

STRATEGY FOR THE GREAT LAKES-ST. LAWRENCE RIVER MARITIME TRANSPORTATION SYSTEM





MESSAGE FROM THE CONFERENCE CHAIR

In 2013, I convened my fellow Governors and Premiers on Mackinac Island to reinvigorate our work to grow our region's economy and protect our environment. Toward that end, we launched an initiative to better leverage and grow our maritime transportation system. Building on several years of work together, our region has developed this maritime strategy to reflect our consensus on the policies, programs and projects needed to boost maritime trade, create jobs and enhance our global competitiveness.

This strategy builds on a series of important actions that we have taken in recent years. For the first time, we identified our collective maritime assets like ports, locks and shipping channels across the region. We developed shared priorities to enhance the competitiveness of the system and direct needed investment. And we launched a regional maritime entity to coordinate our ongoing work.

This strategy represents another important achievement but, of course, our work is not yet complete. We must follow through on this strategy and realize the promise of transforming our maritime system to meet our 21st century needs. I look forward to working with my colleagues and other partners across the entire region to bring this vision to reality.

Governor Rick Snyder, Michigan

Chair, Conference of Great Lakes and
St. Lawrence Governors and Premiers





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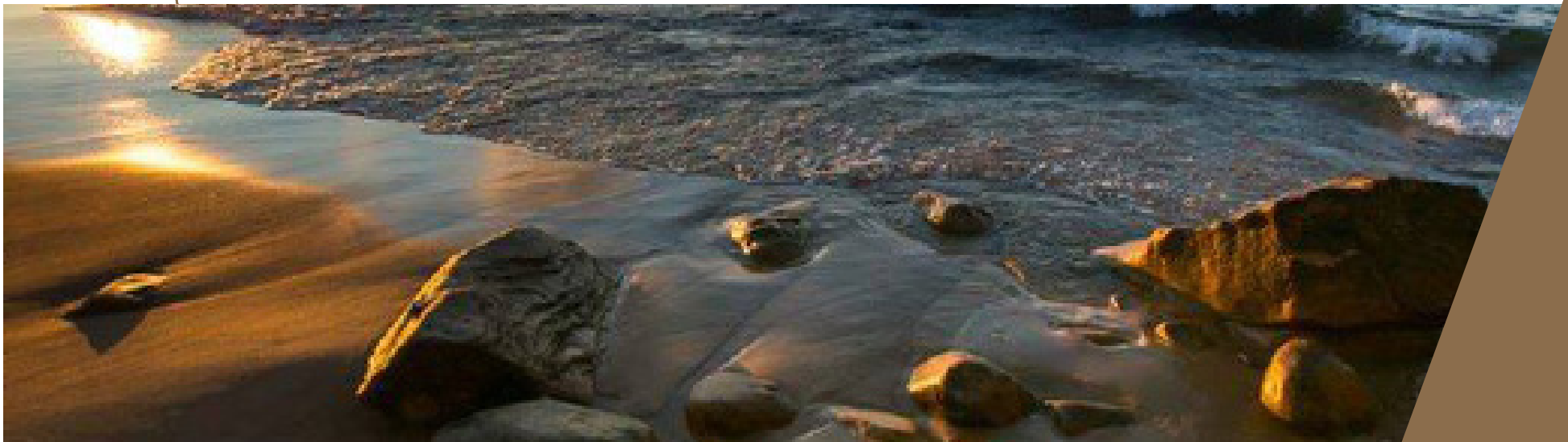
Premier Kathleen Wynne
Ontario

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EXECUTIVE SUMMARY

The Conference of Great Lakes and St. Lawrence Governors and Premiers launched the “Great Lakes-St. Lawrence Maritime Initiative” in 2013 to improve the efficiency and competitiveness of our maritime transportation system, to grow our regional economy, to increase the internal movement of goods across the region, to expand the movement of goods to and from foreign markets, and to create jobs. The initiative has cemented the importance of managing the Lakes and River as one single, integrated maritime transportation system (MTS) and not as a series of loosely related or connected parts.

Since its launch, the initiative created the first-ever inventory of regional MTS assets, maritime priorities and a Regional Maritime Entity to coordinate ongoing work. The Governors and Premiers have each designated a representative to serve on this Regional Maritime Entity and charged it with coordinating State-Provincial actions and spearheading system-wide improvement.

Globally, maritime transportation is growing rapidly shaped by continuously expanding international trade and increased efficiency in global shipping. Drivers include the continuous innovations seen in the expansion of the Panama and Suez Canals, increases in the size and efficiency of container transport, expanded coastal ports and major investment in ports and maritime infrastructure in the Baltic Sea region, across Europe and throughout Asia and other parts of the world. The MTS must keep pace with this trend and become more efficient and effective in order to better attract traffic and stay globally competitive.

Primary Objectives: The MTS Strategy’s primary objectives are to double maritime trade, shrink the environmental impact of the region’s transportation network and support the region’s industrial core. Toward this end, specific actions are organized around the following themes including a blend of policies, programs and projects.

- Increasing Efficiency and Reducing Costs;
- Building New Markets;
- Growing Economic Activity around the Maritime System; and,
- Delivering Results while Managing for the Future.

This Strategy was developed under the leadership of the Great Lakes and St. Lawrence Governors and Premiers. Their Regional Maritime Entity led the drafting process in partnership with its advisory committee including carriers, shippers, federal agencies, non-governmental organizations and other stakeholders.

This finalized Strategy reflects the region’s consensus on steps to improve the MTS. Some steps are near term and more easily achieved while others are aspirational and will require additional time and effort. The shared vision, however, is to ensure that the region exploits the full range and depth of its maritime cluster and attracts inward investment in ports and other maritime business, contributing to our national and regional economies. Successful follow-through will help transform the MTS to meet 21st century needs and capitalize on 21st century opportunities.



SECTION 1 | INTRODUCTION AND PURPOSE

The Great Lakes-St. Lawrence River maritime transportation system (MTS) has been and continues to be a backbone of our regional economy. This regional economy generates more than US\$5 trillion annually and would be the third largest in the world if it were its own country. However, the MTS is an aging system with infrastructure rooted in the late 19th and early 20th centuries. The MTS requires recommitment by governments, users and stakeholders to face the challenges of the 21st century and to become a more strategic asset within broader regional efforts to enhance global competitiveness. Forward-thinking policies and investments are needed to achieve this future.

The MTS is the longest deep-draft inland navigation system in the world. It includes the five Great Lakes, their connecting channels and the St. Lawrence River. The MTS extends 2,300 miles (3,680 km) into the North American heartland and serves more than 100 ports in the eight Great Lakes States, Ontario and Québec. Lock infrastructure enables vessels to navigate the roughly 600-foot (180-meter) elevation change between the St. Lawrence River and Lake Superior. The section of the MTS between Montréal and the Gulf of St. Lawrence is open year-round to shipping, while the other portions of the system are seasonal. A fleet of more than 100 US and Canadian lake vessels have been specially built to serve the system and its customers. Ocean-going vessels trade between MTS ports and overseas markets.

The MTS includes vessel operators and ports as well as a wide range of other activities such as ship building and repair, warehousing, piloting and stevedoring. All these businesses need to be considered together as a mutually reinforcing cluster of maritime activities that support the region's strong manufacturing and agricultural economy, and serve a market of more than 100 million consumers.

