

Report on Opportunities for Maritime Highway Transportation in the Gulf of Mexico, Puget Sound, and Salish Sea System

Final Report



Photo courtesy of Port of Greater Baton Rouge



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List of Acronyms

Acronym	Term
BIL	Bipartisan Infrastructure Law
BTS	Bureau of Transportation Statistics
CBP	Customs and Border Protection
CMAQ	Congestion Mitigation and Air Quality
CMTS	Committee on the Marine Transportation System
DERA	Diesel Emissions Reduction Act
DOC	Department of Commerce
DoD	Department of Defense
DOT	Department of Transportation
EPA	Environmental Protection Agency
FAST	Fixing America’s Surface Transportation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLOW	Freight Logistics Optimization Works
FTA	Federal Transit Administration
FY	Fiscal year
GIWW	Gulf Intracoastal Waterway
GSCN	Green Shipping Corridor Network
IAT	Integrated Action Team
IJA	Infrastructure Investment and Jobs Act
INFRA	Nationally Significant Multimodal Freight & Highway Projects Program
ITS	Intelligent Transportation Systems
MARAD	Maritime Administration
META	Marine Environmental and Technical Assistance
MHR	Marine Highway Route
MHS	Marine Highway System
MIST	Maritime Innovative Science and Technology
MSC	Military Sealift Command
NDAA	National Defense Authorization Act
NPRN	National Port Readiness Network
NPRNSG	National Port Readiness Network Steering Group
NPRNWG	National Port Readiness Network Working Group
PIDP	Port Infrastructure Development Program
ROUTES	Rural Opportunities to Use Transportation for Economic Success
SDDC	Surface Deployment and Distribution Command
SMHN	Strategic Marine Highway Network
STRAHNET	Strategic Highway Network
STRACNET	Strategic Rail Corridor Network
TSA	Transportation Security Administration
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USDA	United States Department of Agriculture

Acronym	Term
USFORSCOM	United States Army Forces Command
USNORTHCOM	United States Northern Command
USTRANSCOM	United States Transportation Command
USMCA	United States–Mexico–Canada Agreement
USMHP	United State Marine Highway Program

Executive Summary

Section 3521(e) of the James M. Inhofe National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2023, P.L. 117-263, requires the Maritime Administration (MARAD) to complete a report on Maritime Highway Transportation in the Gulf of Mexico, Puget Sound, and the Salish Sea System (“*Report to Congress*”) by December 23, 2023:

Not later than one year after the date of the enactment of this Act, the Maritime Administrator 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 opportunities for maritime highway transportation, as that term is defined section 55605(1) of title 46, United States Code, as amended by this section, in the Gulf of Mexico, Puget Sound, and Salish Sea System by vessels documented under chapter 121 of title 46, United States Code.

The United States has a versatile and expansive network of navigable waterways, including rivers, bays, channels, coasts, the Great Lakes, open-ocean routes and the Saint Lawrence Seaway System. Under statutory authority granted under 46 U.S.C. 55601, the United States Marine Highway Program (USMHP) aims to relieve landside congestion, reduce air emissions, and generate other public benefits by increasing the efficiency of the surface transportation system through the development and promotion of marine highway transportation.

The USMHP currently includes 31 Marine Highway Routes (MHRs)¹ that span 26,291 miles. These routes, which are navigable waterways that have been designated by the Secretary of Transportation, run roughly parallel to existing landside routes, and serve as extensions of the surface transportation system. The USMHP awarded 64 discretionary grants totaling \$103 million from FY2010 to FY2023., including \$25 million available in FY23 through the Bipartisan Infrastructure Law (BIL). During that same period, there were 54 unfunded applications totaling \$234 million. The FY2023 NDAA further expanded the USMHP authorities, allowing for a wider range of applicants and project types.

The FY2023 NDAA made several amendments to the USMHP, including:

- (a) expanding the definition of marine highway transportation to include bulk, liquid, and loose cargo (in addition to previously eligible types of freight, including intermodal cargo containers, roll-on/roll-off cargo, unitized freight, and freight vehicles carried aboard commuter ferry boats); and
- (b) expanding the definition of marine highway transportation to include shipments of eligible cargo from U.S. ports to or from ports in Canada and Mexico.

In preparing the *Report to Congress*, MARAD investigated how these recent statutory changes provide opportunities for maritime highway transportation, with a particular focus on the Gulf of Mexico, Puget Sound, and Salish Sea System regions and maritime connections in Canada and Mexico. The research, which included interviews with maritime stakeholders, was conducted in three phases: Current Conditions and Trends in maritime highway transportation; Objectives of the USMHP; and Opportunities

¹ “Marine highway transportation” in this Report refers to the definition in 46 U.S.C. 55605, which provides the statutory authority for the USMHP. “Maritime highway transportation” describes all maritime highway transportation, not just the USMHP.

and implementation actions that could expand maritime highway transportation in these regions.

MARAD used the information gathered in these three phases to prepare this *Report to Congress*. Five common themes were identified through the research findings. These include:

- **System Components and Infrastructure**, including the types of infrastructure, equipment, vessels, system enhancements, and technological improvements (including Intelligent Transportation Systems [ITS] enhancements) needed nationally, or for specific markets, regions, services, commodities, and maritime highway transportation routes.
- **System Operations**, including system operation policies and procedures needed nationally, or for specific markets, regions, services, commodities, and marine highway transportation routes, to administer the USMHP.
- **System Regulations**, including regulations that may be adopted by the various operating and regulating agencies to provide consistent direction to maritime highway network operators and infrastructure owners.
- **System Maintenance**, including ongoing maintenance of the marine highway system, such as a state-of-good repair program that reduces the frequency and duration of future infrastructure repairs and limits maintenance costs to ensure a resilient maritime highway transportation system.
- **System Funding**, including future funding needs and opportunities to improve the maritime highway transportation system, including existing and future sources from both public and private sector sources.

This *Report to Congress* provides eight broad opportunities addressing these themes, along with implementation actions MARAD, other federal agencies, and maritime stakeholders can take to support the USMHP and maritime highway transportation. These opportunities are as follows:

1. MARAD should continue to explore opportunities for maritime highway transportation in the Puget Sound and Salish Sea region.
2. MARAD should continue to explore opportunities for maritime highway transportation in the Gulf of Mexico.
3. MARAD, other U.S. DOT modal administrations such as FHWA and FTA, and other federal agencies could explore partnerships with the public and private sectors to improve and expand maritime highway transportation.
4. MARAD, other U.S. DOT modal administrations, and marine highway service users and providers could investigate opportunities presented by the United States-Mexico-Canada Agreement to develop maritime highway transportation and to foster efficient and sustainable trade in North America.
5. MARAD could work with other federal agencies to better integrate Marine Highway Routes into the Nation's multimodal network via intermodal connections, ensure freight network resiliency, and improve supply chain efficiency.

