

# Ohio Maritime Plan

Strengths, Weaknesses,  
Opportunities, and Threats  
Assessment



Department of  
Transportation



## **Ohio Maritime Plan**

The Ohio Maritime Plan will provide ODOT with information on the owners and operators of Ohio's Maritime Transportation System (MTS), their roles and responsibilities, and opportunities for collaboration and partnership.

## **SWOT Assessment**

The SWOT Assessment summarizes the strengths, weaknesses, opportunities, and threats related to the maritime system based on desk research, data analysis, engagement with the project Steering Committee, and stakeholder consultations.

## **Acknowledgments**

The CPCS Team acknowledges and is thankful for the input of those consulted during the development of this paper, including the Ohio Department of Transportation.

## **Opinions and Limitations**

Unless otherwise indicated, the opinions herein are those of the authors and do not necessarily reflect the views of the Ohio Department of Transportation.

CPCS makes efforts to validate data obtained from third parties, but CPCS cannot warrant the accuracy of these data. This document contains inventory information that will be updated throughout the project. Please see the final report for final data.

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# Acronyms and Abbreviations

| Acronym | Definition   |
|---------|--|
| AO45    | Access Ohio 2045   |
| ASCE    | American Society of Civil Engineers  |
| CHEERS  | The Cleveland Harbor Eastern Embayment Resilience Strategy   |
| MAP     | Maritime Assistance Program  |
| MARAD   | US Department of Transportation Maritime Administration  |
| MPO     | Metropolitan Planning Organization   |
| NHS     | National Highway System  |
| ODOT    | Ohio Department of Transportation  |
| OMP     | Ohio Maritime Plan   |
| PSA     | Port Statistical Area  |
| RTPO    | Regional Transportation Planning Organization  |
| SWOT    | Strengths, Weaknesses, Opportunities, and Threats  |
| TPO     | Transportation Planning Organization (Metropolitan Planning Organizations and Regional Planning Organizations) |
| USACE   | US Army Corps of Engineers   |

# Executive Summary

The Ohio Maritime Plan (OMP) assessed the strengths, weaknesses, and threats to the Ohio Maritime Transportation System (MTS). This included working with stakeholders, analyzing data, and conducting assessments to understand how maritime cargo activity in Ohio supports the overall movement of goods and economic activity in the State of Ohio. Following this assessment, opportunities that could be undertaken by the Ohio Department of Transportation (ODOT) and maritime stakeholders in the state were identified. Together, the strengths, weaknesses, opportunities, and threats (SWOT) analysis is intended to inform ODOT's OMP and thus increase the Department's understanding of how to improve the Ohio Maritime Transportation System.

Opportunities identified through the SWOT analysis fall under five categories, each of which generally coincides with a working group or activity within ODOT. These categories are Planning, Operations and Maintenance, Innovation and Technology, System Investment, and Coordination and Partnerships. In utilizing this structure, the findings from the SWOT analysis can easily be understood by which department within ODOT would be best positioned to own or have a coordinating role in the opportunity. Below are brief summaries of the opportunities identified.



## Planning Opportunities

Opportunities to better support the Ohio MTS through planning include a need to promote the inclusion of the maritime system in ODOT and MPO modal plans and studies, promote the development of Ohio's ports and maritime infrastructure, and ensure the safety and sustainability of the maritime transportation system. As experts in transportation and the movement of goods, ODOT can provide guidance to federal, state, and local officials on these matters.



## Operations & Maintenance Opportunities

Opportunities in Operations & Maintenance prioritize the preservation and improvement of navigation channels, ports, and other infrastructure throughout the maritime transportation system. This will require taking stock of asset conditions, identifying where there are needs, and making investments to maintain and improve system infrastructure. This also includes ensuring connectivity between the maritime infrastructure and road and rail connections to ports where it is needed.



## Innovation & Technology Opportunities

Opportunities in Innovation & Technology begin with the implementation of new port equipment to efficiently handle diverse cargo. This supports the needs identified by stakeholders to modernize port technology in order to remain competitive in the freight market. In turn, these technological improvements can be used to support other goals, such as improved environmental outcomes due to lower emissions via the adoption of alternative fuel vehicles or implementing new practices based on best practice research for dredging disposal and port assistance.



### **System Investment Opportunities**

Opportunities to improve system investment first lie in promoting investment in the system that benefits Ohio's economy, workforce, and communities. To do so, Ohio's maritime system stakeholders must secure long-term, stable funding to support the necessary investments to continue and improve operations. This includes conducting an evaluation of the Ohio Maritime Assistance Program (MAP) to ensure it is right-sized to address system needs, and ODOT, ports, and other stakeholders advancing system investment by supporting or providing grants, technical assistance, or taking other actions toward maintenance or major investment projects.



### **Coordination & Partnership Opportunities**

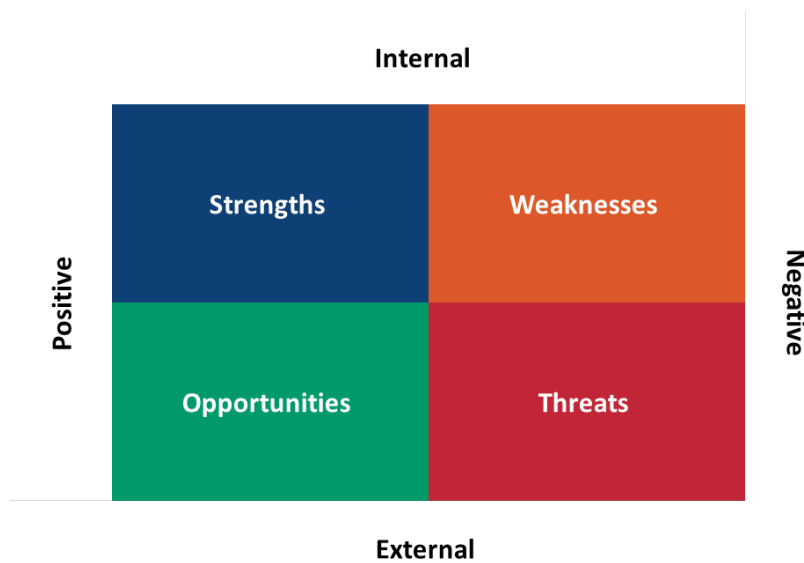
Coordination & Partnerships are a vital part of securing a successful future for the Ohio MTS. Improved coordination is important to facilitate better decisions in each of the other opportunity areas. This, in turn, will allow for better planning, investments, coordination, and alignment among stakeholders. An opportunity to improve coordination and partnerships among the system's many stakeholders could include the State evaluating the need for an improved coordinating mechanism for maritime interests and stakeholders, such as through a maritime-related commission.

These opportunities will continue to be refined, and a discreet list of actions that ODOT and its maritime system partners can take to maintain and advance the maritime system will be developed.

# 1. SWOT Assessment

The Ohio Maritime Plan (OMP) assessed the strengths, weaknesses, opportunities, and threats (SWOT) related to Ohio’s maritime activity. The purpose of the SWOT assessment was to identify opportunities for improvement in the Ohio Maritime Transportation System (MTS). Conducting a SWOT analysis offers a structured approach to understanding the maritime sector's current status and future potential. This analysis integrates information from consultations, literature reviews, and data analysis. Below is an organized overview based on the SWOT framework, detailing key factors identified during the development of the Ohio Maritime Plan.

