

THE ST LAWRENCE SEAWAY: AN EFFICIENT BUT RARELY USED ROUTE

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Introduction

The St Lawrence Seaway is an extremely underutilized transportation corridor. For international shipping, it primarily moves grain and coal abroad and steel coils from Northern Europe to Great Lakes cities. Container ships move as far inward as Montreal, where they are transshipped by rail and truck to Montreal, Toronto, and other Great Lakes cities, such as Cleveland, Detroit and Chicago.

Despite this activity, the Seaway has significant unused capacity in a day and age when international shipments are soaring, highways are congested, and major investments are being made by railroads to transport additional cargos to Great Lakes cities. Why does the Seaway, lying along the minimum mileage all-water route to Europe, languish with little business – and with no container business moving all the way into the Great Lakes by water?

In Europe, the Rhine-Main-Danube system is a major commercial artery. It is the European transportation mode of choice because it is cost effective, environmentally responsible, and green. The bustling Rhine-Main-Danube system is 766 miles long, 13' deep, and has 16 locks. By comparison, the underutilized Seaway has comparable distances to Great Lakes cities and is 26.75' deep with 16 locks. Thus, the Seaway can handle significantly larger container ships than the Rhine-Main-Danube, making its limited utilization even more puzzling.

A renewed interest is being taken in the Seaway based on the construction of 30 new breakbulk vessels designed for it. Hopefully this will result in increased international movements.

This paper addresses Seaway underutilization. It first discusses the perceptual, physical, and institutional problems, and then discusses economic opportunities. The topics are addressed in outline form. In the “Perceptual Problems” section below, the perceived problems are highlighted by italics, followed by a discussion in normal text.

Perception Problems

1. *Many people believe that the Seaway has direct access to no major market:* Most of us grew up with the Mercator Projection map of the world (see Figure 1). In viewing this map one would be certain that following a direct route out of the Seaway and across the Atlantic Ocean, one does not reach any of the major European markets. This, though, is false as can be seen from the global map below. The direct route out of the Seaway follows the minimum mileage Great Circle route (see Figure 2) to Rotterdam and Antwerp, the two largest ports of Europe. However, despite the facts, the belief that the “Seaway goes nowhere” persists among many.



Figure 1. Mercator Projection Map of the Seaway/Europe Route

**MINIMUM MILEAGE ROUTE BETWEEN GREAT LAKES AND
ROTTERDAM/ANTWERP**

Satellite map courtesy of NASA WorldWind

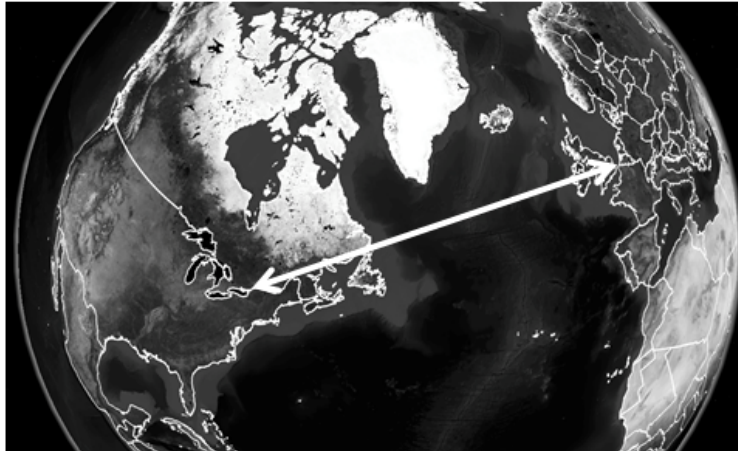


Figure 2

2. *Many people believe that the Seaway is closed for four to five months of the year due to extreme ice conditions.* In reality, the Seaway is open approximately 292 days per year. If business conditions warrant an extension, it is estimated that the Seaway could remain open 300 days per year. Also, for the past two years, it has been relatively ice free. Ice has not been a significant problem for several years.

3. *Many people feel that the wintertime Seaway closure limits its use due to the need for year-round shipping.* This can be an issue in some cases. However, the steel industry imports specialty coils during the open season. During closure they rely on stockpiling and judiciously selected alternate routes. Since the steel industry has done this for the past 50 years, it has been cost effective overall. One would expect this to be true for other industries as well. Further, for many other products, the slow shipping months are January/February, immediately following the Holidays. These correspond with Seaway closure.

4. *Many people feel the Seaway route is too slow to accommodate JIT manufacturing needs, especially for the auto industry.* The Seaway-direct route between Europe and the Great Lakes cities is the minimum mileage route. It is time-competitive with the alternate routes utilizing east coast ports and an overland trip. The Seaway route should be no less capable of handling JIT demands than this present delivery system.

