transportation.\textsuperscript{152}

The Act directed the Secretary of the United States Department of Transportation to create a fivefold initiative that 1) establishes a nationwide short sea transportation program that designates and funds specific projects that mitigate landside traffic congestion, 2) designates specific water routes as extensions of the existing land-based transportation system, 3) develops strategies to promote the use of short sea transportation, 4) enters the Department into agreements with other federal agencies to facilitate the waterways’ use by those other entities, and 5) establishes a means to identify and seek solutions to challenges facing the widespread adoption of water as a mode of inland transport.\textsuperscript{153}

The Department of Transportation’s Maritime Administration announced its implementation of this portion of the act as the America’s Marine Highway Program in an April 2011 report to Congress.\textsuperscript{154,155} The Program is intended to promote the usage of America’s inland waterways, including its navigable rivers, the Great Lakes St. Lawrence Seaway System, and the intracoastal and coastal waterways, with the intention of improving economic competitiveness, creating jobs, reducing greenhouse gas emissions, and strengthening the country’s strategic sealift resources in addition to addressing Congress’s landside traffic congestion concerns.

\textsuperscript{154} Maritime Administration, America’s Marine Highway Report to Congress.
\textsuperscript{155} The Maritime Administration is a functional unit of the United States Department of Transportation. For purposes of this paper, use of the term Department of Transportation will refer to that department’s role in policymaking and program oversight, while references to the Maritime Administration will refer to that functional unit’s role in direct management of the America’s Marine Highway Program.
The Marine Highway is not, for the sake of semantics, a replacement term for the country’s physical network of inland and coastal waterways and the infrastructure that supports it. Instead, the Program refers more abstractly to the Maritime Administration’s grant program and the general “corridors” that it defines for grant allocation and program administration purposes. The marine highway “M-35” (discussed later), for example, refers to the Mississippi River and the appurtenant network of ports, locks and dams that exists to facilitate its use as a commercial and passenger transportation route.

There is currently no “Marine Highway” signage alongside the waterways, and nobody but the hardiest of MARAD bureaucrats would feel the need to use the “M-35” designation in common parlance. No marine traffic dispatcher would be compelled to tell a riverboat captain to “take the M-35 [Marine Highway] to the M-29 [Marine Highway] towards Omaha.” The America’s Marine Highway Program is also separate from other state-run programs which may carry the same name. Alaska, for example, operates an Alaska Marine Highway System which connects various areas of the state via government-owned passenger and cargo ferry boats.

Neither is the America’s Marine Highway Program the sole focus of the Maritime Administration’s efforts to support the shipping industry. MARAD currently administers six major grant and financing programs including the AMHP designed to support the United States’ marine transportation network and its domestic shipbuilding industry: the AMHP, the Capital Construction Fund, the Construction Reserve Fund, the Federal Ship Financing Program, the Port Infrastructure Development Program, and the Small Shipyard Grant Program. The latter five programs exist to support various elements of the United States’ commercial shipping industry through financial support and guarantees (see Table V-A, next page). The Department of Transportation, through its various other operating agencies, also administers programs that support other modes of transport (i.e., air, motor, and rail) that may interact with the maritime industry.

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157 Maritime Administration, ‘Grants and Finances’. 
Table V-A: Major Grant and Financing Programs of the Maritime Administration

<table>
<thead>
<tr>
<th>MARAD Program</th>
<th>Purpose</th>
<th>Inception</th>
</tr>
</thead>
<tbody>
<tr>
<td>America’s Marine Highway Program</td>
<td>To expand the use of America’s inland waterways.¹²</td>
<td>2011</td>
</tr>
<tr>
<td>Capital Construction Fund</td>
<td>To provide funding to build American-flagged vessels.¹³</td>
<td>1936</td>
</tr>
<tr>
<td>Construction Reserve Fund</td>
<td>To fund tax deferrals on the sale of certain American-flagged vessels.¹⁴</td>
<td>1936</td>
</tr>
<tr>
<td>Federal Ship Financing Program</td>
<td>To provide credit guarantees to builders and purchasers of American-flagged vessels.¹⁵</td>
<td>1936</td>
</tr>
<tr>
<td>Port Infrastructure Development Program</td>
<td>To fund improvements to U.S. ports and adjacent intermodal facilities.¹⁶</td>
<td>2019</td>
</tr>
<tr>
<td>Small Shipyard Grant Program</td>
<td>To fund capital improvements to small U.S. shipyards.¹⁷</td>
<td>2008</td>
</tr>
</tbody>
</table>


Five of the Maritime Administration’s six major grant and financing programs exist to support specific elements of the United States’ maritime industry. The Capital Construction Fund, administered in collaboration with the Department of Commerce’s National Oceanic and Atmospheric Administration, was formed by a 1936 act of Congress and exists to aid in funding the construction and purchase of American-built commercial and fishing vessels.¹⁶,¹⁷ The Construction Reserve Fund and Federal Ship Financing Program stem from the same legislation and exist to fund tax deferrals on the gains on sales of certain vessels and to provide credit guarantees to builders and purchasers of new U.S.-flagged vessels, respectively.¹⁸ The Port Infrastructure Development Program (“PIDP”) is a newer counterpart to the first three. Initially authorized as part of the 2019 Consolidated Appropriations Act, the PIDP administers financial grants to operators of coastal, inland, and Great Lakes ports and to operators of the intermodal

¹² Maritime Administration, ‘America’s Marine Highway’.
¹³ Maritime Administration, ‘Capital Construction Fund’.
¹⁴ Maritime Administration, ‘Construction Reserve Fund’.
¹⁵ Maritime Administration, ‘Federal Ship Financing Program (Title XI)’.
¹⁶ Maritime Administration, ‘About Port Infrastructure Development Grants’.
¹⁷ Maritime Administration, ‘Small Shipyard Grants’.
¹⁸ Maritime Administration, ‘Capital Construction Fund’.
¹⁹ The 1936 Merchant Marine Act that created these three initiatives predates the United States Department of Transportation by 31 years. Prior to Transportation’s 1967 creation, these programs fell under the purview of the United States Department of Commerce.
²⁰ Maritime Administration, ‘Construction Reserve Fund’; Maritime Administration, ‘Federal Ship Financing Program (Title XI)’. 
facilities that connect them to the hinterland.\footnote{Maritime Administration, ‘About Port Infrastructure Development Grants’.} The Small Shipyard Grant Program has been similarly supporting small domestic shipyards since its inception in 2008.\footnote{McCormack.}

Each of these five programs administered by the Maritime Administration is the product of its own circumstantial processes, designed to support a specific aspect of America’s shipping industry, possibly at the behest of some private interest. The America’s Marine Highway Program, the sixth, is unique in its design that unites the various elements of shipping together into a holistic program that addresses broad economic issues in addition to quality of life and national defense ones (discussed later).

Conversely, grant programs administered by other DOT entities also exist to support specific elements of the landside transportation network that feed into the AMHP’s transit corridors. The Department’s \textit{Rebuilding American Infrastructure with Sustainability and Equity} (RAISE) program, for example, funds investments in road, rail and port infrastructure that may supplement short sea transportation.\footnote{The RAISE program supersedes previous grant programs including Better Utilizing Investments to Leverage Development (BUILD) and Transportation Investment Generating Economic Recovery (TIGER).} The Federal Highway Administration’s \textit{Infrastructure for Rebuilding America} (INFRA) program operates similarly.\footnote{Federal Highway Administration, ‘Infrastructure For Rebuilding America (INFRA) Grants’.}

These grant programs exist primarily to fund investments in port and other connectivity infrastructure to encourage the use of America’s inland waterway system. They do not, however, fund improvements to the waterways themselves. This dredging, flood control work, and lock and dam construction and improvement work falls primarily to the United States Army Corps of Engineers, which in turn is generally funded half through annual general appropriations by Congress and half through contributions from the $131 million \textit{Inland Waterways Trust Fund}, a 1978 creation of Congress that currently collects a 29 cent per gallon excise tax on marine fuels.\footnote{Bureau of Transportation Statistics, ‘50th Anniversary Edition of the National Transportation Statistics’; Congressional Research Service, ‘Inland and Intracoastal Waterways: Primer and Issues for Congress’; United States Congress, \textit{26 U.S. Code §}.} The similar $9.1 billion \textit{Harbor


_Feedex Trust Fund_, established in 1986, collects an _ad valorem_ Harbor Maintenance Fee (“HMF”) of 0.125 percent of the value of commercial cargo moved between domestic ports and imported from abroad to fund the dredging of harbors and navigation channels. America’s approach to infrastructure funding is a patchwork, but such is the legislative process.

These federal mechanisms work together with countless state and local entities to accomplish their mission of supporting inland waterway usage. After all: _grant_ programs need _grantees_; the federal government does not operate these projects directly. The Marine Highway Program is marketed towards state departments of transportation, local and regional port authorities (collectively, “sponsors”), and even some private operators upon referral. Those state, local and private entities of course have their own funding mechanisms to support their ongoing operations, since AMHP grants are mainly intended to finance fixed-asset vessel and equipment purchases and not to run their businesses.

But why involve the federal government at all? Might a container yard operator in Norfolk for example, as a private enterprise, be responsible for procuring its own equipment and charging its customers some market rate to in exchange for its services, both on their own accord? The operator provides a service that benefits “everybody”: “everybody” can buy the products being shipped through the yard, and “everybody” bears the cost of traffic congestion and vehicle emissions involved. Alternatively, if one of the parties is having trouble doing so, what responsibility would a local or state government have in supporting such a venture when the benefits extend even further beyond their boundaries? The customer may be from out of state, or the customer’s goods may in turn be sold elsewhere. The reality of short sea shipping, and

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4042 - Tax on Fuel Used in Commercial Transportation on Inland Waterways (United States of America)  


— The Harbor Maintenance Fee is codified as such, but it is often referred to as the Harbor Maintenance Tax. It is notably not collected on the export of goods, the practice of which was deemed unconstitutional by the United States Supreme Court in 1998.

— Maritime Administration, America’s Marine Highway: Report to Congress.
transportation in general, is that the benefits and the costs of the trade often extend far beyond the two immediate parties, and the federal government, in scale and scope, is often best situated to equalize the two.

B. Program Objectives

The maleffects of today’s transportation systems have been clear for some time. Vehicle traffic congestion has existed for as long as there have been vehicles, and cities around the world are becoming more congested as the world becomes more urbanized. Vehicle emissions are trending downward, though their ill effects remain an issue. The United States Government Accountability Office contemplated these and other issues in the context of short sea transportation in its July 2005 report to Congress.

The GAO’s mandate was exploratory: to examine the benefits of short sea transportation as they relate to externalities such as traffic congestion and pollution and to propose a framework which may be used to develop such a program. The directive was not to create a Marine Highway program itself (which the GAO did not do, nor did it have the power or means to do so), but it did offer recommendations that set in place important groundwork for Congress to proceed with such a solution (see Table V-B, below).

Table V-B: GAO Recommendations for the Implementation of a Short Sea Transportation Program

1) Establish a comprehensive understanding of key issues, assessing a genuine need for federal involvement and if so, what its role should be. For example:
   a) Determine whether the private sector would undertake a given project on its
      own, or
   b) Better define an appropriate role, which may include
      i) Assessing which state, local, or private resources are already in place,
      ii) Performing quantitative and qualitative analysis of costs, including
          externalities, or
      iii) Evaluate the potential financing mechanisms and incentives which may be
          of the most value in developing an equitable program.

2) Use existing mechanisms and communications channels to encourage such a
   program’s adoption.


179 Hecker.
Congress implemented the GAO’s recommendations in various forms through its passage of the EISA in 2007 (see Appendix A: Energy Independence and Security Act of 2007 [Excerpt]). With a clear headline objective to “relieve landside congestion along coastal corridors,” the Act dutifully specified mechanisms through which the Department of Transportation would accomplish Congress’s goals (enumerated later).\(^1\) Notably absent from Congress’s Act, however, was a funding mechanism. Instead, Congress chose the words “promote” and “encourage” for the Department: terms that provide broad latitude in practice but were eventually rendered as “fund” in future Program rules, a practice with strong historical precedence (see Section IV.D: The Definition of Control).

Congress also wisely included a clause in the Act that required the Department of Transportation to report back within one year on its establishment of the short sea transportation program, which had yet to be named the America’s Marine Highway Program. The Department did so, four years later in 2011. That year’s *America’s Marine Highway Report to Congress* named the Program thusly and, through the DOT’s Maritime Administration, presented its objectives more concretely.\(^2\)

The report enumerated five objectives, the first explicitly stated in the EISA and the subsequent four added by MARAD in an apparent effort to broaden the appeal and effectiveness of the program (see Table V-C, next page).\(^3\) Reduced landside traffic congestion is of primary concern. MARAD also believes that the AMHP can enhance the country’s economic competitiveness—improvements in productivity that extend beyond the ports and yards themselves and into the factories and warehouses of America. Environmental sustainability is an evergreen pursuit of the Department, and augmentation of the nation’s strategic sealift resources (that is, military preparedness) has been a long-simmering issue within the

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\(^2\) Maritime Administration, *America’s Marine Highway Report to Congress*.
\(^3\) The 2007 Act enumerated other additional requirements of the program such as the development of performance measures and the formation of an oversight board. These are certainly important oversight elements, but they are not ultimate objectives of the program.
Finally, MARAD seeks to use the Marine Highway Program to transport hazardous materials more safely and hasten disaster response. The Program’s objectives and other terms per the report were later codified in the Federal Register as official Maritime Administration rules in 2010, and they were amended in 2017.184

Table V-C: Objectives of the America’s Marine Highway Program

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>To reduce traffic congestion in landside transportation corridors through the establishment of a short sea transportation program, designating specific projects and corridors along which to do so.</td>
</tr>
<tr>
<td>2.</td>
<td>To improve our nation’s economic competitiveness while creating and sustaining jobs, including through the reduction of landside traffic congestion, the ability to add cost-effective new freight and passenger transportation capacity, the reduction of wear-and-tear on roads and bridges, and by providing resiliency to the surface transportation system.</td>
</tr>
<tr>
<td>3.</td>
<td>To provide an environmentally sustainable transportation system that requires less energy and reduces greenhouse gas emissions per ton-mile of freight moved.</td>
</tr>
<tr>
<td>4.</td>
<td>To add to the nation’s strategic sealift resources and support the nation’s shipbuilding industry.</td>
</tr>
<tr>
<td>5.</td>
<td>To improve public safety and security through the safe movement of passengers and freight, including hazardous materials, and enable more effective transportation responses in response to natural and manmade disasters.</td>
</tr>
</tbody>
</table>

Source: Maritime Administration, America’s Marine Highway: Report to Congress, 2011

Lawmakers later recognized more potential in the program, and in 2012 they expanded its objectives to “include efforts to increase the utilization and efficiency of domestic freight and passenger transportation” along inland waterways in that year’s Coast Guard and Maritime Transportation Act— incentivizing the improvement of the Marine Highway system in addition to its mere increased usage.185

The 2016 National Defense Authorization Act expanded the program’s definition of short sea transportation to include more types of cargo, including palletized “breakbulk” goods, freight vehicles, and passengers on commuter ferry boats.186 Shippers of bulk commodities such as grain and coal already made extensive use of inland water transportation, so projects supporting those cargoes were specifically excluded.

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183 Maritime Administration, ‘Strategic Sealift’.
185 United States Congress, ‘Hearing Before the Subcommittee on Coast Guard and Maritime Transportation’.
from the program in favor of containerized freight: those same metal boxes congesting the nation’s highways and rails. Passenger service was not expected to constitute a meaningful part of long-distance Marine Highway activity, though it was included in the expanded scope of the program for its use in relieving local traffic congestion in crowded cities and providing transportation redundancy in emergency situations. 

In addition to promoting the Marine Highways as a viable option for the private sector, the 2007 Act seeks to facilitate its usage by other U.S. government agencies. It also seeks to promote its inclusion in regional transportation plans at other levels of government, orders the establishment of an advisory board for Marine Highway-related research, and calls for its grantee projects to participate in other federal funding programs when possible.

Nowhere in the legislation or in the Maritime Administration’s report to Congress is there mention of pursuit of a financial profit to the federal government or the American people. MARAD, in its design of the program, notes in its report to Congress its faith in the free-market mechanics that have brought the economy thus far and is aware of its high-level “steering” role in promoting inland waterway usage. Financial profits, instead, go to the grantees and their delegates, the operators of the ports and vessels who receive the grants to initiate or improve service. From there, private business interests are deemed to be the best allocators of funds.

Social profits, on the other hand, are to be realized by all. Social return on investment is not a new concept to the federal government and it is keenly aware of its role in producing intangible, “quality of life” results that the private sector may fail to produce on its own. Foreign diplomacy, national defense, and

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187 Maritime Administration, America’s Marine Highway: Report to Congress.
188 Maritime Administration, America’s Marine Highway: Report to Congress.
189 Maritime Administration, America’s Marine Highway: Report to Congress.
190 Grantee state and local government entities may indeed reap financial profits if they are involved in direct operations of Marine Highway services. Grant funds are often also forwarded (as authorized) to private sector operators contracted by those state and local government entities.
management of the money supply are all examples of services that might appear to be net costs to the government if not for the immeasurable social and economic benefits that they provide.

Infrastructure is, of course, a key example of this. It provides a social benefit—moving people and freight from place to place—that is highly disparate and difficult to capture or even define. It also involves a social cost: traffic congestion from vehicles takes time away from their operators who may wish to do other things and vehicle pollution causes environmental and health issues that go far beyond drivers and their immediate environment.

