



ASSISES QUÉBÉCOISES
DU SECTEUR MARITIME

PANEL

FINANCEMENT DES INFRASTRUCTURES MARITIMES ET LOGISTIQUES





GREAT LAKES
ST. LAWRENCE
GOVERNORS
& PREMIERS

UNITED FOR GROWTH

Decarbonization in the Great Lakes St. Lawrence Maritime Transportation System

May 2024 – Assises Maritime



Great Lakes St. Lawrence Governors & Premiers



Gretchen Whitmer, Chair
Governor of Michigan



Mike DeWine, Vice Chair
Governor of Ohio

More than 30 years of collaboration among the region's chief executives:

Illinois Indiana Michigan Minnesota New York
Ohio Ontario Pennsylvania Quebec Wisconsin

Growing the region's economy and protecting the world's greatest freshwater system.

“The Working Great Lakes”

1 Maritime Transportation (Green & Smart Shipping)

2 Cruise the Great Lakes

3 Great Lakes USA

4 Great Lakes Impact Investment Platform

5 100% Great Lakes Fish

A \$6 Trillion Regional Economy

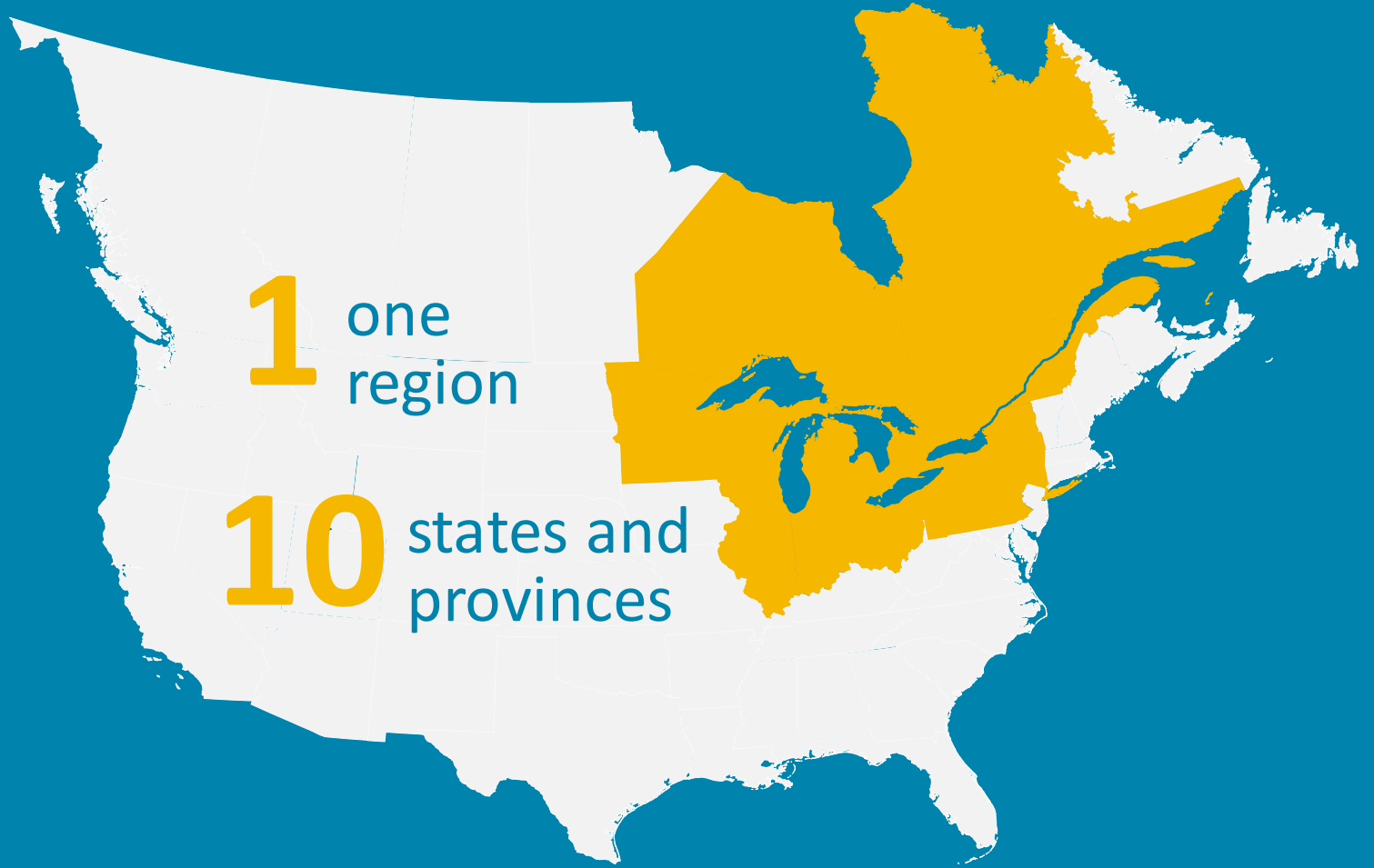
3rd Largest economy
in the World

 **2** countries

 **100** million
people

1 one
region

10 states and
provinces



The Backbone of the Regional Economy



400+ million tons moved per year



100+ ports



\$35+ billion in annual revenue (USD)



