

2023 GREAT LAKES – ST. LAWRENCE SEAWAY WATERWAY TONNAGE ACTIVITY



Introduction

The Great Lakes – St. Lawrence Seaway System (GLSLW) is a strategically important commercial thoroughfare in North America. This waterway connects Canada to the United States (U.S.) and connects inland North America to other parts of the world through the Atlantic Ocean. Stretching west from Lake Superior to the end of the St. Lawrence Seaway (at Montreal), this bi-national trade corridor serves the U.S. and Canada’s most vital inland markets and facilitates billions of dollars of economic activity annually. According to estimates, the Great Lakes – St. Lawrence region states, and provinces (Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, New York, Pennsylvania, Ontario, and Quebec) had a combined annual Gross Domestic Product (GDP) of roughly **\$8 trillion** in 2022.

The commodities moved on the GLSLW are moved by either Canadian-flag, U.S.-flag, or foreign-flag ships. These vessels move upbound (westward) and downbound (eastward) loading and/or unloading a wide range of commodities at North American ports within the system either for domestic use or destined to/originating from foreign ports. This report gives a description of the tonnage volume moved within the GLSLW for the 2023 calendar year, activity that supports hundreds of thousands of jobs on ships, in ports, and other business units.

Executive Summary

The findings of this report estimate that **148.3 million** metric tonnes of cargo were moved on the GLSLW during this same period. This activity supported hundreds of thousands of jobs on ships, ports, and other sectors of the economy.

The findings of the report show:

Overall, cargo shipments on the binational navigation system (**148.3 million metric tons in total**) were up **+3.7** compared to 2022. The results represent an improvement in the system’s post-pandemic recovery – with tonnage totaling about 103% of the previous 3 years.

- After a drop in iron ore tonnage moved in 2022, trade of iron ore increased by about **+15.1%** in 2023. The commodity continues to be the most traded commodity on the system, accounting for roughly a third of total cargo tonnage on the GLSLW. Construction related commodities such as stone, cement, steel, and other dry bulk commodities account for another third of tonnage cargo.
- Canadian-flag ships carried **63.4 million metric tons** of cargo, an increase of **+2.2%** compared to 2022. Total cargo tonnage was roughly 99% of the previous five-year average. Most commodities traded on the system experienced softness, except for iron ore and dry bulk commodities. Iron ore shipments on Canadian-flag vessels increased by about **+21.1%**, while dry bulk tonnage increased by about **+23.7%**. The increased tonnage more than offset the softness experience in other commodity lines.
- Overall, U.S.-flag ships experienced increased tonnage, carrying a total of **73.8 million metric tons (81.4 million net tons)** – up **+6.5%** over 2022. Total tonnage rose to 101% of its previous five-year average, after falling to about 93% in 2022. Iron ore and limestone/sand shipments both increased by **+13.4%** and **+4.1%** respectively.
- Foreign-flag ships transported **11.0 million metric tons** of cargo through the St. Lawrence Seaway to and from overseas destinations – slightly below 2022’s performance (**-5.2%**). Ocean-going vessels played an important role in exporting Canadian and U.S. grain, potash for fertilizer, and other dry bulk products to overseas market.



2019-2023 Great Lakes – St. Lawrence Waterway Tonnage (Million Metric Tonnes) Summary

	Source	2019	2020	2021	2022	2023	2023/2022 % CHANGE
CANADIAN FLAG	(1)	65.3 MT	64.0 MT	63.2 MT	62.1MT	63.4 MT	+2.2%
U.S. FLAG	(2)	81.7 MT	63.5 MT	74.2 MT	69.3MT	73.8 MT	+6.5%
FOREIGN FLAG (GL-SEAWAY)	(3)	11.2 MT	11.6 MT	11.6 MT	11.7MT	11.0 MT	-5.2%
TOTAL GL-SLW		158.2 MT	139.1 MT	149.0 MT	143.0 MT	148.2 MT	+3.7%
ST. LAWRENCE SEAWAY (Total)	(3)	38.4 MT	37.8 MT	38.2 MT	36.3 MT	37.6 MT	+3.37%