Social benefits and costs are themselves difficult to measure, but their net “profits” relate cleanly to their financial equivalents, the inputs of which may be cleanly derived from accounting data. Such “social profits,” however calculated, illustrate the benefits to society that (ideally) outweigh their costs to society. One measure of this concept may be derived using benefit-cost analysis, a formal process for measuring and comparing the full benefits and costs of an infrastructure project to assess the extent of its net benefits over a set period of time and to contrast that project with others (see Section V.B.3: Environmental Concerns).

Social rate of return, a similar metric, considers those same full benefits and costs as a form of percentage investment return, also over a given period of time. Benefit-cost analysis is often required by government entities to be conducted over a predetermined timeframe, while social rate of return is a more fluid measure.

Jorgenson, in his 2021 thesis *The Justification for Federal Assistance in Emerging United States Surface Freight Transportation Modes: The Case for America’s Marine Highways*, illustrates the social rate of return profile similarities between the American inland waterway transportation system and the Interstate highway and transcontinental rail systems that preceded it. They are strikingly similar: Interstate highway

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193 Jorgenson.
construction involved large upfront financial and social costs, and their benefits quite literally extended nationwide over the next half century. The transcontinental railroad was a private venture, but the government recognized the positive externalities and provided substantial support for its construction. The social returns of both persist to this day.

Congress, in apparent deference to the GAO in its July 2005 report, appeared to recognize that government will never be the sole arbiter of who bears which financial and social costs and benefits. It rightly chose in 2007 to let the free market match sellers of Marine Highway services to buyers of them, while acting instead as a sort of force majeure in specific instances to break impasses where sellers cannot readily meet buyers’ needs. Private operators are therefore entitled to the immediate financial profits, while the longer-term social profits accrue to the whole.

In pursuit of Congress’s goal of maximum social profits, the Maritime Administration enumerated five primary goals, enumerated earlier: relief of landside congestion, enhanced economic competitiveness, care for the environment, augmentation of strategic sealift capabilities, and the safety of passengers and freight (see Table V-C, prior). The remainder of this section will discuss the context of each of these objectives and identify how the America’s Marine Highway Program is uniquely fit to achieve them.

1. **Landside Congestion**

Traffic congestion is a simple phenomenon that is easy to recognize as roads and rails fill up with vehicles and passengers and freight travel at slower-than-optimal speeds. It can occur for any number of reasons, including weather, construction, traffic incidents, physical constraints, or simple high demand. Bad weather passes, construction projects reach completion, and traffic incidents are resolved. Physical constraints, however, are not self-correcting and require management of the supply of and demand for capacity as urban areas grow.

**Highway Congestion.** Motor vehicle congestion is a small annoyance to the individual that has material economic impacts on the community at large. When multiplied by the millions of vehicles that travel the country’s roads daily, time spent in traffic equates to billions of dollars of lost economic output.
per year. According to traffic data provider INRIX Inc., Americans spent on average 99 extra hours per year in road and highway traffic during 2019, up two hours on average from 2017.\textsuperscript{194} It cost drivers $1,377 per year on average, or about $88 billion overall, in lost output (see Table V-D, below): time spent sitting in gridlock instead of generating economic activity. Drivers in Boston suffered the worst in 2019, losing 149 hours and $2,205. Chicago, Philadelphia, New York, and Washington followed closely behind, and less-populated metros such as Portland, Oregon and Baltimore also ranked in the top ten.\textsuperscript{195}

### Table V-D: Ten Most Congested Urban Areas in the United States in 2019

<table>
<thead>
<tr>
<th>Rank</th>
<th>Urban Area</th>
<th>Hours Lost to Congestion</th>
<th>2018-2019 Change (%)</th>
<th>Cost per Driver</th>
<th>Total Cost to City</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Boston, Mass.</td>
<td>149</td>
<td>-5%</td>
<td>$2,205</td>
<td>$4.1 billion</td>
</tr>
<tr>
<td>2</td>
<td>Chicago, Ill.</td>
<td>145</td>
<td>4%</td>
<td>2,146</td>
<td>7.6 billion</td>
</tr>
<tr>
<td>3</td>
<td>Philadelphia, Pa.</td>
<td>142</td>
<td>4%</td>
<td>2,102</td>
<td>4.5 billion</td>
</tr>
<tr>
<td>4</td>
<td>New York, N.Y.</td>
<td>140</td>
<td>-4%</td>
<td>2,072</td>
<td>11.0 billion</td>
</tr>
<tr>
<td>5</td>
<td>Washington, D.C.</td>
<td>124</td>
<td>-11%</td>
<td>1,833</td>
<td>4.1 billion</td>
</tr>
<tr>
<td>6</td>
<td>Los Angeles, Calif.</td>
<td>103</td>
<td>4%</td>
<td>1,524</td>
<td>8.2 billion</td>
</tr>
<tr>
<td>7</td>
<td>San Francisco, Calif.</td>
<td>97</td>
<td>-8%</td>
<td>1,436</td>
<td>3.0 billion</td>
</tr>
<tr>
<td>8</td>
<td>Portland, Ore.</td>
<td>89</td>
<td>10%</td>
<td>1,317</td>
<td>1.2 billion</td>
</tr>
<tr>
<td>9</td>
<td>Baltimore, Md.</td>
<td>84</td>
<td>5%</td>
<td>1,243</td>
<td>1.3 billion</td>
</tr>
<tr>
<td>10</td>
<td>Atlanta, Ga.</td>
<td>82</td>
<td>9%</td>
<td>1,214</td>
<td>3.0 billion</td>
</tr>
</tbody>
</table>

Average/total (nationwide)\textsuperscript{196} $1,377 $88 billion


Excessive traffic congestion can also be traced to specific routes. INRIX notes that drivers in Los Angeles lost about 20 minutes per day to traffic on Interstate 5 and U.S. Highway 101, and New Yorkers lost about 17 minutes daily on the Brooklyn–Queens Expressway segment of Interstate 278 and Interstate 95 in the Bronx (see Table V-E, next page).\textsuperscript{197} Highways in Atlanta, Austin, and the Tampa Bay area also scored poorly enough to rank in the top ten.


\textsuperscript{195} INRIX Inc.

\textsuperscript{196} Average and total costs to drivers and cities are inclusive of all United States cities, not only those in the top ten.

\textsuperscript{197} INRIX Inc.
Increased highway traffic congestion is not a direct function of population growth: growth in freeway lane-miles outpaced the growth of the populations they serve in the nation’s largest 100 urban areas over the period from 1993 to 2017. Congestion, however, as measured by the total annual hours of time spent in traffic below free-flowing speeds, actually grew 144 percent over the same period despite the increased capacity—a product of induced demand, urban sprawl, and community design.\(^{198}\) Short sea shipping is not a panacea for these broader issues, but it is a meaningful step that can be taken to ease highway traffic within those confines.

**Rail Congestion.** Rail traffic is somewhat more nuanced. Major U.S. railroad volume has been roughly flat over the past ten years at an average of about 27,000 carloads originated per year, and the rails themselves are generally less congested outside of key chokepoints.\(^{199}\) Congestion has been increasing, however, at major intermodal seaports where shipping containers are transloaded between railcars and ever-larger container ships that are increasingly limited to specific ports due to their sizes.

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\(^{198}\) Transportation for America.  
\(^{199}\) Association of American Railroads.
This issue has come to a head in recent months as the ongoing global COVID-19 pandemic altered trade patterns and created labor shortages that prevented cargo from moving through port efficiently.\textsuperscript{205} Containers have lingered in storage yards for months due in part to overloaded rail connections, and the ensuing gridlock has reverberated throughout global supply chains in the form of longer lead times and product shortages (see Section V.G.A: \textit{Supply Chain Redundancy}). Short sea shipping does not directly solve the problem of waterside port congestion caused by ever-larger container ships, but it may ease pressure on the landside linkages by moving containers from large “gateway” ports to smaller ports elsewhere on the coast or further inland where they may be sorted and transloaded more freely.

2. \textbf{Economic Competitiveness}

The economic benefits of the America’s Marine Highway Program extend beyond those related to reduced traffic congestion. New transport options through revitalized inland ports may provide options for shippers to build nearby warehouses and distribution facilities, which provide jobs and stimulate the economy. The ports themselves provide jobs, as do the vessels that carry cargo between them. Finally, growth in Marine Highway services will likely stimulate demand for new and upgraded barges and ships, revitalizing the domestic shipbuilding industry.

\textbf{New Development.} Marine Highway investment has the potential to spur development in the areas surrounding inland ports and terminals. As it becomes easier to ship through those facilities, it becomes attractive for carriers and distributors to set up warehouses and other facilities nearby. The intermodal focus of the AMHP provides an added benefit, as those same standardized shipping containers that were easily transloaded from the deep-sea port of entry to inland vessels may just as easily be removed to a nearby facility for local sorting. This arrangement is already common with providers of rail service to deep-sea
ports, who dray containers via rail to inland “dry ports” where yard space is cheaper and highways are more easily accessible.

This new development is already occurring. Clients of the Port of Virginia’s Richmond Marine Terminal (see Section V.F.1: James River Container Expansion) have already set up shop near that facility, allowing retailers to move containers inland from Norfolk’s deepwater port on a regularly-scheduled barge service. Similar projects are under consideration at the Port of Memphis in Tennessee, where an agreement with Louisiana’s Plaquemines Port Harbor and Terminal District will soon provide regular container-on-barge service between New Orleans and Memphis. Land adjacent to inland ports is often cheap and available, and legacy road and rail linkages further inland tend to be plentiful.

**Direct Port and Vessel Employment.** Loading and moving cargo along the Marine Highway system is a meaningful source of jobs for Americans. Base pay for union longshoremen equates to over $90,000 per year, with opportunities available for overtime. Median wages for on-vessel transportation workers in the United States are currently around $60,000 per year, with highest decile earning in excess of $128,000 per year. Captains, mates, and port pilots stand to earn even more with their specialized training. A typical tug-and-barge service, the kind found carrying shipping containers on the Marine Highways, stands to employ longshoremen, vessel crew members, and terminal workers in the ports that they serve.

**Shipbuilding.** The Marine Highway Program’s promotion of short sea transportation may also lead to orders for new ships and barges. This increase in demand must, by law, be supplied by domestic shipyards. America’s shipbuilding industry has historically been viewed by Congress as important enough to merit this support through a clause in the protectionist *Jones Act* portion of the Merchant Marine Act of

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201 Gilligan.
202 Risher.
203 Saraiva.
1920, which requires waterborne cargoes moving between two American ports to move aboard American-built, American-flagged ships crewed by American mariners (see Section IV.D: The Definition of Control).

Potential Marine Highway services are diverse: container and trailer barges, roll-on/roll-off trailer ships, and traditional vehicle and passenger ferries may all see expanded use under the terms of the program. Designing and building new ships for these trades, along with repairing and altering them, is a meaningful source of jobs for Americans: during 2019, the industry directly employed over 107,000 people who earned a combined $9.9 billion in wages. The industry indirectly employed another 276,000 workers during that same year through shipbuilding operations, and a further 10,000 people were employed through the industry’s capital investment process—building and repairing the structures and equipment that make it all possible. America’s support for its shipbuilding industry also extends past job creation to the maintenance of a well-equipped and modern fleet of vessels which is ready to provide humanitarian or military support in times of disaster or war (see Section V.B.4: Strategic Sealift Resources).

3. Environmental Concerns

Vehicle emissions take their toll on the environment as well. Airborne exhaust particulates cause environmental pollution in addition to the health issues discussed earlier. Internal combustion engines emit greenhouse gases, which in large amounts may affect the Earth’s climate. Vehicle noise is also an environmental issue, as large amounts of it may range in severity from a mere nuisance to a serious health issue. These additional costs of transportation are rarely attributed properly to those who reap their benefits: the direct costs of operating a vehicle—fuel and depreciation, for example—are paid by the

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27 Gibson and Donovan.
28 Maritime Administration, America’s Marine Highway: Report to Congress.
30 Stopher and Stanley.
operators who will see the benefits of moving their product between points. The indirect costs, those nonfinancial ones including health problems, environmental damage, and effects of noise pollution, tend to be borne by bystanders who do not reap the benefits of such activity. The natural environment, a shared resource to be enjoyed by all, is progressively destroyed by individuals acting to their own benefit. This “Tragedy of the Commons” is a classic issue in economics and other social sciences and forms a helpful template with which to understand the distribution of the full costs of transportation.\footnote{Frischmann, Marciano, and Ramello.} \footnote{Maritime Administration, America’s Marine Highway: Report to Congress.}

The Tragedy of the Commons. America’s transportation system has been formed by the competing private and public sector interests that have appeared over the course of the country’s history.\footnote{Frischmann, Marciano, and Ramello.} It is the result of countless individual decisions made in response to geographic challenges, new technologies, and economic forces that grew and changed along with the country itself. Market forces such as these are generally efficient in allocating resources, but only when the benefits and costs are well understood, definable, and properly considered as part of the investment decision. When left to themselves, individual actors may act in their own self-interest at the expense of the whole: a Tragedy of the Commons may exist where users of services, in this case transportation, are not held accountable for the effects of their actions on their environment while others pay the price.

Certain costs such as vehicle and fuel expenses are directly borne by the user. Other “external” costs, however, are borne by the public and are not directly allocable to those that benefit. Pollution and vehicle noise make life unpleasant and can harm the environment. Traffic congestion results in economic actors being confined to their vehicles for unnecessary lengths of time—preventing them from getting to work to generate more economic activity. These and other externalities are often the result of standalone individuals acting in a way that benefits themselves at the expense of the whole: one may prefer to ship a cargo across the country via truck as it may be the simplest and least expensive way to do so, but the
collective result of a country of shippers choosing to do just that may have societal costs that far outweigh the sum of those of the individuals.

**Benefit-Cost Analysis.** Benefit-cost analysis ("BCA") is one tool which may help capture these externalities. Originally developed in 18th century France by an engineer seeking to measure the benefits of road improvements, BCA seeks to calculate and compare full benefits and costs of a given project to determine whether a given project is an adequate investment and to compare it with others.\(^{213}\) Notably, when mandated by the United States federal government, the analysis addresses externalities—the emissions, noise, and other social impacts that a project may have on its surroundings—in addition to the financial costs.\(^{214}\) While it may be tempting to require the procurement of a full benefit-cost analysis for every prospective Marine Highway project, this paper does not recommend so. The program’s application package already requires similar information regarding externalities but compiling them into a full, formal BCA may prove administratively burdensome. It may also be unnecessary: the same external costs that a BCA accounts for have already been taken into consideration by Congress and the Department of Transportation in the creation of the Program.

It is impossible, or at least economically infeasible, for a single private actor to take steps large enough to reverse these costs in their entirety or at least match them to those who receive their benefits. It is therefore incumbent upon policymakers to mitigate the Tragedy of the Commons and step in to allocate resources, financial or otherwise, where the free market will not do so. The America’s Marine Highway Program seeks to do just that: these concerns are addressed in its discussions of landside traffic congestion, general economic growth, environmental concerns, the nation’s strategic sealift capacities, and safety issues.

**Environmental Arguments Against Short Sea Transportation.** Short sea transportation is not without its own issues. Despite their proposal as a solution to landside environmental problems, waterborne

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\(^{213}\) Jiang and Marggraf; Federal Highway Administration, ‘Benefit-Cost Analysis’.

vessels create their own engine emissions that affect the environment in the same ways.\textsuperscript{215} Underwater noise may disturb marine animal populations and vessel collisions with marine life may occur. These maleffects are harmful in their own rights and should be avoided to the extent possible. However, policymakers should work to understand these detriments in the broader context of commercial life and promote short sea transportation to the extent that the benefits of the program, including those environmental ones, outweigh the costs as a whole.

As a policy matter, the America’s Marine Highway Program is rightly facing some degree of scrutiny. The nonprofit Center for Biological Diversity filed suit in 2021 against the Maritime Administration, alleging that in its administration of the Program it neglected to protect certain endangered species of fish in violation of the Endangered Species Act of 1973 (the “ESA”).\textsuperscript{216} The lawsuit noted that MARAD cannot rely on the environmental protection obligations of its grantees to ensure that AMHP-funded projects properly protect the environment: the ESA places some burden on the government itself to ensure that its grantee projects are compliant. MARAD’s own regulations regarding the Program assert that the agency is “categorically excluded” from this environmental assessment obligation by nature of the Marine Highways’ lack of “significant effect on the quality of the human environment, individually or cumulatively.”\textsuperscript{217} Whether the rivers, lakes, and coastal waters are sufficiently remote as to qualify for such an exclusion is a question that will be answered in court, but Congress may be wise to expand the scope of the Program to address this concern and remove any doubt. The case is ongoing as of this writing.

\textsuperscript{215} Friends of the Earth.
\textsuperscript{216} Center for Biological Diversity.
\textsuperscript{217} Maritime Administration, ‘Revision of the America’s Marine Highway Program Regulations’. 
4. Strategic Sealift Resources

“You will not find it difficult to prove that battles, campaigns, and even wars have been won or lost primarily because of logistics.”

—General Dwight D. Eisenhower

The practice of logistics, the combined transport and related coordination activities that rely on infrastructure, traces its existence as a formal discipline to roots in military history. Alexander the Great, the 4th century BCE Greek king who built one of the largest empires in history, recognized its importance in military success and employed a sizeable ocean fleet in his expeditions throughout the Mediterranean and the Middle East. The Romans, who over the first few centuries of the Common Era built their own empire, improved on Alexander’s practices using their own road- and port-based infrastructure. Military reliance on infrastructure continued over the coming centuries as various empires recognized its importance in moving people and equipment in the most efficient manner possible.