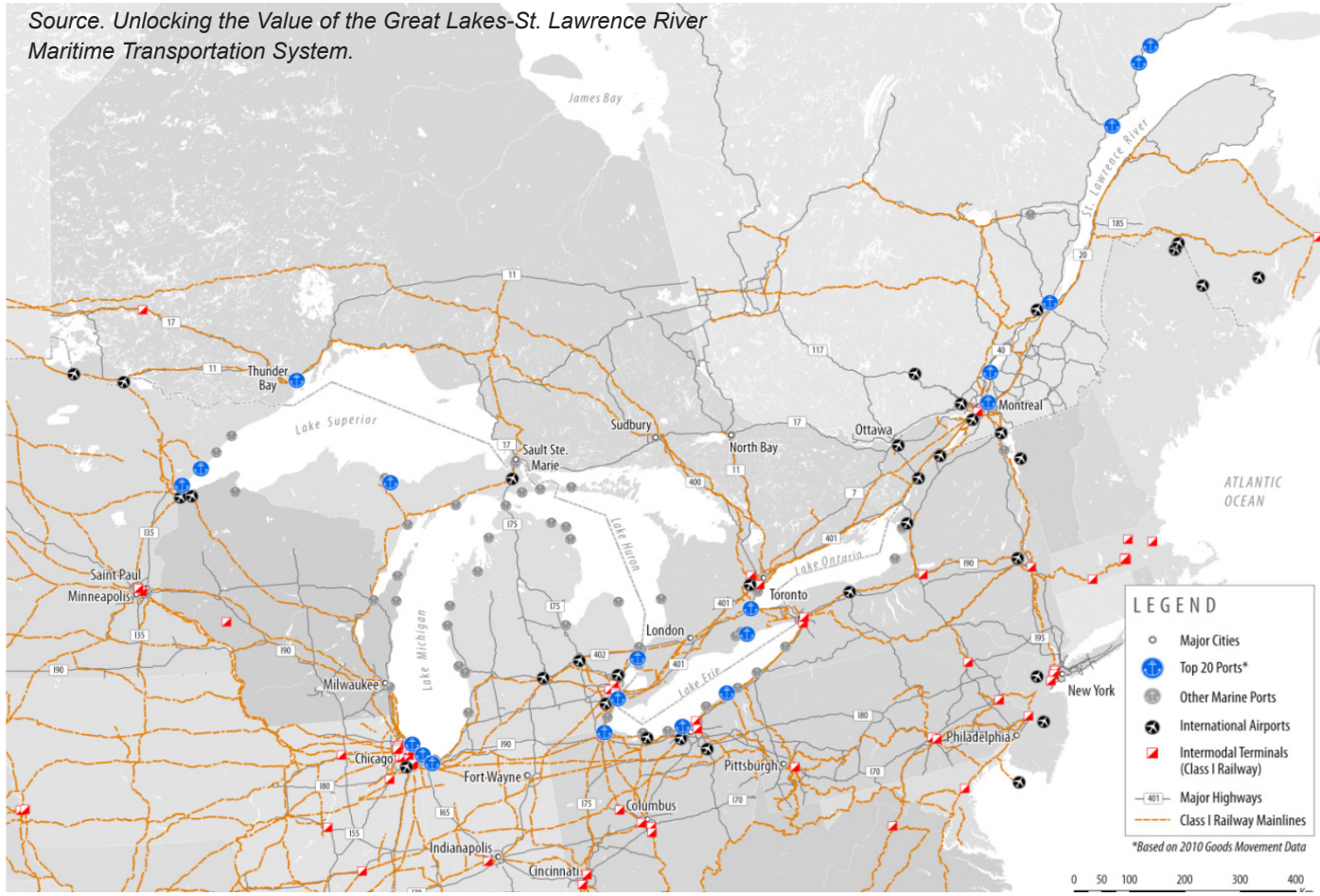
The regional maritime sector including marine industries directly contributes more than US\$30 billion to the US and Canadian economies and accounts for more than 220,000 jobs. This is a similar magnitude to other important and high-value industries.

Maritime transportation is essential to regional and international trade as it facilitates the shipment of large volumes of raw and finished goods at comparatively low transport costs and with strong environmental performance. Maritime transport is critical to key industries and to overall regional competitiveness and sustainability.

When transportation options are efficient and competitive, shippers benefit from lower transport costs, faster and better service, and increased reliability, which in turn contribute to their own competitiveness and growth. And the more options shippers have to move their goods competitively, the better. This exerts downward pricing pressure on transportation costs generally, whether or not a particular mode is used. In order to continue to play its important role, the maritime sector must be willing to adapt, improve and change to successfully exploit new opportunities.

The maritime sector is global in nature and accounts for about 90% of global trade. Seaborne trade is predicted to double by 2030 in line with the forecast growth in international trade. While the growth potential for MTS trade may be somewhat more limited, it is important to recognize regional trends within this global context.

Figure 1 | Maritime Transportation System Map



This MTS Strategy aims to leverage related initiatives taking place within the region and more broadly in the US and Canada. For example, the Québec Maritime Strategy of 2015 underscores the importance of maritime trade to the Provincial and regional economies, and provides a blueprint for strong State/Provincial engagement in the maritime sector. This MTS Strategy is intended to align with federal initiatives including the US TIGER program and America's Marine Highway Program, the Building Canada Fund and related infrastructure initiatives. Better coordination among all levels of government is critical.

The Strategy and related work is guided by the Governors' and Premiers' MTS priorities:

- Ensure the region's prosperity by growing the economy and creating jobs through the efficient use of the Great Lakes - St. Lawrence River maritime system.
- Maintain and continuously improve a world-class regional transportation network with an integrated maritime system.
- Establish a regional framework for achieving shared objectives, launching collaborative initiatives and leveraging funding opportunities for the maritime transportation system.
- Improve the efficiency, competitiveness and resiliency of maritime transportation and the region's multimodal transportation system by improving dynamic connections with other forms of transportation such as waterways, highways and railways.
- Facilitate regional collaboration in sectors related to maritime transportation including commerce, tourism, ports, natural resources, environment, energy, agriculture and other issues.
- Leverage the maritime transportation system as a sustainable, socially responsible and cost-effective enterprise to stimulate regional and international trade.
- Protect the ecosystems of the Great Lakes-St. Lawrence River region through the socially responsible development and utilization of the maritime transportation system.
- Encourage the development of a modern and efficient Great Lakes shipping fleet.
- Maintain and improve the maritime system so as to help mitigate surface transportation congestion and negative environmental and social impacts.
- Expand maritime tourism and cruising opportunities on the Great Lakes-St. Lawrence system.

This Strategy lays out the new, collaborative approaches needed among government agencies, industry and other partners to re-establish and solidify the MTS as a safe, efficient, cost competitive and environmentally sound transportation option. A more competitive maritime system will better connect ports and harbors with one another, and with surface transportation modes. An enhanced multi-modal transportation system will strengthen overall regional competitiveness and fuel job creation.

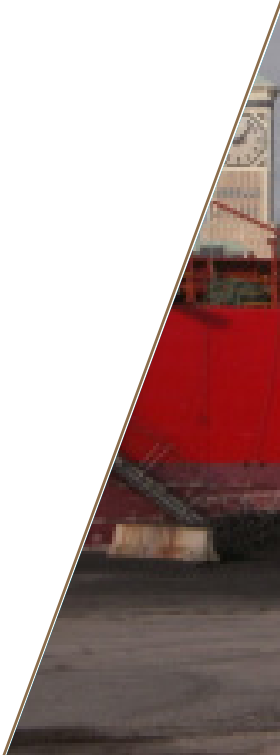
1.1. Strengths and Weaknesses of the Maritime Transportation System

The MTS has strengths on several fronts. The Great Lakes-St. Lawrence River Basin comprises the world's largest system of surface freshwater with nearly 20% of the world's total supply. A significant portion of the manufacturing capacity in the US and Canada is centered in the region. The region is also home to globally significant deposits of ores including iron, zinc, silver, coal, copper, lead and limestone. The mining of these resources is commercially feasible in large part due to the proximity and cost-effectiveness of water-borne transportation that enables efficient supply chains and timely access to markets in the region and around the world. In many cases, the MTS is the only way to move materials from mine to market – there are no substitute paths for many materials that are largely moving from north to south across the region.

The MTS provides access to a market of more than 100 million consumers across eight US States and two Canadian Provinces, which together account for 30% of US and Canadian economic activity amounting to about US \$5.8 trillion in 2014. Political stability and a firm rule of law have supported commercial trade, goods transportation and environmental stewardship. Moreover, the MTS has the capacity to greatly expand cargo flows. The St. Lawrence Seaway system, for example, is estimated to use only about 50% of its full capacity, while many Great Lakes ports have similarly significant capacity available.

Despite its utility, the Great Lakes portion of the MTS has historically been a seasonal system that has not allowed for year-round navigability due to ice cover. Hence, shippers have been required to use alternative modes of transportation for brief periods of the year or to stockpile inventories during the winter. The Great Lakes section of the MTS has therefore focused on a narrow set of bulk commodities, which inhibits the development of multi-modal logistics operations and economic clusters in the Great Lakes. By contrast, the sections of the MTS which are open year-round have developed a diverse and relatively stable cargo base across multimodal corridors.

Other challenges include physical features that limit vessel size; costs and inefficiencies that have resulted in declining competitiveness for some portions of the MTS; and a lack of needed investment in infrastructure. Unfortunately, while the Provinces have had some success, there has not been a viable mechanism for some States to take advantage of private capital (e.g. public-private partnerships) or more creative arrangements like “public-public” partnerships for MTS infrastructure. Beyond this, MTS governance has been disjointed, and regulatory and



operational harmonization has been lacking. Bureaucratic inertia and resistance to change are prevalent throughout the MTS.

All of these factors have contributed to broadly declining MTS use over time. For instance, despite being one of the world's largest production environments for vehicles, for many years essentially no cars have been transported out of the region by water. Addressing system challenges and overcoming relative decline is critical to re-energizing the MTS as one of the region's competitiveness cornerstones.