6. MARAD should continue to promote the public and environmental benefits maritime highway transportation offers, such as relieving landside congestion and reducing air emissions, and should incorporate maritime highway transportation in climate resiliency and decarbonization efforts.
7. MARAD, in collaboration with the Department of Defense, Department of Agriculture, and other federal agencies, could encourage the use of the Marine Highway System to transport federally owned, procured, financed, or generated cargo.
8. MARAD should continue to use and identify information technology tools, resources, and data to support maritime highway transportation initiatives and decisions.

These opportunities can expand the Nation's maritime highway transportation and leverage the new authorities identified in the FY2023 NDAA.

I. Introduction

I.1 Purpose of Report

Section 3521 of the FY 2023 NDAA made several amendments to marine highway transportation that impact MARAD’s United States Marine Highway Program (USMHP). These include:

- (c) Expanding the definition of marine highway transportation to include bulk, liquid, and loose cargo (in addition to previously eligible types of freight, including intermodal cargo containers, roll-on/roll-off cargo, unitized freight, and freight vehicles carried aboard commuter ferry boats), and
- (d) Expanding the definition of marine highway transportation to include shipments of eligible cargo from U.S. to/from ports in Canada and Mexico.

The FY2023 NDAA requires MARAD to complete a report on Maritime Highway Transportation in the Gulf of Mexico and Puget Sound (“*Report to Congress*”) by December 23, 2023:

Not later than one year after the date of the enactment of this Act, the Maritime Administrator 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 opportunities for maritime highway transportation, as that term is defined section 55605(1) of title 46, United States Code, as amended by this section, in the Gulf of Mexico, Puget Sound, and Salish Sea System by vessels documented under chapter 121 of title 46, United States Code.

This document is MARAD’s *Report to Congress* submittal in response to the FY2023 NDAA.

I.2 The U.S. Marine Highway Program

The United States has a versatile and expansive network of navigable waterways, including rivers, bays, channels, coasts, the Great Lakes, open-ocean routes and the Saint Lawrence Seaway System. Under statutory authority granted under 46 U.S.C. 55601, the United States Marine Highway Program (USMHP) aims to relieve landside congestion, reduce air emissions, and generate other public benefits by increasing the efficiency of the surface transportation system through the development and promotion of marine highway transportation.

The USMHP currently includes 31 Marine Highway Transportation Routes (MHRs) that span 26,291 miles (Figure 1). These routes, which are navigable waterways that have been designated by the Secretary of Transportation, run roughly parallel to existing landside routes, and serve as extensions of the surface transportation system. For example, M-95 stretches from Maine to Florida and is the designation for the shipping lane along the Atlantic Coast paralleling interstate highway I-95.²

² <https://www.maritime.dot.gov/grants/marine-highways/marine-highway>

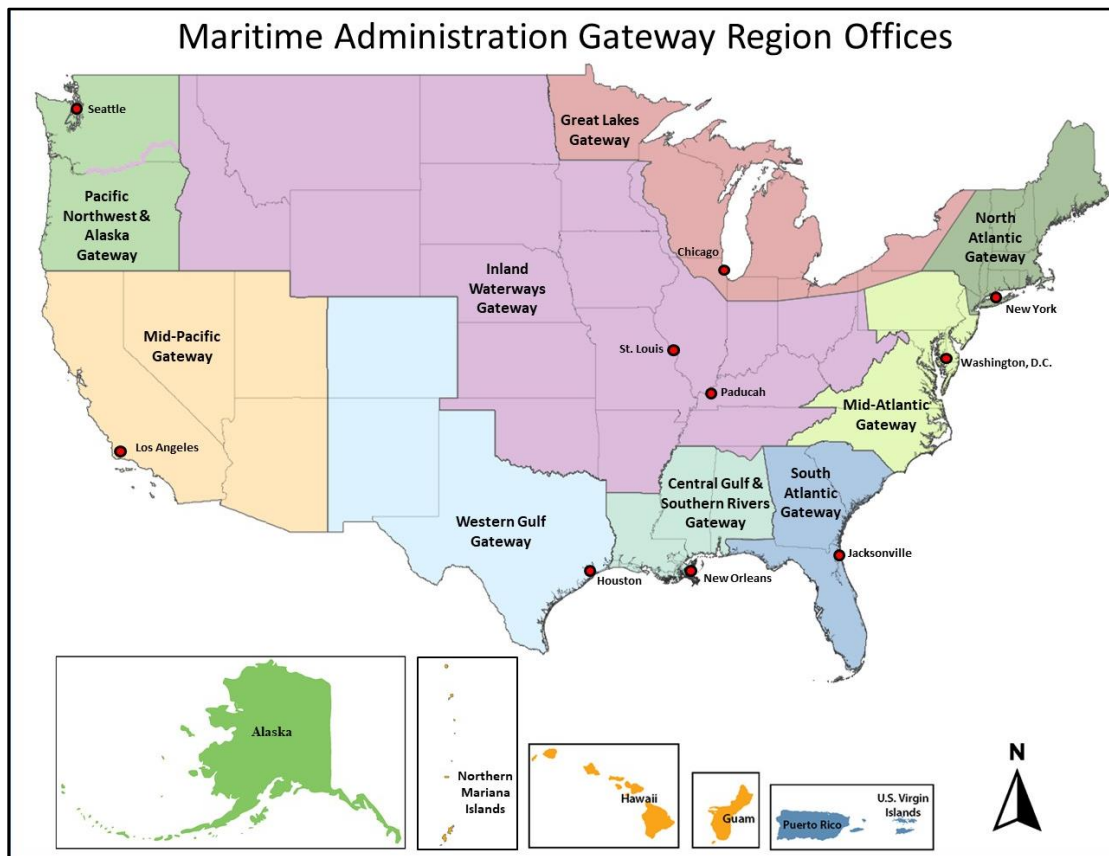


Figure 2: MARAD’s Gateway Regions and Offices
(Source: MARAD)

1.3 Work Description and Methodology

In preparing the *Report to Congress*, MARAD investigated how recent statutory changes, which expanded eligibility for USMHP grants to include the transportation of all types of freight as well as projects that support shipments to and from Canada and Mexico, provide opportunities for maritime highway transportation, with a particular focus on the Gulf of Mexico, Puget Sound, and Salish Sea System regions. The research was conducted in three phases, each with a report deliverable, from March to October 2023.