Military logistics remained largely the same in substance, if not in form, until the early 20th century when the combat requirements of the First World War called for a level of warfare requirements that was unseen until then. In addition to the sheer magnitude of the conflict, technical advances in communications and aerial warfare cemented the need for all countries involved to pay special attention to the location of and distribution methods used in transporting ammunition, equipment and troops to battle.

The Second World War solidified many of the lessons learned from the first, as the global conflict drew supplies and troops even further away from home. Technological advances by all belligerents led to

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218 Wissler.
219 Sutherland.
220 Sutherland.
221 Sutherland.
an even more logistically intense battle environment, and the complex geopolitics of the war meant that militaries were not only required to supply their forces, but also to repatriate prisoners of war and feed the civilian populations of some of the countries that they dismantled.

Militaries rely on logistics. The Merriam-Webster dictionary goes so far as to primarily define the term *logistics* as “the aspect of military science dealing with the procurement, maintenance, and transportation of military matériel, facilities, and personnel”—relegating the term’s broader supply chain meaning as we commonly know it to a vaguer secondary definition of “the handling of the details of an operation.” The “operation” in question may be civilian in nature, for example in the case of a private sector business supply chain; or military, for example in the case of a nation moving matériel and equipment around the world in advancement of its interests.

Logistics, in turn, relies on infrastructure. The efficient and timely transport of products and people would simply not be possible without the built environment of roads, seaports, airports, and rail networks that forms the physical manifestation of supply chain designers’ flow diagrams.

**Military Reserve Capabilities.** War efforts such as the World Wars and Korea, Vietnam, and the campaigns in the Middle East require a degree of manpower and logistical intensity that may make sense for periods of conflict but is an unnecessary and unsustainable buildup of resources during peacetime. For this reason, governments build and maintain *reserve forces* that train and remain on standby while awaiting deployment should the need arise. The United States’ reserve forces broadly mirror its active forces: army, naval, and air forces remain available for national defense and emergency assistance purposes. Lesser known than those traditional reserve forces is a program that supplements the active-duty Military Sealift

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Command (MSC), a division of the United States Navy that provides logistical support to the branch. This strategic sealift program seeks to supplement the Navy’s logistical capabilities in times of need in the same way that the Navy reserves support its combat efforts. The program, administered through the United States Department of Transportation’s Maritime Administration, maintains the National Defense Reserve Fleet (NDRF) and a Ready Reserve Force (RRF) that are both available to the Department of Defense to supplement logistical capacities. To staff these fleets, the Navy maintains a Strategic Sealift Midshipman Program consisting of merchant mariners ready to operate the NDRF, RRF and other merchant vessels as naval auxiliaries.

Military preparedness depends on more than the maintenance of a robust active-duty force and keeping a reserve force at the ready. War can be an all-encompassing endeavor that requires input from all sorts of civilian industries: the private sector builds warships and bombers, manufactures weapons, and produces the food that feeds soldiers. One should hope that the United States does not see civilian mobilization efforts akin to those of World War II ever again, when communities collected scrap metal to contribute to the construction of war equipment and endured food rationing to keep it available for troops, but modern warfare does require a degree of civilian participation that in turn requires infrastructure to operate. MSC ships are generally crewed by civilians, and MARAD’s Maritime Security Program and Voluntary Intermodal Sealift Agreement program exist to make civilian merchant vessels available to the military should the need arise. Quality port and waterway infrastructure, by association, is required for these vessels to be useful in bringing civilian-made “matériel, facilities, and personnel” to war.

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225 Maritime Administration, ‘Strategic Sealift’.
227 Maritime Administration, ‘Strategic Sealift’.
5. **Passenger and Freight Safety**

Finally, the America’s Marine Highway Program seeks to address health and safety issues. Vehicle emissions degrade air quality, and frequent exposure to them may result in illness and premature death.\(^{228}\) Traffic congestion inherently increases the time vehicles spend on the road during a given period, compounding that effect. The health risks of traffic congestion extend even further: extra time spent in traffic simply presents a higher risk of “exposure” to potential vehicle accidents as drivers are on the road longer and may become distracted.\(^{229}\) AMHP also addresses freight-related safety issues, as landside transportation involves comparatively more safety incidents and fatal accidents than short sea transportation.\(^{230}\)

Vehicle emissions are becoming less problematic, though still an issue.\(^{231}\) A 2010 study by researchers at Boston University and Harvard University estimated that premature deaths resulting from them decreased from 4,000 at the turn of the century to 1,600 in 2020—despite a substantial *increase* in vehicle miles travelled over the same period.\(^{232}\) The economic impact of these premature deaths was estimated at $13 billion in 2020, also a decrease from 2000’s $31 billion estimate but also arguably much higher than some “socially optimal” amount of deaths from the cause (“zero” is simply not realistic).

Traffic raises other safety issues as well. A 2021 empirical study by researchers at the University of Barcelona concluded that the highest risk of death in road accidents occurred during periods of traffic congestion, when vehicles were in “stop-and-go” traffic as opposed to “free-flowing” situations.\(^{233}\) In other words, between the extremes of freely moving traffic and completely stopped gridlock, drivers were at their

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\(^{228}\) Levy, Buonocore, and Stackelberg.

\(^{229}\) Zhanga and Batterman.


\(^{231}\) Levy, Buonocore, and Stackelberg.

\(^{232}\) The researchers attributed this decrease partly to significant reductions in fuel efficiency and, notably, partly to an aging population in general that had died due to other causes.

\(^{233}\) Albalate and Fageda.
highest risk when traffic was just heavy enough to cause stop-and-go situations. Moving large trucks off of these roads would directly lead to safer traffic conditions.

The safety benefits of short sea transportation extend to freight carriers as well, particularly with regard to human operators (i.e., truck drivers) and the passenger vehicles with which they share the road. During 2007, large trucks were involved in accidents that caused 2.36 fatalities per billion ton-miles transported.\(^{234}\) Operators of freight transportation via water incurred just 0.23 fatalities per billion ton-miles in the same year. Carriage over water is safer for all parties due to its slower speeds, more highly trained operators (merchant mariner training is significantly more challenging than obtaining a commercial driver’s license), and the simple fact that there are fewer vessels on the water than vehicles on the roads.

**Hazardous Materials.** Safe hazardous materials transport is of significant interest to the Department of Transportation. Transporting “HAZMAT” presents risks to humans and the environment, as well as the potential for damage to infrastructure, evacuations, and environmental remediation.\(^{235}\) One particularly salient example comes from the 2001 CSX Howard Street Tunnel incident in Baltimore, where a chemical tank railcar ruptured and caught fire in that tunnel, burning for five days. The accident shut down a key link in the country’s north-south rail system, and aboveground roads were gridlocked due to closures. The incident incurred $12 million in response and cleanup expenses, and it would have been much less disruptive (it would be a stretch to say that the tank would never have ruptured at all) had the cargo been transported over water, away from populated areas and other infrastructure assets. Nuclear waste transport via water is similarly attractive for the same reasons.

C. **Marine Highway Routes**

As of 2022, the America’s Marine Highway Program comprises 28 “Marine Highway Routes” (the “Designated Routes” or the “Routes”), augmenting the country’s surface transportation system (see

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\(^{234}\) Maritime Administration, America’s Marine Highway: Report to Congress.

\(^{235}\) Maritime Administration, America’s Marine Highway: Report to Congress.
Appendix B: List of Designated America’s Marine Highway Program Routes. These corridors generally trace the routes of navigable, natural rivers, but occasionally pass through manmade canals, locks, coastal routes, and the Great Lakes. The naming convention generally mirrors the major landside highways that the Routes seek to relieve—for example, marine highway “M-5” parallels Interstate 5 on the west coast (see Figure V-A, below).

**Figure V-A: America’s Marine Highway Program Designated Routes**

The 28 designated Marine Highway routes directly serve 41 states, the District of Columbia, Puerto Rico, American Samoa, Guam, and Commonwealth of the Northern Mariana Islands (see Table V-F, next page). They serve five regions: the East Coast, the West Coast, the inland river system including the

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237 The 2012 amendment to the AMHP broadened the scope of the program to “promote short sea shipping” in general, thereby allowing for the creation of interisland Marine Highway routes in Hawaii, Puerto Rico, American Samoa, Guam, the Northern Mariana Islands, and the U.S. Virgin Islands despite not having landside transportation routes to relieve.
Mississippi River and its tributaries, the Great Lakes St. Lawrence Seaway System, the Gulf of Mexico, the Pacific (which comprises Hawaii and three U.S. territories), and the Caribbean (which comprises Puerto Rico and the U.S. Virgin Islands).

Table V-F: Summary of Designated America’s Marine Highway Program Routes

<table>
<thead>
<tr>
<th>Region</th>
<th>No. of Routes</th>
<th>States and Territories Served</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Coast</td>
<td>5</td>
<td>ME, NH, MA, RI, CT, NY, VT, NJ, DE, MD, DC, VA, NC, SC, GA, FL (10)</td>
</tr>
<tr>
<td>West Coast</td>
<td>5</td>
<td>AK, WA, OR, CA (4)</td>
</tr>
<tr>
<td>Inland Rivers</td>
<td>7</td>
<td>MN, WI, IA, IL, MO, PA, OH, WV, IN, KY, AR, TN, MS, AL, LA, TX (10)</td>
</tr>
<tr>
<td>Great Lakes</td>
<td>3</td>
<td>MN, WI, IL, MI, OH, PA, NY (7)</td>
</tr>
<tr>
<td>Gulf of Mexico</td>
<td>3</td>
<td>TX, LA, MS, AL, FL (5)</td>
</tr>
<tr>
<td>Pacific</td>
<td>3</td>
<td>HI, AS, GU, NMI (4)</td>
</tr>
<tr>
<td>Caribbean</td>
<td>2</td>
<td>PR, VI (2)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>28</strong></td>
<td><strong>44 States and Territories</strong></td>
</tr>
</tbody>
</table>

Source: Maritime Administration, ‘America’s Marine Highway Route Designations’, 2021

These water routes of course predate the U.S. Interstate Highway System (and the United States itself), and in some cases simply traverse open water. While the “M-N” designations provide a useful heuristic for understanding the Marine Highway, the Routes may more accurately be defined as broad corridors of investment and coordination instead of fixed passages of travel. The physical manifestation of the Marine Highway Program is evident in well-maintained marine rights-of-way, increased port and other infrastructure investment, increased economic activity alongside the routes and throughout the regions, and of course the presence of more waterborne vessels themselves.  

But why designate Marine Highway routes at all? Rivers, lakes, and oceans are natural waterways that may be freely travelled without the government’s sanctification, and no physical structures are built that need identifying names, as in the example of the Interstate system. Aside from the fact that the 2007 Act

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238 The total of 44 states and territories directly served by the AMHP excludes duplicates from among the individual routes.

239 The terminology of the Marine Highway’s Designated Routes is not unlike that of their landside Interstate equivalent in terms of structure. A given marine highway “corridor” refers in general to a long, multi-state route, while a “connector” describes a shorter route that feeds a larger corridor. “Crossings” exist as short routes that cross harbors or rivers as a means of offering a shorter or more convenient means of transport.
specifically requires these designations, defining them and naming them after their landside equivalents aids in marketing the system to new users of the short sea transportation. A frequent shipper of goods via truck on Interstate 95, for example, may more readily see the value in short sea shipping if the M-95 alternative were to be described as such. Uses of the “M-N” Marine Highway designations may also extend to analysis and administration duties, as also mandated by the Act.

D. Funding and Allocation

The Energy Independence and Security Act of 2007 enumerated many of the terms of the America’s Marine Highway Program, though conspicuously absent in that engendering legislation is a means to pay for it all (see Appendix A: Energy Independence and Security Act of 2007 [Excerpt]). In fact, the relevant parts of the Act that outline the Marine Highway’s terms do not even mention the words “grant” or “funding”: Congress’s mandate was simply to “encourage” and “promote” such activity. The Department of Transportation, in its interpretation of the Act, was not so literal as to employ a troop of cheerleaders to simply “encourage” shippers to switch to inland waterways, but instead it relied on precedence to carry out its mandate through the use of financial incentives. By necessity, it became reliant on Congress to provide funds for AMHP grants.

Amounts funded by Congress, by necessity, limit the scale of the Program. Lawmakers appear to have high hopes for the Program, as do the Department of Transportation, grant applicants, and other industry observers. Grant applications, responses to general comment solicitations, and the research and analysis efforts of the Department of Transportation itself work in tandem to demonstrate the need for and the benefits of moving road and rail traffic to the inland waterways. These needs, however well-founded, remain hostage in a way to the legislative process that funds them.


A minor section of the relevant portion of the Act does, however, expand the definition of “short sea shipping” in another section of the code to make the practice explicitly eligible for funds from the Department’s separate-but-related Capital Construction Fund.
Policymaking is an exercise in constraints. Physical constraints, namely the ever-growing levels of traffic occupying the nation’s roads and rails, gave cause to the creation of the Marine Highway Program in the first place. Financial constraints may have prevented shippers from freely opting to use inland waterways as an alternative. Regulatory constraints may have been what caused the creation of the Program to take so long (traffic congestion and environmental concerns are not new issues). Government, in this case the federal one, has some degree of obligation to ease these constraints to break that impasse and promote new levels of service and ensure optimal social outcomes (see Section IV: Legal Basis for Federal Oversight of Transportation Infrastructure). Congressional proponents of the Marine Highway are surely aware that the funding they are able to procure for the Program may be limiting its outcomes, but such is the nature of the government funding process and all parties are likely aware of the limitations.

**Figure V-B: America’s Marine Highway Program Grants Since Inception**

As of May 2022, the Program’s portfolio consisted of 40 grants totaling $46,416,350 to various local port authorities, regional planning commissions, and delegated private entities, generally for the purchase of vessels, equipment or to fund planning studies (see Figure V-B, above, and Table V-G, next page, for
They range in dollar amounts from $96,000 (for an intermodal barge service design project in Virginia) to $3.2 million (for the procurement of another container-on-barge service on the West Coast) and average about $1.1 million each. They have recently become more frequent in number, due to increased funding and attention from Congress, with almost two thirds of the grants by dollar amount having been issued during the period from 2019 through 2021 alone. Average grant amounts, however, have remained reasonably constant.

### Table V-G: America’s Marine Highway Program Grants Since Inception

<table>
<thead>
<tr>
<th>Fiscal Year(s)</th>
<th>Number of Grants</th>
<th>Total Grant Amounts</th>
<th>Average Grant Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Annual</td>
<td>Cumulative</td>
</tr>
<tr>
<td>2010</td>
<td>2</td>
<td>$2,866,070</td>
<td>$2,866,070</td>
</tr>
<tr>
<td>2011-2015</td>
<td>0</td>
<td>-</td>
<td>2,866,070</td>
</tr>
<tr>
<td>2016</td>
<td>4</td>
<td>4,041,000</td>
<td>6,907,070</td>
</tr>
<tr>
<td>2017</td>
<td>6</td>
<td>4,872,677</td>
<td>11,779,747</td>
</tr>
<tr>
<td>2018</td>
<td>2</td>
<td>4,977,715</td>
<td>16,757,462</td>
</tr>
<tr>
<td>2019</td>
<td>9</td>
<td>7,503,000</td>
<td>24,260,462</td>
</tr>
<tr>
<td>2020</td>
<td>8</td>
<td>9,555,750</td>
<td>33,816,212</td>
</tr>
<tr>
<td>2021</td>
<td>9</td>
<td>12,600,138</td>
<td>46,416,350</td>
</tr>
<tr>
<td>Total/average</td>
<td>40</td>
<td>$46,416,350</td>
<td>$46,416,350</td>
</tr>
</tbody>
</table>


The America’s Marine Highway Program grant process is straightforward and consistent with other federal government grant programs. Grantee projects are “precleared” for AMHP eligibility through a “project designation” process that certifies eligibility. Funds are then provided by Congress, which in the case of the AMHP involves appropriations from an annual omnibus discretionary spending bill. A notice is then published by the Maritime Administration in the Federal Register, and word of that notice is disseminated to potential interested parties. Grants are then prepared by applicants, a process for which the

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243 Sponsors of certain specific projects, such as the M-64 James River Container Expansion (later) have applied for and received grants in multiple years. That particular project has received grants during each funding year of the program except 2020, totaling $7.1 million since inception.
Maritime Administration has published useful, specific guidance. Grants are then awarded based on their merits as assessed by MARAD’s senior leadership, and then funded using a reimbursement-based process.

1. **Project Designation**

   Project designation is the first step in the Marine Highway grant process, itself written into the law through a clause of the 2007 Act (see *Appendix A: Energy Independence and Security Act of 2007 (Excerpt)*). This process, separate from the route designation process, is designed to “preclear” future projects and initiatives for technical and financial suitability to the Program. Offered on a rolling, semiannual basis, the process is announced on the Maritime Administration’s website and in the Federal Register, and takes some time to review potential projects for fitness and amend them as necessary.\(^{244}\)

   Applications for project designation include project-specific information that MARAD may use to assess its appropriateness for inclusion in the Program.\(^ {245}\) Markets and customer bases are outlined, and specific prospective shippers are identified. Marketing strategies are reviewed, as are financial information and operational requirements needed to ensure project success. Information in support of the overall pursuit of AMHP objectives is requested as well: data surrounding expected emissions reductions, energy savings, and landside traffic relief along with safety information and a narrative of how the project will benefit the public. Project designation reviews are offered by the Maritime Administration on an ongoing basis, with exact review periods published in the Federal Register.\(^ {246}\) Once a given project is designated, its sponsor must wait for funding and a formal grant announcement.