(1) CMC Tonnage Survey

(2) Lake Carriers Association – Annual Reports, 2021, 2022

(3) St. Lawrence Seaway Management Corporation

August 2024

Organization

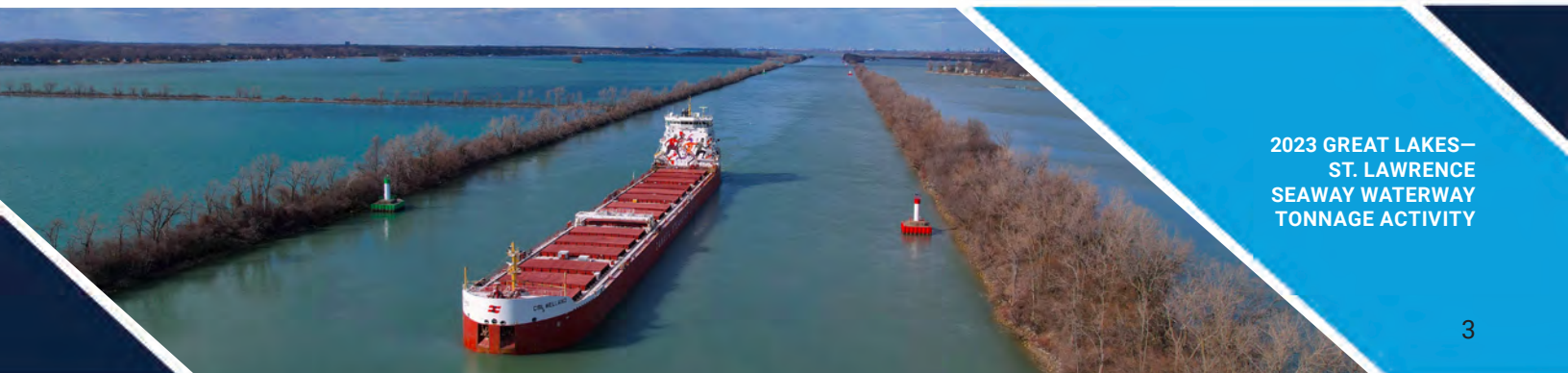
Following a brief overview, this report analyzes the tonnage activity trend of some of the system's core commodities and the composition of this tonnage, based on the three proprietary tonnage data sources. Canadian-flag vessel tonnage data was sourced from major Canadian domestic ship owners, while the foreign-flag vessel tonnage and U.S.-flag vessel tonnage data was provided by The St. Lawrence Seaway Management Corporation and the Lake Carriers' Association (LCA), respectively.

Great Lakes – St. Lawrence Waterway Tonnage

Table 1 presents a summary of cargo tonnage moved on the GLSLW in 2023, while figure 1 provides a breakdown of the different commodities moved. Major commodity categories experienced softness in 2023. Total tonnage was approximately **148.3 million metric tonnes¹**, which represents a **+3.7%** increase over 2022 tonnage (**143.0 million metric tonnes**). This increase was due to a rise in Canadian-flag and U.S.-flag vessel tonnage. U.S.-flag tonnage was **+6.5%** more than in 2022, while Canadian-flag vessel tonnage was **+2.2%** above the previous year. Conversely, foreign-flag vessel tonnage fell by **-5.2%** compared to the previous year.

The share of GLSLW tonnage carried on Canadian-flag vessels fell in 2023 from 43.4% in 2022 to **42.8%**, while the share of U.S.-flag vessel tonnage increased from about 48.5% in 2022 to **49.8%** in 2023. The share of foreign-flag vessels tonnage decreased to approximately **7.5%** in 2023 (down from 8.1% in 2022).

¹ This also includes upbound and downbound cargo carried by Canadian-flag vessels in the lower St. Lawrence River and beyond Anticosti Island and into the Atlantic and Artic Regions. It also includes cargo carried by foreign-flag vessels that at some point passes through the Canadian portion of the St. Lawrence Seaway lock system.