1.2. Opportunities and Threats in the Maritime Transportation System

There are many opportunities to grow MTS use and better leverage its potential. For example, the region's population centers, industrial base, as well as rail and road networks are concentrated on the shores of the Great Lakes and St. Lawrence River. This density of population, industry and infrastructure offers an opportunity to integrate logistics chains across the freight transportation modes and cultivate industry clusters.

Maritime transportation can mitigate surface congestion and reduce the environmental footprint of regional and national freight movement. For some types of cargo (particularly large shipments of bulk cargo), marine transportation generates significantly lower air emissions per cargo unit than other modes. Additionally, major investments continue to be made to further improve ships' environmental performance. More broadly, maritime transportation can be a major feature of sustainability efforts, and gives shippers another viable transport option in order to improve the overall resiliency of the regional transportation system.

Separately, new markets such as short sea shipping, cruising and container shipping are growth opportunities for the MTS. Better maintaining and improving channels, ports and other infrastructure can also boost the movement of the heavy bulk materials traditionally moved on the MTS.

Threats to the MTS reflect a complex range of issues. Variability of water levels and seasonality, along with increasing climate uncertainty, present challenges. Declining freight volumes and the small number of cargoes upon which the Great Lakes portion of the MTS has historically relied further threaten the system's future. Regulatory and fiscal uncertainty creates further risk, all of which has stifled needed investment.

Figure 2 | Regional Road and Rail Capacity Constraints

Source: Figure 3-45, NCFRP Report No 17, Multimodal Freight Transportation within the Great Lakes-Saint Lawrence Basin, Transportation Research Board of the National Academies, 2012.

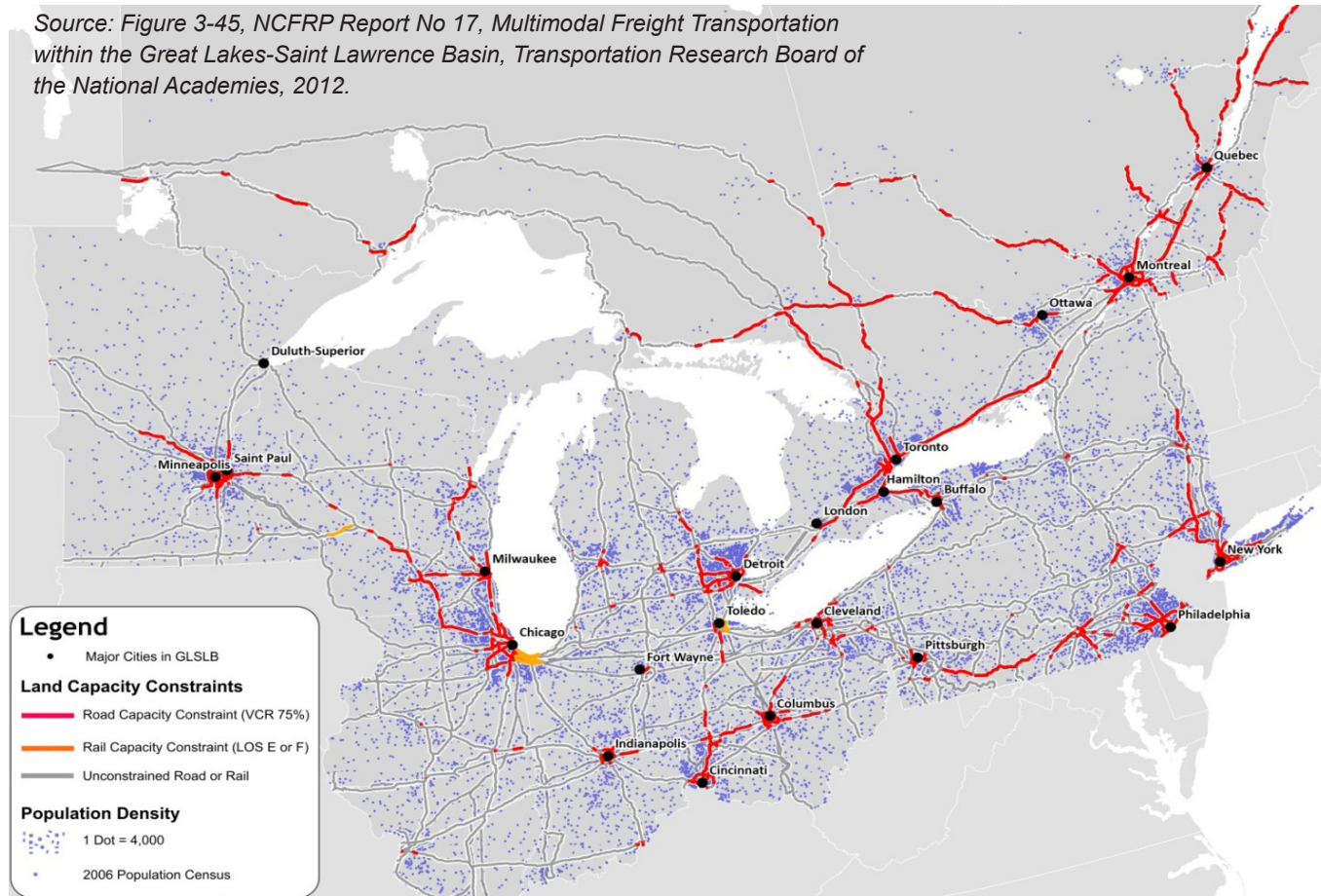


Figure 3 | MTS Strengths / Weaknesses / Opportunities / Threats

<p>Strengths</p> <ul style="list-style-type: none"> • Abundant freshwater system • Natural resources (e.g. ores, limestone) • Cost-effectiveness and safety • No substitute path for many cargoes • Political stability and firm rule of law • Relatively stable regulatory framework • High standard of living in region • Environmental stewardship and sustainability • Resiliency and security • Inland and international access • Strong support for end users and manufacturers 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Seasonality • Costs and inefficiencies resulting in declining competitiveness • Vessel size limited by physical features • Lack of multi-modal logistics operations and economic clusters in Great Lakes • Complex and fragmented governance • Lack of sufficient and consistent infrastructure investment • Lack of regulatory and operational harmonization • Bureaucratic inertia and resistance to change • No mechanisms in some States to take advantage of private capital (e.g. P3)
<p>Opportunities</p> <ul style="list-style-type: none"> • Concentrated population and industry • Dense regional rail and road network • Integrated logistics chains • Mitigate surface congestion and reduce the environmental footprint of freight transportation • Infrastructure investment • Projected increase in cargo volumes • New markets such as short sea shipping • Abundant capacity • No lack of private capital 	<p>Threats</p> <ul style="list-style-type: none"> • Water level variability • Climate uncertainty • Long-term decline of cargo volumes in the Great Lakes • Reliance on a small number of cargoes in the Great Lakes • Aging infrastructure • Regulatory and fiscal uncertainty • Inter-regional and global competition • Trade protectionism • Risk



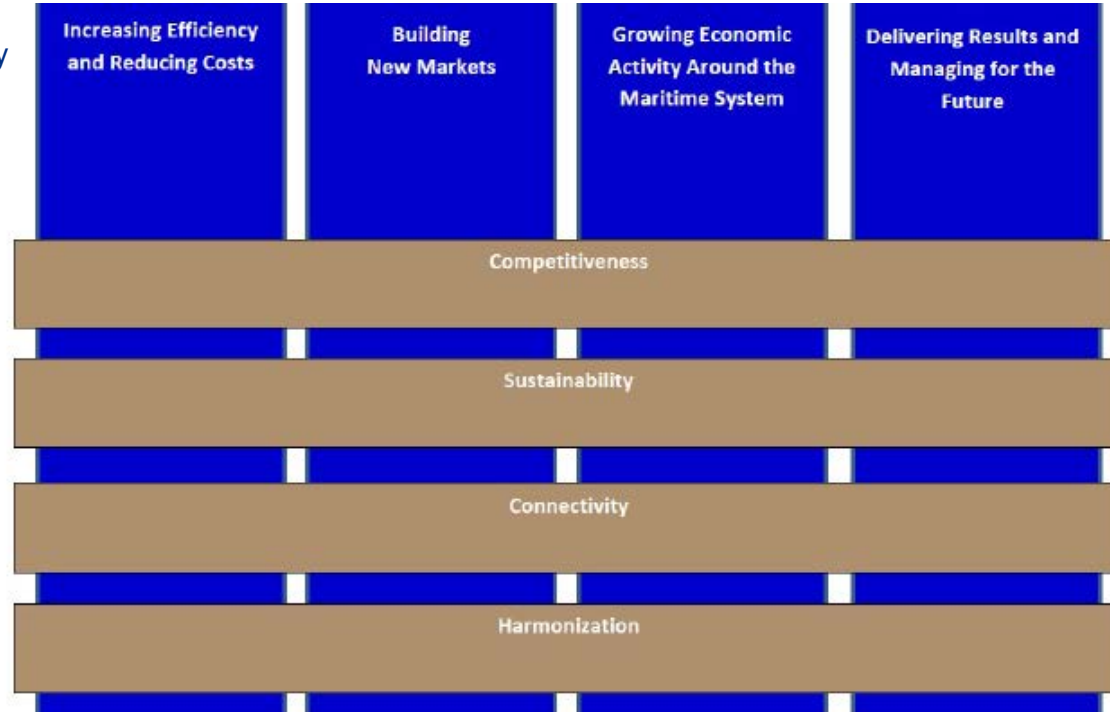
SECTION 2 | MARITIME STRATEGY AND IMPLEMENTING ACTIONS

The MTS Strategy's goals are to double maritime trade, shrink the environmental impact of the region's transportation network and support the region's industrial core. The Strategy is organized around four objectives needed to realize these goals:

- Increasing Efficiency and Reducing Costs;
- Building New Markets;
- Growing Economic Activity around the Maritime System; and,
- Delivering Results while Managing for the Future.