2. **Congressional Appropriations**

   To date, Congress has authorized over $50 million in grant funding for the America’s Marine Highway Program (see Table V-H, next page). Initial funding of $7 million in 2010 was carved from the

\(^{244}\) Maritime Administration, ‘Marine Highway Project Designation Open Season General Information Announcement’.

\(^{245}\) Maritime Administration, ‘Revision of the America’s Marine Highway Program Regulations’.

\(^{246}\) The project designation process, in this specific use of the term as a preclearance mechanism, appears to be unique to the America’s Marin Highway Program.
Maritime Administration’s appropriations in that year’s National Defense Authorization Act. Funding paused from 2011 to 2015 for reasons lost to the legislative process, but Congress in 2016 renewed funding for the program with $5 million in that year’s Consolidated Appropriations Act, an annual omnibus spending bill that funds the federal government’s discretionary spending.247

Table V-H: Acts of Congress Authorizing Funding for the America’s Marine Highway Program

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Authorizing Act</th>
<th>Gross Amount Authorized</th>
<th>Less: Administration &amp; Oversight</th>
<th>Net Amount Available for Grants</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>National Defense Authorization Act for Fiscal Year 2010</td>
<td>$7,000,000</td>
<td>n/a</td>
<td>$7,000,000</td>
</tr>
<tr>
<td>2011-2015</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>2016</td>
<td>Consolidated Appropriations Act, 2016</td>
<td>5,000,000</td>
<td>n/a</td>
<td>5,000,000</td>
</tr>
<tr>
<td>2017</td>
<td>Consolidated Appropriations Act, 2017</td>
<td>7,000,000</td>
<td>(150,000)</td>
<td>6,850,000</td>
</tr>
<tr>
<td>2018</td>
<td>Consolidated Appropriations Act, 2018</td>
<td>7,000,000</td>
<td>(210,000)</td>
<td>6,790,000</td>
</tr>
<tr>
<td>2019</td>
<td>Consolidated Appropriations Act, 2019</td>
<td>7,000,000</td>
<td>(210,000)</td>
<td>6,790,000</td>
</tr>
<tr>
<td>2020</td>
<td>Further Consolidated Appropriations Act, 2020</td>
<td>9,775,000</td>
<td>(293,250)</td>
<td>9,481,750</td>
</tr>
<tr>
<td>2021</td>
<td>Consolidated Appropriations Act, 2021</td>
<td>10,819,000</td>
<td>(324,570)</td>
<td>10,494,430</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>$31,594,000</td>
<td>(1,187,820)</td>
<td>$30,406,180</td>
</tr>
</tbody>
</table>

Following years saw appropriations of another $5 million, $7 million, another $7 million, $9.8 million in 2020 and $10.9 million in 2021 for a total of $51.6 million in grant funding appropriations since the inception of the Program, for the purchase and upgrade of vessels, procurement of dock and handling equipment, and funding of planning studies (see Appendix C: *List of America’s Marine Highway Program Grants*).257 These are relatively small amounts for the Maritime Administration ($80 million was allocated...
for the United States Merchant Marine Academy in 2021 alone, but the Marine Highway Program is young and premised on the notion of high-impact and relatively low-cost investments.

3. Notice of Funding Opportunity

Once grant funding is authorized by Congress, the Maritime Administration prepares and issues a Notice of Funding Opportunity ("NOFO") for publication in the Federal Register, the daily journal of the United States federal government that is maintained by the National Archives and contains rules, notices, and Presidential documents among other filings. Notice of the grant opportunity is subsequently also disseminated through non-government news media.

Notices of Funding Opportunities are typically released annually, consistent with the timing of their funding appropriations. A typical NOFO contains a summary of the Program and describes its intent to shift freight and passengers from land to water. It contains due dates and addresses for submission, contact information for the relevant parties within the Maritime Administration, and a narrative of the application process, which is to be completed online.

4. Grant Applications

Once a project is designated, its sponsor may apply for a grant when available (as marketed through a Notice of Finding Opportunity, prior). The Maritime Administration offers detailed guidance on the application process, which invites detailed project narratives and viability details in addition to the clerical information needed to evaluate and process the grant. Applications include information on the various stakeholders who will contribute to and benefit from the project, which Marine Highway routes and ports

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258 Maritime Administration, ‘Revision of the America’s Marine Highway Program Regulations’.
259 Maritime Administration, ‘Notice of Funding Opportunity for America’s Marine Highway Projects [2021]’.
260 Maritime Administration, ‘AMH Grant Application Narrative Guide’.
will be served by the project, and where remaining funding will come from (the Program requires sponsors to fund at least 20 percent of overall project costs).\textsuperscript{261,262}

5. **Awarding of Grants**

After the submission period has closed, the Maritime Administration begins its review of the proposals. They are reviewed by MARAD staff members, who assess them based on financial and technical aspects.\textsuperscript{263} Financial criteria, per an application guide published by the administration, include information on cost sharing mechanisms, sources of non-AMHP funds, and an assessment of the overall financial viability of the project.\textsuperscript{264} Technical criteria include specific data on vessel emissions, energy savings and safety. The staff members narrow the application pool to a specific list of projects which will then be presented to the Secretary of Transportation for a final decision. Sponsors of accepted projects are then notified in writing, a grant agreement is executed, and the project proceeds. Grants are funded on a “reimbursement” basis as costs are incurred by the sponsor, not as an initial “lump-sum” cash disbursement (see Appendix C: *List of America’s Marine Highway Program Grants*).\textsuperscript{265}

It is at this point in the process where the Maritime Administration appears to begin falling short of its mandate per the 2007 Act. In addition to “promoting” (i.e., funding) short sea transportation efforts, the Act *recommends* that the Department of Transportation “coordinate, with ports, State departments of transportation, localities, other public agencies, and the private sector and on the development of landside facilities and infrastructure to support short sea transportation services” and *requires* that it “assess the

\textsuperscript{261} Maritime Administration, ‘Notice of Funding Opportunity for America’s Marine Highway Projects [2021]’.
\textsuperscript{262} Annual Notices of Funding Opportunities denote a requirement that project sponsors provide at least 20 percent of project costs from non-federal sources. The inclusion of this amount in annual NOFOs, but not in public Program rules, appears to allow MARAD to mirror annual non-federal funding requirements as prescribed by Congress in their annual appropriations bills. Those bills, however, do not always prescribe such a requirement for every grant program. The 2021 Consolidated Appropriations Act, for example, requires 20 percent non-federal funding for Port Infrastructure Development Program grants but not for America’s Marine Highway Program grants. MARAD’s imposition of this rule for AMHP may be in anticipation of such a requirement for AMHP in the future, but it is more likely the case that it views the amount as a simple “best practice” to align incentives between taxpayers and grant recipients.
\textsuperscript{263} Maritime Administration, ‘Revision of the America’s Marine Highway Program Regulations’.
\textsuperscript{264} Maritime Administration, ‘AMH Grant Application Narrative Guide’.
\textsuperscript{265} Maritime Administration, ‘Notice of Funding Opportunity for America’s Marine Highway Projects [2021]’.
extent to which States and local governments include short sea transportation [...] in their transportation planning,” “encourage State departments of transportation [...] to incorporate short sea transportation [...] in their transportation planning,” and “encourage [States] to determine how short sea transportation can address congestion, bottlenecks, and other interstate transportation challenges.” Project designation and grant approval aside, the DOT does not appear to be taking these proactive steps toward building a cohesive program, instead taking the reactive, piecemeal approach of simply approving or denying grants as presented by sponsors. Congress’s intent was clearly the former.

E. Administration and Monitoring

During and after project development, the Maritime Administration seeks to ensure that grantee projects are achieving their objectives. They are evaluated qualitatively and quantitatively, with attention paid to public benefits, public costs, and the timeframe within the project is expected to achieve self-sufficiency. No specific timing or format is given in Program rules, though there may exist internal timeframes or templates. Grants are also subject to the government-wide Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (commonly referred to as “Uniform Guidance”) which guard against general waste, fraud, and abuse.

The Maritime Administration appears to continue to fall short of its mandates per the 2007 Act at this stage, at least in its public-facing operation of the Program. In addition to the prior “promotion” elements of Congress’s vision (see Section V.D.5: Awarding of Grants), the Act also recommends the creation of performance measures, coordination with other government agencies to use the Marine Highways whenever possible in their own operations, and research activities in consultation with the

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267 Maritime Administration, ‘Revision of the America’s Marine Highway Program Regulations’.
268 This audit requirement is not explicitly mentioned in the legislation or Program rules, but it is noted in an application planning “toolkit” package prepared by MARAD and likely included contractually in post-award grant agreements.
Environmental Protection Agency. Table V-I, below, enumerates selected administration and monitoring-related portions of the 2007 Act and their statuses as implemented.

Table V-I: Selected Portions of the Marine Highway Section of the 2007 Act (As Amended)

<table>
<thead>
<tr>
<th>46 USC Ch. 556</th>
<th>Requirement</th>
<th>As Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>§55601 (e) Elements of Program.—For a marine highway transportation project designated under this section, the Secretary may—</td>
<td>“Promotion” implies more than grants. Where is the rest of the “promotion” aspect?</td>
<td></td>
</tr>
<tr>
<td>(1) promote the development of marine highway transportation services;</td>
<td>No meaningful public forum, colloquium, convention, or other convocation, in person or virtual, is evident based on a review of available information.</td>
<td></td>
</tr>
<tr>
<td>(2) coordinate, with ports, State departments of transportation, localities, other public agencies, and the private sector and on the development of landside facilities and infrastructure to support marine highway transportation services; and</td>
<td>Neither Program rules nor the Maritime Administration’s website provide specific performance measures for use in quantitatively measuring the effectiveness of the AMHP.</td>
<td></td>
</tr>
<tr>
<td>(3) develop performance measures for the marine highway transportation program.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>§55602 (a) Memorandums of Agreement.—The Secretary of Transportation shall enter into memorandums of understanding with the heads of other Federal entities to transport federally owned or generated cargo using a marine highway transportation project designated under section 55601 when practical or available,</td>
<td>Such memoranda, if they have been created, have not been made public.</td>
<td></td>
</tr>
<tr>
<td>(b) Short-Term Incentives.—The Secretary shall consult shippers and other participants in transportation logistics and develop proposals for short-term incentives to encourage the use of marine highway transportation.</td>
<td>Such consultations, if they have occurred, have not been made public.</td>
<td></td>
</tr>
<tr>
<td>§55603 Interagency coordination.—The Secretary of Transportation shall establish a board to identify and seek solutions to impediments hindering effective use of short sea transportation. The board shall include representatives of the Environmental Protection Agency and other Federal, State, and local governmental entities and private sector entities.</td>
<td>Section repealed in 2021.</td>
<td></td>
</tr>
<tr>
<td>§55604 The Secretary of Transportation, in consultation with the Administrator of the Environmental Protection Agency, may conduct research on marine highway transportation, regarding—</td>
<td>MARAD senior leadership has alluded to cooperation with the Environmental Protection Agency.</td>
<td></td>
</tr>
<tr>
<td>(1) the environmental and transportation benefits to be derived from marine highway transportation alternatives for other forms of transportation;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The 2007 Act codified the America’s Marine Highway Program into law through 46 United States Code Chapter 556, originally titled “Short Sea Transportation” and later amended to “Marine Highways.”
One’s interpretation of the 2007 Act and the Department of Transportation’s implementation thereof may be the subject of debate. The Act separately uses the terms “shall” and “may” for those respective purposes: “the Secretary of Transportation shall establish a short sea transportation program” versus “the Secretary may [...] promote the development of short sea transportation services.” Semantics in the context of the law is hardly anything new, but is it really a good-faith interpretation for the Department to simply do all of the “shalls” and none of the “mays”?

Such activities may not necessarily be made public information either. The inner workings of the Department of Transportation’s interactions with local port authorities may simply not be deemed relevant by those responsible for publication online or in any sort of periodic reports. Congress has notably not publicly asked for this information, either.

Underlying these issues is a question of the intent of Congress itself. Accountability in government is generally valued, but Congress does not dole out cash with the same level of precision and expectations of return of investment that a venture capital investment firm might. Despite writing it into the law, the Act’s writers may simply not have been as interested in “performance measures” and “interagency coordination” as they were in bringing funds to their home districts and voting constituents. The benefits of such public investment generally play out over decades and across the country in the form of higher economic output and greater national wealth, so why concern oneself with measuring intermediate minutia?

F. Selected Projects

Shortly before its April 2011 report to Congress, the Maritime Administration announced the availability of an initial $7 million in grant funding to applicants including various state and regional transportation departments and economic development organizations. As grant availability is based on appropriations from Congress, the program was quiet until 2016 when MARAD received another $5 million in funding to allocate among new projects.\(^{271}\) Subsequent offerings have been more consistent, with funds being available and offered yearly since then.

Marine Highway grantees projects and initiatives are diverse, by design. Much of the funding is relayed by grantee sponsors to contracted private operators to purchase or renovate container barges, consistent with the primary intent of the program.\(^{272}\) Cranes have been purchased, along with other material handling equipment that eases the flow of freight between the Marine Highway and other modes of transport. Storage facilities have been built and expanded, also with grant funds further allocated to private sector operators, and docks themselves have been rehabilitated to better serve needs: berth lengthening and ramp construction projects to enable the movement of containers from shore to ship. One grant to a Seattle area passenger ferry service was used to convert a vessel from diesel fuel to a hybrid one, improving service and reducing emissions. Grants have also funded planning and engineering studies to determine the feasibility of future projects. These studies, along with other pre-viability activities, are referred to as initiatives, instead of projects, by MARAD.\(^{273}\)

\(^{271}\) United States Department of Transportation, ‘Maritime Administration Announces Availability of Funding for Marine Highway Projects’.

\(^{272}\) Maritime Administration, ‘America’s Marine Highway Grants’.

\(^{273}\) Maritime Administration, America’s Marine Highway: Report to Congress.
The 40 projects funded through 2022 (see Figure V-C, above, and Appendix C: List of America’s Marine Highway Program Grants) are too numerous to describe here. Instead, three projects that are indicative of the scope of the Marine Highway Program follow: the James River Container Expansion, which links the inland marine terminal at Richmond, Virginia to the deepwater one at Norfolk, Virginia; the New York Harbor Container and Trailer on Barge Service, which connects the ports at Newark, New Jersey to Brooklyn, New York; and the Tennessee-Tombigbee Waterway, a unique inland canal that links two rivers in America’s south to decrease shipping times and provide redundancy to the inland waterway network.

1. James River Container Expansion

The James River, linking the inland Richmond Marine Terminal to the deepwater facilities at Norfolk, Virginia, was an early beneficiary of the Marine Highway Program. As one of the Program’s initial grants in 2010, MARAD has allocated $4 million to the Port of Virginia’s James River Container Expansion project from its inception through 2022 to purchase equipment to expand its barge float service capabilities,
identified as marine highway route M-64 for the Interstate 64 highway that it relieves.\textsuperscript{274} Purchases (on behalf of private operators under contract) have included generators, refrigerated container support infrastructure, cargo handling equipment, and new river barges themselves.

Richmond has been a beneficiary of ocean trade since its settlement before the American Revolution at the \textit{fall line} of the James River, the inlandmost point to which a ship could safely navigate.\textsuperscript{275} Commercial shipping on the James looked largely the same until the 1940 completion of the Richmond Deepwater Terminal five miles downriver of the city proper, which established a modern marine cargo area for the city. Later known as the Port of Richmond, the terminal facilitated shipments of iron, tobacco, and newsprint, and sugar until the U.S. embargo on Cuba came into effect in 1960. It first saw containerized ocean cargo in the late 1970s.

As container shipping increased in popularity and ships grew larger, the shallow, winding channels of the James River became less capable of handling the trade. After the millennium, the 2008 financial crisis’s “Great Recession” took its toll on Richmond’s container business, with shippers cancelling calls in favor of the deepwater ports at Norfolk and further up the coast.\textsuperscript{276} In 2008, the city in response funded its port authority’s purchase of a container barge to stimulate business, making additional investments in container handling equipment, yard lighting, and lot resurfacing to further improve the renamed Richmond Marine Terminal.

The recent growth in container shipping volumes has tended to favor ocean-adjacent deepwater ports that are capable of handling larger ships.\textsuperscript{277} Containers on those ships, however, still need to move inland to complete most journeys. These trips typically involve travel via trucks, often on Interstate 95 which is the main north-south motor conduit on the East Coast. Cargo owners are therefore presented with the

\textsuperscript{274} Maritime Administration, ‘America's Marine Highway Grants’.
\textsuperscript{275} Port of Richmond, ‘The History of The Port of Richmond’.
\textsuperscript{276} Rago.
\textsuperscript{277} Bureau of Transportation Statistics, ‘50th Anniversary Edition of the National Transportation Statistics’.
choice of either shipping to Norfolk, the deepwater port on the Atlantic Ocean, and trucking their containers via a feeder highway to Interstate 95 at Richmond, or simply transloading their containers at Norfolk to a container barge to continue the journey inland via the James River where it will meet the Interstate at Richmond.

The Richmond Marine Terminal is situated directly next to Interstate 95, presenting an option for container shippers looking to transit inland (see Figure V-D, next page). Movement via the James River is inexpensive, environmentally friendly, and more convenient given traffic congestion on Interstate 64, the highway connecting Norfolk to Interstate 95. Trips on this M-64 corridor are slow: 12 hours via river, which must be completed at night, and they only run three times per week. But for containers that have already spent weeks in transit at sea, the service provides a compelling value proposition for shippers.