5. *Invasive species have entered the Great Lakes in the ballast water of international ships, and then been discharged into the Lakes.* Many people feel that invasive species pose an insurmountable problem for the Seaway. During the 1960s and 1970s invasive species such as the lamprey eel and the gobi entered the Lakes. The last major invasion was the Zebra mussel in 1986. Since then, new invasive species have entered but have been minor. For the past seven years, USCG regulations have required that ballast water be discharged in the ocean outside of the Seaway. During that time no invasive species have been introduced. More recently, UN rules prohibiting ballast water discharge within a 200-mile radius of the coast are being implemented, further reducing the threat of invasive species. The maritime industry and the US and Canadian Coast Guard have been extremely effective at reducing the threat.

6. *Container service to the Great Lakes was implemented in the 1970s by Manchester Liners, Hapag Lloyd, and Great Lakes European lines.* It didn't work then, so how can it work now? Since the 1970s, the world has become a global economy with imports/exports drastically increasing. Also, fuel prices have escalated and highways have become congested. Fuel price escalation makes water more competitive with truck and rail, due to the fuel efficiency of water. With such substantial changes, it is worth revisiting history to see if this straight line route can be economically feasible.

7. *There is a perception that the Great Lakes ports are incapable of unloading containers since they lack the infrastructure.* The Port of Toledo has gantry cranes that can unload containers. Other ports, such as Ashtabula, Cleveland, Detroit, Milwaukee, and Duluth have

cranes to handle coils, breakbulk, and project cargo. They can also handle containers.

Physical Constraints

To enter the Great Lakes, a ship must transit the Welland Canal, between Lakes Ontario and Erie. The Welland Canal locks constrain the ships to a “Seawaymax” size: 740 feet in length, 78 feet in width, with a draft of 26 feet, 9 inches and an air draft of 116 feet. This limits a ship’s capacity to 800 TEUs, considerably smaller than the typical 4000–6000 TEU vessels that call at East Coast ports.

Institutional Constraints

1. The US and Canada have protectionist laws designed to encourage their own shipping industries (the Jones Act and the Coasting Act, respectively). Recently, Canada relaxed the Coasting Act to permit foreign construction of Canadian flag ships. The result has been the building boom of 30 ships, as referenced in the introduction.

2. The Harbor Maintenance Tax (HMT) is a US tax of .125% of the value of any cargos imported to the US by water. It applies to all cargos entering US East and West Coast, as well as Great Lakes ports. Depending on the cargo value, HMT can easily exceed \$300 per container. A way of avoiding this tax is to deliver containers from Europe to Montreal and then ship to Great Lakes cities by rail or truck (HMT does not apply to rail or truck). As such, HMT discourages direct all-water shipments from Europe to US Great Lakes ports. It also discourages the development of a feeder service between Montreal and Great Lakes ports.

3. Foreign flag ships transiting the Seaway cross between Canadian and US waters multiple times. For most if not all of this route, the ship must be accompanied by a US or Canadian pilots, each of whom has specific knowledge of his/her particular section of the route. This system is both expensive and antiquated. It is generally felt that the pilotage system should be reviewed to simplify the organization, update it with the latest technology, and reduce its expense.

4. Each Great Lakes state has the right to establish its own legislation regarding ships transiting its waters. This structure has resulted in widely diverging ballast water regulations. As a ship passes through the waters of several states, it must meet the most stringent of all the requirements. Vessel owners must comply with this plethora of regulations from each state.

Economic Opportunities and Conclusion

In his thesis, Verboon considers chemicals, auto parts, and high valued goods that currently move between Northern Europe and the Great Lakes cities. For several specific defined movements, he estimates the cost of the existing routes taken, which would include water transit through US or Canadian East Coast ports, and then an overland leg. He then compares this cost with a direct ship option from Rotterdam to the customer, utilizing a Great Lakes port. Based on multiple cost studies he concludes that especially chemicals and auto parts may be less costly utilizing the Seaway route.

As a further observation, waterborne transit is “good” at handling cargos that rail/truck either “don’t want” or “can’t handle efficiently.” By this measure, some other cargos that might benefit from the Seaway route would include:

- Hazmat, which is charged a premium by overland transport modes.
- Refrigerated cargos, because ships transiting the Seaway experience minimal vibrations, reducing the likelihood of a malfunction of the power unit. Malfunctions are more likely, especially with long distance rail moves.
- Oversized and overweight cargos. This would keep these cargos off our highways, avoiding congestion and damage.

Based on Verboon’s results and the other arguments above, it is clearly time to take a fresh look at the Seaway.

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