Figure 1: SWOT Factors Summary

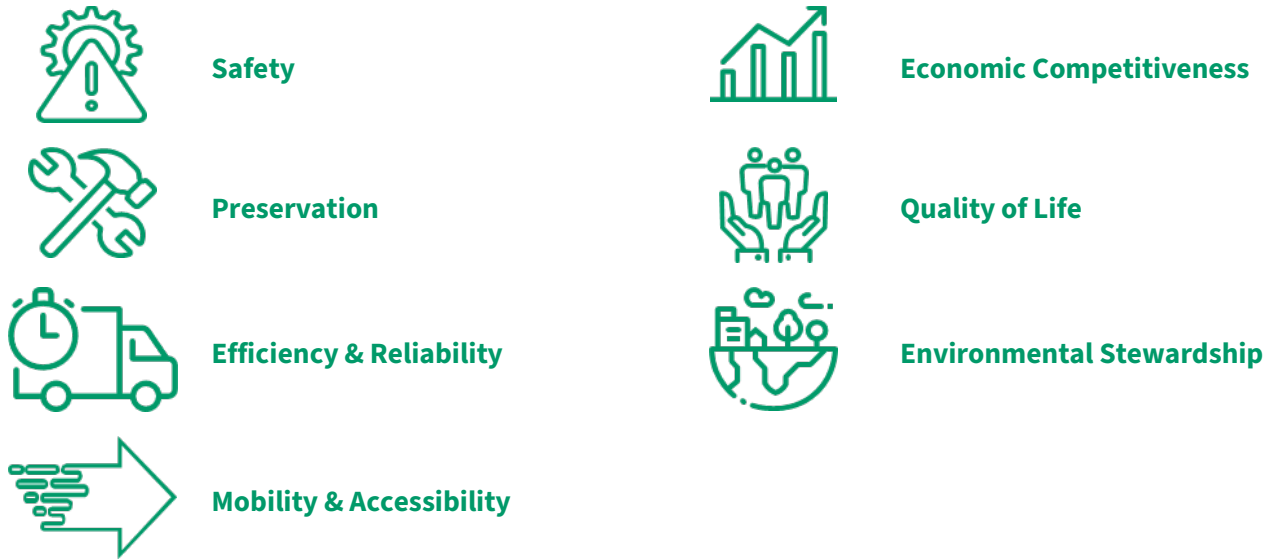


Findings were categorized as SWOT based on the following criteria:

- **Strengths** – Internal factors that give Ohio and its communities and businesses an advantage over others.
- **Weaknesses** – Internal factors that place Ohio and its communities and businesses at a disadvantage relative to others.
- **Opportunities** – External factors that Ohio and its communities and businesses could capitalize on to its advantage.
- **Threats** – External factors that could create challenges for Ohio and its communities and businesses.

The SWOT analysis was framed around the Access Ohio 2045 (AO45) long-range transportation plan’s goal areas. These goal areas are used to structure all of ODOT’s transportation plans and are intended to guide Ohio’s development as a smart, safe, and collaborative transportation system. Due to the many public and private stakeholders, the goal areas are uniquely applied to Ohio’s maritime system. The AO45 goal areas are shown in the following figure.

Figure 2: Access Ohio 2045 Goal Areas



## SWOT Summary

The SWOT analysis assessed different factors after gathering information throughout the project including, but not limited to, data analysis, stakeholder consultations, and surveys. Data for the analysis came from a variety of sources, including from the US Army Corps of Engineers (USACE) Waterborne Commerce Statistics Center. The USACE collects, processes, distributes, and archives vessel trips and cargo data to provide monthly and annual reports on the maritime market. Other data sources included the US Coast Guard and the Ohio Department of Natural Resources.

Consultations were integral to understanding the variety of viewpoints represented by stakeholders of the maritime system. Consultations were held with all relevant Metropolitan Planning Organizations (MPOs) and Regional Transportation Planning Organizations (RTPOs) in Ohio, in-person and virtual listening sessions and Steering Committee meetings were convened, and a survey on preferences was distributed to Steering Committee members. The collaborative nature of Ohio's MTS was highlighted throughout these conversations. For example, throughout the engagement process, Ohio's TPOs stressed the importance of building relationships between public and private stakeholders to better understand maritime needs and to foster a collaborative planning process.

As noted, the SWOT categories for analysis are aligned with AO45's goals. Due to the unique nature of the Ohio MTS, each of the SWOT categories most closely aligns with two to three of the AO45 goal areas. In the following section, the explanations of each SWOT category are provided by AO45 goal area.

## Strengths

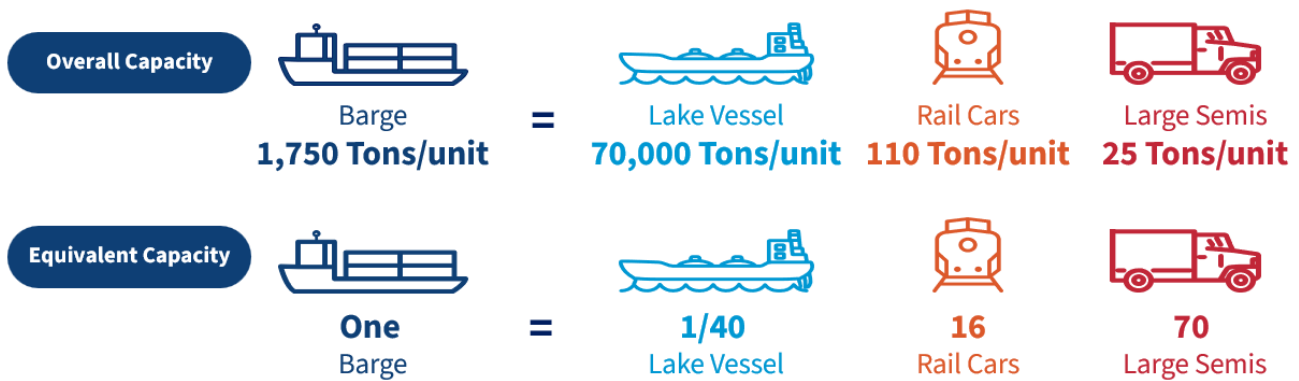
Steering Committee members identified the Ohio MTS’s geographic breadth, the number of markets served, and its diversity of users and purposes as the system’s greatest strengths. Additional data analysis and stakeholder engagement support this, as the strengths of the system can generally be categorized under the economic competitiveness and safety A045 goal areas.

### Economic Competitiveness

#### A System with Capacity

Several factors support the economic competitiveness of the Ohio MTS. First, the system can move a remarkable amount of cargo compared to other freight transportation modes (Figure 3). Its abundant capacity allows for the current, efficient, movement of goods and provides room for growth on both the lake and river systems in the future. As a single barge can move the equivalent of 70 large semi-trucks, not only is this a more efficient movement of goods, but the reduction of trucks on the road in favor of a single barge also lowers freight-related emissions and uses much less fuel per ton mile.