1.3.1 Phase I Work

The Phase I work assessed the impact of the FY2023 NDAA legislative changes on the USMHP with respect to current conditions in marine highway transportation, with particular focus on the Gulf of Mexico, Puget Sound, and Salish Sea regions. The work included:

- Review of the history of the USMHP;
- Identification of federal grant and loan programs, international agreements, and other resources applicable to the USMHP;
- Research and analysis of national, statewide, and regional maritime highway transportation studies;

- Description of the 38 U.S. ports included in the study regions (24 in Gulf of Mexico, 9 in Puget Sound and Salish Sea region, and 5 along the M-5 Route in California), including infrastructure and equipment inventory information;
- Description of five Canadian and five Mexican ports in close proximity to the 38 U.S. ports in the study regions;
- Analysis of commodities transported to and from the 48 study ports (38 in the U.S., 5 in Canada, 5 in Mexico) via water (2020 data) and to and from landside locations adjacent to or nearby the study ports (2017 data)⁴;
- Examination and explanation of trends such as environmental considerations (air quality, greenhouse gases, water quality, noise), freight industry operations, technology, and others influencing goods movement in marine highway transportation; and
- Outreach to non-federal maritime industry stakeholders to conduct a needs assessment based on their perceptions as to how the FY2023 NDAA changes will affect the USMHP.

I.3.2 Phase II Work

MARAD established goals for the USMHP that define the program’s broad, primary, and overall preferred outcomes.

The objectives measure progress towards achieving the USMHP goals. The objectives reflect information obtained from stakeholders, program meetings, grant data, and other venues during the USMHP’s history.

Details are provided in the Goals and Objectives section.

I.3.3 Phase III Work

Opportunities

The Phase III work built upon the Phase II activities and identified eight opportunities that MARAD can pursue to implement the objectives, and each opportunity addresses multiple objectives. Each opportunity includes an implementation action. Details are provided in the Opportunities section.

MARAD used the information collected in these three phases to prepare this *Report to Congress*. For access to the Phase I, II, and III reports, please send a request to mh@dot.gov.

⁴ 2020 and 2017 were the most recent full years of data available at the time the Phase I work was conducted.

2. Goals and Objectives

2.1 USMHP Goals

Under statutory authority granted under 46 U.S.C. 55601, the USMHP aims to relieve landside congestion, reduce air emissions, and generate other public benefits by increasing the efficiency of the surface transportation system.

MARAD has established four goals for the USMHP that define the program's broad, primary, and overall preferred outcomes:

- Provide a coordinated and capable alternative to landside transportation;
- Mitigate or relieve landside congestion;
- Support the development and expansion of documented vessels and port and landside infrastructure; and
- Develop, expand, or promote marine highway transportation.

2.2 USMHP Objectives

Objectives measure progress towards achieving the USMHP goals. MARAD has identified the following objectives. They are presented in no particular order, with each having equal weight regarding its importance to achieving the USMHP goals.

Objective I: Identify and Promote Multimodal Solutions

Freight infrastructure improvement strategies that include not only improvements to the maritime highway transportation network, but also improvements to ports and port facilities, equipment, waterways, vessel design, and improvements to other transportation modes connecting to ports, including intermodal railroad and highway infrastructure and related equipment.

Objective II: Maximize Marine Highway Freight Flows

Improvements and enhancements to maximize freight flows on marine highway transportation routes, including those that serve inadequately served or underserved markets, include methods and approaches that showcase how marine highway transportation routes provide a resilient and alternate option to surface transportation routes.

Objective III: Identify Statutory, Regulatory, and Institutional Barriers

Solutions to resolve statutory, regulatory, or institutional barriers that hinder expansion of and improvements to maritime highway transportation performance or growth.

Objective IV: Investigate and Promote Information Technology Solutions

Information technology applications to improve operations, streamline selection and documentation requirements, and assess current conditions (e.g., fitness of structural components).

Objective V: Reduce Environmental Impacts and Promote Environmental Benefits

New or enhanced initiatives that can reduce the environmental impact of the maritime highway transportation system and/or promote the environmental benefits of maritime highway transportation.

Objective VI: Promote Stakeholder Collaboration

Collaboration and partnerships among public and private sectors to foster better understanding and communications about marine transportation needs, opportunities, successes, and barriers.

Objective VII: Target New and Underserved Markets

Targeted markets include maritime highway transportation operators of bulk, liquid, and loose cargo, federally owned, procured, financed, or generated cargo, ferry services, military cargo, and others.

Objective VIII: Promote Resiliency and Redundancy Benefits

Marine highway transportation routes provide a flexible and alternate option to surface transportation systems, including railroad and highway networks.

Objective IX: Leverage Current Statutory Provisions

In addition, several provisions in the [Bipartisan Infrastructure Law \(BIL\)/Infrastructure Investment and Jobs Act \(IIJA\)](#) expanded eligibility for port and maritime projects within other modal programs. These include:

- Amending the Surface Transportation Block Grant Program to add rural barge landing, dock, and waterfront infrastructure projects as eligible activities. (23 U.S.C. 133; [IIJA, Section 11109](#)).
- Allowing the use of funds for marine highway projects in the following programs: Nationally Significant Freight and Highway Projects (23 U.S.C. 117; [IIJA, Section 11110](#)); National Highway Freight Program (23 U.S.C. 167; [IIJA, Section 11114](#)); and the Congestion Mitigation and Air Quality Improvement Program (23 U.S.C. 149; [IIJA, Section 11115](#)).
- Raised the cap (to 30 percent) on the use of apportioned funding for freight intermodal or freight rail projects under the National Highway Freight Program (23 U.S.C. 167; [IIJA, Section 11114](#)).

Objective X: Identify Funding Opportunities

Several Federal funding opportunities beyond the USMHP discretionary grant program are available to improve the maritime highway transportation system. These include:

- MARAD and U.S. DOT discretionary grant and financing programs,
- State freight formula funding programs, and
- Other federal agency funding programs, such as those offered by the Environmental Protection Agency (EPA), Army Corps of Engineers (USACE), Federal Emergency Management Agency (FEMA), Department of Defense (DoD), Department of Agriculture (USDA), and the Department of Commerce (DOC).