1 one system



Connecting the North American and Global Economies



Iron
Ore



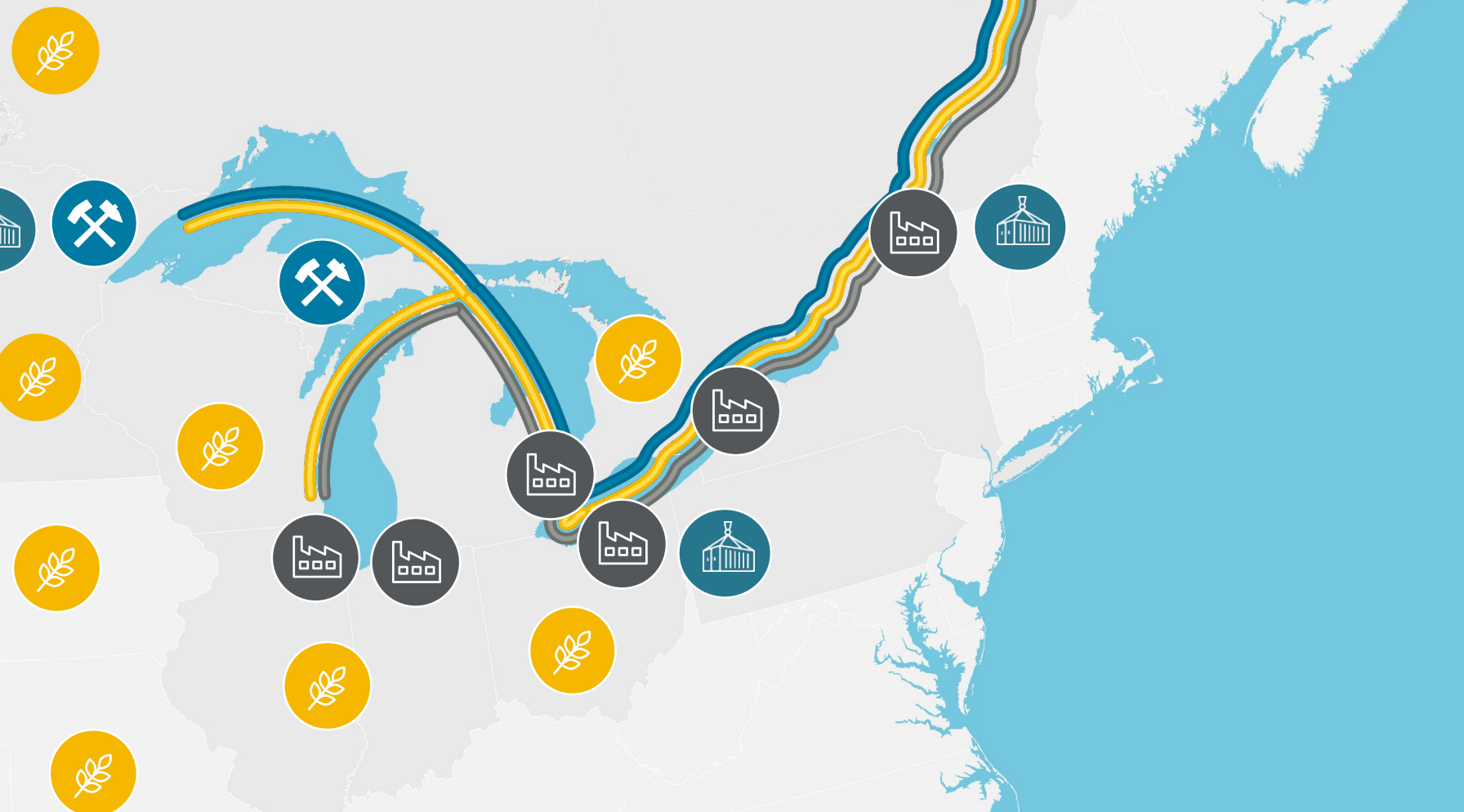
Steel



Grain



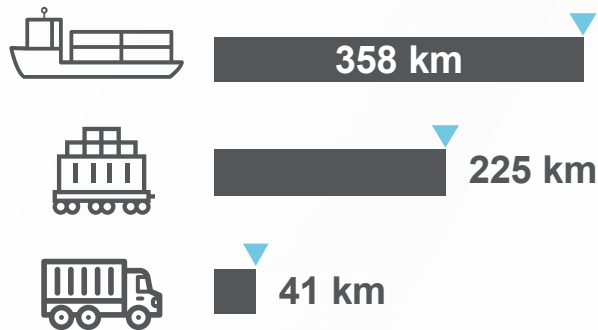
Container



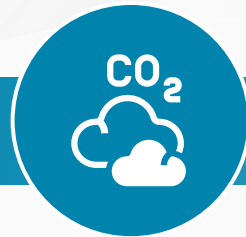
An Environmentally-Sound Shipping Route



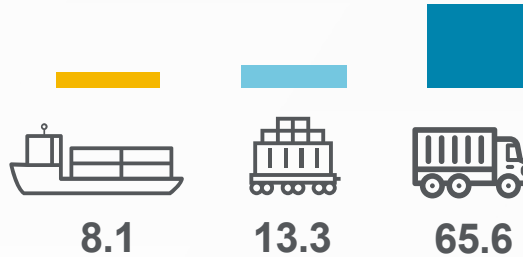
Best Fuel Efficiency



▲ Distance (kilometres) one tonne of cargo travels on 1 litre of fuel ▲



Smallest Carbon Footprint



▲ CO₂ grams per tonne/km ▲



Greenest end-to-end Shipping Option



▲ Up to 55% less carbon emissions than drayage and shipping through coastal ports ▲

The truck-to-Duluth, liner-to-Antwerp method ranks as the least carbon-intensive option for many Upper Midwest markets, **reducing emissions up to 56%** compared to alternatives

Regional Maritime Strategy

- Released in June 2016
- Goals
 - Double maritime trade
 - Shrink the environmental impact of transportation
 - Support the region's industrial core
- Collaborative process including government, industry, NGOs and other partners; public comments
- Policies, programs and projects to grow the economy and create jobs



Regional Maritime Entity

Governors' and Premiers' maritime staff

Wisconsin, **Co-Chair**

Québec, **Co-chair**

- Illinois
- Indiana
- Michigan
- Minnesota
- New York
- Ohio
- Ontario
- Pennsylvania