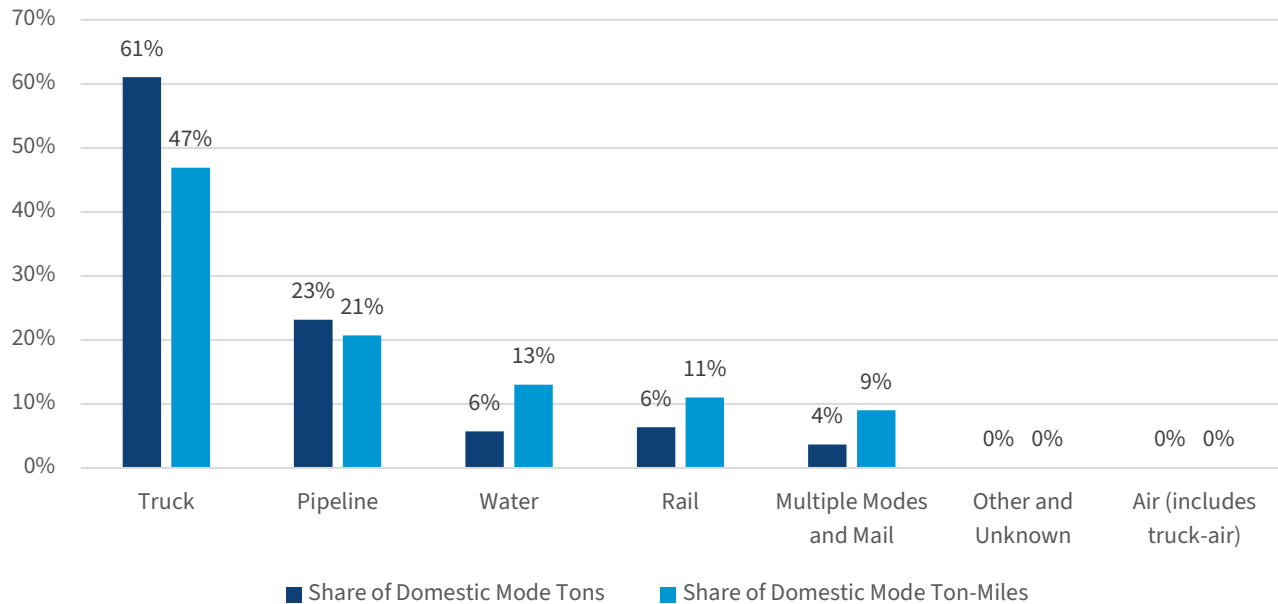
Figure 3: Ohio MTS System Equivalencies



Source: Waterways Council, Inc. & Interlake Steamship Company

As shown in Figure 4, more than half (53 percent) of Ohio’s freight ton-mileage is handled by modes other than truck. Truck moves tend to be over the shortest distances; rail, water, and multiple modes and mail tend to be over the longest; and pipeline is roughly in-between. The MTS handles around 13 percent of Ohio domestic ton-mileage – slightly higher than rail at 11 percent.

Figure 4: Ohio Freight Tonnage and Ton-Mileage by Mode, 2022



Source: WSP Analysis of FAF 5.6

### ***A System that Serves Ohio's Key Industries***

The system's abundant capacity is used to support Ohio's key industries, moving a diverse variety of Ohio's raw materials and finished products. In particular, Ohio's steel manufacturing, agriculture, and construction industries utilize the MTS to move goods. In the past, coal was also a primary good transported on the Ohio MTS. Today, coal's share of total goods moved on Ohio's lake and river systems is declining. However, the decline in demand from this industry is being replaced by the demand for other products, such as polymers and other chemicals. This speaks to the wide variety of industries served by the MTS, which will help secure the system's important position in the future.

### ***A System that Supports Ohio's Economy***

The demand for goods to be moved on Ohio's lake and river system fuels a competitive job economy. Over 130,000 jobs in Ohio were reliant on the Ohio MTS in 2023. These jobs produced \$9.7 million in personal income with 56% on the Ohio River and 44% on Lake Erie (Figure 4). In 2023, the movement of goods on the Ohio MTS generated \$37.5 billion in economic revenue, \$2.4 billion in local purchases, and nearly \$1 million in state and local taxes (Figure ). Together, value added from the Ohio MTS's employment, revenue, purchases, and taxes generated nearly \$40 billion in total economic activity for the State of Ohio. This significant value-add underlines the integral role played by the Ohio MTS in the Ohio economy.

Figure 5: Total Economic Activity, Ohio Maritime Transportation System

| IMPACT CATEGORY                            | Ohio River           | Lake Erie            | Ohio MTS             |
|--|----------------------|----------------------|----------------------|
| <b>Jobs</b>                                |                      |                      |                      |
| Direct                                     | 7,827                | 9,612                | 17,439               |
| Induced                                    | 6,750                | 9,624                | 16,374               |
| Indirect                                   | 8,893                | 12,240               | 21,133               |
| Related                                    | 50,887               | 24,966               | 75,852               |
| <b>TOTAL JOBS</b>                          | <b>74,357</b>        | <b>56,441</b>        | <b>130,798</b>       |
| <b>Personal Income</b>                     |                      |                      |                      |
| Direct                                     | \$ 437,585           | \$ 617,972           | \$ 1,055,557         |
| Re-Spending/Local Purchases                | \$ 1,034,013         | \$ 1,460,268         | \$ 2,494,280         |
| Indirect                                   | \$ 575,660           | \$ 742,278           | \$ 1,317,937         |
| Related                                    | \$ 3,525,362         | \$ 1,309,402         | \$ 4,834,764         |
| <b>TOTAL INCOME</b>                        | <b>\$ 5,572,619</b>  | <b>\$ 4,129,919</b>  | <b>\$ 9,702,538</b>  |
| <b>Value of Economic Revenue (\$1,000)</b> |                      |                      |                      |
| Business Services Revenue                  | \$ 2,969,749         | \$ 2,627,277         | \$ 5,597,025         |
| Related Output                             | \$ 19,227,988        | \$ 12,676,917        | \$ 31,904,905        |
| <b>TOTAL VALUE OF ECONOMIC REVENUE</b>     | <b>\$ 22,197,737</b> | <b>\$ 15,304,194</b> | <b>\$ 37,501,930</b> |
| <b>LOCAL PURCHASES (\$1,000)</b>           | <b>\$ 1,030,180</b>  | <b>\$ 1,348,282</b>  | <b>\$ 2,378,462</b>  |
| <b>State and Local Taxes (\$1,000)</b>     |                      |                      |                      |
| Direct, Induced and Indirect               | \$ 204,726           | \$ 282,052           | \$ 486,777           |
| Related                                    | \$ 352,536           | \$ 130,940           | \$ 483,476           |
| <b>TOTAL STATE AND LOCAL TAXES</b>         | <b>\$ 557,262</b>    | <b>\$ 412,992</b>    | <b>\$ 970,254</b>    |
| <b>TOTAL ECONOMIC ACTIVITY (\$1,000)</b>   | <b>\$ 23,231,749</b> | <b>\$ 16,764,461</b> | <b>\$ 39,996,211</b> |

Source: 2023 Economic Impact Analysis, Martin Associates

Note: Totals may not add due to rounding

## Safety

### A Safer System

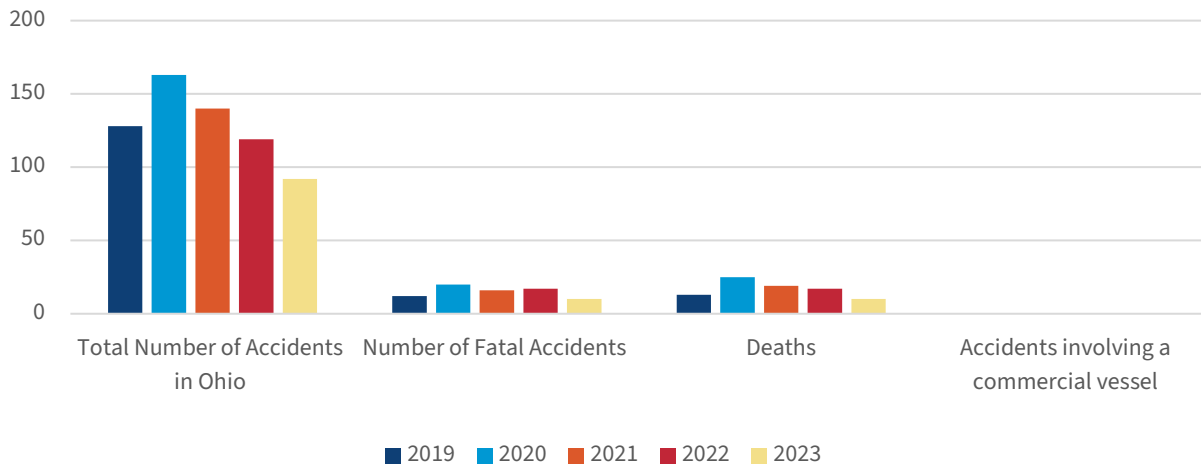
Safety is one of ODOT's highest priority goal areas and is one of the Ohio MTS's strengths. Maritime transportation is significantly safer than other modes of freight transportation. According to the Waterways Council, for every one barge-related injury, there are 96 injuries related to rail and 1,145 injuries in the trucking industry.<sup>1</sup> For every barge-related fatality, there are 26 rail-related and 120 truck-related fatalities.<sup>2</sup>

<sup>1</sup> Waterways Council, Inc.