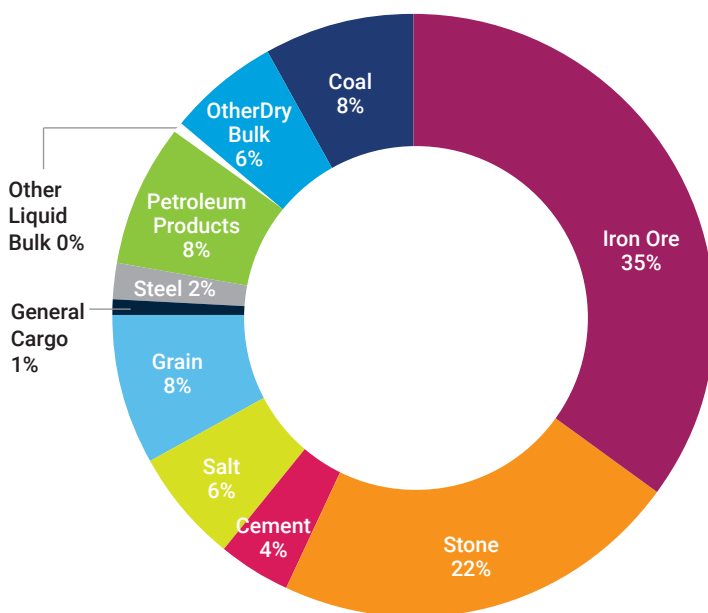
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Table1 2023 Great Lakes – St. Lawrence Waterway Tonnage Cargo Breakdown

	Metric Tonnes
Cement	5,985,805
Coal	11,990,842
General Cargo	1,510,796
Grain	11,731,389
Iron Ore	52,156,341
Other Dry Bulk	8,449,806
Other Liquid Bulk	589,058
Petroleum Products	11,466,117
Salt	8,927,289
Steel	2,843,667
Stone/Sand	32,601,554
Total	148,252,664

* Source: Chamber of Marine Commerce, Annual Tonnage Survey

Figure 1 2023 Percentage Breakdown of Cargo Type on GLSLS



Canadian-flag Vessel Tonnage² :

Tonnage moved on Canadian-flag vessels in 2023 increased from **62.1 million metric tonnes** in the previous year to approximately **63.4 million metric tonnes**, making for a **+2.2%** increase. **+2.2%** compared to 2022. Total cargo tonnage was roughly 99% of the previous five-year average. Most commodities transported on Canadian-flag vessels experienced softer demand, except for iron ore and dry bulk commodities (these commodities make up around 30% of total Canadian-flag tonnage). Figure 2 shows that the increase in tonnage moved in 2023 was a return to the long-run average trend seen in recent years. Total tonnage moved on Canadian-flag vessels in 2023 was roughly **-1.4%** less than 5-year average of **64.3 million metric tonnes** recorded over the previous five years.

Iron ore shipments on Canadian-flag vessels increased by about **+22.1%**, due to increased demand from existing markets (Canadian steel makers) and minor activity from new markets. Also, market conditions led some carriers to move a higher proportion of cross-border iron ore shipments on Canadian-flag vessels.

² This includes tonnage moved on Canadian-flag vessel owned/operated by members of the Chamber of Marine Commerce, including members of CMC Domestic Shipowner Committee.



Dry bulk tonnage moved on Canadian-flag vessels increased by about **+23.7%**. There was noticeable increase in domestic demand for slag and other construction-related dry bulk commodities.

A milder winter in 2023 meant that shipments of road salt aboard Canadian-flag vessels fell by **-8.8%**. Despite the decreases in several other commodity categories, the increase in iron ore and other dry bulk tonnage more than offset the decreases.