Additional funding opportunities for the maritime highway transportation system may also result from the expanded definition of marine highway transportation, which includes shipments to/from ports in Canada and Mexico (no grant funds can be used outside of the U.S.).

3. Opportunities

The opportunities identify broad initiatives, each one supporting multiple USMHP Objectives. These opportunities are directed across the entire MARAD enterprise and address five common themes identified through the research findings. These include:

- System Components and Infrastructure. Initiatives related to the types of infrastructure, equipment, vessels, and system enhancements needed nationally, or for specific markets, regions, services, commodities, and marine highway transportation routes. Also, initiatives related to enhancements to the Intelligent Transportation Systems (ITS) network and other technological improvements.
- System Operations. Initiatives related to system operation policies and procedures needed nationally, or for specific markets, regions, services, commodities, and marine highway transportation routes, to administer the USMHP.
- System Regulations. Initiatives related to regulations that may be adopted by the various operating and regulating agencies to provide consistent direction to maritime highway network operators and infrastructure owners.
- System Maintenance. Matters related to the ongoing maintenance of the marine highway system, such as a state-of-good repair program that reduces the frequency and duration of future infrastructure repairs and limits maintenance costs to ensure a resilient maritime highway transportation system.
- System Funding. Issues related to future funding needs and opportunities to improve the maritime highway transportation system, including existing and future sources from both public and private sector sources.

[Table 1](#) displays the relationship between the USMHP Opportunities and Objectives.

Table 1: Crosswalk of U.S. Marine Highway Program Opportunities and Objectives

Opportunities	Objectives									
	I. Identify and promote multimodal solutions	II. Maximize marine highway freight flows	III. Identify statutory and other barriers	IV. Investigate and promote IT solutions	V. Reduce environmental impacts & promote benefits	VI. Promote stakeholder collaboration	VII. Target new and underserved markets	VIII. Promote resiliency and redundancy benefits	IX. Leverage current statutory provisions	X. Identify funding opportunities
1. MARAD should continue to explore opportunities for maritime highway transportation in the Puget Sound and Salish Sea region	X	X	X		X	X	X	X	X	X
2. MARAD should continue to explore opportunities for maritime highway transportation in the Gulf of Mexico.	X	X	X	X	X	X	X	X	X	X
3. MARAD, other U.S. DOT modal administrations such as FHWA and FTA, and other federal agencies could explore partnerships with the public and private sectors to improve and expand maritime highway transportation.	X	X	X		X	X	X	X		X
4. MARAD, other U.S. DOT modal administrations, and marine highway service users and providers could investigate opportunities presented by the United States-Mexico-Canada Agreement to develop maritime highway transportation and to foster efficient and sustainable trade in North America.		X			X	X	X	X	X	X
5. MARAD could work with other federal agencies to better integrate Marine Highway Routes into the Nation’s multimodal network via intermodal connections, ensure freight network resiliency, and improve supply chain efficiency.	X	X	X	X	X	X	X	X	X	X

Opportunities	Objectives									
	I. Identify and promote multimodal solutions	II. Maximize marine highway freight flows	III. Identify statutory and other barriers	IV. Investigate and promote IT solutions	V. Reduce environmental impacts & promote benefits	VI. Promote stakeholder collaboration	VII. Target new and underserved markets	VIII. Promote resiliency and redundancy benefits	IX. Leverage current statutory provisions	X. Identify funding opportunities
6. MARAD should continue to promote the public and environmental benefits maritime highway transportation offers, such as relieving landside congestion and reducing air emissions, and should incorporate maritime highway transportation in climate resiliency and decarbonization efforts.	X	X	X	X	X	X	X	X	X	X
7. MARAD, in collaboration with the Department of Defense, Department of Agriculture, and other federal agencies, could encourage the use of the Marine Highway System to transport federally owned, procured, financed, or generated cargo.		X			X	X	X	X	X	X
8. MARAD should continue to use and identify information technology tools, resources, and data to support maritime highway transportation initiatives and decisions.	X	X	X	X	X	X		X	X	X

Opportunity 1. MARAD should continue to explore opportunities for maritime highway transportation in the Puget Sound and Salish Sea region.

The Puget Sound and Salish Sea region is composed of an international network of mainland cities and towns in the United States and Canada that are connected to a network of major islands (e.g., Bainbridge, San Juan, and Whidbey Islands in Washington and Salt Spring and Vancouver Islands in British Columbia) by a system of highways and waterways. While some of these islands are connected to the mainland by bridges, most rely on ferries or other vessels to transport people, vehicles, and cargo.

The two major ferry systems in the region—the Washington State Ferry System and the British Columbia (BC) Ferry Services Inc.—are operated by public entities. Recently, some Washington State Ferry routes from Anacortes to the San Juan Islands, Seattle to Bainbridge Island, and Edmonds to Kingston have experienced delays due to higher ridership volume, dock construction work in Seattle, vessel repairs, and staffing shortages.⁵ There is an increasing demand for regional freight and passenger transportation (especially during the large visitor population in the summer) with a potential impact on landside transportation infrastructure and the environment.

To respond to the demand, the region could develop a robust “hub-and-spoke network” by connecting disparate locations (spokes) to a single location (hub). These networks can offer transportation flexibility by concentrating commodity flows and providing economies of scale (e.g., higher frequency of services, lower shipping costs).⁶ The development of a hub-and-spoke network in the region would require close coordination with all stakeholders, including ports, operators, and users. However, there is a potential for success due to the region’s unique geography and market, especially when the addition of Canadian ports to the network is considered while alleviating cross border delays, where possible. The development of a hub-and-spoke network for the marine highway network would not be limited to this region and could be used elsewhere around the Nation to link our Marine Highway System, such as the West Coast, Gulf of Mexico, mid-Atlantic, Northeast, Great Lakes, and the Inland Waterways.

Washington State is the second-largest producer of lumber in the United States, and lumber accounts for \$36 billion in annual state revenue.⁷ Washington State also produces 90 percent of all commercial aircraft produced in the United States.⁸ Both the lumber and aerospace industries have successfully used maritime transport for these commodities. There are opportunities for increasing the movement of these commodities as well as others (e.g., oil, petrochemicals, agricultural products)⁹ via barges and other vessels in the Puget Sound and Salish Sea region.