<sup>2</sup> Waterways Council, Inc.

Additionally, spills from maritime vessels occur less often than those on truck or rail, with eight commercial vessel spills occurring in Ohio in 2023. Lower volumes of accidents and spills result in lower maintenance and cleanup costs and lessen potential delays from safety hazards. From a recreational boating perspective, accidents have trended downward in recent years, and the occurrence of accidents with commercial vessels has been zero for the past five years (Figure ).

**Figure 6: Ohio's Recreational Boating Safety Statistics**



Source: U.S. Department of Homeland Security, U.S. Coast Guard, Office of Auxiliary and Boating Safety

## Weaknesses

Weaknesses identified for the Ohio MTS fall under the AO45 goal areas of Preservation, Efficiency & Reliability, and Mobility & Accessibility. In a Steering Committee meeting, members described the Ohio MTS’s weaknesses as the underutilization of the waterways, constraints on the size of vessels that can be accommodated, aging of both workforce and infrastructure, and competing visions among the many different Ohio MTS stakeholders.

### Efficiency & Reliability

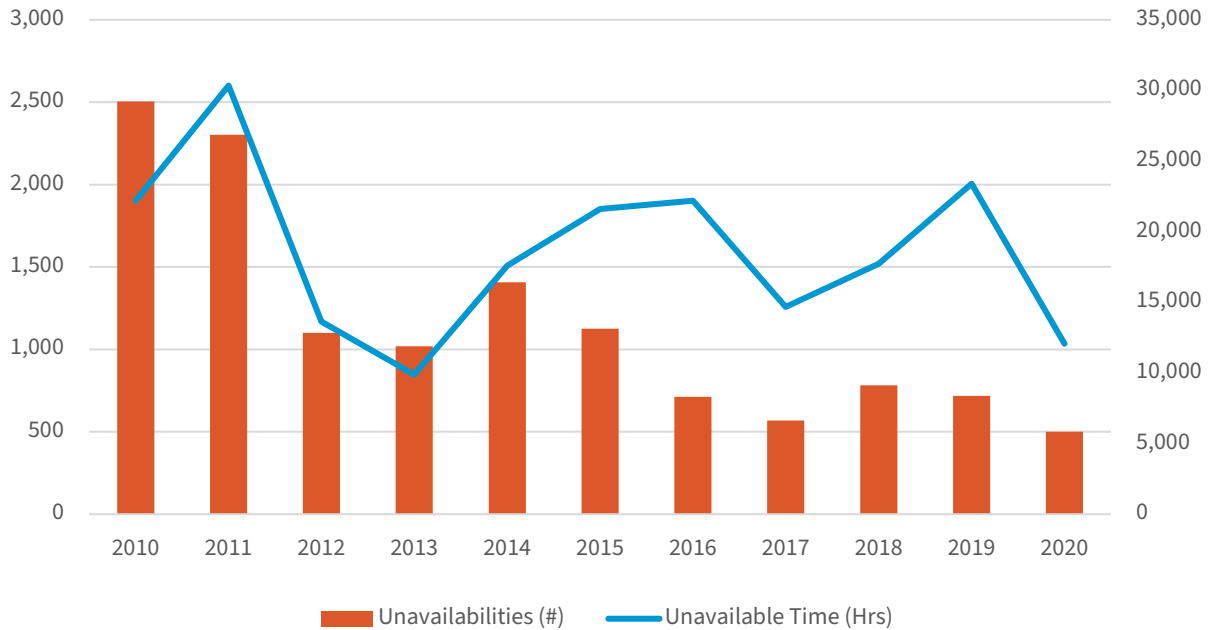
#### An Aging System

The efficiency and reliability of the Ohio MTS is largely dependent on the operations of the physical infrastructure. Ports rely on a series of locks along the St. Lawrence Seaway and Saint Marys River to traverse the Great Lakes, as well as a long series of locks and dams along the Ohio and Mississippi River Systems. This key infrastructure is aging, with over 80 percent of the locks and dams being at least 50 years old. Due to this, many locks are reaching the end of their lifespan and are unable to accommodate the larger size of modern vessels. As a result, the system can see frequent, and often unplanned, closures of the locks (Figure ). While efforts are underway to replace or repair aging lock infrastructure, some locks undergo long term closures for repairs, resulting in disruptions that can cause delays throughout the system and present a significant challenge for ships to access ports on the Great Lakes and the inland waterway system.

Additionally, the locks and dams on the lake system are closed during the winter season. While these closures allow for maintenance to occur, they also shutter the lake system for months at a time. Stakeholders have

expressed a desire to increase the use of the Ohio MTS year-round. The current seasonality of the lake locks is an impediment to this goal.

**Figure 7: Ohio River Lock Unavailability by Occurrences and Duration**



Source: CPCS Analysis of USACE data

An additional challenge to the efficiency of the system is the speed at which marine vessels transport goods. With a typical speed on the river of only 9 knots, a barge typically takes 10.5 days to travel to New Orleans from St. Louis, while a barge destined to New Orleans from Pittsburgh typically takes 21 days to reach its destination. These travel times can be impacted by unplanned lock and dam closures, delaying what is already a rather slow way to transport goods.

## Preservation

### *Funding Shortfalls to Make Key Investments*

The preservation of the Ohio MTS includes securing funds to perform necessary maintenance and improvements and ensuring connectivity between the maritime infrastructure assets and the landside assets, thus improving connectivity between the two. The most recent American Society of Civil Engineers (ASCE) Infrastructure Report Card rated Ohio's ports as being in below-average condition. Two-thirds of Ohio's locks and dams are beyond their lifespan, with levees and inland waterways also facing a maintenance shortfall that can cause delays and safety hazards. Aging infrastructure not only increases costs for repair but also lessens the volume of maritime traffic from which Ohio's economy can benefit. This underscores the importance of securing funding to complete necessary maintenance work throughout the system.

In recent years, the Ohio MTS has experienced funding shortfalls that have prevented the system from making key investments in its infrastructure. For example, in FY2024, there was a \$24 million total shortfall for Ohio Ports under USACE funding for Great Lakes navigation maintenance. It is important to note that

resolving funding shortfalls does not rest solely with any one stakeholder. This is because there is no system for establishing consistent funding for the system as-a-whole. Currently, funding is based on congressional decisions that determine the funding levels, which can be heavily influenced by political cycles. Therefore, it will be essential to seek out new avenues through which to improve the Ohio MTS, using the existing funds available.