Specific actions are linked to these objectives including a blend of policies, programs and projects. Overarching themes include enhancing regional competitiveness, sustainability, connectivity and harmonization.

Figure 4 |
MTS Strategy
Objectives



2.1. Increasing Efficiency and Reducing Costs

Increasing efficiency and reducing costs are critical to improving the competitiveness of the MTS and attracting new business. For the MTS to operate as a reliable and low-cost transportation mode, locks need to be functional, channel and harbor depths need to be maintained, ports need to be accessible and ships need to be fuel efficient.

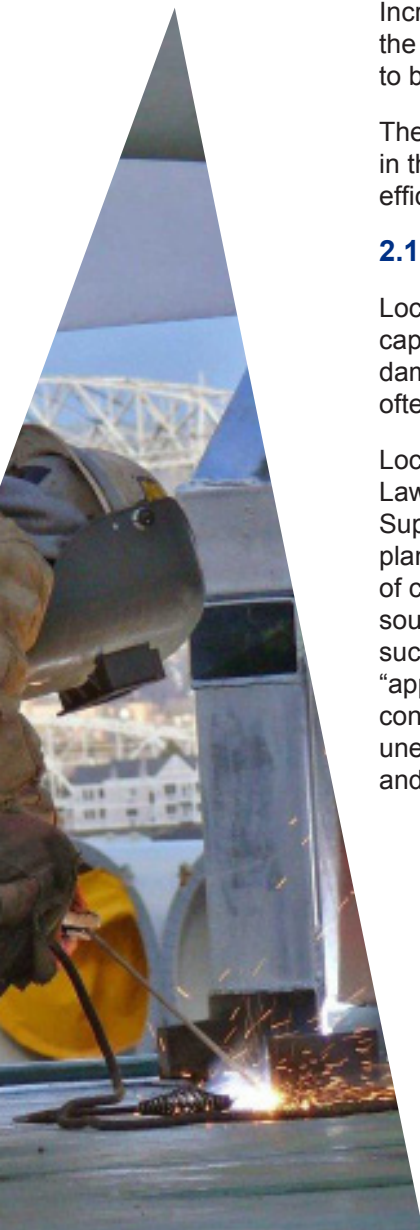
The system is functionally constrained during the winter months (January-March) when shipping cannot occur in many locations in the Great Lakes due to ice coverage. Overall, strategic infrastructure investments and cost-saving measures can increase MTS efficiency and make it a more attractive transportation option.

2.1.1. LOCKS

Locks provide passage around dams, shoals and water control structures for each type of vessel transiting the MTS. The available capacity of any single lock is influenced by scheduled and unscheduled maintenance, which increases with the age of the lock, dam and operating equipment. Delayed repairs can disrupt all traffic moving through the locks. For commercial vessels, locks often represent key bottlenecks and potential constraints for the MTS system as a whole.

Locks in the St. Lawrence Seaway and at Sault Ste. Marie, Michigan (Soo) are of particular importance to the MTS. The St. Lawrence represents the system's connection to the world and the Soo locks control the key connection point between Lake Superior and the rest of the MTS, enabling mined commodities including taconite to reach the steel mills and manufacturing plants in the southern portions of the MTS. The US Army Corps of Engineers has estimated that upwards of 80 million tons of cargo traverse the Soo Locks annually, and should they close, "...America's steel industry would be severed from its major source of iron ore and power plants throughout the Great Lakes would not have sufficient coal to supply electricity to major cities such as Detroit." The US Department of Homeland Security found that with an extended, unplanned closure of the Soo Locks, "approximately 80 percent of iron ore mining operations and nearly 100 percent of the North America appliances, automobile, construction equipment, farm equipment, mining equipment, and railcar production would shut down," resulting in crippling unemployment and economic recession. There is no alternative transportation for these commodities upon which the region's steel and automotive sector and their many tens of thousands of jobs depend.

- The US Army Corps of Engineers should immediately accelerate its Soo Locks asset renewal program for the MacArthur and Poe Locks.
- A second "Poe Class" Lock should be constructed adjacent to the existing Poe and MacArthur locks. The US Army Corps of Engineers should immediately accelerate its cost-benefit study toward this end.
- The potential for a public-private partnership for the Soo locks should be examined based on private construction managed by the US Army Corps of Engineers. The project should include a second power plant to be privately constructed and owned. Analysis should include the feasibility of using revenue generated from this power plant for lock construction and maintenance.
- The asset renewal program of the Saint Lawrence Seaway Development Corporation should be fully funded and



implemented; the St. Lawrence Seaway Management Corporation should continue its long term asset renewal program; and both federal governments should continue and enhance their commitments to MTS reliability, innovation and sustainability.

2.1.2. CHANNELS AND HARBORS

Regular dredging to maintain the navigability of harbors and navigation channels throughout the MTS is essential to assuring navigability and competitiveness. Inadequate dredging can create safety issues and forces ships to carry lighter cargo loads, thereby increasing the cost and air emissions per ton to move cargo.

Dredging in Canadian ports and harbors has been de-federalized and is largely now paid for by the local users--the ports and private industry. In the US, however, the federal government collects a Harbor Maintenance Tax from system users to maintain access channels to commercial, deep draft ports and channels connecting the lakes. Under the most recent Water Resources Reform & Development Act, US federal agencies must treat the Great Lakes MTS as a single unified system.

To further the reach and timeliness of US federal programs, greater participation by States is needed. Improved coordination and information sharing among the States and US federal agencies can allow for more effective use of dredging funds. In addition, cost-effective management of dredged material including beneficial reuse should be continued and increased.

For over two decades, funds made available for US MTS dredging have not been sufficient to meet the system's needs. While funding has improved in recent years, insufficient dredging has created a significant backlog of unremoved sediment despite the fact that many projects have positive economic potential or payback. Most importantly, key MTS bottlenecks such as the St. Marys River and the St. Clair River-Lake St. Clair-Detroit River corridor must be adequately maintained to avoid major economic impacts.

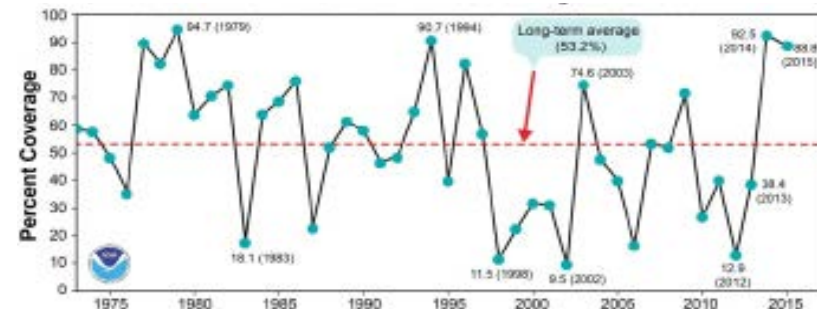
- The US federal government should allocate funding to eliminate the \$200 million backlog needed to ensure functional depth of MTS channels and harbors. In order to immediately address the MTS's most significant bottleneck, the US Army Corps of Engineers should maintain authorized dimensions of the St. Marys River to the authorized depth to achieve optimum efficiency and system resiliency. This includes maintaining the navigation channels in the River to 27 feet of depth.
- The US federal government should allocate \$250 million to repair breakwalls and other critical nearshore infrastructure in the MTS.
- The costs/benefits and any environmental impacts of providing two additional feet of navigational depth to the St. Marys River should be analyzed. In addition to increasing vessel efficiency, it could result in a more cost effective approach to channel maintenance by reducing dredging frequency. As well, the costs/benefits and environmental impacts of deepening the shallow sides of the Middle Neebish Channel to allow two-way traffic should be evaluated.