Table 2 Canadian Flag Vessels Great Lakes-St. Lawrence River Waterway Tonnage (MT) (2018-2023)*

	2018	2019	2020	2021	2022	2023	PREVIOUS 5-Y-AVG
Cement	2,143,260	2,807,172	2,813,603	2,902,947	2,619,057	2,116,697	2,657,208
Coal	5,116,514	5,121,578	4,543,945	4,128,158	4,203,547	4,084,769	4,622,748
General Cargo	5,116,514	1,099,365	1,163,840	1,374,982	1,254,010	1,395,223	1,214,793
Grain	5,116,514	7,601,268	9,005,759	8,078,112	7,712,573	7,692,572	8,181,199
Iron Ore	5,116,514	12,400,944	12,272,244	11,778,383	11,251,364	13,621,011	12,698,392
Other Dry Bulk	5,698,674	5,322,286	4,164,025	5,573,548	4,458,040	5,515,688	5,043,315
Other Liquid Bulk	109,453	114,682	94,899	91,806	72,819	78,496	96,732
Petroleum Products	11,062,544	11,982,491	11,198,236	10,560,148	11,530,135	10,877,084	11,266,711
Salt	7,501,736	8,885,257	9,093,977	8,656,634	8,631,955	7,876,148	8,553,912
Steel	654,592	556,591	411,400	717,041	718,124	587,439	664,524
Stone	9,084,943	9,373,055	9,202,187	9,346,796	9,605,660	9,554,920	9,322,528
Total	63,013,001	65,264,689	63,964,115	63,208,555	62,057,284	63,400,047	64,322,061

* Source: Chamber of Marine Commerce, Annual Member Tonnage Survey



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Figure 2 Canadian Flag Vessels Great Lakes–St. Lawrence River Waterway Tonnage (MT) (2016-2023)*