Implementation Actions

- **MARAD should continue to work with local governments, public transportation entities, and private companies to alleviate delays in existing ferry services and to explore the feasibility of**

⁵ Ibid

⁶ <https://transportgeography.org/contents/chapter2/geography-of-transportation-networks/point-to-point-versus-hub-and-spoke-network/>

⁷ <http://choosewashingtonstate.com/why-washington/our-key-sectors/forest-products/>

⁸ Ibid.

⁹ https://www.factmr.com/report/2485/barge-transportation-market?utm_source=adwords&utm_medium=ppc&gclid=EAlalQobChMIsJD8wbXmgQMVN9zjBx0FmAM1EAAYBCA AEgIHdfD_BwE

increasing the use of ferry services by adding new multi-use ferries and offering expanded service along regional MHRs.

- **MARAD and other stakeholders should continue to actively engage and collaborate with indigenous tribes in the Salish Sea and Pacific Northwest when pursuing maritime highway transportation opportunities in the Puget Sound and Salish Sea region. This collaboration ensures that the initiatives benefit the region economically and honor the cultural and environmental significance of tribal lands and waters.**
- **MARAD could facilitate the development of a hub and spoke maritime transportation system in the region, including collaboration with regional operators in the U.S and Canada, to meet the rising demand for regional freight and passenger transport in the Puget Sound and Salish Sea region while minimizing the impact on existing infrastructure and the environment.**
- **MARAD should continue to work with regional maritime and transportation sectors to determine what improvements are needed (vessels, port equipment, etc.) to facilitate maritime transport of key commodities. Such activities could potentially be replicated in other locations within the Puget Sound and Salish Sea region as well as along other MHRs, especially those with inland waterways.**
- **MARAD, in cooperation with the maritime transportation sector and other public and private stakeholders, could explore collaborations and joint initiatives with Canadian operators, leveraging the new authorities in the FY2023 NDAA and fostering sustainable and eco-friendly movement of goods and passengers.**

Opportunity 2. MARAD should continue to explore opportunities for maritime highway transportation in the Gulf of Mexico.

The Gulf of Mexico serves as a critical gateway to the Nation's extensive inland waterway system, facilitating the efficient transport of goods and commodities to key regions across the United States. Similar to the Puget Sound/Salish Sea region, the Gulf of Mexico has the potential to develop a hub-and-spoke network with various hubs, such as Houston and New Orleans, and spokes throughout Texas, Louisiana, Mississippi, Alabama, and Florida. The Port of New Orleans is described as a “strategic location (with) access to 30-plus major inland hubs such as Dallas, Memphis, Chicago, and Canada via 14,500 miles of waterways, six Class I railroads, and interstate roadways.”¹⁰ This network can be complemented with the potential addition of ports in Mexico. Development of this network could enhance multimodal connectivity through intermodal connector projects; provide incentives for combined transport; support regulatory streamlining (especially for permitting activities); and foster public-private partnerships.

The FY2023 NDAA authorized non-unitized cargo (bulk, liquid, and loose cargo) to be transported on marine highways. One area where this legislative change provides maritime highway transportation opportunities is the automotive sector. In 2022, the International Trade Administration reported that 90 percent of vehicles produced in Mexico are exported, with 76 percent destined for the United States.¹¹ These automotive imports may be shipped to U.S. Gulf of Mexico ports.

The landscape of global and domestic trade has evolved post the COVID-19 pandemic, including impacts to the supply, flow, and availability of commodities as well as opportunities for nearshoring and domestic manufacturing, resulting in changes to the behavior of the Nation’s supply chain. These changes can create new opportunities for maritime highway transportation, especially in the Gulf of Mexico and the West Coast, offering the potential to optimize cargo movement.

Implementation Actions

- **MARAD could facilitate the development of a hub-and-spoke maritime transportation system in the region, with a particular emphasis on enhancing the Gulf Intracoastal Waterway (GIWW), as outlined in the ["Texas Delivers 2050: Texas Freight Mobility Plan."](#)**
- **MARAD should continue to work with regional ports, shippers, and carriers in the Gulf of Mexico to investigate the availability and potential for backhaul and multi-directional cargos to be transported from the destination port back to the port of origin, so that vessels, barges, and containers do not return empty (i.e., “deadheaded”).**
- **MARAD, the U.S. Customs and Border Protection (CBP), and other federal agencies could work together with manufacturers to leverage MHRs and to identify gateways for transporting automobiles from Mexico to the U.S., with a focus on Gulf of Mexico ports due to their proximity to Mexico and their strategic connections to the U.S. inland waterway system.**

¹⁰ <https://portnola.com/info/port-101#:~:text=Port%20NOLA%20Advantage&text=This%20naturally%20strategic%20location%20allows,I%20railroad%20and%20interstate%20roadways>.

¹¹ <https://www.trade.gov/country-commercial-guides/mexico-automotive-industry>

¹¹ [Texas Delivers 2050 - Freight Plan \(txdot.gov\)](#)

Opportunity 3. MARAD, other U.S. DOT modal administrations such as FHWA and FTA, and other federal agencies could explore partnerships with the public and private sectors to improve and expand maritime highway transportation.

Ferry and barge transportation opportunities exist in the Puget Sound and Salish Sea region, in the Gulf of Mexico, and in other U.S. areas. Ferries are used to transport passengers, vehicles, and cargo. In addition to USMHP grants, the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) offer ferry-related grants. FHWA's [Construction of Ferry Boats and Ferry Terminal Facilities Formula Program](#) (formerly the Ferry Boat Discretionary Program) provides federal-aid highway funds via state transportation agencies for designing and constructing vehicular or passenger ferry boats; designing and acquiring rights-of-way; and constructing ferry terminal facilities.¹² FTA's [Passenger Ferry Grant Program](#) funds capital projects that improve existing passenger ferry service, establish new ferry service, and repair and modernize ferry boats, terminals, and related facilities and equipment.¹³ FTA's [Ferry Service for Rural Communities Program](#) provides competitive funding to states to ensure basic essential ferry service is provided to rural areas.¹⁴ FTA's [Electric or Low-Emitting Ferry Pilot Program](#) provides annual competitive grants for the purchase of electric or low-emitting ferry vessels that reduce emissions by using alternative fuels or on-board energy storage systems and related charging infrastructure; at least one annual award "shall be for a ferry service that serves the state with the largest number of marine highway system miles."¹⁵

SUCCESS STORY

The Seattle-Bainbridge Island Ferry Service, operated by Washington State Ferries, is an example of effective interagency collaboration. This \$41.38 million project—conversion of one diesel ferry to hybrid electric drive—is funded with \$1.5 million in FY2019 USMHP funds along with a combination of state, local, and federal sources, including Congestion Mitigation and Air Quality (CMAQ) funding within FHWA and FTA authority.