- A comprehensive, MTS system-wide analysis of constraints and bottlenecks should be conducted with lead roles assumed by entities such as the US Army Corps of Engineers, the US Department of Transportation, the Canadian Coast Guard (Department of Fisheries and Oceans) and Transport Canada in collaboration with the States, Provinces and stakeholders.
- The US Army Corps of Engineers' dredging program could be further improved through a series of measures:
 - Provide ongoing and regular opportunities for the States to participate in the project development process.
 - Provide greater administrative and financial flexibility for States and ports to manage dredging projects and programs. A pilot program should be initiated to enable one or more States to manage the dredging projects within their jurisdiction using federal monies through a block grant or other similarly streamlined means.
 - Work with the States to develop innovative pilot projects such as public-private partnerships and multi-State collaborations that will meet program and project requirements while ensuring MTS performance and reliability.

2.1.3. ICEBREAKING

Ice covered 93 percent of the five Great Lakes in 2014 and 89 percent in 2015. Ice coverage coupled with inadequate icebreaking decreases the amount of cargo moved on the MTS and reduces subsequent economic activity. For example, during the 2013-14 winter season, ice coverage resulted in seven million fewer tons of cargo moved in U.S.-flag vessels alone compared to the prior year. The resultant cost to industries served by Great Lakes cargo carriers totaled over \$700 million, largely due to diminished iron ore inventories, decreased steel production and coal shortages at electrical generating stations. Additionally, the US laker fleet reported nearly \$6 million in damage to vessels struggling to operate through heavy ice. Ice coverage, however, is important to

Figure 5 | Great Lakes Annual Maximum Ice Coverage 1973-2015



sensitive ecosystems, and these sensitivities and resultant impacts can vary greatly depending on location. At the same time, icebreaking enables additional cargo movement on the MTS, which carries an environmental benefit. Regardless, the holistic environmental costs and benefits of additional icebreaking should be considered along with the economic impacts.

The US Coast Guard's Great Lakes icebreaking fleet consists of nine vessels led by the Mackinaw, the largest and newest Great Lakes icebreaker, commissioned in 2006. The Canadian Coast Guard maintains two icebreakers permanently in the Great Lakes and has frequently brought in additional icebreaking vessels from its Arctic and coastal fleets to help during harsh winters. Overall, the US and Canadian federal governments should better maintain and improve MTS icebreaking capacity and efficiency through better binational and interdepartmental coordination, and enhanced strategic management of the two countries' collective assets as a single system of ice breaking.

- The Canadian government should accelerate the building of new icebreakers as part of Canada's National Shipbuilding Procurement Strategy, and address short-term icebreaking capability gaps with the purchase and/or chartering of both existing and additional icebreakers.
- US icebreaking capability should be increased in the MTS by completing restoration of the US Coast Guard's five 35-year old icebreaking tugs in the Great Lakes, and adding a second "Great Lakes Class" icebreaking vessel to the US fleet to restore and maintain critical system function.

2.1.4. PILOTAGE

All vessels moving cargo on the MTS upstream from Les Escoumins, Québec are required to comply with pilotage requirements to help ensure safe navigation and prevent ship accidents and damages that can result from collisions, groundings or other incidents. In US waters on the Great Lakes, pilots are provided by three private associations of independent contractors under a highly regulated monopoly structure. In accordance with their Coast Guard Certificates of Inspection, US-flagged lakers carry a master and three mates who are also licensed pilots. The US federal government has vested regulatory oversight including pilotage rate-setting in the US Coast Guard.

In the Canadian parts of the MTS, pilotage services are the responsibility of the Great Lakes Pilotage Authority (a Canadian federal government corporation) in the area west of Montreal and under the Laurentian Pilotage Authority in

the St. Lawrence River. Both authorities have independent responsibility for rate setting designed to recover service costs. These costs are set after extensive consultation with a seven-member board that includes representatives of pilots, shippers, other stakeholders, and the public including the option for independent review if board members believe the rates do not meet the public interest. Canadian-flagged vessels are not required to carry licensed or registered pilots when operating in the MTS west of Montreal. Instead, the companies owning these vessels self-certify that the navigation officers have sufficient local knowledge with the requisite amount of qualifying trips and training. The companies annually audit their officers and the Great Lakes Pilotage Authority validates these company audits each year.

According to the U.S. Coast Guard, US pilotage fees totaled nearly US\$17 million including monies paid to the 36 pilots in 2014. For that same year, Canadian pilotage fees totaled over C\$111 million including monies paid to the 181 pilots according to the Great Lakes Pilotage Authority and the Laurentian Pilotage Authority. A number of system users have raised concerns about the current system. Beyond costs, current arrangements create efficiency challenges as users must work through the two Canadian pilot authorities and, separately, US pilotage requirements. In some instances, the current system has not been able to provide pilots on a timely basis to system users, creating logistical challenges and costs. Pilots face their own challenges with the service delivery structure and in meeting user needs given the current number of pilots. Altogether, these issues adversely impact MTS competitiveness.

- The federal governments should collaborate to convene a facilitated process to bring pilots and ratepayers together to review and develop recommended changes to the service delivery structure. This process should include relevant agencies such as Transport Canada and the US Coast Guard and be guided by the following principles:
 - Safety should continue to be the first priority;
 - MTS pilotage should be managed on a system-wide basis and service delivery should be made more transparent and efficient;
 - Pilots must be consistently available and fairly compensated;
 - Ratepayers should be involved in rate setting;
 - Recent advancements in radar, automated identification systems, collision avoidance equipment, shore-based piloting, and, in the long term, the potential for remote or automated control mechanisms

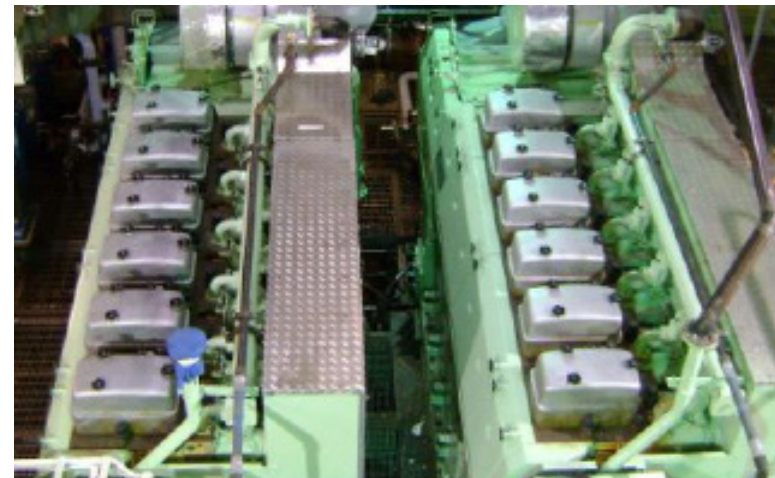
- should be taken advantage of where appropriate;
- Pilotage reforms should be designed to increase the overall competitiveness of the MTS.

2.1.5. EFFICIENCY AND ENVIRONMENTAL PERFORMANCE

Sustainability and environmental performance are two of the MTS's greatest strengths. This Strategy's goal is to double maritime trade while shrinking the environmental impact of the region's transportation network. This includes reducing air emissions; eliminating new invasive species introductions and reducing the spread risk of invasive species already present; minimizing shoreline erosion; and protecting sensitive ecosystems. Expanded use of the MTS can and should be done in a sustainable and socially responsible manner.

For some types of cargo (particularly large shipments of bulk cargo), maritime transportation generates significantly lower air emissions per cargo unit than other modes. Accordingly, maritime transportation can reduce the environmental footprint of regional and national freight movement while mitigating surface congestion. Some jurisdictions have incorporated climate change and other environmental issues into their plans, including Ontario's Climate Change Strategy and Quebec's Climate Change Action Plan. Overall, a flexible MTS also gives shippers another viable transport option in order to improve the overall competitiveness and resiliency of the regional transportation system.

Major investments have been made throughout the MTS to improve efficiency and environmental



New engines aboard the vessel Hon James L Oberstar, reducing costs while improving efficiency and environmental performance.

performance. For example, a number of shipowners have invested in major improvements to enhance fuel efficiency and reduce emissions. Many ports and harbors have made similar improvements in their facilities and operations. Beyond the broad-based environmental benefits that result from these and other investments, improvements represent a commercial opportunity and competitive advantage to entities that can document performance characteristics to customers demanding more efficient and environmentally-friendly solutions. Different classification systems and voluntary certification programs characterize efficiency and environmental performance.

Alternative fuels including liquefied natural gas (LNG) are becoming an important alternative to traditional fuels in many parts of the world. Demand from the maritime industry alone may be insufficient to attract LNG infrastructure investments in the MTS. This continues to present the classic chicken-and-egg problem. Carriers are unwilling to install LNG equipment because access to LNG fuel is not developed. LNG suppliers and terminal developers are unwilling to build maritime LNG infrastructure because there is insufficient maritime demand. Current low liquid petroleum fuel prices further impede LNG development, but these conditions are unlikely to continue in the long term.