The revitalized Richmond Marine Terminal is already producing benefits for the region. Internet retailer Amazon.com, Inc. opened a 462,000 square foot, 150-job fulfillment center less than a mile away from the terminal in 2019, and various other firms such as grocer Lidl, vacuum manufacturer Bissell, and computer equipment manufacturer Brother International soon followed suit. Container volumes increased to an average of almost 3,500 containers per month in the early months of the 2020 COVID-19 pandemic, buoyed by demand from Amazon and Lidl. There is still plenty of room to grow, however: container barge service only accounted for three percent of recent overall cargo tonnage in the combined Port of Virginia system.

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278 Port of Richmond, ‘City of Richmond Marine Facility Lessee: Virginia Port Authority’.
279 Virginia Maritime Bulletin; Rago.
280 Gilligan; McCabe.
281 Ashe.
282 Virginia Port Authority, ‘Port Stats’.
Figure V-D: James River Container Expansion Project Map

2. New York Harbor Container and Trailer on Barge Service

The New York Harbor Container and Trailer on Barge Service was also one of the early grantee programs of the America’s Marine Highway Program. Initially funded in 2016, the stiltedly-named project has received nearly $4 million in grants to date for the purchase of equipment, infrastructure improvements, and planning studies to ease the movement of freight across New York Harbor from Newark, New Jersey to Brooklyn, New York.\(^{283}\)

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\(^{283}\) Maritime Administration, ‘America’s Marine Highway Grants’.
Rail service in the area has met its terminus at the harbor since its beginnings in the 19th century. Though New York and New Jersey’s ports were and remain the region’s ocean gateway to the world, neither the technology nor the demand existed at the time to build a rail facility to move freight across the harbor itself (see Figure V-E, next page). As the city grew and the demand for such a service increased, enterprising railroad operators built rail-equipped barges that linked specially-equipped ports on either side of the harbor via ramp. These “car floats” reached their zenith in the 1960s; a successful operation until the Interstate Highway System was built and trucks came to rule the freight business. As of 2017, 89 percent of freight entering the city did so by truck.

The missing cross-harbor rail link is not for lack of want. Proposals to connect the two sides of the port via an underwater rail tunnel date back almost a century and the closest cross-Hudson River rail link is 140 miles upriver near Selkirk, New York. Proposals for a cross-harbor freight rail tunnel have been floated as recently as 2018, though they have gained little traction. Cross-harbor freight service, for now, must be delivered over water.

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284 Newman.
287 The southernmost Hudson River rail crossing used to be 60 miles closer to New York City at Poughkeepsie, N.Y. until 1974 when a fire destroyed that bridge. The bridge is now a unique state park with scenic river vistas, but it does nothing to solve the problem of the additional 80-mile “Selkirk Hurdle” detour.
288 The Port Authority of New York and New Jersey.
289 The Hudson River rail tunnels that link Midtown Manhattan’s Pennsylvania Station to New Jersey have primarily facilitated passenger-only service since their inception.
The operators of the Red Hook Container Terminal offer one such service. With terminals in Newark and Brooklyn, the preexisting service received its first Marine Highway Program grant of $1.6 million in 2016 to fund the purchase of handling equipment, infrastructure improvements, and training capabilities. Subsequent smaller grants funded studies of the feasibility of future service expansion and more equipment, and $1.5 million was allocated later in 2021 to fund the modification of a barge vessel. The service is successful, and its future looks bright: the Port Authority of New York and New Jersey seeks to have it act as a major hub for New York City's local freight delivery network.

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The remnants of the 1960s car float services live on as a single, separate, Port Authority of New York and New Jersey-owned New York New Jersey Rail (“NYNJR”) service that links Jersey City, N.J. to another port in Brooklyn, N.Y. Despite the Port Authority’s ownership of both, they are separate operations. NYNJR floats entire railcars across the harbor, while the Red Hook service simply transports containers.

Maritime Administration, ‘America’s Marine Highway Grants’.

Morley.
3. **Tennessee-Tombigbee Waterway**

The *Tennessee-Tombigbee Waterway* (known colloquially as the *Tenn-Tom*) is a unique inland waterway that connects the Tennessee River in northern Mississippi to the Tombigbee River in Alabama, creating a north-south alternative to the Mississippi River that spans from Paducah, Kentucky to the Gulf of Mexico at Mobile, Alabama (see Figure V-F, next page). The route and a spur along the Black Warrior River to Tuscaloosa and Birmingham, Alabama, comprise the *M-65* marine highway corridor.

The need for a navigable link between the Tennessee and Tombigbee Rivers predated Mississippi and Alabama’s 1817 and 1819 statehoods. Traders in the northern region of that combined Mississippi Territory were long forced to ship goods by either travelling hundreds of miles north up the Tennessee River and then back south along the Mississippi River, or to trek south over land to ports along the Tombigbee River where they could proceed to Mobile, Alabama and the Gulf of Mexico.

It was not until 1874 that the Ulysses S. Grant administration conducted a study of the feasibility of building a waterway to link the two rivers. The perceived need at the time was just that: construction of a canal linking the two rivers was at the time deemed to be impractical due to low projected commercial traffic. A 1913 study of the same issue found a need, but the project failed to secure funding from Congress.

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[294] Ress.
Construction of the waterway was finally approved in 1946.\textsuperscript{296} Approval is, of course, by no means acceptance, and funding of the proposed construction was subsequently delayed for another two decades. Funding finally arrived in 1968 from the Lyndon B. Johnson administration, though challenges remained from environmental groups and other competing factions of Congress, not to mention from the railroad industry with which the canal would eventually compete.

Actual construction of the Tennessee-Tombigbee Waterway finally began in 1972.\textsuperscript{297} Its initial phase lasted 12 years, involving the movement of 310 million cubic yards of earth to build 234 navigable miles of “greenfield” waterways with ten locks and dams along the way. Twenty-two bridges were either relocated or rebuilt, and the entire town of Holcut, Mississippi was moved. The 29-mile “Divide Cut,” linking the canal’s

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Tennessee-Tombigbee_Waterway_Map}
\caption{Figure V-F: Tennessee-Tombigbee Waterway Project Map}
\end{figure}


\textsuperscript{296} Ress.
\textsuperscript{297} Ress.
northern end to the Tennessee River via the manmade Pickwick Lake (previously dammed for hydropower generation by the Tennessee Valley Authority), represented one of the largest earthmoving projects in history at the time.\footnote{\textsuperscript{298} Tennessee-Tombigbee Waterway Development Authority.}

The Tenn-Tom was completed in 1984 and welcomed its first commercial vessel in 1985.\footnote{\textsuperscript{299} Ress.} Traffic was low for an initial period due to an economic recession, but it saw increased demand when a 1988 drought caused the Mississippi River to close to commercial traffic, diverting traffic to the waterway. Traffic today averages about eight million tons of commercial cargo (primarily coal and timber) per year, well below the 27 million tons per year estimated by the Army Corps of Engineers upon its construction.

G. State of the Program and its Future

To date, the America’s Marine Highway Program has seen moderate success. The Maritime Administration estimates that cost savings specifically related to decreased road maintenance and traffic congestion have increased each year since inception, from approximately $1.5 million in 2016 (the first year of estimates) to $3.6 million in 2017 and $4.9 million in 2018.\footnote{\textsuperscript{300} United States Congress, ‘Short Sea Shipping: Rebuilding America’s Maritime Industry’.} The 40 grants to date have seen additional funds allocated to proven-successful projects (e.g., the James River Container Expansion in Virginia), infill projects on already-important corridors (e.g., the North Carolina Container on Barge Shuttle Operation), and new projects in new geographies (e.g., projects in Hawaii and American Samoa) (see Appendix C: \textit{List of America’s Marine Highway Program Grants}).\footnote{\textsuperscript{301} Maritime Administration, ‘America’s Marine Highway Grants’.} It has funded vessel and equipment purchases, planning studies, and even the domestic design and construction of a specific type of reach-stacker crane that previously could only be purchased from abroad.

The waterways, though, remain underused by any measure and there is still great potential that has yet to be realized by the Marine Highway Program. Specifically, the project designation and grant allocation
processes appear to operate on a “push” framework instead of a “pull” one: a framework that accepts proposals “pushed” in from operators instead of “pulling” them in in a manner that fulfills some greater vision. Further, it is unlikely that MARAD is fully maximizing the reach of the Program through the proactive measures recommended by the 2007 Act. Simple marketing—to grantee sponsors and to end users—appears to be lacking. The ongoing COVID-19 pandemic has laid bare the need for supply chain redundancy, especially with regard to coastal shipping and large port relief, and regulatory issues persist in diluting the attractiveness of short sea shipping. Finally, “traditional” shipping issues such as the “last mile” problem, service scheduling, and container positioning affect the Marie Highways’ attractiveness.

1. Transportation Planning Perspectives

The federal government is within its rights to take a more proactive approach to planning (see Section IV: Legal Basis for Federal Oversight of Transportation Infrastructure)—and the 2007 Act explicitly encourages it with regard to the America’s Marine Highway Program. The Marine Highways are envisioned to act as “extensions of the surface transportation system [...] to relieve landside congestion along coastal corridors” and the Department of Transportation was mandated to “coordinate with ports, State departments of transportation, localities, other public agencies, and the private sector” to develop the service. That is not, to any public facing degree, the case. After a decade of grantmaking, the Department appears to treat the Marine Highway Program as a sort of automatic teller machine for port authorities, funding piecemeal projects with the best of intentions but largely ignoring the whole.

The Maritime Administration does collect information on how a potential project will fit into the broader scheme of American trade. The “project designation” process (see Section V.D.1: Project Designation) requests information from sponsors that identifies potential geographies, customer bases, and cargoes, as does the subsequent grant application one. This information, while relevant to standalone

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303 Maritime Administration, ‘Revision of the America’s Marine Highway Program Regulations’; Maritime Administration, ‘AMH Grant Application Narrative Guide’. 
project efficacy, is not necessarily indicative of an overall Marine Highway system that is truly fulfilling Congress’s mandates. By simply approving or denying projects as “pushed in” to the Program by the free market, MARAD is losing the opportunity to “pull” the system in a direction that benefits those beyond the immediate beneficiaries. In other words, painting the whole picture is not just an issue of money, but also an issue of vision.

The Maritime Administration’s 2011 report notes that “the full range of public benefits of Marine Highway services will not be realized based solely on market-driven transportation choices.” This is certainly a noble approach for MARAD: to step back, let market actors act in ways they see fit, and then step in where needed to ease the process. But “stepping in” requires more than the simple infusion of cash, and Congress did explicitly require that the agency take a more proactive approach.

2. Targeting and Funding of Future Projects

The designated routes of the America’s Marine Highway Program are by now well defined (see Appendix B: List of Designated America’s Marine Highway Program Routes). The only recent additions to the list are the open water routes surrounding Guam, the Northern Mariana Islands, and the U.S. Virgin Islands, all of which were added to fit Congress’s amended scope of the program. The United States Army Corps of Engineers, despite all of their talents, are not building any more rivers, and the entire point of the program is to promote the use of existing waterways which are deemed to be underused relative to their full potential.

**Program Expansion.** The future of the Program, then, must turn to increasing the number and size of projects along the designated routes. To date, the AMHP has issued only 40 grants, some of which have gone to repeat grantees (see Appendix C: List of America’s Marine Highway Program Grants). Grants to date have averaged around $1.2 million each, which may be enough to break whatever bottlenecks are

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304 Maritime Administration, America’s Marine Highway: Report to Congress.
305 Maritime Administration, America’s Marine Highway: Report to Congress.
preventing the adoption of short sea shipping but pales in comparison to other similar grant programs. The Port Infrastructure Development Program (see Section V.A: Program Overview), for example, doled out grants as large as $52 million in 2021, while the AMHP’s largest in that same year was just over $3 million.\textsuperscript{307} If the two grant programs share similar objectives, and the AMHP has an arguably broader scope, why would these amounts not be reversed?

**Return on Investment.** A simple argument may be made for the high return on investment of the program. The AMHP is premised on using the force of government to remove key impediments to an otherwise free market operation. Millions of dollars in shipping business may be waiting for the opportunity to board a vessel, only to be prevented by the absence of a $300,000 crawler crane to move cargo from truck to barge. Why the private sector has not stepped in already to provide such equipment is another question that may not have a readily available answer, but if that is all it takes then why should the government fund more?

**Accounting for Benefits.** Minimalist or maximalist approaches to funding aside, Congress and other stakeholders must be aware that the Marine Highway Program is, in many cases, only as good as the resources that it is provided. The grant approval process does address operational efficiencies with an eye towards return on investment to the taxpayer, but in the grander scheme, the government will only see benefits from what it puts in. Limited amounts of funding limit the effectiveness of the program, and the DOT cannot practically be held responsible for things they are not funded to do. Further, other grant programs including the Port Infrastructure Development Program (see Section V.A: Program Overview) may fund projects similar to those of the AMHP.\textsuperscript{308} A clear accounting of each project’s grants and benefits is critical to understanding the effectiveness of each: the better-funded PIDP may see benefits that should

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\textsuperscript{307} United States Department of Transportation, ‘U.S. Transportation Secretary Pete Buttigieg Announces Over $241 Million in Grants for America’s Ports’.

\textsuperscript{308} The scope of the Port Infrastructure Development Program includes coastal seaports in addition to the AMHP’s inland waterways.
instead be attributed to the AMHP, and ride the AMHP’s coattails for additional funding from Congress based on those results.

**Benefit-Cost Analysis.** A complex but necessary answer may lie in the procurement of some sort of benefit-cost analysis that measures the full social and financial benefits of a hypothetical AMHP program versus its full social and financial costs (see Section V.B.3: Environmental Concerns). Given these inputs, which would by necessity require substantial qualitative estimates, one should be able to identify some crossover point where the benefits of short sea shipping outweigh the costs. From that point, a researcher might be able to almost algebraically derive an optimal grant amount that makes short sea shipping desirable, which may then be communicated to Congress as a guideline amount for future appropriations. Even then, low program popularity may simply be due to a lack of awareness.

### 3. Program Marketing

Government is not a business, but as the administrator of the America’s Marine Highway Program the Maritime Administration is by necessity inserting itself into the marketplace. The already-high return on investment of AMHP grants may be eclipsed by an even higher potential return on a dollar spent marketing the program to grantees and the shipping public. Marine Highway Notices of Funding Opportunities are currently made known through periodic announcements in the Federal Register and on the federal government’s Grants.gov online portal. Subsequent dissemination of the news trickles through industry media on a limited basis. Only once grantees are selected and grants are allocated does the Program reach the news in any meaningful capacity, after the funding decisions have been made. Until potential grantee organization executives start making a habit of perusing the Federal Register on their lunch breaks, MARAD might be wise to increase its marketing efforts.

**Marketing to Users.** Similarly, the shipping public may simply be unaware of the availability of short sea transportation services and their benefits. Business owners may simply have grown comfortable with using motor or rail freight and may have strong relationships with their current logistics providers. Allowing AMHP grant funds to be allocated to marketing campaigns, or even directly engaging in marketing efforts
themselves may allow the Maritime Administration to expand the adoption of short sea transportation in furtherance of the Program’s objectives. The pursuit of economies of scale has, after all, long been central to the shipping business.

**Marketing to Lawmakers.** Finally, the Maritime Administration may face the seemingly ironic task of marketing the Marine Highway Program back to Congress and taxpayers. The lawmakers’ 2007 intentions for the Program were noble, but its limited funding and lack of meaningful reporting requirements indicate that they are likely occupied by other things. Other, more piecemeal grant programs such as the Port Infrastructure Development Program (see Section V.A: *Program Overview*) are funded much more generously—its 2021 appropriations of $230 million were over 20 times the $11 million appropriated to the AMHP in the same year.\(^3\) The law called for an initial foundational report and MARAD has provided updates via committee hearings, but no formal process exists to keep Congress apprised of the successes of the Program in hopes of future funding increases. It is possible that these two issues are connected.

There are likely good reasons for Congress to fund other programs more generously. PIDP grantees are mainly ocean ports, the operation of which are vital to American commercial life.\(^4\) AMHP, on the other hand, is a more “aspirational” program that seeks to improve quality of life and offer other long-term benefits—still important, but not so much that inattention to it would result in a national supply chain breakdown. With this in mind, MARAD may seek to increase funding for the Marine Highway Program by selling Congress on what it has accomplished thus far and, more specifically, the high social return on investment of a given project (see Section V.B: *Program Objectives*). Some analysis may determine that a small new port crane purchase, for example, may offer dollar-for-dollar benefits that are some multiple

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\(^3\) Maritime Administration, ‘About Port Infrastructure Development Grants’.  
\(^4\) Maritime Administration, ‘PIDP Applicant List’.
higher than a replacement project at a large seaport. A detailed explanation of the resultant social benefits as well—increased economic output and a healthier environment, for example—may help sweeten the deal.

4. **Supply Chain Redundancy**

The Maritime Administration’s 2011 report to Congress alluded to the impact of supply chain disruptions, but only in passing in its discussion of other objectives of the Program. The effects of the ongoing 2020 COVID-19 pandemic on supply chains have, however, renewed discussion of the importance of redundancy and resiliency throughout the nation’s supply chains (see Section V.B.1: *Landside Congestion*). Ocean shipping in particular has grown ever more important as world economies continue to globalize, and pandemic-related disruptions have caused backups on both the land and water sides of major ports. Short sea transportation is uniquely situated to address these issues.

Container ships have grown ever larger over the past several decades as carriers have tested the limits of ship construction in search of cost savings through economies of scale. An adverse effect of these megaships, though, is the fact that they may only berth at a limited number of deepwater ports—and the West Coast, America’s gateway to the manufacturing hubs of Southeast Asia, only has three of them. Already-constrained port systems with limited rail and road linkages were gridlocked during the pandemic as virus-related lockdowns altered trade patterns and labor shortages limited container moving capacities. This has in turn led to container pileups in storage yards and lines of ships waiting at anchorage outside port for their turn to unload. Short sea transportation will not solve the pandemic problem, but coastal movements of containers from larger ports to smaller ones may relieve pressures on container yards and inland carriers and provide redundancy to the system. Expansion by Congress of the AMHP mandate to include this as a sixth objective would prove prudent.