As of September 2023, Washington State Ferries achieved a significant milestone in its \$4 billion fleet overhaul. The Wenatchee, one of its largest vessels, was taken out of service for conversion to hybrid-electric power; this conversion is expected to reduce emissions by 75% and significantly reduce the fleet's annual diesel fuel consumption of 19 million gallons. This future transformation aligns with the state's commitment to sustainable maritime transportation and highlights the success of interagency collaboration.

Statutory authority for the USMHP in 46 U.S.C. 55601 grants MARAD the authority to coordinate with ports, state departments of transportation, localities, other public agencies, and appropriate private sector entities on the development of landside facilities and infrastructure to support maritime highway transportation. In addition to working closely with other U.S. DOT modal administrations, MARAD actively engages with other federal agencies, such as the Environmental Protection Agency (EPA),

¹² <https://www.fhwa.dot.gov/discretionary/fbmemos.cfm>

¹³ <https://www.transportation.gov/rural/grant-toolkit/passenger-ferry-grant-program>

¹⁴ <https://www.transit.dot.gov/funding/grants/grant-programs/ferry-service-rural-communities-program-iija-ss-71103>

¹⁵ <https://www.transit.dot.gov/funding/grants/fact-sheet-electric-or-low-emitting-ferry-pilot-program>

Department of Energy (DOE), Department of Agriculture (USDA), and Department of Commerce (DOC). These inter-agency partnerships can assist MARAD in investigating opportunities for improvements to public and private ferry services.

Finally, maritime highway transportation stakeholders noted opportunities for increasing cargo transport via barges, and indicated that aggregates, petroleum products, plastic resin pellets, scrap metal, fertilizer, and pig iron are commodities with a potential for increased transport via barges.

Implementation Action

- **MARAD, other U.S. DOT modal administrations such as FHWA and FTA, and other federal agencies could work with public and private transportation entities to explore ways to improve and expand public and private ferry (including multi-use ferries) and barge services; identify and promote transport of expanded cargo types via barges; and provide information about ferry and barge opportunities to rural and tribal communities.**
- **MARAD and U.S. DOT could work with State DOTs through the State Freight Planning process to explore additional opportunities to develop maritime highway transportation routes and service.**

Opportunity 4. MARAD, other U.S. DOT modal administrations, and marine highway service users and providers could investigate opportunities presented by the United States-Mexico-Canada Agreement to develop maritime highway transportation and to foster efficient and sustainable trade in North America.

The [United States-Mexico-Canada Agreement \(USMCA\)](#) was enacted on July 1, 2020, and replaced the North American Free Trade Agreement (NAFTA). It supports trade opportunities between the United States, Mexico, and Canada, particularly within the manufacturing, agriculture, and energy sectors.¹⁶

Marine highway service users and providers can use provisions of the USMCA to foster and encourage the expansion of existing trade and to identify new trade opportunities while examining related customs and security considerations. In addition, marine highway service users and providers should encourage the use of MHRs for commodity transport, which will reduce congestion between land ports of entry in Canada, Mexico, and the United States.

ANTICIPATED SUCCESS STORY

The USMCA included several changes to the rules of origin for the automotive sector. The USMCA requires that 75 percent of a vehicle's content (70 percent for heavy trucks) be produced in North America, and that core auto parts originate from the United States, Canada, or Mexico. Following a phase-in period ending in 2023 for vehicles and 2027 for trucks, only goods meeting these content requirements will receive duty-free access. The USMCA requirements for the automotive industry are likely to provide new business opportunities for U.S. exporters, with local original equipment manufacturers and other suppliers in Mexico looking to increase the percentage of inputs in their supply chains from North American sources.¹⁷

Implementation Action

- **U.S. DOT, MARAD, and marine highway service users and providers could investigate opportunities presented by the United States-Mexico-Canada Agreement to develop maritime highway transportation and to foster efficient and sustainable trade in North America.**

¹⁶ <https://www.cbp.gov/trade/priority-issues/trade-agreements/free-trade-agreements/USMCA>

¹⁷ <https://www.trade.gov/country-commercial-guides/mexico-automotive-industry>

Opportunity 5. MARAD could work with other federal agencies to better integrate Marine Highway Routes into the Nation’s multimodal network via intermodal connections, ensure freight network resiliency, and improve supply chain efficiency.

The [National Port Readiness Network \(NPRN\)](#) is a cooperative designed to ensure readiness of commercial ports to support force deployment during contingencies and other national defense emergencies. The NPRN consists of the National Port Readiness Network Steering Group (NPRNSG), a National Port Readiness Network Working Group (NPRNWG), and the following nine federal agencies and organizations:

- Maritime Administration (MARAD)
- U.S. Coast Guard (USCG)
- Military Sealift Command (MSC)
- U.S. Army Forces Command (USFORSCOM)
- U.S. Transportation Command (USTRANSCOM)
- U.S. Army Corps of Engineers (USACE)
- U.S. Northern Command (USNORTHCOM)
- Transportation Security Administration (TSA)
- Surface Deployment and Distribution Command (SDDC)

The 18 strategic commercial ports in the Nation are:

- Port of Anchorage (AK)
- Port of Long Beach (CA)
- Port of Oakland (CA)
- Port of San Diego (CA)
- Port of Jacksonville (FL)
- Port of Savannah (GA)
- Port of Guam
- Port of Gulfport (MS)
- Port of Morehead City (NC)
- Port of Wilmington (NC)
- Port of Philadelphia (PA)
- Port of Charleston (SC)
- Port of Beaumont (TX)
- Port of Corpus Christi (TX)
- Port of Port Arthur (TX)
- Port of Hampton Roads (VA)

- Port of Everett (WA)
- Port of Tacoma (WA)

At each port, representatives of the nine agencies maintain a Port Readiness Committee (chaired by the USCG Captain of the port); this committee provides the means to coordinate efficient port operations during peacetime and actual national defense emergencies. Establishing a Strategic Marine Highway Network (SMHN) that links the strategic ports with MHRs can play a critical role in the NPRN. MHRs act in a flexible capacity during supply chain disruptions and national emergencies, thereby providing supply chain resiliency.