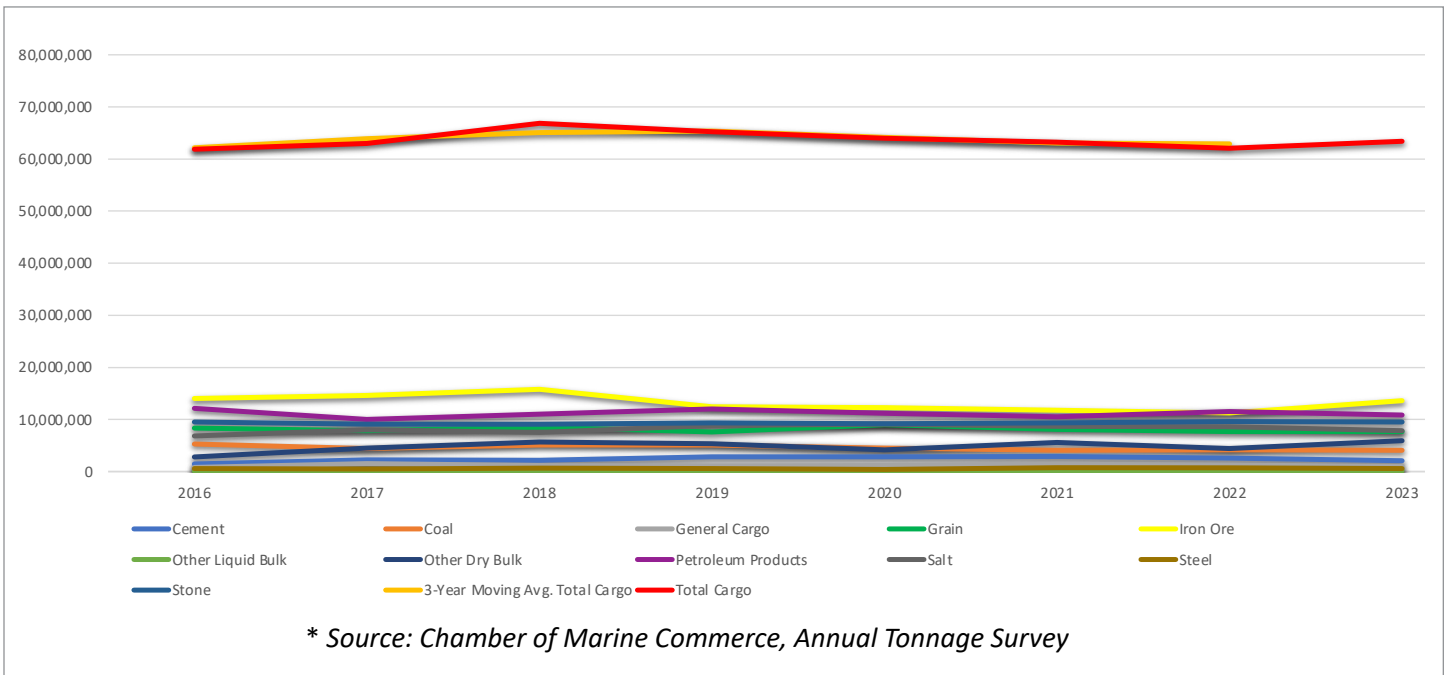
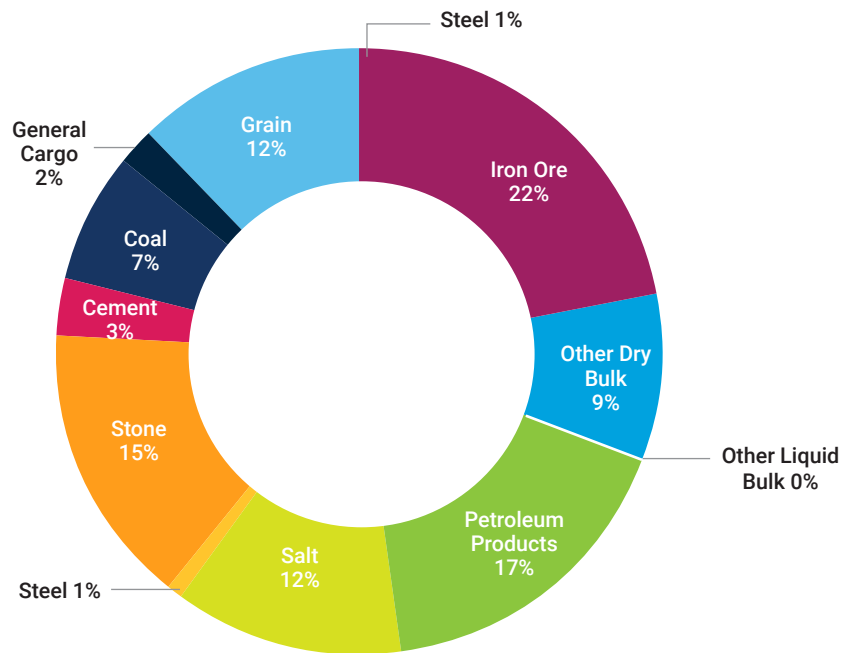


Figure 3 Canadian Flag Vessels Great Lakes–St. Lawrence River Waterway Tonnage Breakdown*



* Source: Chamber of Marine Commerce, Annual Member Tonnage Survey



U.S.-Flag Vessel Tonnage³ :

Total cargo moved on U.S.-flag vessels increased from 69.3 million metric tonnes in 2022 to **73.8 million metric tonnes**. This makes for an increase of approximately **+6.5%**. Major commodities moved by U.S.-flag vessels on the Great Lakes experienced softness in 2023. Most noticeably, grain shipments fell by more than **-11.8%**.

As seen in Table 3, grain tonnage was about **-0.1%** less than the 5-year average. Likewise, shipments of coal, were also lower in 2023 (**-9.7%**). Despite this, the **+13.4%** increase in iron ore tonnage more than offset the decrease in shipments of other commodities.

