

SHORT SEA SHIPPING ON THE GREAT LAKES

NEW STUDY SHOWS BENEFITS OF MOVING MORE GOODS ON THE CANADA-US GREAT LAKES

SUMMARY

A new study, “*Foundational Study on Cross-Border Short Sea Shipping Opportunities*,” examines the potential for short sea shipping services between southern Ontario and the US Great Lakes region.

The study identifies several trade flows as ideal candidates where marine could complement truck transportation.

More than 12,000 trucks move back and forth between Southern Ontario and selected US Great Lakes port regions each week. Many of these are carrying non-perishable, relatively low-value commodities that could make use of a marine service for the ‘middle mile’.

The impact of new Great Lakes short sea shipping services would be reduced highway and border congestion, reduced GHGs, and improved supply chain resilience.

This study is authored by *Fluid Intelligence*, a data analytics partnership led by the McMaster Institute for Transportation & Logistics, and HOPA Ports, supported by Transport Canada.

BACKGROUND

‘Short sea shipping’ refers to moving goods by marine at a regional level; i.e. within the Canada-US Great Lakes region. It is an approach that is common in Europe and Asia but has been less common on the Great Lakes.

Short sea shipping on the Great Lakes is an idea that has been simmering for a long time, but recently, the stars are starting to align. Population growth and highway congestion, driver shortages and fuel costs are all part of the equation making marine a more appealing alternative to road transportation.

Importantly, as importers and exporters of goods look to green their supply chains, short sea shipping offers a compelling environmental advantage: one marine vessel can carry the same

amount of cargo as 963 transport trucks, and in moving the same amount of cargo, trucks emit 558% more CO₂ per metric tonne/km.

THE CHALLENGE

Southern Ontario's economy and critical infrastructure faces critical challenges:

- Highway congestion and wear
- Border congestion
- Lack of transportation redundancy
- Truck driver shortages
- Need to reduce transportation-related GHGs
- Intensification of all the above, due to population growth and density. The GTHA region is growing by more than 110,000 people per year.ⁱ

The cost of congestion in the GTHA in the form of lost economic activity is estimated to be as much as \$6 billion per year.ⁱⁱ



KEY FINDINGS

Cross-border goods movement within the Great Lakes region is enormous, and the supply chains are complex.

- 28.5 million tonnes of cargo per year originates in Ontario and moves by truck into the US per year; 70% of this is destined for a Great Lakes State.
- At least 24 million tonnes of cargo per year originates in the US and moves by truck into Ontario per year; 55% of this originates in a Great Lakes State.

- The largest tonnage cargo type is iron and steel. About 3.3 million tonnes moves by truck per year from Ontario into the Great Lakes states, mainly Michigan and Ohio.

Commodities that move between Ontario and the US Great Lakes States by truck include: scrap metal, flat-rolled iron and steel, scrap paper and cardboard, tubes and pipes, petroleum and other fuels, paper and paperboard, cement, aluminum waste and scrap, mineral and chemical fertilizers, salt, soybeans, and more.

The study focuses on a strategic slice of this total activity, to identify specific routes and commodity flows that are good candidates for new marine services.

On the Road Again, and Again...

- 100+ trucks per week carry paper and cardboard from S. Ontario to the Port of Milwaukee area.
- 70 trucks per week carry plastics and rubber from S. Ontario to the Port of Milwaukee area.
- 90 trucks per week carry machinery from the Port of Milwaukee area to S. Ontario.
- 200 trucks per week carry base metals from the Port of Chicago area to S. Ontario.
- 250 trucks per week carry plastics and rubber from S. Ontario to the Port of Chicago area.
- Almost 400 trucks per week carry base metals from S. Ontario to the Port of Cleveland area.

The Fluid Intelligence study indicates high viability for new short sea shipping services that connect southern Ontario to ports on Lake Michigan and Lake Erie.

In particular, the cities of Chicago and Milwaukee are promising due to the concentration of economic activity and strong connections to Southern Ontario population centres. On both routes, *“the data suggest solid existing cargo connections that marine can seek to complement.”* (p.14) Trucking distances are far enough that a marine alternative makes good sense.