The SMHN should be fully integrated into the overall transportation network, connected with the Nation’s 18 strategic commercial ports, the FHWA [Strategic Highway Network \(STRAHNET\)](#), and the FRA [Strategic Rail Corridor Network \(STRACNET\)](#). STRAHNET is a “62,791-mile system of roads deemed necessary for emergency mobilization and peacetime movement of heavy armor, fuel, ammunition, repair parts, food, and other commodities to support U.S. military operations.” STRACNET includes the “civil rail lines most important to national defense.”

Implementation Actions

- **MARAD could leverage its participation in the NPRN and the [U.S. Committee on the Marine Transportation System \(CMTS\)](#), to identify a SMHN in order to achieve full multimodal transportation network integration.**
- **MARAD could work with ports to update the port infrastructure inventory list maintained by the USACE and the Bureau of Transportation Statistics (BTS) to ensure that ports have the equipment and infrastructure needed to load and offload the expanded commodities contained in various packaging now allowed by the NDAA 2023 changes (including ferry and barge cargoes).**
- **MARAD could conduct a nationwide Maritime Highway Transportation study, which would include all U.S. ports and MHRs, to identify opportunities for increased maritime highway transport in the United States and to assist in the development of a National SMHN.**

Opportunity 6. MARAD should continue to promote the public and environmental benefits maritime highway transportation offers, such as relieving landside congestion and reducing air emissions, and should incorporate maritime highway transportation in climate resiliency and decarbonization efforts.

OPPORTUNITY FOR SUCCESS

In April 2022, the U.S. Department of State announced the Green Shipping Corridor Network:

“Green shipping corridors can spur early and rapid adoption of fuels and technologies that, on a lifecycle basis, deliver low- and zero-emissions across the maritime sector, placing the sector on a pathway to full decarbonization. The United States envisions green shipping corridors as maritime routes that showcase low- and zero-emission lifecycle fuels and technologies with the ambition to achieve zero greenhouse gas emissions across all aspects of the corridor in support of sector-wide decarbonization no later than 2050. There are multiple pathways through which a fully decarbonized corridor can be achieved; this green shipping corridors framework therefore provides maritime stakeholders the flexibility to choose the path that best suits their needs.”¹⁸

At the November 2022 [United Nations Climate Change Conference \(Conference of Parties or COP27\)](#), the Canadian and U.S. Governments agreed to establish a [Green Shipping Corridor Network \(GSCN\)](#) in the Great Lakes and St. Lawrence Seaway system. In April 2023, the U.S. Great Lakes St. Lawrence Seaway Development Corporation and the Canadian St. Lawrence Seaway Management Corporation co-hosted the first-ever Collaborative Forum on establishing a GSCN on the Great Lakes St. Lawrence Seaway System. As previously described, the USMHP was initially established in 2007, and now has 31 designated MHRs covering 26,291 miles of waterways. These routes can complement the GSCN. For example, the M-90 is a designated USMHP MHR in the Great Lakes. The designation of this route and existence of the USMHP was not acknowledged in the announcement of the GSCN in the Great Lakes and St. Lawrence Seaway System. Currently, there is a lack of connection between the GSCN and the USMHP’s designated MHRs, a missed opportunity to leverage both programs.

In addition, EPA leads several climate and decarbonization programs applicable to the maritime industry. The [SmartWay Program](#) helps companies advance supply chain sustainability by measuring, benchmarking, and improving freight transportation efficiency. The [Clean Ports Program](#) funds zero-emission port equipment and technology and to help ports develop climate action plans to reduce air pollutants at U.S. ports. EPA’s [Ports Initiative](#) is an incentive-based program designed to reduce emissions by encouraging port authorities and terminal operators to retrofit and replace older diesel engines with new technologies and use cleaner fuels. The [Diesel Emissions Reduction Act \(DERA\) Program](#) promotes diesel emission reduction by providing grants and rebates that protect human health and improve air quality by reducing harmful emissions from diesel engines. Similarly, FHWA’s [Reduction of Truck Emissions at Port Facilities Program](#) provides funding to reduce truck idling and emissions at ports, including through the advancement of port electrification.

¹⁸ <https://www.state.gov/green-shipping-corridors-framework/>

Furthermore, MARAD has an opportunity to be a catalyst for climate change and decarbonization in the maritime sector. MARAD’s [Maritime Transportation System National Advisory Committee \(MTSNAC\)](#) is currently working with EPA and the DOE on port decarbonization and emission reduction efforts.

MARAD’s [Maritime Environmental and Technical Assistance \(META\) Program](#) promotes research on emerging technologies, practices, and processes that improve maritime industrial environmental sustainability. Two research focus areas include controlling aquatic invasive species transported by vessels and reducing air emissions at ports and from vessels.

As indicated throughout the report, the USMHP aims to relieve landside congestion, reduce air emissions, and generate other public benefits by increasing the efficiency of the surface transportation system.¹⁹ The USMHP provides a variety of benefits to the public. For example, barge transportation is an excellent and viable transportation mode to move large, heavy components, such as transporting large on- and off-shore wind components, including turbines and blades. Barges allow for the mass movement of oversize and overweight goods using the inland river system or coastal ports or using the Great Lakes St. Lawrence Seaway System for transportation to and from northern ports in the region. Project cargo can be directly moved from an ocean vessel into a barge, providing a clean, economic mode of transport that avoids the congestion of cities and towns, while reducing the impact of oversize and overweight goods on the nation’s roadways.

Lastly, a major focus of the [Bipartisan Infrastructure Law](#) is investing in rural communities, assisted through the [Rural Opportunities to Use Transportation for Economic Success \(ROUTES\) Program](#). The FY2023 NDAA increased rural and tribal applicant federal funding requests to be up to 100 percent of the total project cost for the USMHP. In addition, the [National Historic Preservation Act of 1966](#) mandates that federal agencies must consider the impact of federally funded or sponsored projects in ports and waterways that include, or are adjacent to, waters that are designed as “reservation” and “non-reservation” areas under the jurisdiction of recognized tribal governments.