A regional vision for an environmentally efficient maritime system includes preventing the introduction of invasive species through ballast water. Solutions to this problem are being addressed in international and domestic forums. The risk of new invasive species releases in the MTS has already been reduced in recent years by ships exchanging ballast water at sea before entering the system. Specific measures beyond this remain controversial and resolving these issues is beyond the scope of this strategy. Regardless, time is of the essence to reach a consensus on a long-term solution.

- The ports and the St. Lawrence Seaway Management Corporation, along with other partners as appropriate, should examine the potential for applying differentiated lock, port or other charges based on the environmental certifications or classifications of vessels.
- Government and MTS stakeholders should support and encourage participation in environmental sustainability programs such as Green Marine/Alliance Verte. Metrics to track participation and outcomes should be developed.
- In order to recognize the continuing efficiencies of maritime transportation, the US and Canadian federal governments should work toward the establishment of an internationally based system for structured monitoring, reporting and verification of vessel environmental performance.



Some ship owners in the MTS are taking bold steps to use LNG. In 2015, one ferry operator commissioned the first LNG ferry to operate in North America, while one MTS shipowner currently has two LNG hybrid cargo ships under construction.

- Government, industry and other MTS stakeholders should analyze the environmental and economic efficiencies of moving cargo on the MTS compared to other modes and to US and Canadian coastal ports. A holistic analysis is needed that compares emissions, differing impacts on congestion, long-term maintenance, and all associated transportation, logistics, environmental, social and related costs and benefits.
- With North American freight projected to increase 29% in the next 11 years and significant MTS capacity available overall, the States and Provinces should broadly examine opportunities to reduce the environmental footprint of freight transportation through the expanded use of the MTS. Additionally, governments should evaluate opportunities to invest in green infrastructure to minimize shoreline erosion and enhance nearshore habitat.

2.2. BUILDING NEW MARKETS

Today, MTS commerce is concentrated in a small number of bulk commodities such as taconite, coal, grain, cement and aggregates. Flows of these particular commodities have been declining in many instances. If the MTS is to prosper and boost regional competitiveness, it needs to increase commodity flows while diversifying cargoes. The St. Lawrence Seaway and many regional ports have significant capacity to absorb additional cargo. In many ways, the MTS is well positioned to take on these challenges but will need to overcome a number of structural, institutional and cultural challenges to accomplish this.

Building new markets for the MTS will require a series of strategic actions. Chief among these is addressing the issue of season optimization, improving opportunities for short sea shipping, and developing a coordinated regional marketing plan for promoting maritime commerce and related activity. While oil transportation by ship remains a market opportunity on the lakes, there are many social and environmental challenges that make this a deeply complex issue – one that is not addressed currently in this strategy.

Overall, the MTS must be more flexible and nimble to anticipate, prepare for and accommodate new cargoes, or to once again attract cargoes that for different reasons have moved exclusively to other transport modes.





Project cargoes such as wind turbines represent a recent success story and future opportunities could include things like food products, cars and other finished goods.

2.2.1. SEASON OPTIMIZATION

Upstream from the first locks of the St. Lawrence Seaway located just above Montréal, seasonality is a major obstacle to maximizing MTS efficiencies through increased utilization and cargo throughput. Seasonality makes it difficult to dislodge existing supply chain and logistics decisions related to the use of the MTS. Historically, ice cover (and necessary lock maintenance closures which are scheduled in this period) have reduced or eliminated shipping on the Great Lakes between January and March each year. Therefore, if a business utilizes the water route for much of the year and stockpiling is not an option, it needs an alternative transport mode during the months the system is closed. Interlake shipping traffic on Lakes Michigan, Huron and Erie is capable of virtual year-round operations when conditions permit in certain years. However, international trades served by the St. Lawrence Seaway and Lakes trades reliant on the Soo Locks are both interrupted annually by ice cover and scheduled lock closures given the lack of redundancy in this part of the system. A new Poe-sized lock could provide a more flexible maintenance schedule and extend the shipping season between Lake Superior and the other lakes.

Many MTS users have employed a costly system of stockpiling inventories during the shipping season in order to maintain operations through the winter. Many shippers that rely on year-round supply chains have chosen other transportation options altogether due to the cost and complexity of stockpiling or developing two solutions (i.e. MTS for nine months, another mode for three months). In short, seasonality has significantly constrained efforts to cultivate new markets for MTS shipping in such categories as containers, break bulk and perishable cargoes, all of which have greater reliance on 12-month supply chains and just-in-time logistics.

- The Canadian Coast Guard, US Coast Guard and St. Lawrence Seaway Development Corporation should install all-season navigation buoys in the MTS, to both accommodate longer shoulder season navigation when conditions permit, and to reduce system maintenance costs incurred by seasonal placement and removal of buoys.
- The US Coast Guard should continue its work in developing Virtual Aids to Navigation including “virtual buoys.” These aids are another tool that could be used to promote safe navigation in a cost-effective way during a longer shoulder season in place of winter buoys. In the longer term, the Canadian federal government and the St. Lawrence Seaway Corporations should also consider using this technology.
- The relevant US and Canadian federal government agencies should identify the costs and benefits of incrementally extending the existing MTS navigation season upstream from Montreal for part or all of the MTS, including harmonization of Seaway and Soo Lock opening and closings. Analysis should consider

economic viability and projected future demands on the system, additional ice-breaking needs, environmental protections and future climate models.

2.2.2. SHORT SEA SHIPPING

Short sea shipping—the movement of freight by water over short distances—can be a viable alternative to over-land transport in some instances. The U.S. Maritime Administration refers to short sea shipping as “marine highways.” The MTS has available capacity to move freight and short sea transportation to help alleviate highway and rail congestion. Roll on-roll off (RORO) vessels that seamlessly transport trucks over short distances by ship are successfully being used in many areas of the world and represent a particularly attractive option to grow short sea shipping while reducing freight’s environmental footprint.

Several challenges deter increased short sea shipping in the MTS. Short sea shipping is disadvantaged in the US where it is subject to the Harbor Maintenance Tax (HMT), which is not imposed on shipments made via truck, rail or other modes. Trade policies and customs regulations also act as deterrents. Moreover, maritime transportation is not included in all State or local transportation plans.

Further, short sea shipping is hindered by the absence of financial signals reflecting the environmental and social advantages of moving freight by ship. Short sea shipping for “non-traditional” cargoes can be a challenge due to the lack of proper ships and, in some cases, infrastructure in the MTS.

- State and Provincial transportation agencies should collaboratively develop a regional short sea shipping plan. The plan should explore the costs and benefits (economic and environmental) of short sea shipping options in the MTS including around highway, rail and border crossing congestion points. Within this larger regional planning process, multi-jurisdictional teams should study the development of specific short sea shipping routes with private partners, local and federal governments. For example:
 - Wisconsin, Illinois, Indiana and Michigan should jointly analyze cross-lake freight ferry service on Lake Michigan to relieve highway congestion in the Chicago area and Northwest Indiana.
 - Ohio and Ontario should explore enhanced freight service across Lake Erie.

These short sea plans should be developed in conjunction with broader, sub-regional plans.

- The US federal government should exempt non-bulk cargo moving between MTS ports from the Harbor Maintenance Tax. This tax is only assessed on cargo if it moves by ship and thus serves as a gross disincentive to move freight by water. Removing this disincentive would enable a fairer and more rational consideration of economic and environmental costs when choosing among transportation options.

- The federal governments should examine customs policies and their implementation to identify opportunities to simplify and expedite the cross-border movement of maritime cargo. Policies used for land-based transportation including “pre-clearance” programs should be considered.
- The US federal government should fund the M-90 plan of the US Marine Highways Program.

2.2.3. CONTAINERS

Global container traffic has grown by more than 400% between 1990 and 2013, and container traffic has had a major presence on the St. Lawrence River for many years. However, containerized shipping has been largely absent from the Great Lakes as container movements are typically concentrated at coastal ports that can accommodate increasingly large container ships on a year-round basis. The only scheduled service for containerized freight currently operating from a Great Lakes port is the Cleveland-Europe Express.

Containerized shipping represents a huge economic opportunity for the region given the logistics activities that often grow around ports handling containers. Beyond this, containerized shipping in the MTS could also alleviate trucking congestion in certain areas such as around Chicago. Limitations on containerized shipping in the winter upstream from Montréal represent a clear challenge during the winter season. Accordingly, the icebreaking and season optimization actions described above should improve the conditions for container traffic on the MTS.

- In order to be better positioned to capitalize on any future container traffic, all levels of government in the region should evaluate and facilitate strategic investments in ports and port infrastructure, and the reduction or removal of regulatory barriers to enable container shipment.