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311 Rodrigue.
5. Future Legislation

Marine Highway project grant targeting, funding, and marketing are issues that are all limited by congressional mandate. Congress, through its passage of the 2007 Act, its various amendments, and the annual appropriations bills, has defined the scope and scale of the Program. It would be inappropriate for the Maritime Administration to act unilaterally to expand the former and impossible to expand the latter. Instead, Congress must work with industry leaders to identify and monitor the ongoing needs of the program and create legislation that allows MARAD to make such a program possible.

Reasonable efforts have been made to keep Congress officially apprised of the state of the America’s Marine Highway Program and its successes. In 2019, the House of Representatives’ Committee on Transportation and Infrastructure held a hearing with testimony from MARAD senior leadership and various industry representatives that provided important updates on the Program’s successes and shortfalls.312 Shortfalls in achieving the mandates of the 2007 Act were attributed to inadequate funding (a reasonable, though incomplete, suggestion) and regulations such as the Jones Act and a potential duplicate payment of the Harbor Maintenance Fee by shippers that lessened the Program’s attractiveness.

Jones Act. A section of the Merchant Marine Act of 1920 known as the Jones Act (see Section IV.D: The Definition of Control) requires that goods shipped between United States ports (i.e., via cabotage) be transported on American-made, American-flagged ships crewed by American nationals.313 American ships and workers tend to be more expensive than their foreign equivalents, leading to higher costs for shippers (see Section V.B.2: Economic Competitiveness).

This argument holds some merit. The trucking and railroad industries have no equivalent requirement that their vehicles be built in the United States, though they must be registered (“flagged,” to use the maritime term) domestically. The United States has Commercial Driver License reciprocity

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312 United States Congress, ‘Short Sea Shipping: Rebuilding America’s Maritime Industry’.
313 Gibson and Donovan.
agreements with Canada and Mexico, meaning nationals of those countries may operate trucks so long as they are otherwise legally able to work.\textsuperscript{314} Railroad conductor certification is delegated to the railroads themselves, so only those same work eligibility rules apply.\textsuperscript{315} The Jones Act does impose some extra degree of burden, but its job creation and strategic sealift objectives are noble and the economic benefits of short sea transportation far outweigh those of the other modes when they (eventually) operate at scale. This paper, therefore, does not recommend an elimination of or alterations to the Jones Act, but rather that the Department of Transportation find ways to make the Marine Highways more cost-competitive through other means.

**Harbor Maintenance Fee.** The Harbor Maintenance Fee (see Section V.A: *Program Overview*) may be duplicated when shipping goods via Marine Highway for later export via sea.\textsuperscript{316} The fee (paid by the shipper, not the carrier) is small, amounting to $1,250 per $1 million of declared value of cargo, but doubling it is apparently enough to affect the economic attractiveness of inland waterways for certain industry participants.\textsuperscript{317} It may also be administratively cumbersome for carriers of containerized freight if containers contain shipments for multiple customers.

The HMF, along with the federal fuel excise tax that funds the Inland Waterways Trust Fund (see Section V.A: *Program Overview*) and sundry other taxes and fees, acts as a marine equivalent to the federal excise tax on motor vehicle fuel which in part funds the nation’s highway system. It is indeed an expense that is borne by users, but waterway infrastructure must be paid for somehow. Industry representatives in the 2019 House Committee hearing (prior) offered this as a somewhat dubious obstacle to the further adoption of short sea transportation—it is a relatively small expense, especially given short sea


\textsuperscript{316} Certain minor river ports are excluded from collection of the Harbor Maintenance Fee.

\textsuperscript{317} United States Congress, ‘Short Sea Shipping: Rebuilding America’s Maritime Industry’. 
transportation’s overall inherent cost savings. However, if Congress is serious about promoting the Marine Highways it may be wise to explore accommodating their request and waiving the duplicate fee.\textsuperscript{318}

6. Other Challenges

The America’s Marine Highway Program faces practical issues in addition to policy ones. Container positioning is a persistent issue, as American trade in goods tends to favor imports (as evidenced by growth trends in the United States international trade deficit).\textsuperscript{319} The problem of completing the “last mile” of short sea shipments is one of cost and practicality. Service scheduling remains an issue, particularly with regard to convenient and scheduled “liner”-style services similar to those of their deep-sea counterparts versus a less-expensive, railroad-style “focused” service that waits to build a complete train (or vessel) before departure.

**Container Positioning.** The standardized shipping container has played a key role in enabling the past half century of enormous worldwide economic growth. The steel containers, typically measuring 8 feet wide by 8½ feet tall and 20 or 40 feet in length, are built to physical specifications that allow them to be easily lifted from truck to rail and ship in an efficient and cost-effective manner. Moving them is so straightforward that innovations in port technology are trending towards complete automation in some intermodal ports—the Port of Rotterdam’s fully-automated container terminal calls to mind the inner workings of a vending machine.\textsuperscript{320}

These containers’ ease of use has led to their ubiquity. A side effect of everything (the word “everything” is not a stretch) being transported in them has, however, led to issues in making the boxes available in the right place at the right time. Trade flows are rarely completely balanced, meaning that a net

\textsuperscript{318} Such a waiver may appear administratively burdensome, but it is no more burdensome than the Inland Waterways Fuel Tax, which applies only to the consumption (not purchase) of fuel while on certain waterways and applies only to fuel used in the propulsion of the craft as opposed to electrical generation and other onboard uses. An administrative overhaul of this system may itself act as a form of stimulus for the Marine Highway system.


\textsuperscript{320} Barnard.
importer such as the United States will generally see more containers coming in than leaving. Since the containers are meant to carry their cargoes from door to door, this pattern continues inland as they are moved from ship to rail or truck towards their final destinations. Empty containers pile up as more full ones arrive.

There is little incentive to unilaterally ship empty containers to their next location. Barring some form of subsidized empty container repositioning service or soda can-style deposit system, the solution to the container positioning problem must come from the free market. Shippers enjoy bragging about how cheap it is to ship product around the world in one (and with any luck those same cost efficiencies will soon be found on the inland waterways), but the burden of moving a standardized shipping container must fall on that shipper who will use it next. Private sector container matching services exist, and carriers may be willing to offer lower freight rates to haul empty containers back to the seaports.

**Last Mile Problem.** Movement of freight between core “trunks” of a freight network and the destinations on either end of a shipment is a classic problem for the transportation industry. Cost savings typically arise from the economies of scale that are achieved when freight is consolidated on higher capacity “mainline” routes, and those efficiencies often disappear when the cargo moves to this “last mile” of service. A container that shares a Marine Highway vessel with other containers shares the cost of transport with that many other shipments; a benefit that disappears when the container is transloaded for final delivery to a truck that often carries only one container and must be operated by a single operator.

This was, in fact, one of the reasons that the canals of the early United States fell prey to the railroads in the mid-19th century.³² Rails could effectively be built up to the front door of a client and canals, despite their simple nature as literal holes in the ground, required geographies and geometries that were simply more restricting than those of the railroads. The same phenomenon also appeared in the

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³² Parkman.
airline industry in the wake of its 1978 deregulation, when airlines became able to adjust their routes more freely in search of cost savings.\footnote{Colin F. Wheeler, ‘Strategies for Maximizing the Profitability of Airline Hub-and-Spoke Networks’, Transportation Research Record, 1214, 1989 <https://trid.trb.org/view/308291>}

It is not realistic for the government or private operators to build “last mile” waterway connections to every potential end customer of the Marine Highway system. Instead, attention must be paid to the specific costs and inconveniences that deter shippers from using the system in favor of road or rail: transloading, drayage, and storage costs that are incurred when moving from road and rail to water. These solutions could come from the Maritime Administration in the form of specifically targeted AMHP grants, from other Department of Transportation agencies, or even from another Congressional initiative. The private sector may step in to “fill in the blanks” in the wake of another AMHP grant, or simple marketing of the Marine Highway may be the answer. Regardless, a holistic analysis of the entire system, from door to seaport, is required to identify these obstacles to Marine Highway adoption.

\textbf{Service Scheduling.} Freight carriers face a simple scheduling decision that may have broad implications on customer service and financial results. Deep sea ocean shippers, for example, may operate “liner”-style freight services that make specified stops on a predetermined schedule.\footnote{Stopford.} The ship departs whether or not it is full so it may call at the next port on time. “Tramp”-style services, to the contrary, move between ports as needed to meet the needs of their charterers. Freight railroads similarly tend operate “focused” services that hold freight until a train is “complete” (by whatever definition maximizes profitability) before leaving.\footnote{Union Pacific Railroad Company.} Liner shipping former is more reliable, and tramp shipping is less expensive.

Part of the Marine Highway puzzle is that carriers must find ways to make the use of the waterways more convenient; it is not simply a question of availability or cost. Shippers of containerized freight in particular may have timing requirements that are much stricter than shippers of bulk commodities:
containers often carry cargo that has entered a “just-in-time” supply chain system where time is of the
essence, while bulk (i.e., non-containerized) commodities such as iron ore are often ordered months in
advance and their shipments are not as time sensitive.

Liner-style service is already the case for some Marine Highway services. MARAD notes at least six
granter projects in its latest inventory that provide regular service to customers, and this is no doubt a
concern that arises in grant negotiations. It is likely to be the future of more such services, but carriers and
shippers alike should share the understanding that this added reliability often comes with a price.
VI. Recommendations

This paper has explored the historical context for inland water transportation in the United States, the structure of its network, its uses and regulations, and the ways that government can help improve it. It has examined the America’s Marine Highway Program, an inland waterway development initiative, with a review of its origins, objectives, structure, and management. Attention has been paid to specific projects that are representative of the Program’s mission, and the current and future states of the Program have been contemplated. Finally, this paper reviewed the Constitutional basis for the federal government’s involvement in promoting inland waterway usage and examined those rights’ implications for other modes of transportation. Several recommendations for the Program have been derived therefrom: an increased emphasis on systemwide network planning, development of a means to incentivize specific projects, enhanced program marketing, an additional stated Program objective of supply chain redundancy, regulatory easements, and continued research into specific operational issues.

Transportation Planning Perspectives. The federal government is within its rights to take a more proactive approach towards building a Marine Highway system that works for all, not just those who proactively seek out grant funding (see Section V.G.1: Transportation Planning Perspectives). “Market-driven transportation choices” should remain the driving force behind the Program, but the Department of Transportation should not shy away from guiding the system in a direction that accomplishes its objectives.  

Targeting and Funding of Future Projects. Should the Department of Transportation find opportunities within the system for new or improved projects (possibly through the planning processes described above), it should have the ability and funding to reach out to potential grantees and incentivize them to participate in the Program (see Section V.G.2: Targeting and Funding of Future Projects). A more
detailed accounting of the full costs and benefits (including externalities) of specific programs may aid in this process and help obtain more funding from Congress.

**Program Marketing.** Basic marketing of the America’s Marine Highway Program appears to be lacking (see Section V.G.3: *Program Marketing*). “Notices of Funding Opportunities” announcing grant availability are only announced in the encyclopedia-like Federal Register of the United States government and in limited industry publications, and mainstream media attention to the Program is paid only after grantee projects have been selected.\(^{326}\) If the Department of Transportation wishes to attract a substantial, diverse, and economically meaningful volume of potential projects, it may be wise to focus marketing efforts on potential grantee entities and end users of Marine Highway services.

**Supply Chain Redundancy.** The 2020 COVID-19 pandemic has laid bare the need for a reimagining of America’s supply chains and the alternative ways in which freight may move about the country (see Section V.G.4: *Supply Chain Redundancy*). The Marine Highways are uniquely situated to help provide this redundancy: smaller container vessels may help redistribute shipping containers among congested coastal seaports, and inland rivers may provide reliable and cost-effective transport parallel to Interstate highways in times of traffic congestion and reduced labor availability. Adding supply chain redundancy as a sixth objective of the Program may help formalize this possibility.

**Future Legislation.** Regulatory barriers such as the protectionist prohibitions of the Jones Act and a possible duplication of the Harbor Maintenance Fee may disincentivize potential shippers from switching from their current modes of transport to water (see Section V.G.5: *Future Legislation*). Barring an unlikely repeal of both (neither of which this paper recommends), a detailed examination of the costs stemming from these and other regulations may help lawmakers more meaningfully manage the Program and further incentivize use of the Marine Highways.

\(^{326}\) Maritime Administration, ‘Notice of Funding Opportunity for America’s Marine Highway Projects [2021]’.
Research into Specific Operational Issues. Marine Highway shipping is not exempt from broader, practical transportation issues such as container positioning, the last mile problem, and service scheduling decisions (see Section V.G.6: Other Challenges). While not specific to short sea transportation, these may be impediments to the adoption of Marine Highway shipping and further research into each may help ease the decision to move shipments to water.
VII. Conclusion

The America’s Marine Highway Program is a holistic and forward-looking program of the United States Department of Transportation that seeks to move freight away from congested highways and railroads and onto the country’s underused inland waterway network. It has shown moderate success since its 2010 introduction, having issued 40 grants averaging $1.2 million each since inception, to port authorities and other operators. The program appears to be falling short, however, of the mandates outlined by Congress in the Program’s engendering legislation.

In addition to promoting short sea transportation in general as a means to reduce landside traffic congestion, the Energy Independence and Security Act of 2007 recommends coordination by the Department of Transportation with port authorities, state departments of transportation, and other agencies to further use of the waterways (see Appendix A: Energy Independence and Security Act of 2007 [Excerpt]). It requires that the Department engage in planning activities with those same entities, collect and disseminate data on the program, and conduct research on how the Marine Highways may address traffic congestion and other transportation challenges. To whatever extent these mandates have been accomplished internally, they have not been made public in any reasonable manner.

In addition to the Department of Transportation’s apparent nonperformance of these mandates, this paper has identified several recommendations which already lay within the Congressionally-defined scope of the program as detailed in the 2007 Act which may aid in accomplishing those and other stated objectives. A comprehensive transportation planning approach to the system may aid in extending its benefits to all. Specific projects should be targeted, with the intent of strengthening the system as a whole. Program marketing can help popularize Marine Highway shipping and help achieve economies of scale, and supply chain redundancy may be a timely addition as an additional objective of the Program.

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Maritime Administration, ‘America’s Marine Highway Grants’.
Regulatory burdens persist which may discourage otherwise willing shippers from moving to water. Finally, the Marine Highways are not exempt from broader operational issues such as container positioning, last mile delivery, and service scheduling decisions all of which should be addressed as the Program matures.

The America’s Marine Highway Program shows great potential due in no small part to its holistic approach to serious issues facing the country. It is premised on high-impact, high return on investment projects, but its reach is limited by the paltry amounts appropriated by Congress. Addressing these issues and acting on these recommendations may aid in convincing Congress to allocate more funding to the Program as it grows in popularity and its benefits unfold, furthering its mission of traffic congestion relief, economic growth, environmental protection, military readiness, and freight and passenger safety.
VIII. Considerations and Future Research

This paper’s exploration of the America’s Marine Highway Program’s successes and shortcomings raises several derivative questions as to how the service may be improved. A detailed network analysis of population centers and freight volumes may aid in allocating new Marine Highway projects where they are needed most. Simple Program marketing appears to be lacking, the amplification of which may bring about important cost savings that may in turn make the Marine Highways more cost competitive. Regulatory burdens persist, namely through the protectionist Jones Act, as do tax frictions such as the Harbor Maintenance Fee. The social rates of return of Marine Highway projects are well understood in theory but require work to be practicable. Similarly, a fuller understanding of the “all-in” costs of Marine Highway transportation may aid in incentivizing land-based shippers to move to water. Finally, “classic” transportation issues such as container positioning, the last mile problem, and service scheduling remain to be addressed by Program stakeholders.

Network Analysis

Implicit in this paper’s recommendation that the Department of Transportation take a more proactive approach to Marine Highway network planning is the need for some means to identify underserved areas and opportunities for greater efficiency (see Section V.G.2: Targeting and Funding of Future Projects). Certain highly populated areas, for example, may be relatively underserved by the Marine Highways. Certain highway or rail routes, also for example, may currently be operating above capacity with a clear potential water alternative that a potential project sponsor simply has not recognized yet. “Promot[ion of] the development of short sea transportation services” per the 2007 Act would seemingly require such knowledge.³⁰

This type of analysis is arguably already within Congress’s scope of the Program: the 2007 Act allows for the “promotion of the development of short sea transportation services” and “coordination with […] public agencies […] on the development of landside facilities and infrastructure to support short sea transportation services” along the Marine Highways.³³⁰ Data may already exist, as the Act permits the “collection and dissemination of data for the designation and delineation of short sea transportation routes” and “development of performance measures for the short sea transportation program.” As discussed prior, however, the Department appears not to have made any public-facing analysis of such potential improvements. Such an analysis, possibly in cooperation with an urban planning or transportation network operations specialist, may meaningfully advance the Program.

Program Marketing

Short sea transportation depends on the achievement of economies of scale to be able to offer low rates and to reach profitability. As a competitor against road and rail transport, however, it currently sits at a disadvantage. Those land-based modes already enjoy freight volumes that are high enough to produce low per-unit costs (i.e., a larger denominator of freight volumes underneath a constant numerator of fixed costs) that in turn let them charge competitive rates. Short sea carriers, on the other hand, are left to recover their comparatively high per-unit costs by charging higher rates, which render them less competitive in the marketplace. Simple marketing of the America’s Marine Highway Program may raise the Program’s awareness and attract shippers who may in turn increase freight volumes and profitability (see Section V.G.3: Program Marketing).