Table 3⁴ U.S.-Flag Dry Bulk Cargo Movement on the Great Lakes 2018-2023 and Long-Term Average (Net Tons)

Commodity	2018	2019	2020	2021	2022	2023	Average 2018-2023
Iron Ore							
Direct Shipments	41,711,804	46,004,805	33,422,404	41,025,561	35,370,648	39,008,635	38,893,979
Transshipments	4,092,629	3,678,669	3,637,614	625,628	2,017,176	3,375,654	3,423,409
Total - Iron Ore	45,804,433	49,683,474	37,060,018	41,651,189	37,387,824	42,384,289	42,317,388
Coal							
Lake Superior	8,697,702	7,952,133	4,930,728	7,268,985	6,160,250	5,367,531	7,001,960
Lake Michigan	390,438	723,841	560,057	827,962	878,467	803,237	676,153
Lake Erie	2,728,192	2,642,972	1,764,650	2,255,738	2,262,121	2,230,065	2,330,735
Total - Coal	11,816,332	11,318,946	7,255,435	10,352,685	9,300,838	8,400,833	10,008,847
Limestone	21,961,050	24,086,722	20,694,823	24,141,410	23,704,683	24,631,568	22,917,738
Cement	2,933,346	3,288,509	3,441,467	3,612,012	3,748,705	3,732,534	3,404,808
Salt	460,577	923,476	866,354	1,162,396	1,230,538	1,158,665	923,668
Sand	493,128	413,040	411,165	500,055	653,695	734,591	494,217
Grain	259,745	289,728	314,849	366,154	356,50	314,513	317,396
Totals	83,728,611	90,003,895	70,044,110	81,785,901	76,382,786	81,356,993	80,389,061

Source: Lake Carriers Association – Annual Report, February 2023

³ This includes cargo tonnage moved by the LCA's 11 vessel owner/operator members servicing the Great Lakes

⁴ 1 U.S. net ton is equal to 0.90718474 metric tonnes.