- Port of Chicago to Welland Canal: 524 miles / 843 km / 8 hours drive time
- Port of Milwaukee to Welland Canal: 630 miles / 1000 km / 10 hours drive time
- The report shows that there are an estimated 2700 truck trips per week between the area immediately around the Port of Chicago (50km radius) and S. Ontario.
- If just 10% of existing cargo currently being moved by truck on this one route was handled on the marine mode, the transportation system could save **220 tonnes of GHGs per week**.

In total, there are 5000 (50km radius) and 12,000 (100km radius) truck trips per week moving between five US Great Lakes port areas and Southern Ontario which are excellent candidates for a modal alternative.

Bi-directional trips between US Great Lakes ports and Southern Ontario:

Port of Cleveland: 621/week (within 50km from port); 1474/week (100km)

Port of Milwaukee: 322/week (50km); 592/week (100km)

Port of Rochester: 447/week(50km); 1809/week (100km)

Port of Toledo: 901/week(50km); 5098/week (100km)

Port of Chicago: 2733/week(50km); 3160/week (100 km)

Top candidate commodities:

- Scrap metal
- Steel products – flat-rolled
- Steel Tubes & pipes
- Metal hardware
- Paper for recycling
- Paper for printing and packaging
- Salt
- Agricultural products; cereals, grains, soybeans etc
- Oils & oil products
- Motorized and other vehicles (including parts)
- Dozens of others with potential for containerization

RECOMMENDATIONS

- This research is aligned with the development of a **Marine Strategy for Ontario**, which considers the infrastructure and marine services required to capitalize on the opportunities revealed in this report.
- This research underscores the urgent need for to enable the handling of containers in Ontario ports, in the form of dedicated sufferance facilities and First Port of Entry status.

Qs & As

- **Will Short Sea Shipping undermine the trucking sector?**
- *“It is wise to align new short sea shipping services to be most complementary to trucking. For example, in the context of an ongoing truck driver shortage, it makes sense for trucking resources to consider shorter, faster cycles that emphasize cross-border truck trips less... Short sea shipping can offer a complementary approach as a middle mile partner.” (p.90)*

- **Does the Great Lakes St. Lawrence Seaway System and Ontario/Great Lakes ports have the infrastructure they need to offer enhanced short sea shipping service?**
 - The Great Lakes St. Lawrence Seaway is currently operating at roughly 50% of its total potential capacity, meaning the number of ships using the system could double with no fundamental expansion of the system.
 - Great Lakes ports may require enhanced port facilities and infrastructure (sufferance facilities, warehouses, cranes, storage facilities, transload capability), depending on location.
 - The current Great Lakes fleet is designed for large-scale bulk movements and may not be ideal for short sea services. *“The development of a more dedicated or specialized fleet over time will assist in the development of short sea services.”* (p.93) There is room for made-in-Ontario innovation here in the development of specialized barges or vessels optimized for this purpose.
- **Do Ontario ports have the regulatory framework required to enable short sea shipping on a larger scale?**
 - To enable short sea shipping between southern Ontario and Great Lakes states, the Government of Canada must ensure that the Canada Border Services Agency (CBSA) is adequately resourced to enable the establishment of sufferance facilities and the clearing of containers at ports in Southern Ontario; and that a First Port of Arrival be designated within the Great Lakes in Southern Ontario.
- **Can new short sea services be viable when the Great Lakes Seaway system closes every winter?**
 - The Great Lakes St. Lawrence Seaway Management Corporation has been progressively compressing the closure window in recent years, reducing the amount of time shippers must seek an alternate route.
 - A hub at Port Colborne could enable an all-season Lake Erie shipping option at times when the lock system is not operating.
 - A modally-integrated commercial offering would allow trucking companies to take advantage of a marine middle mile partner in a way that is seamless from a customer perspective.
- **How significant is the market served by the Canada-US Great Lakes?**
 - The Great Lakes Region accounts for more than 50% of all U.S./Canadian bilateral border trade. If it were a single country, it would have a GDP of US\$6 trillion – making it the third biggest economy in the worldⁱⁱⁱ.

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ⁱ Ontario Ministry of Municipal Affairs and Housing (2013) “Growth Plan for the Greater Golden Horseshoe”

ⁱⁱ Metrolinx (2008) “Costs of Road Congestion in the Greater Toronto and Hamilton Area”

ⁱⁱⁱ Council of the Great Lakes Region. Great Lakes Economy: Growth Engine of North America. <https://councilgreatlakesregion.org/the-great-lakes-economy-the-growth-engine-of-north-america/>