General awareness of the Marin Highway Program is good, but that awareness comes with a price. A question also exists of to whom the Program should be marketed to, given finite resources. Should the services of the AMHP grantee projects themselves be advertised to the general public? Should resources be

expended marketing the Program to regional, state, and local governments with the hope that they in turn make similar, parallel investments? What is the return on investment of a given grant dollar spent on marketing versus one spent on equipment? Can outright Program marketing be reasonably interpreted to fulfill the “promotion” elements of the 2007 Act?\textsuperscript{331} Transportation economics are decidedly complex, and such an analysis of demand generation may provide meaningful insight into ways to improve existing and future service.

**Regulatory Analysis**

The America’s Marine Highway Program seeks to ease the burdens of doing business along the nation’s waterways. Infrastructure grants, however, are not a panacea for the system’s ills. Regulations such as the Jones Act and added costs such as the Harbor Maintenance Fee (see Section V.G.5: Future Legislation) continue to act as barriers to the wider adoption of short sea transportation in the United States. A wholesale repeal of either is likely not practical, but a nuanced, empirical analysis of the costs and benefits of each as they relate to short sea transportation may help guide Congress in refining the regulatory framework.

**Social Rate of Return**

Jorgenson presents a thoughtful analysis of what constitutes the full social benefits and costs that comprise the social rate of return profile for the Marine Highway Program (see Section V.B: Program Objectives).\textsuperscript{332} His analysis, however, rightly stops short of performing a full analysis of those returns as such a project would likely lie significantly outside of the scope of a Master’s thesis paper and involve data sets which may be quite large or are publicly inaccessible. Continuation of this research, specifically with regard to the development of specific key performance indicators such as those relating to emissions, employment, and safety, may meaningfully advance this analysis.


\textsuperscript{332} Jorgenson.
Water-Versus-Land Transportation Cost Analysis

The Department of Transportation is tasked with allocating the funds provided by Congress to Marine Highway projects in the most equitable manner possible. The success of these projects, however, is part of a larger calculus that depends on individual shippers’ and carriers’ own business decisions. Shipping via water is environmentally friendly and safe, but altruism alone is unlikely to tip the scales in favor of the Marine Highways versus road or rail. Instead, carriage over water must be cost-competitive with those other modes of transport (see Section V.G.2: Targeting and Funding of Future Projects).

The shipping decision involves more than simple freight rates. Transloading, warehousing, and last mile transportation must all be taken into account, as should the potential administrative work involved in selecting new water-based carriers and coordinating shipments across multiple modes of transport. The Jones Act renders short sea transportation less competitive against roads and rails (there are no similar prohibitions against foreign-built trucks, for example), and the potential duplication of the Harbor Maintenance Fee, however small, does not help. Added time in transit may beget longer lead times and higher investments in inventories—two factors that stand in opposition to today’s lean “just-in-time” supply chain designs. Sunk costs and preexisting business relationships may also provide friction, as might the psychological effects of precedence and convenience. A detailed analysis of these and other transport-related costs may aid in identifying a “crossover point” at which Marine Highway transportation is competitive with land-based alternatives.

Container Positioning, the Last Mile Problem, Service Scheduling, and Other Operational Issues

The Marine Highway system is vulnerable to common “classic” operational transportation issues that face other modes of transport (see Section V.G.6: Other Challenges). Standardized metal shipping containers, which contain much of the freight that the AMHP seeks to shift to water, are not always located where they need to be and must be moved at someone’s expense. The “last mile problem” concerns the added costs and service customization involved in bringing shipments from mainline “trunk” services to the customer’s front door. Service scheduling, including the liner-versus-tramp decision, is another decision that
affects a given service’s balance between cost and convenience. Much research has already been performed on these and other matters, but their application to short sea transportation will likely encounter issues as the Program matures.
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X. Appendix A: Energy Independence and Security Act of 2007 (Excerpt)

The following is the relevant excerpt from the Energy Independence and Security Act of 2007 which enumerates the terms under which the America’s Marine Highway Program was established.333 The Act was amended slightly in 2012, 2016 and 2020 to expand the scope of the program, but the mandate otherwise remains materially the same.

PUBLIC LAW 110-140 – DEC. 19, 2007
Title XI—Energy Transportation and Infrastructure
Subtitle C—Marine Transportation
SEC. 1121. SHORT SEA TRANSPORTATION INITIATIVE.
(a) In General.—Title 46, United States Code, is amended by adding after chapter 555 the following:

“CHAPTER 556—SHORT SEA TRANSPORTATION

“Sec. 55601. Short sea transportation program.
“Sec. 55602. Cargo and shippers.
“Sec. 55603. Interagency coordination.
“Sec. 55604. Research on short sea transportation.
“Sec. 55605. Short sea transportation defined.

“Sec. 55601. Short sea transportation program

“(a) Establishment.—The Secretary of Transportation shall establish a short sea transportation program and designate short sea transportation projects to be conducted under the program to mitigate landside congestion.

“(b) Program Elements.—The program shall encourage the use of short sea transportation through the development and expansion of—

“(1) documented vessels;
“(2) shipper utilization;
“(3) port and landside infrastructure; and
“(4) marine transportation strategies by State and local governments.

“(c) Short Sea Transportation Routes.—The Secretary shall designate short sea transportation routes as extensions of the surface transportation system to focus public and private efforts to use the waterways to relieve landside congestion along coastal corridors. The Secretary may collect and disseminate data for the designation and delineation of short sea transportation routes.

“(d) Project Designation.—The Secretary may designate a project to be a short sea transportation project if the Secretary determines that the project may—

“(1) offer a waterborne alternative to available landside transportation services using documented vessels; and

“(2) provide transportation services for passengers or freight (or both) that may reduce congestion on landside infrastructure using documented vessels.

“(e) Elements of Program.—For a short sea transportation project designated under this section, the Secretary may—

“(1) promote the development of short sea transportation services;

“(2) coordinate, with ports, State departments of transportation, localities, other public agencies, and the private sector and on the development of landside facilities and infrastructure to support short sea transportation services; and

“(3) develop performance measures for the short sea transportation program.

“(f) Multistate, State and Regional Transportation Planning.—The Secretary, in consultation with Federal entities and State and local governments, shall develop strategies to encourage the use of short sea transportation for transportation of passengers and cargo. The Secretary shall—

“(1) assess the extent to which States and local governments include short sea transportation and other marine transportation solutions in their transportation planning;

“(2) encourage State departments of transportation to develop strategies, where appropriate, to incorporate short sea transportation, ferries, and other marine transportation solutions for regional and interstate transport of freight and passengers in their transportation planning; and
“(3) encourage groups of States and multi-State transportation entities to determine how short sea transportation can address congestion, bottlenecks, and other interstate transportation challenges.

“Sec. 55602. Cargo and shippers

“(a) Memorandums of Agreement.—The Secretary of Transportation shall enter into memorandums of understanding with the heads of other Federal entities to transport federally owned or generated cargo using a short sea transportation project designated under section 55601 when practical or available.

“(b) Short-Term Incentives.—The Secretary shall consult shippers and other participants in transportation logistics and develop proposals for short-term incentives to encourage the use of short sea transportation.

“Sec. 55603. Interagency coordination

“The Secretary of Transportation shall establish a board to identify and seek solutions to impediments hindering effective use of short sea transportation. The board shall include representatives of the Environmental Protection Agency and other Federal, State, and local governmental entities and private sector entities.

“Sec. 55604. Research on short sea transportation

“The Secretary of Transportation, in consultation with the Administrator of the Environmental Protection Agency, may conduct research on short sea transportation, regarding—

“(1) the environmental and transportation benefits to be derived from short sea transportation alternatives for other forms of transportation;

“(2) technology, vessel design, and other improvements that would reduce emissions, increase fuel economy, and lower costs of short sea transportation and increase the efficiency of intermodal transfers; and

“(3) solutions to impediments to short sea transportation projects designated under section 55601.
“Sec. 55605. Short sea transportation defined

“In this chapter, the term ‘short sea transportation’ means the carriage by vessel of cargo—

“(1) that is—

“(A) contained in intermodal cargo containers and loaded by crane on the vessel; or

“(B) loaded on the vessel by means of wheeled technology; and

“(2) that is—

“(A) loaded at a port in the United States and unloaded either at another port in the United States or at a port in Canada located in the Great Lakes Saint Lawrence Seaway System; or

“(B) loaded at a port in Canada located in the Great Lakes Saint Lawrence Seaway System and unloaded at a port in the United States.”.

(b) Clerical Amendment.—The table of chapters at the beginning of subtitle V of such title is amended by inserting after the item relating to chapter 555 the following:

“556. Short Sea Transportation.................................55601”.

(c) Regulations.—

(1) Interim regulations.—Not later than 90 days after the date of enactment of this Act, the Secretary of Transportation shall issue temporary regulations to implement the program under this section. Subchapter II of chapter 5 of title 5, United States Code, does not apply to a temporary regulation issued under this paragraph or to an amendment to such a temporary regulation.

(2) Final regulations.—Not later than October 1, 2008, the Secretary of Transportation shall issue final regulations to implement the program under this section.

SEC. 1122. SHORT SEA SHIPPING ELIGIBILITY FOR CAPITAL CONSTRUCTION FUND.

(a) Definition of Qualified Vessel.—Section 53501 of title 46, United States Code, is amended—
(1) in paragraph (5)(A)(iii) by striking “or noncontiguous domestic” and inserting “noncontiguous domestic, or short sea transportation trade”; and

(2) by inserting after paragraph (6) the following:

“(7) Short sea transportation trade.—The term ‘short sea transportation trade’ means the carriage by vessel of cargo—

“(A) that is—

“(i) contained in intermodal cargo containers and loaded by crane on the vessel; or

“(ii) loaded on the vessel by means of wheeled technology; and

“(B) that is—

“(i) loaded at a port in the United States and unloaded either at another port in the United States or at a port in Canada located in the Great Lakes Saint Lawrence Seaway System; or

“(ii) loaded at a port in Canada located in the Great Lakes Saint Lawrence Seaway System and unloaded at a port in the United States.”.

(b) Allowable Purpose.—Section 53503(b) of such title is amended by striking “or noncontiguous domestic trade” and inserting “noncontiguous domestic, or short sea transportation trade”.

SEC. 1123. SHORT SEA TRANSPORTATION REPORT.

Not later than 1 year after the date of enactment of this Act, the Secretary of Transportation, in consultation with the Administrator of the Environmental Protection Agency, shall submit to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the short sea transportation program established under the amendments made by section 1121. The report shall include a description of the activities conducted under the program, and any recommendations for further legislative or administrative action that the Secretary of Transportation considers appropriate.

XI. Appendix B: List of Designated America’s Marine Highway Program Routes

The following is a list of designated America’s Marine Highway Program corridors as of May 2022.\(^{33}\)

<table>
<thead>
<tr>
<th>Route Designation</th>
<th>Route Name</th>
<th>Landside Routes</th>
<th>Northern or Western</th>
<th>Southern or Eastern</th>
<th>Other Major Cities</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>East Coast</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-64</td>
<td>Hampton Roads, Chesapeake Bay, and James River</td>
<td>I-64</td>
<td>Richmond, Va.</td>
<td>Norfolk, Va.</td>
<td>None</td>
<td>M-95 &amp; M-495</td>
</tr>
<tr>
<td>M-87</td>
<td>Hudson River and Erie Canal</td>
<td>I-87</td>
<td>St. Lawrence Seaway (via Canada)</td>
<td>New York City</td>
<td>Burlington, Vt. &amp; Albany, N.Y.</td>
<td>M-90, M-95, &amp; M-295</td>
</tr>
<tr>
<td>M-95</td>
<td>Atlantic Ocean Coastal Waters</td>
<td>I-95</td>
<td>Portland, Maine</td>
<td>Miami</td>
<td>Boston; New York City; Norfolk, Va.; Savannah, Ga.; &amp; Jacksonville, Fla.</td>
<td>M-64, M-87, M-295, &amp; M-495</td>
</tr>
<tr>
<td>M-295</td>
<td>East River, Long Island Sound, and Block Island Sound</td>
<td>I-95, I-295, I-495, &amp; I-678</td>
<td>New York City</td>
<td>Block Island</td>
<td>New Haven, Conn.</td>
<td>M-87 &amp; M-95</td>
</tr>
<tr>
<td>M-495</td>
<td>Anacostia, Occoquan, and Potomac Rivers</td>
<td>I-95, I-295, I-395, &amp; I-495</td>
<td>Washington, D.C.</td>
<td>Chesapeake Bay</td>
<td>None</td>
<td>M-64 &amp; M-95</td>
</tr>
<tr>
<td><strong>West Coast</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-5</td>
<td>Pacific Ocean Coastal Waters</td>
<td>I-5</td>
<td>Bellingham, Wash.</td>
<td>San Diego</td>
<td>Seattle; Portland, Ore. (via M-84); Oakland &amp; San Francisco, Calif.; &amp; Los Angeles</td>
<td>M-5 (AK), M-84, &amp; M-580</td>
</tr>
<tr>
<td><strong>Inland Rivers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-35</td>
<td>Upper Mississippi River</td>
<td>I-35, I-94</td>
<td>Minneapolis</td>
<td>St. Louis, Mo.</td>
<td>Dubuque &amp; Davenport, Iowa; Moline, Ill.</td>
<td>M-29 &amp; M-55</td>
</tr>
<tr>
<td>M-49</td>
<td>Atchafalaya River and the J. Bennett Johnson Waterway</td>
<td>I-49</td>
<td>Shreveport, La.</td>
<td>Morgan City, La.</td>
<td>None</td>
<td>M-10</td>
</tr>
</tbody>
</table>

\(^{33}\) Maritime Administration, ‘America’s Marine Highway Route Designations’. 
### Inland Rivers (continued)

<table>
<thead>
<tr>
<th>Route Designation</th>
<th>Route Name</th>
<th>Landside Routes</th>
<th>Terminus</th>
<th>Other Major Cities</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-70</td>
<td>Ohio, Mississippi, and Missouri Rivers</td>
<td>I-70</td>
<td>Paducah, Ky.</td>
<td>Pittsburgh</td>
<td>M-55 &amp; M-65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Louisville, Ky.; Cincinnati, Ohio; Huntington, W.Va.</td>
<td></td>
</tr>
<tr>
<td>M-71/77</td>
<td>Lake Erie</td>
<td>I-71 &amp; I-77</td>
<td>Detroit</td>
<td>Cleveland</td>
<td>M-75, M-90</td>
</tr>
<tr>
<td>M-75</td>
<td>Detroit River and Lake Erie</td>
<td>I-75</td>
<td>Detroit</td>
<td>Toledo, Ohio</td>
<td>M-71/77 &amp; M-90</td>
</tr>
<tr>
<td>M-90</td>
<td>The Great Lakes St. Lawrence Seaway System</td>
<td>I-80, I-90, &amp; I-94</td>
<td>Duluth, Minn. &amp; Chicago</td>
<td>Albany, N.Y. &amp; St. Lawrence Seaway (via Canada)</td>
<td>M-55, M-71/77, M-75, &amp; M-87</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sault Ste. Marie, Mich.; Detroit; Cleveland; Buffalo, N.Y.</td>
<td></td>
</tr>
<tr>
<td>M-10</td>
<td>Gulf Coastline</td>
<td>I-10</td>
<td>Brownsville, Texas</td>
<td>Tampa, Fla.</td>
<td>M-49, M-55, M-65, &amp; M-146</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Houston (via M-146); Galveston, Texas; New Orleans; Pensacola, Fla.</td>
<td></td>
</tr>
<tr>
<td>M-146</td>
<td>Houston Ship Channel, Buffalo Bayou, and Galveston Bay</td>
<td>TX-146</td>
<td>Houston</td>
<td>Galveston, Texas</td>
<td>M-10 &amp; M-69</td>
</tr>
<tr>
<td>M-69</td>
<td>Texas Gulf Intracoastal Waterway</td>
<td>I-69</td>
<td>Brownsville, Texas</td>
<td>Port Arthur, Texas</td>
<td>M-10 &amp; M-146</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Corpus Christi, Texas; Houston (via M-146)</td>
<td></td>
</tr>
<tr>
<td>Pacific</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-H1</td>
<td>Hawaiian Islands</td>
<td>I-H1</td>
<td>Loop around Hawaiian Islands</td>
<td>Honolulu; Hilo, Hawaii</td>
<td>None</td>
</tr>
<tr>
<td>M-AS1</td>
<td>American Samoa</td>
<td>None</td>
<td>Loop around American Samoan Islands</td>
<td>Pago Pago</td>
<td>None</td>
</tr>
<tr>
<td>M-GMN1</td>
<td>Guam and Commonwealth of the Northern Mariana Islands</td>
<td>None</td>
<td>Loop around Guam and Northern Mariana Islands</td>
<td>Hagåtña, Saipan</td>
<td>None</td>
</tr>
<tr>
<td>Caribbean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-2</td>
<td>Puerto Rico</td>
<td>PR-2</td>
<td>Loop around Puerto Rico</td>
<td>San Juan, Ponce</td>
<td>None</td>
</tr>
<tr>
<td>M-V1</td>
<td>The U.S. Virgin Islands</td>
<td>None</td>
<td>Loop around U.S. Virgin Islands</td>
<td>Charlotte Amalie</td>
<td>None</td>
</tr>
</tbody>
</table>

The following is a list of America’s Marine Highway Program grants as of May 2022.\textsuperscript{335}