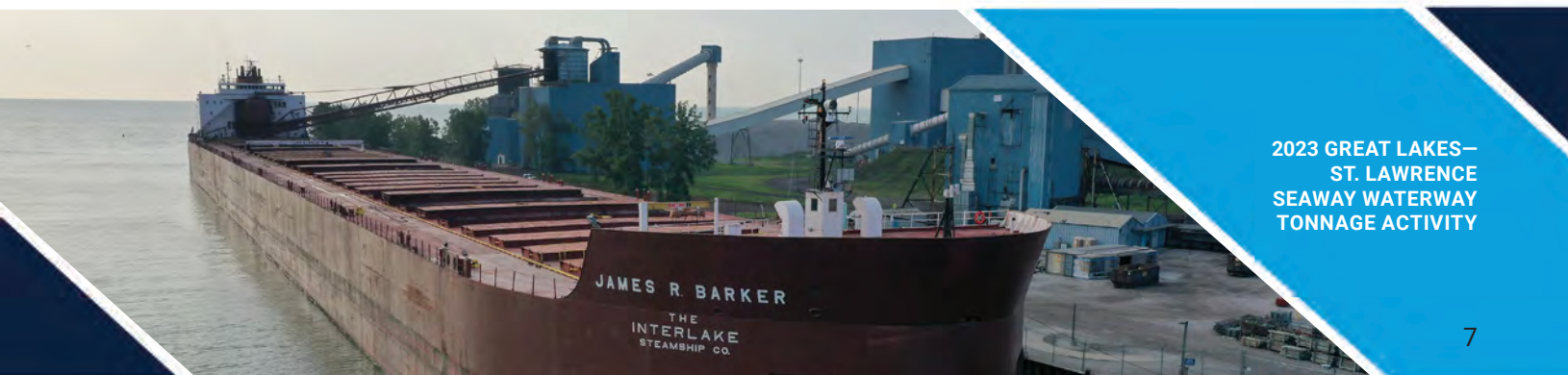
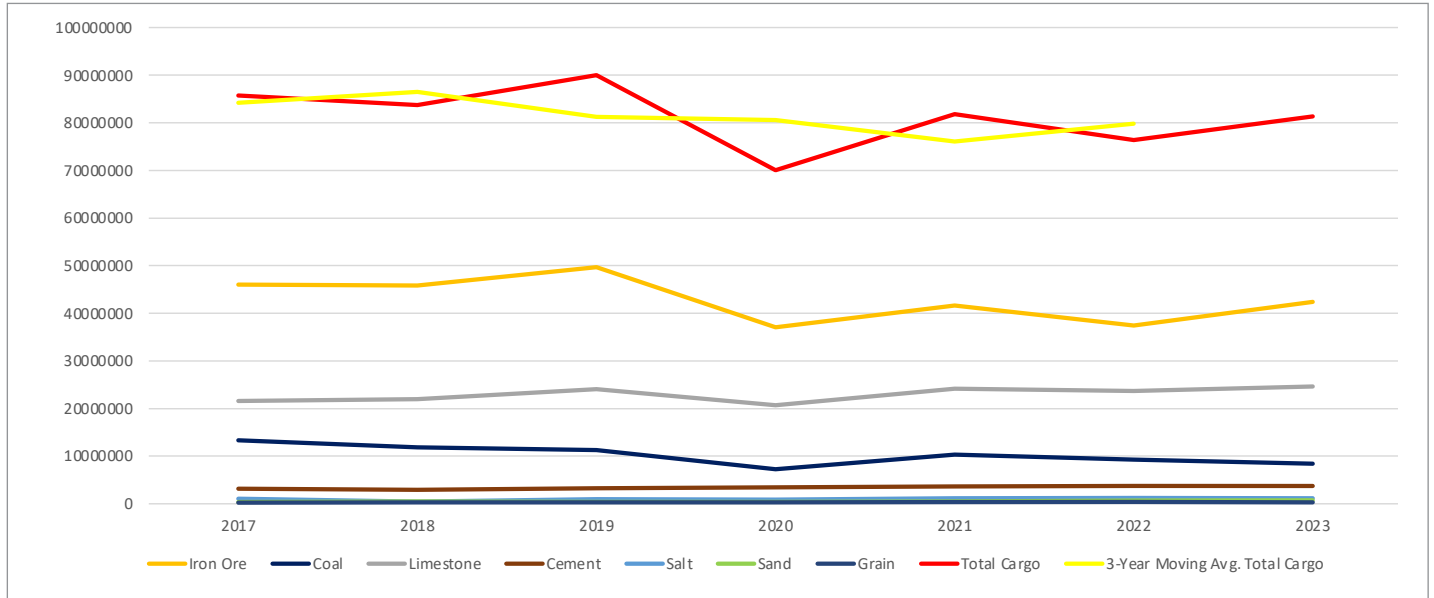
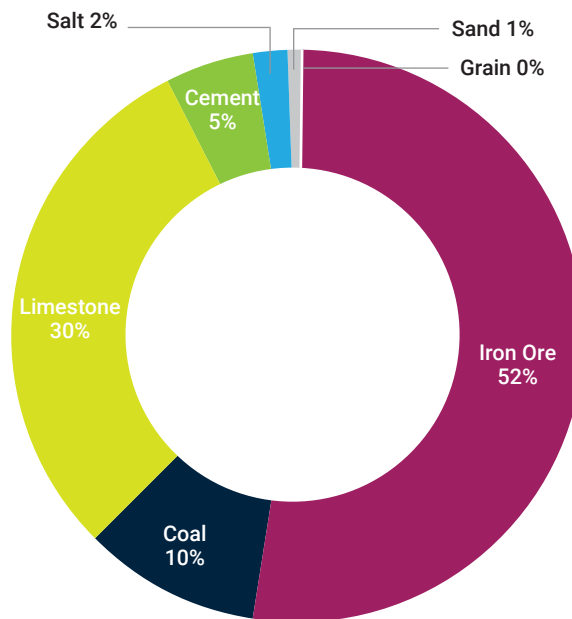


Figure 4 U.S.-Flag Vessels Great Lakes – St. Lawrence River Waterway Tonnage (Net Tons) (2017-2023)*



* Source: Lake Carrier Association – Annual Report, February 2024

Figure 5 2023 U.S.-Flag Vessels Great Lakes – St. Lawrence River Waterway Tonnage Breakdown*



* Source: Lake Carrier Association – Annual Report, February 2024



St. Lawrence Seaway Tonnage

Opened in 1959, the St. Lawrence Seaway (SLS) is a bi-national system of locks, which connects the Great Lakes to the lower St. Lawrence River and beyond. Vessel traffic on the Seaway excludes trades occurring exclusively in the upper four Great Lakes (Superior, Erie, Huron and Michigan) and exclusively in the lower St. Lawrence River and beyond. Total tonnage haulage through the St. Lawrence Seaway locks increased by about **+3.4%** from 36.3 million metric tonnes to approximately **37.6 million metric tonnes**.