2.2.4. PASSENGER TRAVEL AND CRUISING

Passenger travel and cruises are thriving in many parts of the world, including on the St. Lawrence River. Extending the successful cruises from the River through the Great Lakes and, more broadly, building cruising throughout the MTS holds tremendous potential. The region’s globally unique freshwater system features vibrant coastal communities, culture and history. Increased cruising would generate substantial economic benefits through cruise package spending, port calls, associated excursions and the purchase of support services.

Unfortunately, the passenger cruise trade on the Great Lakes has been stifled by a number of challenges. Shoreside facilities for cruise ships in many locations need to be developed or improved. Because cruise ships in the MTS usually carry fewer than 400 passengers, as compared to up to 4,000 for ocean-going passenger ships, pilotage costs therefore add a proportionally high cost to these smaller vessels. The unavailability of pilots has in some cases also resulted in crippling delays and high additional costs for cruise ships. Cruises are built around pre-determined itineraries and complex logistical arrangements that involve contractual and financial

commitments entered into by the cruise operators. Overall, a complex regulatory environment and Customs protocols have added inconvenience, costs and unnecessary delays to cruise programs.

On a trial basis, the US Department of Homeland Security recently implemented a “closed loop” clearance system whereby a cruise ship departing from and returning to the same US port is supposed to be granted flexibility in the Customs clearance process. However, this trial program is not aligned with most cruise itineraries, which depart from and return to different ports on either side of the border, and has therefore failed to fulfill its promise of jumpstarting the nascent regional cruise industry, and attracting more cruise operators and associated businesses to the region.

- In consultation with the Great Lakes Governors, the US Department of Homeland Security should institute an “open jaw” clearance system for Great Lakes-St Lawrence cruise passengers while identifying other opportunities to facilitate regional cruising. Such a clearance system would subject passengers to one full Customs clearance into the US or Canada per cruise, regardless of the sequence of ports visited or the number of times crossing the border.
- Ports as well as State and Provincial economic development agencies should examine and where appropriate develop or improve facilities to better receive and welcome cruise passengers including, where needed, customs facilities. Specifically, model facilities should be identified for ports to serve the cruising market, including public-private partnership opportunities.
- States and Provinces, in partnership with private industry, local and federal governments, should explore the establishment of new passenger ferry services where practical, such as a proposed Detroit-Windsor service.

2.2.5. DOMESTIC AND INTERNATIONAL MARKETING

The profile and visibility of the MTS does not match its scale and is not equivalent to comparably sized sectors. While some MTS actors have marketed themselves individually or collaboratively, enhanced and more effective marketing could significantly improve the system’s visibility and, over time, boost maritime trade.

The MTS must settle on a single brand and use it consistently. Beyond this, a comprehensive and strategic marketing plan is needed to unify the diverse maritime sector and raise its profile in the US, Canada and abroad.

- The US and Canadian Seaway authorities should convene State and Provincial economic development agencies, ports and carriers in order to collaboratively develop market research and a single MTS marketing plan to target core and new trade opportunities to key audiences including prospective investors, shippers, receivers, tourists, ferry and passenger cruise operators, site selectors, and freight and logistics managers.
- The Highway H₂O brand should be assessed for its potential to build future regional marketing plans around it, recognizing that significant changes may be needed to enhance its effectiveness.
- A ‘Team MTS’ approach should be deployed to present a coordinated offering from government and industry to

prospective system users. Toward this end:

- Maritime should be placed on the agenda for foreign trade missions and, where appropriate, include MTS representatives.
- A single annual event (e.g. Highway H₂O conference) should be built and marketed as the

region's event to bring together all MTS interests including the Governors' and Premiers' Regional Maritime Entity as well as prospective MTS users.

Hwy H₂O is an alliance of transportation stakeholders, actively promoting the benefits of marine transportation within the Great Lakes St. Lawrence Seaway system. The River, Seaway and Lakes provide the 'highway' and the ports are the on/off ramps and the interconnections with the surface mode. The initiative encourages the shipping of freight as close as possible to its final destination by water.



2.3. Growing Economic Activity Around the Maritime System

The competitiveness of the MTS depends on the type, cost and quality of surface transportation links available to ports. Connections between ports and road, highway, freight rail and intermodal links can enable maritime transportation. The more extensive the hinterland transportation network, the greater the effective inland reach of the port. Landside infrastructure upgrades that remove bottlenecks, reduce congestion or otherwise decrease the transportation costs and time required for the landside movement of any maritime shipment will increase the competitiveness of that shipment route and thereby attract potentially greater traffic flows through the ports. A viable maritime transportation option also exerts downward pricing pressure on other modes thus creating economic benefits for all shippers whether the maritime mode is used or not.

Key components required for growing economic activity around the maritime system include the establishment of clear leadership and planning functions within each jurisdiction, strong collaboration with existing public ports and private terminals, and strategic infrastructure investment to support future growth.

2.3.1. LEADERSHIP & PLANNING

No one entity is charged with responsibility for the entire MTS. Particularly in the US, maritime transportation has been the responsibility of the federal government and local port authorities. State governments have had little to no input or role in managing the MTS. Transportation networks are regional in nature, yet the MTS is not coordinated on a strategic, regional basis. This historical absence of State involvement and lack of regional focus has constrained the system, particularly in its ability to maintain and develop appropriate infrastructure to meet the needs of the region's economy. State, local and regional planning and support for infrastructure and economic development within and near ports is necessary to grow economic activity.

To manage for the future, in 2014 the Governors and Premiers created a Regional Maritime Entity and charged it with coordinating State and Provincial actions related to improving the MTS. The Entity spearheaded development of the first-ever MTS asset inventory, priorities for the system, and this Strategy. The Entity is charged with supporting, implementing and tracking Strategy follow-through, as well as coordinating the future evolution of regional planning and management for the MTS. The Governors' and Premiers' Regional Maritime Entity should:

- Assess economic projections including for manufacturing and planning for cargo flows, such as grains and aggregates, as well as coordinated dredging and infrastructure management. The Entity should ensure that a regional analysis of projected cargo flows is created in order to better inform policy and investment. This Entity should also develop and incorporate select sub-regional plans such as for Southern Lake Michigan, the Detroit River and Lake Erie into regional planning.
- Support and encourage its members to assist with the various planning processes at the State, Provincial and Federal levels to ensure that freight plans properly incorporate maritime transportation. For example, this Entity should ensure that the National Freight Network created by the US Department of Transportation incorporates the MTS into its plan. Overall, future regional planning should incorporate current State and Provincial plans including those for maritime transportation facilities.

Regional Maritime Entity members:

- Mr. Charlie Zelle, Minnesota Department of Transportation (Co-Chair)
- Mr. Bill Carr, Ontario Ministry of Intergovernmental Affairs (Co-Chair)
- Mr. Jon Allan, Michigan Office of the Great Lakes
- Mr. Michel Dignard, Ministère des Transports du Québec
- Ms. Jennie Granger, Pennsylvania Department of Transportation
- Ms. Beth McCluskey, Illinois Department of Transportation
- Mr. Jody Peacock, Ports of Indiana
- Mr. Scott Phinney, Ohio Department of Transportation
- Mr. Michael Snyder, New York State Department of State
- Ms. Sheri Walz, Wisconsin Department of Transportation

- States and Provinces should:
 - Lead maritime planning sessions with local ports, maritime-related businesses and all related agencies including economic development, transportation and agriculture. States and Provinces should also develop, coordinate and align short-term and long-term maritime strategies.
 - Expand and maintain the maritime asset inventory begun in 2014, and incorporate State and Provincial maritime assets into long-term freight transportation planning. States and Provinces should also incorporate port development projects into State and Provincial economic development plans.
 - Task regional planning authorities to incorporate port development and projects into regional plans.

2.3.2 PORTS & TERMINALS

Ports are an economic and transportation infrastructure cluster centered on the industries served by the movement of freight. Ports are a potential location for the formation of these industry clusters due to reduced transport costs and the availability of skilled labor. This has a particular advantage in a sector where sub-contracting and outsourcing is widespread and there is a demand for highly specialized skills. As a consequence, there are a number of cities and regions where significant clusters have developed as a result of the local port infrastructure. Moreover, ports are a decided economic and strategic benefit to the States, Provinces and nations served by the MTS.

- States and Provinces should recognize ports as key economic development nodes and collaborate with business development officials in port authorities, private industry and regional economic development organizations to partner on maritime economic development strategies.



2.3.3 INVESTMENT

Port and other maritime infrastructure requires maintenance and investment to sustain its economic function. The network of MTS ports has the potential to form a hub and spoke system with large to small port connections, and with connections to other transportation modes. The demand for intermodal shipments is increasing more than any other mode of transport. Between 1997 and 2007, multimodal freight activity increased 97.4 percent (based on the freight value) and 164.8 percent (based on the freight tonnage), according to the US Department of Transportation. Infrastructure is needed to create and smooth the connection between modes at ports including water, rail and roadway connections, especially first- and last-mile connections.