Advisory Committee

Industry

- American of Great Lakes Ports Association
- Association of Canadian Port Authorities
- Chamber of Marine Commerce
- Cleveland-Cliffs, Inc.
- Fednav Limited
- Freight Management Association of Canada
- Great Lakes Cruising Coalition
- Great Lakes Dredge & Dock Co., LLC
- HolcimUS
- Interlake Maritime Services
- Interlake Steamship Company
- Lake Carriers' Association
- Ontario Marine Transportation Forum

Government

- Canadian Coast Guard
- Federal Reserve Bank of Chicago
- Great Lakes Commission
- Great Lakes St. Lawrence Seaway Development Corporation
- Northeast-Midwest Institute
- St. Lawrence Seaway Management Corporation
- Transport Canada
- U.S. Army Corps of Engineers – Detroit District
- U.S. Coast Guard 9th District
- U.S. Maritime Administration

Others

- Alliance for the Great Lakes
- Great Lakes Maritime Research Institute
- Northeast-Midwest Institute
- Société de Développement Économique du Saint-Laurent (SODES)
- The Nature Conservancy – Michigan
- University of Wisconsin-Superior



Regional Decarbonization Plan



Diverse research team to explore future energy options for Great Lakes shipping

Wednesday, September 21, 2022

MARAD study aims to inform future US investments in low carbon shipping



This work is financially supported by a grant from the U.S. Maritime Administration