Implementation Actions

- **MARAD, other U.S. DOT modal administrations, the Department of State, and other federal agencies could work to integrate the USMHP and designated MHRs within the Green Shipping Corridors Framework.**
- **MARAD should continue to work with federal agencies, transportation organizations, and industry stakeholders to identify maritime highway transportation vulnerabilities and to support resiliency measures to adapt to sea-level rise, extreme weather events, and other climate-related challenges.**
- **MARAD should continue to promote the META program and other initiatives that explore the development of green and sustainable technologies for vessels, such as the use of alternative fuels, emissions reduction technologies, zero/low emission retrofits, and energy-efficient designs.**

¹⁹ <https://www.maritime.dot.gov/grants/marine-highways/marine-highway> (updated October 5, 2023)

- **MARAD should continue to promote projects that expand the USMHP and benefit the surrounding communities, including leveraging opportunities available through rural and tribal transportation programs.**

Opportunity 7. MARAD, in collaboration with the Department of Defense, Department of Agriculture, and other federal agencies, could encourage the use of the Marine Highway System to transport federally owned, procured, financed, or generated cargo.

STATUTE AUTHORITY: OPPORTUNITY FOR SUCCESS

Title 46, Shipping § 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 marine highway 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 marine highway transportation.

Based on the statutory authority, opportunities exist for MARAD to utilize the Marine Highway System for transport of federally owned, procured, financed, or generated cargo. DoD has military cargo that can be transported via U.S. ports to military installations, such as Camp Murray Army Base in Tacoma, WA; Joint Base Lewis-McChord in the central western Puget Sound area; Naval Air Station in Whidbey Island, WA; the Gulf of Mexico Ports of Mobile, Houston, New Orleans; and the Naval Air Station in Corpus Christi, TX. In addition, USDA purchases and/or transports a variety of food products through several programs including the [USDA-DoD Fresh Fruit and Vegetable Program](#), the [Foods Disaster Assistance Program](#), and the [Emergency Food Assistance Program](#). Additionally, through the [Foreign Agricultural Service](#), USDA provides U.S. agricultural commodities to people in countries around the world to support meeting nutritional needs and enhanced trade.

Implementation Action

- **MARAD could develop memorandums memoranda of understanding with DoD and USDA to transport federally owned, procured, financed, or generated cargo. Expected outcomes include improvements to national security, enhancements to freight fluidities, and upgraded supply chain resilience.**

Opportunity 8. MARAD should continue to use and identify information technology tools, resources, and data to support maritime highway transportation initiatives and decisions.

The USMHP operates at the intersection of various maritime and transportation data streams and generates, utilizes, and interfaces with a variety of maritime and transportation data. USMHP integration into the national freight transportation network is critical to promote maritime highway transportation as a key component of the Nation's supply chain network. Elevating maritime highway transportation to a central role in the Nation's supply chain network contributes to its reliability, resiliency, economic vitality, and environmental responsibility.

MARAD's commitment to leveraging technology and data for marine highway initiatives is evident in the [U.S. DOT FY2022-FY2023 Annual Modal Research Plans](#), with a focus on emissions reduction, alternative fuels, and safety. This focus is further shown in the [Maritime Environmental and Technical Assistance \(META\) Program](#) and in MARAD's collaboration with the Intelligent Transportation Systems-Joint Program Office (ITS-JPO) to enhance port and freight network performance.

There is a need to analyze and integrate the various operational, vessel, and infrastructure data sources available from MARAD, the USACE, and others to identify opportunities and needs along the marine highway network. The analysis may help identify points of congestion or deficiencies along the marine highway network that warrant further analysis.

Implementation Actions

- **MARAD should develop a maritime research program, supplementing the successful META program, with a goal of leading to an improved understanding of maritime transportation data needs, issues, and opportunities; technical and research products; and strategies to promote maritime operations and maritime data research advancement.**
- **MARAD should continue to use and identify information technology tools and data, emphasizing the critical integration of the USMHP into the national freight transportation and supply chain networks.**
- **MARAD could investigate the use of information technology tools that can handle the USMHP's data needs and that enhance MARAD's analyses and decision processes.**
- **MARAD could explore improved visual data communication tools and ways to integrate marine highway data with other U.S. DOT and federal data systems, such as the U.S. DOT Office of the Secretary's [Freight Logistics Optimization Works \(FLOW\)](#) and the USACE's [Waterborne Commerce Statistics](#) data. This data would supplement MARAD's USMHP data to assist in tracking and developing USMHP performance measures.**

- **MARAD could coordinate with other federal agencies on their technology “lessons learned” as well as participating in brief information technology trial user sessions.**
- **MARAD could develop web-based information (e.g., an app, flowchart, or toolkit) that helps explain the USMHP services and grant process in a step-by-step manner; this information can promote the USMHP while assisting grant applicants. Together, these activities can serve as a catalyst for informing the USMHP’s future initiatives and decisions.**

4. Conclusion

This report is MARAD’s response to the FY2023 NDAA requirement to complete a report on Maritime Highway Transportation in the Gulf of Mexico, Puget Sound, and Salish Sea System (“*Report to Congress*”) by December 23, 2023:

Not later than one year after the date of the enactment of this Act, the Maritime Administrator 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 opportunities for maritime highway transportation, as that term is defined section 55605(1) of title 46, United States Code, as amended by this section, in the Gulf of Mexico, Puget Sound, and Salish Sea System by vessels documented under chapter 121 of title 46, United States Code.

The United States has a versatile and expansive network of navigable waterways, including rivers, bays, channels, coasts, the Great Lakes, open-ocean routes, and the Saint Lawrence Seaway System. Using the Nation’s waterways more consistently would create more public benefits and incentivize shippers to use these critical transportation channels.

MARAD’s USMHP manages a discretionary transportation grant program which funds projects that provide a coordinated and capable alternative to landside transportation; promotes the use of the Nation’s navigable waters to relieve landside congestion and reduce air emissions; and generates other public benefits by increasing the efficiency of the surface transportation system.

As discussed in this report, opportunities exist for maritime highway transportation not only in the Gulf of Mexico, Puget Sound, and Salish Sea System, but also throughout the Nation. Furthermore, the FY2023 NDAA provided additional authorities for the USMHP, including expanding the definition of marine highway transportation to include all types of freight and shipments to and from Canada and Mexico.

This report highlights several opportunities and implementation actions that, together, can expand the Nation’s maritime highway transportation and leverage the new authorities provided in the FY2023 NDAA. Potential implementation actions include, but are not limited to, integrating the maritime transportation system into the Nation’s transportation network; improving intra- and inter-agency coordination; promoting the environmental benefits of maritime transportation; and exploring partnerships with the public and private sectors to improve and expand maritime highway transportation.

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