### ***First/Last-Mile Road Condition***

In addition to funding, preservation also includes the conditions of physical infrastructure and landside connectivity. To assess these for the Ohio MTS, an analysis of the first- and last-mile road condition was performed, visualizing an analysis of ODOT inventory specific to pavement condition ratings of federal-aid corridors within one mile of docks (Figure 8). This analysis revealed that 13 of the 20 worst condition segments are within the Mid-Ohio Valley region, while five are within the Huntington Tri-State region. Therefore, most of the state's worst pavement condition of landside connections are on the river.

## **Mobility & Accessibility**

### ***First/Last-Mile Road Connectivity***

The mobility and accessibility of the system considers how access to the maritime mode may be increased and how increased access may affect businesses. One aspect of this is road connectivity, which enables the movement of goods between ports or port statistical areas (PSAs) and the broader road network. Analysis identified six ports or PSAs with gaps between their locations and National Highway System (NHS) Intermodal Connectors and the National Truck Network. Ports and PSAs with gaps include:

- Marblehead
- Sandusky
- Fairport Harbor
- Conneaut
- Parts of Cincinnati and Northern KY
- Parts of Mid-Ohio Valley

### ***First/Last-Mile Railroad Connectivity***

Connectivity between the maritime mode and railroads is another essential piece to facilitate the multi-modal movement of goods. Due to the low costs of moving goods by water, the maritime mode is often utilized to move goods toward their final destination before they are transloaded to an alternate freight transportation mode to move inland. This movement inland can occur by rail, making the quality of first/last-mile railroad connectivity an important component to the success of the maritime transportation system.

In Ohio, many areas of the maritime system have good railroad connectivity (Figure 9). However, connectivity may be lacking in other critical areas. For example, the Marblehead and Lorain facilities on Lake Erie have no direct rail service, while 41 percent of docks on the Ohio River do not have rail access. Improving this landside connectivity opens the door to increased access to the Ohio domestic market.

Figure 8: First/Last Mile Road Quality Concerns

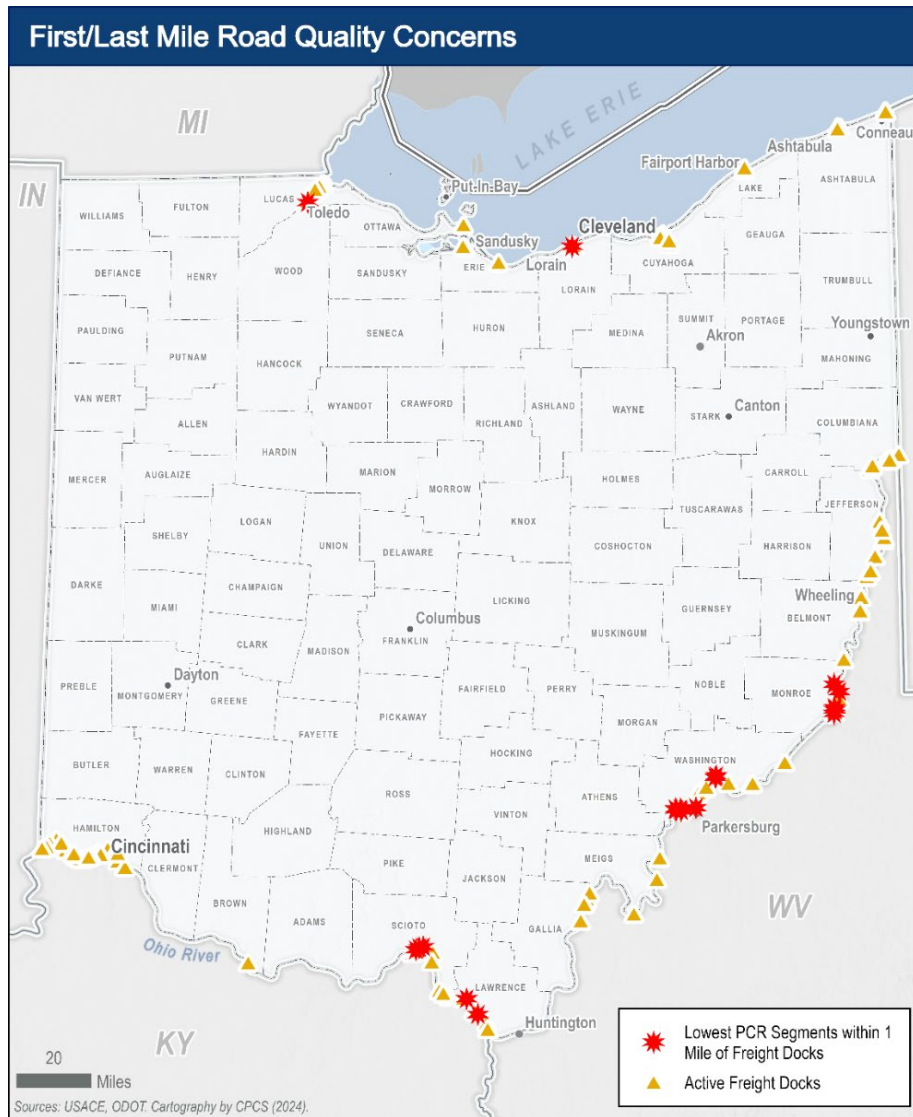
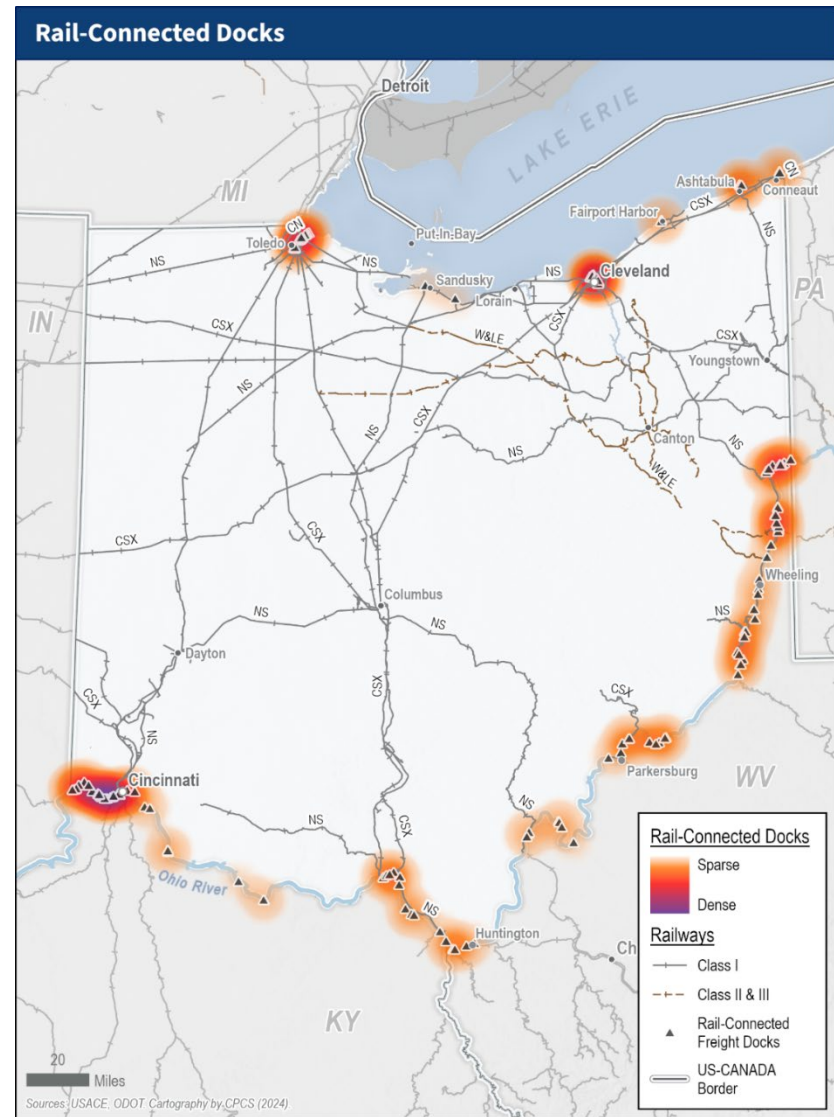