Emissions Inventory

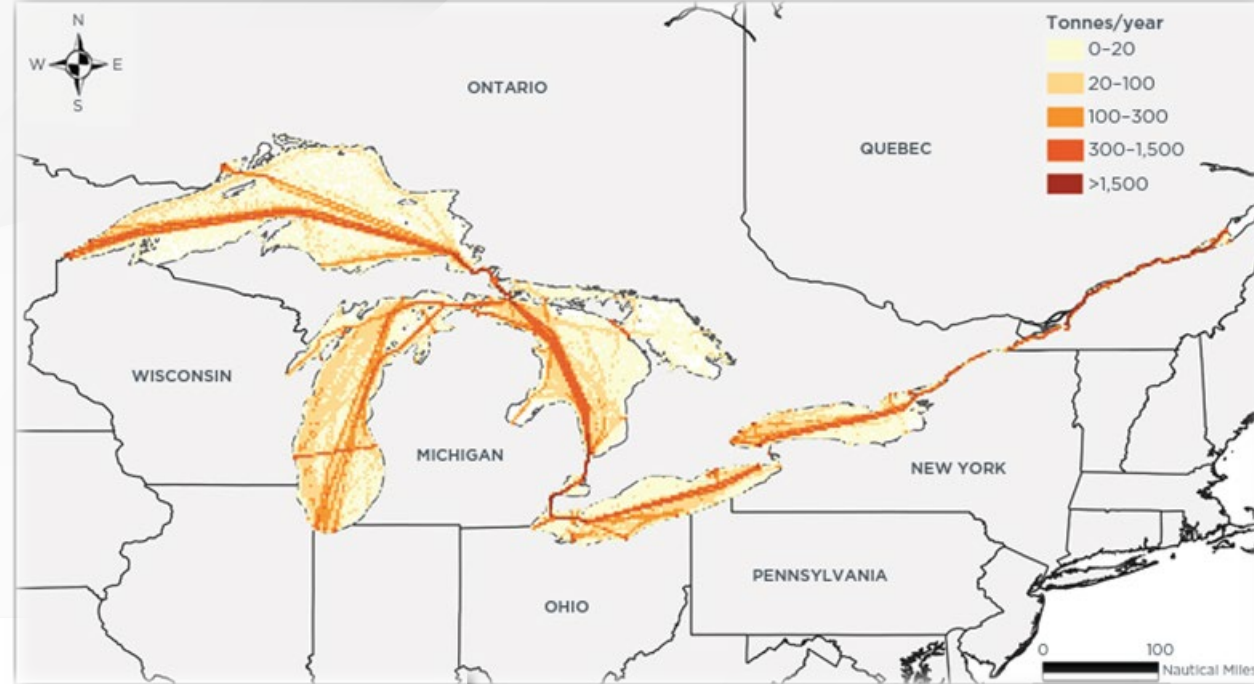


Table A2. Maritime CO₂ emissions by flag state and ship type in the GL in tonnes, 2019.

Flag state	Bulk carrier	Chemical tanker	Container	Ferry-ropax	Oil tanker	Service-tug	All other ship types	Total
United States	498,961	0	0	15,141	0	114,114	17,136	645,352
Canada	345,049	52,001	0	14,915	9,300	20,859	14,724	456,848
All others	77,788	23,898	28	0	6,554	19	13,209	121,496
Total	921,798	75,898	28	30,057	15,855	134,991	45,068	1,223,695

Table A3. Maritime CO₂ emissions by operating phase in the GL in tonnes, 2019.

Operating phase	Bulk carrier	Chemical tanker	Container	Ferry-ropax	Oil tanker	Service-tug	All other ship types	Total
At anchor	31,203	11,356	0	3,835	1,921	5,469	8,343	62,121
At berth	11,794	18,776	0	3,272	6,079	1,948	5,615	47,677
Cruising	862,371	43,957	26	21,283	7,451	124,123	29,204	1,088,270
Maneuvering	16,430	1,809	2	1,666	403	3,451	1,906	25,627
Total	921,798	75,898	28	30,056	15,854	134,991	45,068	1,223,695