In the US, the MTS was established and operates under a model in which the federal government provides funding for multiple federal agencies to operate, construct, maintain and provide services for individual locks, breakwaters, navigation channels and harbors with local businesses availing themselves of that infrastructure. Even as US federal funding for MTS maintenance has increased in recent years, future funding availability and needs are highly uncertain in both the US and Canada, and thus new approaches to developing and implementing projects and programs are required. Regardless, the return on investment of MTS infrastructure should be considered holistically and with regard to other potential transportation investments.

Internationally, government agencies and ports have been far more creative in identifying and executing innovative approaches, thereby realizing service and efficiency advantages. For example, the Port of Brisbane (Australia) recently entered into a “public-public” operating partnership with La Caisse de dépôt et placement du Québec.

- When allowed by authorizing legislation and adequate funding, States should establish long-term port and harbor investment programs and funds similar to the Wisconsin Harbor Assistance Program, Minnesota’s Port Development Assistance Program and Québec’s Maritime Strategy.
- States and Provinces should make any financial assistance that they may provide to ports contingent on the prior demonstrated integration of port development projects with local and regional economic development planning and investment.
- States and Provinces should sustain and provide financial and other resources to the Governors’ and Premiers’ Regional Maritime Entity to continue and build on its work to date.
- Federal infrastructure programs (e.g. US TIGER program and the Building Canada Fund) should be expanded to provide additional funding for maritime projects, increase modal interconnectivity, operational efficiency, MTS competitiveness and economic development, with greater emphasis placed on first- and last-mile connections at ports with rail, highways and pipelines.
- States and Provinces should evaluate models for leveraging various sources of maritime infrastructure

investment such as public-private and public-public partnerships. In the near term, the Regional Maritime Entity should develop up to three public-private or public-public pilot projects in the region toward this end.

2.4. Delivering Results and Managing for the Future

The MTS holds great promise. It is poised to continue playing an important role supporting key industries, and connecting the region and the world. However, it is an under-performing asset whose full potential must be unlocked by completing the actions laid out in this Strategy.

Forward-looking actions are needed, including in the areas of research and development to ensure the long-term competitiveness of the MTS. For example, innovation related to the development of autonomous vessels may hold opportunities to develop advanced manufacturing capacity and diversify service offerings. Autonomous vessels present long-range potential for some portion of the Great Lakes maritime system, whether as research and investigation vessels, for navigation support, or for transport of goods across the Great Lakes. Accordingly, governments and private industry are engaged in research, development and innovation in this area.

2.4.1. TALENT AND WORKFORCE DEVELOPMENT

The MTS workforce includes a broad and diverse range of professionals typically associated with maritime commerce such as captains, pilots, engineers, shipyard workers, ship repair and maintenance personnel, stevedores and longshoremen. These jobs offer unique opportunities and relatively high wages but, in many cases, the workforce is aging and struggling to attract new talent.

At the same time, new professional opportunities are emerging in and around the maritime sector including in logistics, communications and environmental management. Altogether, the MTS needs to more effectively project an image that reflects its dynamic, exciting and challenging job opportunities.

It also needs to do more to connect with and attract talent including traditionally underrepresented demographic groups to careers in the maritime sector. The existing maritime academies at Georgian College in Marine Studies, the Maritime Institute of Québec, Great Lakes Maritime Academy and the US Merchant Marine Academy are well qualified maritime education programs with the potential to bring additional personnel to the workforce.

- Industry, in collaboration with government, should develop a single, overarching maritime careers portal.

- The US and Canadian Coast Guards, the Royal Canadian Navy and US Navy are excellent sources for prospective personnel. Veterans could be a rich source of new and experienced entrants into commercial shipping and any barriers, including lack of credential recognition, deterring individuals from entering should be identified and removed. “Military to Maritime” programs should be encouraged and further developed.
- Governments should support workforce development including for freight and logistics personnel, as well as port labor.



States should support the development of maritime K-12 schools, especially in port cities on the Great Lakes. Introducing young people to maritime industries through interactive and STEM-related disciplines can stimulate long-term interest in maritime careers and help foster early skill development. The Toledo Maritime Academy, pictured here, is a successful example of such a school.

2.4.2. GOVERNANCE

Historically, a complicated patchwork of government agencies, authorities and other entities have managed the MTS as a fragmented collection of component parts. MTS stakeholders have been similarly fragmented among several subsectors each with their own interests and priorities. The extensive number of entities and wide range of priorities have made it difficult for the MTS constituent parts to coordinate their interests.

Overall, fragmentation and disconnection has resulted in underperformance by the MTS as a whole. Better integrating management authorities, organizing stakeholders, harmonizing regulations, and promoting more effective coordination across the entire MTS could significantly improve performance and results.

- All parties must sustain the commitment to manage the MTS as a system.

- Non-governmental MTS stakeholders including ports, carriers, shippers and other relevant interests should create a unified industry body and appoint a high profile chair to act as a private sector partner advising both the Regional Maritime Entity and State and Provincial maritime teams.
- Each State and Province should:
 - Develop in-house staff expertise and resources focused on maritime economic development, planning, and coordination to address dredging, port capacity, and other issues outlined in this Strategy. To the greatest extent possible, the States and Provinces should engage a wide range of departments to develop maritime policy (e.g. transportation, economic development, natural resources, environment).
 - Consult with the maritime industry and relevant government officials, through an advisory group or other means, to discuss freight transportation plans.
- The Governors' and Premiers' Regional Maritime Entity should:
 - Examine and develop recommendations for the federal governments regarding the potential for a treaty or other binding international agreement between the US and Canada that includes mechanisms to cooperatively manage the MTS as a single competitive system, with performance measures and system attributes. These recommendations should identify opportunities to harmonize regulations across levels of governments and include robust participation from the States and Provinces.



The Central Commission for the Navigation of the Rhine was created in 1815 and brings together five European countries that depend on the Rhine River for inland navigation. The Commission ensures freedom of navigation and uniform, even-handed regulations for the Rhine's entire length. It also promotes navigation safety and the environmental sustainability of shipping on the Rhine. Its permanent Secretariat, committees and work groups provide an ongoing means for the five member countries to coordinate the use of this critical inland navigation highway. The Commission is a successful example of an international treaty-based organization managing a complex transportation system for the economic and environmental benefit of its members.

2.4.3. METRICS TO EVALUATE SYSTEM PERFORMANCE

State and local agencies are increasingly developing transportation plans based on performance metrics as a result of scarce resources and performance-based discretionary funding programs such as TIGER grants in the US. Metrics can help guide decision-makers to better identify gaps in the transportation system and the types of projects and investments needed to fill them.

- The Regional Maritime Entity should meet annually to assess progress in implementing this Strategy.
- The Regional Maritime Entity should convene a working group to identify available data and data gaps; document State/Provincial, federal and private sector investments in data collection; make recommendations on ways to improve coordination of these investments; and identify unmet data collection needs.
- The working group should recommend a set of maritime performance metrics. These performance metrics should be aligned with the maritime priorities and guiding principles established through the Governors' and Premiers' Maritime Initiative, and should be measureable and understandable by key stakeholders.
- Over time, performance metrics should be identified and developed above and beyond the goal to double maritime trade, such as in the following categories:
 - Freight volume
 - Freight value
 - Environmental performance and sustainability
 - Employment, jobs and taxes
 - Investment
 - Value creation
 - System performance, including a comparison to other modes and coastal ports
- The working group should investigate ways to align data collection and reporting with the "Great Lakes Blue Accounting" program being managed by the Great Lakes Commission. Further, the working group should explore opportunities to harmonize data collection and reporting for the Great Lakes maritime industry with similar efforts being undertaken for the St. Lawrence maritime industry in Québec. The long-term goal is to fill data gaps and improve the availability and integration of needed data and information.
- An analysis should be conducted to determine the total cost of moving cargo through the MTS. A thorough evaluation of fees, charges and other regulatory costs for maritime transportation

is needed to understand the relative efficiencies of the maritime mode, to help ensure the consistency of costs across the MTS, and to maximize competitiveness with respect to other regions of the US, Canada and the world. Additionally, this analysis should compare the relative costs of maritime to other modes, with a particular focus on short sea shipping.

- All parties should work to harmonize and standardize methods for gathering data and information, and producing systemwide metrics.
- Statistics Canada should resume its strategic function of providing timely statistical indicators for the maritime sector.







ILLINOIS



INDIANA



MICHIGAN



MINNESOTA



NEW YORK



OHIO



ONTARIO



PENNSYLVANIA



QUÉBEC



WISCONSIN