Figure 9: Rail-Connected Docks



## Threats

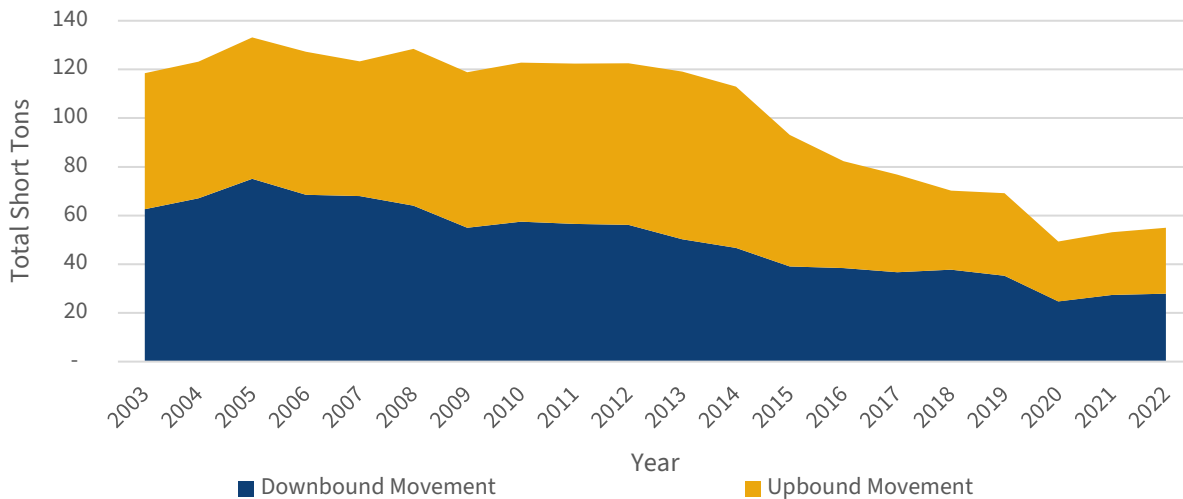
Threats to the Ohio MTS generally fall under the Economic Competitiveness, Quality of Life, and Environmental Stewardship goal areas. Stakeholders identified issues such as competing uses for waterfront property, cost and maintenance complexity, and climate change as the primary factors threatening the success of the Ohio MTS.

### Economic Competitiveness

#### *Use of the MTS is Declining*

Maintaining the Ohio MTS's economic competitiveness is vital to the overall success of the system. Despite the many benefits of moving goods via water, system use is declining. Figure 10 demonstrates the decline of coal cargo tonnage on the Ohio River. Twenty years ago, Ohio had over 100 operating coal plants. As of 2024, only four remain, all located on the Ohio River, resulting in a nearly 50 percent decline in coal tonnage on the system. Besides changes to the industrial and manufacturing base in Ohio, other reasons, such as geopolitical threats and shifting demand for Ohio's primary export goods in response to tariffs, are also impacting how the system is used.

**Figure 10: Historical Ohio River Coal Cargo Tonnage, 2003-2022**

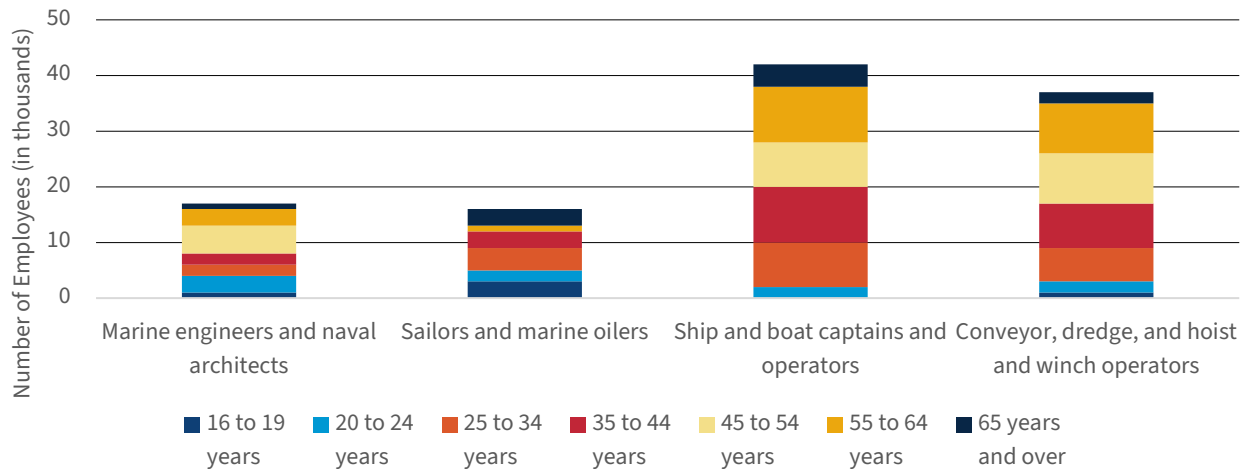


Source: Decarbonization of the inland waterway sector in the US: a report for ABS, Vanderbilt University, 2021

#### *The Maritime Workforce is Aging*

Additionally, the economic competitiveness of the system is threatened by an aging workforce. Nationally, 50 percent of the maritime workforce is made up of workers aged 45-65+ (Figure 11). This is a trend also seen in Ohio's maritime workforce. The decline in workers entering the maritime industry can be attributed to a variety of reasons, but the emphasis in recent decades on formal college in lieu of skilled trades and labor positions, the high costs associated with maritime training programs, and the absence of federally designated post-secondary training and education programs in Ohio have undermined the available workforce for these types of jobs.