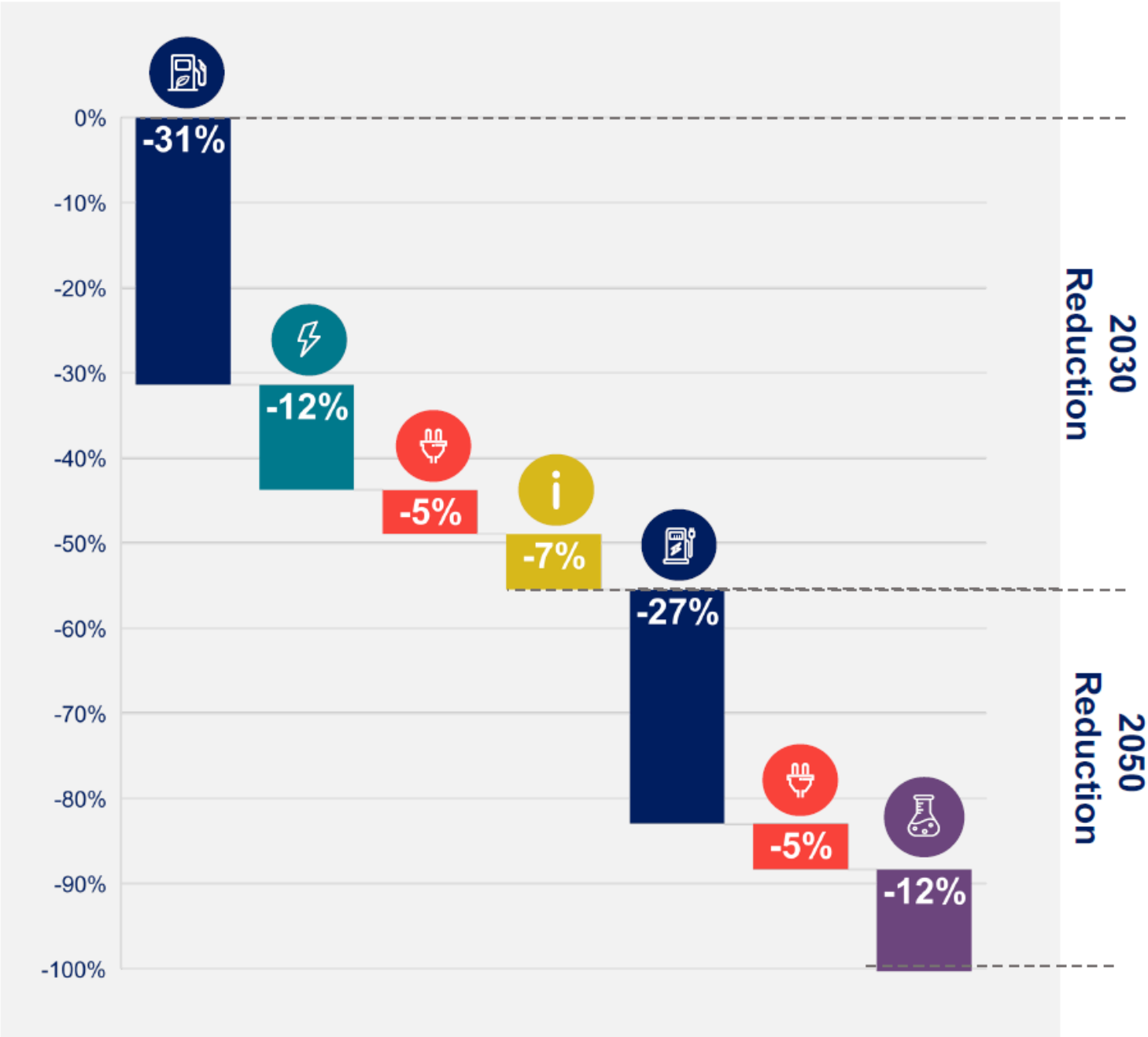
Annually released
by ICCT & GSGP

Great Lakes St. Lawrence Maritime Transportation System

Emissions Reduction Potential for Different Strategies

-  **Biofuel**
-  **Electrification of Ferries and Tugs**
-  **Shore Power During Season**
-  **Information Sharing**
-  **Future Fuels***

**Future, zero-carbon marine fuels will eventually replace biofuels in whole or in part, and will contribute to full decarbonization of the maritime system.*



Electrification – Ports & Vessels



- Electrification for...**
- Shore power
 - Winter layup
 - Ferries
 - Tugs/Harborcraft

ELECTRIFICATION OPPORTUNITIES
for the Great Lakes St. Lawrence Maritime Transportation System

**GREAT LAKES
COMMERCIAL VESSELS
THAT OPERATE
LIKE FERRIES: A
POTENTIAL PATH TO
ELECTRIFICATION**

August 22, 2023



Regional Biofuels Analysis



ENERGY CLUB AT
ROSS:
MARITIME BIODIESEL
USE CASE
January 16, 2022



Smart Shipping – Applications & Current Work

SMART SHIPPING – CHALLENGES & OPPORTUNITIES FOR THE GREAT LAKES ST. LAWRENCE REGION



Technologies

- Hands-free mooring
- Vessel sequencing and maneuvering
- Positioning
- Collision avoidance
- and more!

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The Axia Institute:
Delivering Value Chain Solutions®
MICHIGAN STATE UNIVERSITY

POTENTIAL IMPACT OF DIGITAL TECHNOLOGY SOLUTIONS ON THE NEW SOO LOCK

Dr. David Closs & Dr. Bahar Aliakbarian

July 18, 2022





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2024

Thank you!