<table>
<thead>
<tr>
<th>Route</th>
<th>Geography</th>
<th>Grant</th>
<th>Sponsoring Authority</th>
<th>Amount Granted</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
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<tr>
<td>M-65</td>
<td>Inland Rivers</td>
<td>Tenn-Tom Freight Project</td>
<td>Itawamba County Port Commission</td>
<td>$1,766,070</td>
<td>Sponsored by the Tennessee-Tombigbee Waterway Development, this grant was awarded to purchase material handling equipment and make yard improvements to create a Marine Highway Service between the Port of Itawamba, MS, and Mobile, AL.</td>
</tr>
<tr>
<td>M-64</td>
<td>East Coast</td>
<td>James River Container Expansion Project</td>
<td>The Port of Virginia</td>
<td>$1,100,000</td>
<td>This grant was awarded to purchase a barge to start a container on barge weekly service between Richmond Marine Terminal and Hampton Roads.</td>
</tr>
<tr>
<td>2016</td>
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<tr>
<td>M-55</td>
<td>Inland Rivers</td>
<td>Baton Rouge-New Orleans Shuttle Service</td>
<td>Baton Rouge/ New Orleans Ports</td>
<td>$1,758,595</td>
<td>This grant was awarded to purchase barges needed to start a new service to collect empty containers in Memphis, and transport them to Baton Rouge, LA, to meet customer demand for chemical industry exports.</td>
</tr>
<tr>
<td>M-64</td>
<td>East Coast</td>
<td>James River Container Expansion Project</td>
<td>The Port of Virginia</td>
<td>$476,748</td>
<td>This grant was used to buy a generator to include on barge refrigerated and frozen products supporting the development of new customers by expanding the service.</td>
</tr>
<tr>
<td>M-295</td>
<td>East Coast</td>
<td>New York Harbor Container and Trailer on Barge</td>
<td>New York/ New Jersey Port Authority</td>
<td>$1,632,296</td>
<td>This grant was awarded to purchase material handling equipment, build infrastructure to improve barge operations, and create two crane operator training centers.</td>
</tr>
<tr>
<td>M-495</td>
<td>East Coast</td>
<td>Potomac River Commuter Ferry Project</td>
<td>Northern Virginia Regional Commission</td>
<td>$173,361</td>
<td>This grant was awarded to support planning efforts focused on the development of a new commuter ferry service in the National Capital Region.</td>
</tr>
<tr>
<td>2017</td>
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</tr>
<tr>
<td>M-55</td>
<td>Inland Rivers</td>
<td>Baton Rouge-New Orleans Shuttle on the M-55</td>
<td>Port of New Orleans</td>
<td>$2,307,200</td>
<td>This grant was awarded to purchase material handling equipment for efficient loading and unloading of container-on-barge operations to the New Orleans France Road Terminal.</td>
</tr>
<tr>
<td>M-295</td>
<td>East Coast</td>
<td>Davisville/Brooklyn/Newark Container on Barge Service</td>
<td>Quonset Development Corporation</td>
<td>$855,200</td>
<td>This grant was awarded to purchase material handling equipment for a bi-weekly barge service between the Port of Davisville in North Kingstown, RI, and Red Hook Container Terminals in Brooklyn, NY, and Newark, NJ, for New England bound containers.</td>
</tr>
<tr>
<td>M-64</td>
<td>East Coast</td>
<td>James River Container Expansion Project</td>
<td>The Port of Virginia</td>
<td>$456,000</td>
<td>This grant was awarded to purchase material handling capacity at the Richmond Marine Terminal to expand barge service in Virginia between Richmond and Hampton Roads.</td>
</tr>
<tr>
<td>M-295</td>
<td>East Coast</td>
<td>New York Harbor and Container and Trailer on Barge</td>
<td>New York City Economic Development Corporation</td>
<td>$298,423</td>
<td>This grant was awarded to fund a planning study to analyze the marine highway services expansion throughout the Northeast Region from New York Harbor to other points.</td>
</tr>
</tbody>
</table>

\textsuperscript{335} Maritime Administration, ‘America’s Marine Highway Grants’; United States Department of Transportation, ‘U.S. Transportation Secretary Pete Buttigieg Announces $12.6 Million in Grants for America’s Marine Highways’. 
<table>
<thead>
<tr>
<th>Route</th>
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<th>Sponsoring Authority</th>
<th>Amount Granted</th>
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<tbody>
<tr>
<td><strong>2017 (continued)</strong></td>
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<tr>
<td>M-295</td>
<td>East Coast</td>
<td>Cross Sound Ferry Enhancements</td>
<td>Connecticut Port Authority</td>
<td>$503,927</td>
<td>This grant was awarded to support the expansion of the dock and shore side infrastructure for the Cross-Sound Ferry.</td>
</tr>
<tr>
<td>M-65</td>
<td>Inland Rivers</td>
<td>Paducah-McCracken Riverport Container on Barge Service</td>
<td>Paducah-McCracken County Riverport Authority</td>
<td>$251,927</td>
<td>This grant was awarded for an 18-month container-on-barge services that would stretch across three states and three Marine Highway Routes.</td>
</tr>
<tr>
<td><strong>2018</strong></td>
<td></td>
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<tr>
<td>M-55</td>
<td>Inland Rivers</td>
<td>Baton Rouge–New Orleans Shuttle on the M-55</td>
<td>SEACOR AMH</td>
<td>$3,155,622</td>
<td>Sponsored by the Port of New Orleans, this grant was awarded to purchase purpose-built vessels that will increase the viability of the service between the two ports.</td>
</tr>
<tr>
<td>M-64</td>
<td>East Coast</td>
<td>James River Container Expansion M-64</td>
<td>James River Barge Line</td>
<td>$1,822,093</td>
<td>Sponsored by Virginia Port Authority, this grant was awarded for the acquisition of a third barge to expand the existing service on the M-64 route.</td>
</tr>
<tr>
<td><strong>2019</strong></td>
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<tr>
<td>M-146</td>
<td>Gulf of Mexico</td>
<td>Houston Gateway &amp; Gulf Container-on-Barge Central Node</td>
<td>Houston Port Authority</td>
<td>$1,500,000</td>
<td>This grant was awarded to support the development of an Operational Plan that provides the necessary data to establish a business case to move container by barge between terminals.</td>
</tr>
<tr>
<td>M-95</td>
<td>East Coast</td>
<td>Wallops Island M-95 Intermodal Barge Service</td>
<td>Virginia Commercial Spaceflight Authority</td>
<td>$96,425</td>
<td>This grant was awarded to design a new trestle and combination dock/ramp to support the loading and unloading of rocket parts, equipment, and any other accessory pertaining space launch from barges and research vessels at the Mid-Atlantic Regional Spaceport (MARS).</td>
</tr>
<tr>
<td>M-90</td>
<td>Great Lakes</td>
<td>Lake Erie Shuttle</td>
<td>Port of Monroe</td>
<td>$1,101,735</td>
<td>This grant was awarded to support the purchase, installation, and training associated with the use of a crawler crane.</td>
</tr>
<tr>
<td>M-64</td>
<td>East Coast</td>
<td>James River Container Expansion M-64</td>
<td>The Port of Virginia</td>
<td>$189,840</td>
<td>This grant will be used to purchase equipment in support of the existing James River Expansion Project between Richmond and Hampton Roads.</td>
</tr>
<tr>
<td>M-65</td>
<td>Inland Rivers</td>
<td>Paducah-McCracken Riverport Container on Barge Service</td>
<td>Paducah-McCracken County Riverport Authority</td>
<td>$480,000</td>
<td>This grant was awarded to purchase or lease material handling equipment to load and unload containers at the Baton Rouge facility.</td>
</tr>
<tr>
<td>M-55</td>
<td>Inland Rivers</td>
<td>Baton Rouge–New Orleans Shuttle on the M-55</td>
<td>SEACOR AMH</td>
<td>$1,040,000</td>
<td>Sponsored by the Port of Greater Baton Rouge, this grant was awarded to purchase six purpose-built barges and lease one towboat to transport containers.</td>
</tr>
<tr>
<td>M-5</td>
<td>West Coast</td>
<td>Seattle-Bainbridge Island Ferry Service</td>
<td>Washington State Department of Transportation</td>
<td>$1,500,000</td>
<td>This grant was awarded to convert from diesel to hybrid one of the two ferries used in the Seattle-Bainbridge Island Ferry Service, resulting in a significant reduction in emissions.</td>
</tr>
<tr>
<td>M-84</td>
<td>West Coast</td>
<td>Port of Morrow M-84 Barge Service Expansion</td>
<td>Port of Morrow</td>
<td>$1,623,200</td>
<td>This grant was awarded for the expansion of barge services from Portland, Oregon, to Vancouver, Washington, and to enhance the Port of Morrow barge capacity.</td>
</tr>
<tr>
<td>M-95</td>
<td>East Coast</td>
<td>M-95 Fernandina Express Container on Barge Service</td>
<td>Ocean Highway and Port Authority of Nassau County</td>
<td>$1,291,800</td>
<td>This grant was awarded to purchase material handling equipment essential for the efficient loading and unloading for the Fernandina Express container barge service between the Port of Fernandina and the Port of Charleston.</td>
</tr>
<tr>
<td>Route</td>
<td>Geography</td>
<td>Grant</td>
<td>Sponsoring Authority</td>
<td>Amount Granted</td>
<td>Description</td>
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<tr>
<td>2020</td>
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<tr>
<td>M-35/M-55</td>
<td>Inland Rivers</td>
<td>M-35/M-55 Container on Barge Service</td>
<td>America's Central Port District</td>
<td>$1,268,800</td>
<td>This grant was awarded to purchase material handling equipment and security equipment for container on barge movement to the St. Louis area on the M-35.</td>
</tr>
<tr>
<td>M-70</td>
<td>Inland Rivers</td>
<td>M-70 Barge Service in the Ports of Cincinnati, Northern Kentucky and Beyond</td>
<td>Ports of Indiana</td>
<td>$545,136</td>
<td>This grant was awarded to establish a new storage facility and support expansion of its existing Marine Highway service between Nucor Gallatin in Ghent, KY, and the Port of Indiana-Jeffersonville, IN.</td>
</tr>
<tr>
<td>M-70</td>
<td>Inland Rivers</td>
<td>M-70 Barge Service in the Ports of Cincinnati, Northern Kentucky and Beyond</td>
<td>Nucor Steel Corporation</td>
<td>$2,363,800</td>
<td>Sponsored by OKI (Ohio-Kentucky-Indiana Regional Council of Governments), Nucor Steel Corporation at Brandenburg was awarded a grant to support the retrofit of two casino barges to move containers along the M-70 route.</td>
</tr>
<tr>
<td>M-55</td>
<td>Inland Rivers</td>
<td>Baton Rouge-New Orleans Shuttle of the M-55</td>
<td>SEACOR AMH</td>
<td>$778,350</td>
<td>Sponsored by the Port of New Orleans, SEACOR AMH was awarded a grant to provide permanent damage fabrication and installation in barges to support the continued growth of the container shuttle service between Memphis, TN, to Port Allen, LA.</td>
</tr>
<tr>
<td>M-95</td>
<td>East Coast</td>
<td>M-95 New York Harbor Container and Trailer on Barge Service</td>
<td>US Coastal Service Inc</td>
<td>$308,000</td>
<td>Sponsored by the New York City Economic Development Corporation, this grant was awarded for planning, permitting, and engineering studies required to start operation in the New York City Region.</td>
</tr>
<tr>
<td>M-295</td>
<td>East Coast</td>
<td>New York Harbor Container and Trailer on Barge Service</td>
<td>Red Hook Container Terminal, LLC</td>
<td>$148,664</td>
<td>Sponsored by The Port Authority of New York and New Jersey, this grant was awarded to purchase low-emission yard tractors to support barge operations in the New York and New Jersey Harbor.</td>
</tr>
<tr>
<td>M-84</td>
<td>West Coast</td>
<td>Port of Morrow M-84 Barge Service Expansion</td>
<td>Tidewater Barge Lines, Inc</td>
<td>$3,200,000</td>
<td>Sponsored by the Port of Morrow, this grant was awarded to support the procurement of a container on barge service to expand from the Port of Morrow in Boardman, OR, to Vancouver, WA.</td>
</tr>
<tr>
<td>M-AS1</td>
<td>Pacific</td>
<td>Port and Landside Infrastructure Improvements/Port of Pago, Pago American Samoa</td>
<td>Port of Pago, American Samoa</td>
<td>$943,000</td>
<td>This grant was awarded to purchase material handling equipment and dock rehabilitation to expand inter-island service.</td>
</tr>
<tr>
<td>2021</td>
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</tr>
<tr>
<td>M-95</td>
<td>East Coast</td>
<td>Cape May - Lewes Ferry</td>
<td>Delaware River and Bay Authority</td>
<td>$600,000</td>
<td>This grant will support a comprehensive ferry master plan to develop a new, modern, efficient, and cleaner ferryboat design. The master plan will serve as a comprehensive analysis of operations and service needs, and help determine the types, sizes, and number of ferries that are needed in the future. With a nationwide push towards a low carbon economy transition, the ferry system is capable of incorporating technologies within the vessels that can benefit customers as well as the environment, including electric vehicle charging stations.</td>
</tr>
<tr>
<td>M-H1</td>
<td>Pacific</td>
<td>Hawaii Commercial Harbors System Shipping Services</td>
<td>Young Brothers, LLC</td>
<td>$200,475</td>
<td>Grant funds will be used to purchase 99 forklift scales to enhance the newly designated Hawaii Commercial Harbors System Shipping Services Project. The scales will improve the safety and efficiency of Young Brother’s inter-island cargo operations by providing real-time weight information for cargo being transported. Currently, weight information is provided by the shippers.</td>
</tr>
<tr>
<td>Route</td>
<td>Geography</td>
<td>Grant</td>
<td>Sponsoring Authority</td>
<td>Amount Granted</td>
<td>Description</td>
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<tr>
<td>M-70</td>
<td>Inland Rivers</td>
<td>M-70 Barge Service in the Ports of Cincinnati, Northern Kentucky and Beyond</td>
<td>Nucor Corporation</td>
<td>$1,408,000</td>
<td>Grant funds will support the acquisition of a Buy American-compliant bridge crane at the new marine terminal in Gallatin County, Kentucky. This site will transport steel products by inland river barge. The purchase of the new crane will be designed to lift 70 tons to meet market demand.</td>
</tr>
<tr>
<td>M-55</td>
<td>Inland Rivers</td>
<td>Baton Rouge-New Orleans Shuttle Service</td>
<td>SEACOR AMH</td>
<td>$847,500</td>
<td>Grant will fund the purchase of 100 container chassis; support modification to the towboat wheelhouse; and enable one bareboat lease of a new 2520 horsepower Z-Drive towboat with Tier 3 engines. Funding for this project will support the continued growth of the Memphis, Tennessee to Port Allen, Louisiana container shuttle.</td>
</tr>
<tr>
<td>M-95</td>
<td>East Coast</td>
<td>North Carolina Container on Barge Shuttle Operation</td>
<td>Stevens Towing of North Carolina</td>
<td>$1,015,000</td>
<td>Grant funds were awarded for an Equipment Upgrade Project, which includes the purchase of a crawler crane, two spreader bars, and a forklift. Currently, containerized cargo bound for the Port of Virginia from Edenton must reach its destination via truck, causing high amounts of volume on North Carolina and Virginia roadways. This service will run between Riverbulk Terminal in Edenton, North Carolina, to locations within the Port of Virginia, and operate utilizing a 200 TEU capacity deck barge for Lo/Lo cargo and/or Ro/Ro cargo.</td>
</tr>
<tr>
<td>M-95</td>
<td>East Coast</td>
<td>Mid-Atlantic Barge Service</td>
<td>South Jersey Port Corporation</td>
<td>$1,010,800</td>
<td>This project will acquire two American-made, low-emissions reach stackers for the Balzano Marine Terminal at the Port of Camden, NJ. These fully mobile reach stackers will be utilized terminal wide. Using these reach stackers, the Balzano Marine Terminal is expected to increase densification and throughput, creating a more resilient system of transport at the terminal.</td>
</tr>
<tr>
<td>M-95</td>
<td>East Coast</td>
<td>New York Harbor Container and Trailer on Barge Service</td>
<td>Red Hook Container Terminal, LLC</td>
<td>$1,470,000</td>
<td>This project will be used to modify a deck barge to begin the Trailer-on-Barge Package Delivery Service of the New York Harbor Container &amp; Trailer on Barge Service. Upon completion of these modifications, the trailer-on-barge portion of this designation will begin transporting up to 36 trailers between Brooklyn and Newark on one round trip per day, 260 days per year.</td>
</tr>
<tr>
<td>M-146</td>
<td>Gulf of Mexico</td>
<td>Chambers County-Houston Container on Barge Expansion Service</td>
<td>Chamber County Improvement District #1</td>
<td>$3,000,000</td>
<td>This grant will support the purchase of two purpose-built barges. Funding this project will enable the applicant to transport up to 56,000 containers annually to and from the surrounding ports.</td>
</tr>
<tr>
<td>M-64</td>
<td>East Coast</td>
<td>James River Container Expansion Project</td>
<td>Virginia Port Authority</td>
<td>$3,048,363</td>
<td>Grant will be used to improve lighting within the perimeter of the Richmond Marine Terminal (RMT) through the installation of high mast light poles with Light Emitting Diode (LED) fixtures and the retrofitting of existing light poles and LED fixtures. Expanding the operational capacity at the terminal with improved lighting within the facility will allow for barge operations beyond daylight hours.</td>
</tr>
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