**Figure 11: Age of Maritime Workers Nationally by Occupation in 2023**



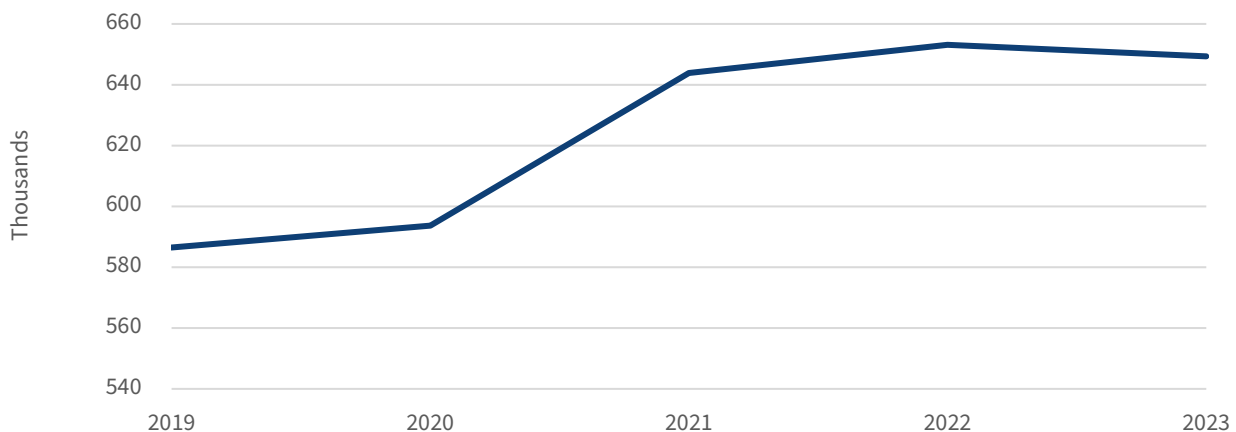
Source: US Bureau of Labor Statistics

## Quality of Life

### Competing System Uses

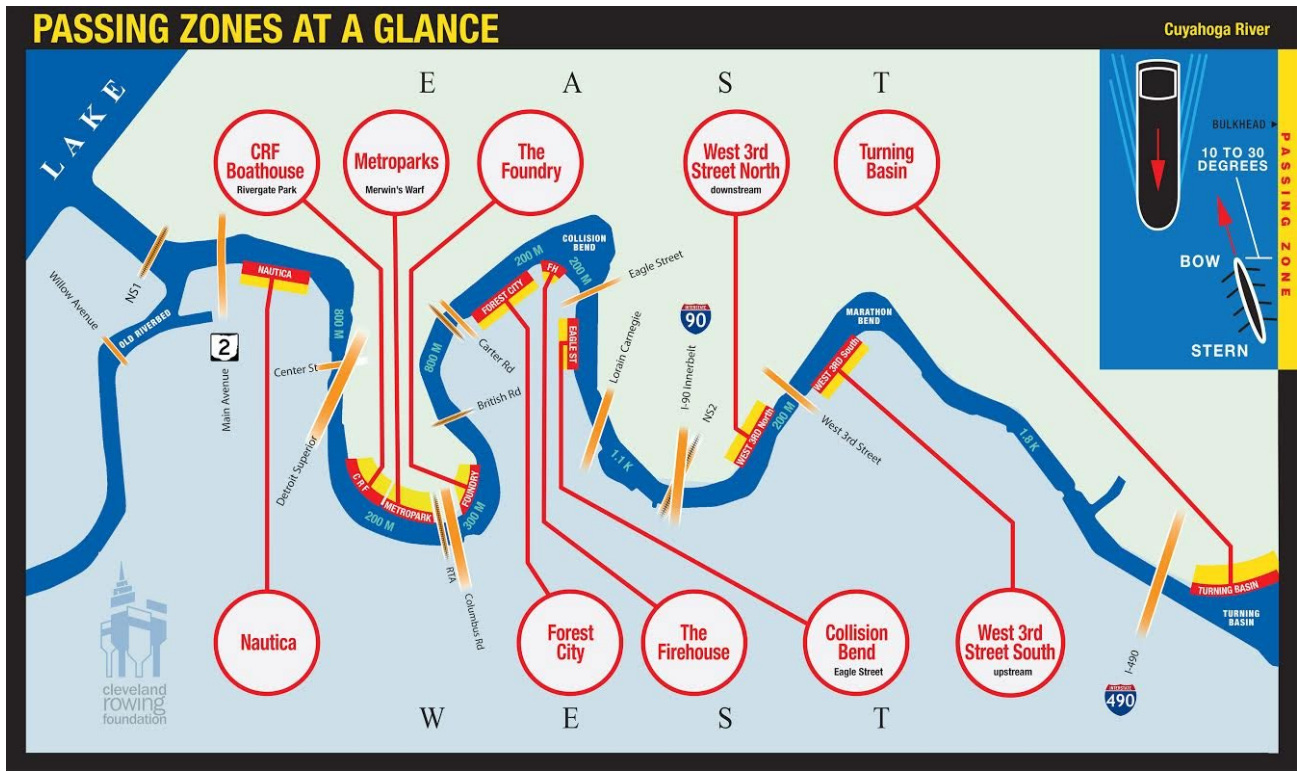
Awareness over the use of Ohio’s waterways has heightened following a sharp increase in the number of recreational boaters caused by the COVID-19 pandemic competing for space on the water. Between 2020 and 2021, over 50,000 new boats were registered in Ohio (Figure 12). As more recreational boaters take to the water, safety concerns have been raised, as it is difficult for large commercial vessels to see and navigate around recreational boaters. This challenge is sometimes further complicated by the path of the river system, which includes numerous sharp bends and turns, exasperating a commercial vessel’s difficulty with seeing and avoiding conflicts with recreational boaters. Passing zones have been created to facilitate the safe use of the waterways for all parties, but conflicts can still occur. Figure 13 illustrates the ten passing zones created on the Cuyahoga River

**Figure 12: Ohio's Annual Recreational Boat Registrations, 2019-2023**



Source: Share the River and Ohio DNR

Figure 13: Passing Zones on the Cuyahoga River



Source: Cleveland Rowing Foundation

**Environmental Stewardship**

**The Environment is Changing**

It is vital that the Ohio MTS be prepared to adapt to the ongoing shifts occurring in the environment. Due to these environmental changes, water levels throughout the MTS fluctuate throughout the year. This has serious implications for the movement of vessels through the system, as well as increasing the risk of erosion. Flooding risks are also a serious concern, as floods can cause catastrophic damage to port infrastructure and increase runoff.

The environmental impact of dredged materials is also an area of concern for the Ohio MTS. Dredged materials must be handled with caution, as they commonly contain contaminants and industrial runoff pollutants. If not disposed of properly, they may pose serious environmental concerns.

Figure 14: Ohio River Flooding



Source: Marietta College, April 2024

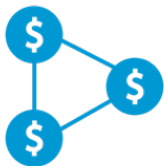
## 2. Opportunities

In supporting the Ohio MTS to reach its full potential, it is important to envision what the future system will look like and be able to achieve. Steering Committee members shared that their ideal vision for the future of Ohio's MTS includes a system that is modernized, fully funded, resilient, and continuing to give Ohio a competitive economic advantage.

To identify opportunities for improvement of the Ohio MTS, strategies are organized to align with ODOT's core activities, including Planning, Operations & Maintenance, Innovation & Technology, System Investment, and Coordination & Partnerships.

### Planning

Promoting the development of Ohio's ports and maritime infrastructure to ensure the efficient movement of goods and bolster economic growth was the planning opportunity ranked most important by Ohio MTS stakeholders. This was followed closely by providing guidance to federal and state officials on matters related to Ohio's maritime and related industries, ports, and waterways and encouraging the maritime system to be included in ODOT and MPO modal plans and studies.



#### **Promote the development of Ohio's ports and maritime infrastructure to ensure the efficient movement of goods and bolster economic growth.**

Upgrades to physical infrastructure improve the rate at which goods can move to, from, and through Ohio on the maritime transportation system. Due to an underutilized system, this could, in turn, be an opportunity to bolster economic development efforts in Ohio. Ohio MTS stakeholders ranked this opportunity as the most important among all planning opportunities.



#### **Provide guidance to federal and state officials on matters related to Ohio's maritime-related industries, ports, and waterways.**

ODOT can use its subject matter expertise to inform state and federal officials about the current state of the maritime industry in Ohio. This knowledge and guidance are integral to ensuring well-informed decisions at the federal and state level.



#### **Promote consideration and inclusion of the maritime transportation system in ODOT and MPO/RTPO modal plans and studies.**

As a vital part of Ohio’s freight transportation network, including the Ohio MTS in multi-modal plans and studies will increase awareness of the system’s benefits and help to identify future opportunities to improve connectivity between modes.



### **Promote maritime system safety and environmental sustainability.**

Planning can be utilized to ensure the maritime system is operating safely and in a way that is environmentally sustainable. For example, USACE and public ports utilize a portion of dredged materials in a beneficial manner by using it for the reinforcement of retaining walls and dikes. Clay-like sediment is used to build and strengthen structures that are essential to prevent future coastal erosion, flooding, and improve safety for communities on Lake Erie’s coast.

## **Operations & Maintenance**

Stakeholders evenly ranked three opportunities – supporting the preservation and improvement of navigation channels and infrastructure, supporting the preservation and improvement of port infrastructure, and maintaining and improving road and rail connections to ports – as the highest priority opportunities under Operations and Maintenance.



### **Support the preservation and improvement of navigation channels and infrastructure.**

Navigation channels and infrastructure are the foundation of the Ohio MTS and will require sufficient funding and investment to reach and maintain a state of good repair. This will also require addressing the maritime industry labor shortages to accommodate improved operation.



### **Support the preservation and improvement of port infrastructure, including new equipment for ports to handle diverse cargo.**

Maintenance of existing port infrastructure is integral to keeping goods moving through the system. This movement can be more efficient by making improvements to key port infrastructure. For example, in 2020, the Maritime Assistance Program awarded \$5.5

million to the Toledo-Lucas County Port Authority for the purchase of an additional heavy lift mobile harbor crane, which allows for greater movement of heavy cargo.<sup>3</sup>



### **Maintain and improve road and rail connections to ports.**

A lack of road or rail connection to ports impacts the safety and accessibility of the Ohio MTS network. According to first/last mile analysis, Cleveland, Toledo, and Cincinnati are safety hotspots. Operational improvements can be identified and made at these sites to improve safety outcomes. A lack of rail connections at some ports impacts the system’s accessibility. The Lorain and Marblehead ports are two important cargo ports that lack rail connectivity. While these ports currently handle goods that may not require rail connectivity, the expansion of rail service could potentially enhance their competitiveness in handling rail-friendly commodities.



### **Collaborate with Ohio stakeholders to address the maritime industry labor shortage.**

Using their knowledge of the Ohio maritime market, stakeholders can provide unique insights and suggestions into programs that can be implemented to encourage and improve access to the maritime workforce. This can include deeper partnerships with schools, such as the Davis Aerospace & Maritime High School, which supports programs for students interested in the maritime industry.

## **Innovation & Technology**

Stakeholders equally ranked two opportunities – (1) implementing new equipment for ports to handle diverse cargo and (2) collaborating with Ohio dredging stakeholders on dredging research, best practices for dredging disposal, and port assistance – as the most important under innovation and technology. These were followed by supporting technology to improve port efficiency and encouraging the adoption of alternative fuel vehicles at ports, including trucks, locomotives, and vessels. This ranking indicates a desire for the Ohio MTS to prioritize investment in new systems and technologies that advance efficiencies along the Ohio MTS.



### **Implement new equipment for ports to handle diverse cargo**

To remain competitive in the freight market, it is important that ports be properly equipped to handle a diverse range of cargo. To do so requires a variety of cranes and equipment to meet the specific requirements of the cargo. The Columbiana County Port Authority was awarded \$300,000 under the Ohio Maritime Assistance Program to

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<sup>3</sup> Ohio Department of Transportation, Ohio Maritime Assistance Program Awards, page 6.

<https://www.transportation.ohio.gov/programs/maritime-freight/resources/ohio-maritime-awards>

purchase transloading equipment to move cargo between trucks, rail, and Ohio River barges.<sup>4</sup> This example supports the needs identified by stakeholders to modernize port technology, infrastructure, and equipment to remain competitive in today's freight market.



**Collaborate with Ohio dredging stakeholders on dredging research, planning, and best practices for dredging disposal, and port assistance.**

Implementing new practices based on best-practice research for dredging disposal and port assistance can ensure that environmental risks related to dredging are mitigated. The OMP supported the Cleveland Harbor Eastern Embayment Resilience Strategy (CHEERS) , which addressed concerns regarding limited capacity at the Port of Cleveland's disposal facilities by reusing approximately 60 percent of the port's dredged materials.<sup>5</sup>



**Support technology to improve port efficiency.**

Technological innovations can be applied at ports to identify inefficiencies throughout the system and improve the flow of goods as they enter, travel through, and exit the Ohio MTS.



**Encourage adoption of cleaner and alternative fuel vehicles for goods movement, including trucks, locomotives, and vessels.**

The adoption of alternative fuel vehicles at ports can improve environmental outcomes due to lower emissions.

## System Investment

Under system investment opportunities, stakeholders ranked promoting investments that grow the economy, improve access to jobs, minimize environmental impact, and align with community values as their top priority. This was followed closely by supporting long-term stable funding for the maritime system, emphasizing the relationship between a successful, fully funded Ohio MTS and the success of the Ohio economy. Providing grants and funding technical assistance and conducting an evaluation of the Ohio Maritime Assistance Program were ranked third and fourth, respectively.

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<sup>4</sup> Ohio Department of Transportation, Ohio Maritime Assistance Program Awards, page 8.  
<https://www.transportation.ohio.gov/programs/maritime-freight/resources/ohio-maritime-awards>

<sup>5</sup> Ohio Maritime Plan, Dredging Spotlight Report, page 30.



**Promote investments that grow the economy, improve access to jobs, minimize environmental impact, and align with community values.**

Opportunities to improve system investment first lie in more successfully and broadly sharing the value that the maritime transportation system has. This includes promoting investment in the system that benefits Ohio’s economy, workforce, and communities.



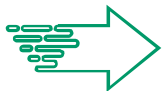
**Support long-term, stable funding for the maritime system.**

The Ohio MTS must secure long-term, stable funding to support the investments necessary to both continue and improve the operation of the Ohio MTS.



**Provide grants and funding technical assistance.**

ODOT can also support system investment by providing grants and funding technical assistance to ports seeking grant money for maintenance or major investment projects. ODOT already provides support to the industry through awards, such as the Maritime Assistance Program.



**Continue to advance the Ohio Maritime Assistance Program.**

Currently, the largest funding option available to Ohio’s ports for maritime projects is the Ohio Maritime Assistance Program (MAP). This program provides funding to eligible Ohio public port authorities for planning, design, acquisition, and infrastructure projects for maritime operations. MAP was established in 2020 to support public port projects that update and maintain the maritime system to keep goods moving efficiently. Funding for the program was reduced by 60 percent for the most recent FY 2024-2025 biennium. 2023. Therefore, an evaluation of the MAP should be conducted to educate and create awareness of the program’s benefits and accomplishments given the levels of allocated funding.

## Coordination & Partnerships

Under coordination and partnerships, Ohio MTS stakeholders overwhelmingly identified the support of ODOT in advancing maritime system objectives as their top priority.



**Improve coordination for maritime interests and stakeholders.**

Coordination & Partnerships are a vital part of securing a successful future for the Ohio MTS, particularly as the Ohio MTS involves a wide range of owners, operators, and other interested parties. Improved coordination among these parties is important to facilitate better decisions in each of the other opportunity areas. This, in turn, will allow for better planning, investments, coordination, and alignment among stakeholders. Coordinating

the many different stakeholders who have a vested interest in the success of the Ohio MTS is one of the greatest challenges. The maritime industry has multiple agencies, including the Maritime Administration (MARAD), USACE, and the US Coast Guard, all of which have different operational mandates. This can cause the agencies to be pulled in different directions, rather than working together toward their common goals.



**Build awareness of the Ohio maritime transportation system and its benefits.**

Key to advancing the maritime system is a broad awareness of the role the system serves and the benefits it provides to Ohio’s industries and the overall economy. The research, data analysis, working papers, guides, and tools developed as part of the Ohio Maritime Plan must be distributed to educate, inform and inspire future action and investment in the maritime system.

These opportunities will continue to be refined, and a discreet list of actions that ODOT and its maritime system partners can take to maintain and advance the maritime system will be developed.