Tonnage volume on Foreign-flag vessels, which accounted for nearly 30% (11.0 million metric tonnes) fell by **-5.2%** in 2023, as increase in cement (**+78.9%**) and petroleum (**+4.3%**) could not compensate for reduced liquid bulk, dry bulk, grain, iron ore, coal, and general cargo tonnage.

In total, grain shipments moved through the SLS locks increased by **+5%**. This represents an improvement over 2021 tonnage, after poor weather conditions in the U.S. Midwest region affected crop yields in the previous year.

Coal shipments moved through the SLS also experienced a resurgence in 2023. After falling to about 75% of the previous 5-year average in 2021, coal tonnage moved through the SLS increase by nearly **+14%** and was roughly 90% of the previous 5-year average. This is likely due to increased demand from Canadian steel makers, which would also explain the **+1.9%** increase in iron ore (another key steel-making commodity) tonnage moved through the SLS.

Table 4⁵ St. Lawrence Seaway Total Tonnage (MT) Handled 2018 - 2023

	2018	2019	2020	2021	2022	2023	5-Year Average
Grain	12,297,000	10,463,000	13,302,000	10,609,000	9,996,000	10,496,000	11,333,000
Iron Ore	7,487,000	6,910,000	6,080,000	6,872,000	6,201,000	6,321,000	6,710,000
Coal	2,516,000	2,391,000	2,439,000	2,116,000	1,771,000	2,018,000	2,247,000
Dry bulk	10,740,000	11,631,000	10,534,000	11,378,000	11,686,000	12,321,000	11,194,000
Liquid Bulk	4,585,000	4,693,000	3,077,000	3,233,000	3,516,000	3,634,000	3,821,000
General Cargo	3,322,000	2,193,000	2,257,000	3,909,000	3,058,000	2,693,000	2,948,000
Total Cargo	41,011,000	38,375,00	37,762,000	38,193,000	36,336,000	37,561,000	38,335,000
% Change Year/Year	+7.13%	-6.43%	-1.60%	+1.14%	-4.86%	+3.37%	
Total Vessel Transits	4,389	4,136	3,855	3,918	4,008	3,934	4,033

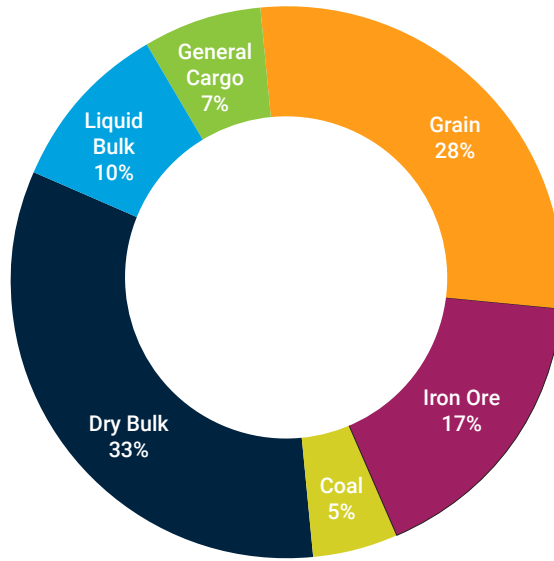
Source: St. Lawrence Seaway Management Corporation

⁵ Note: 'Dry Bulk' includes commodities such as salt, cement, stone/Aggregate, etc. General cargo includes containerized cargo, oversized project cargo, aluminum and steel



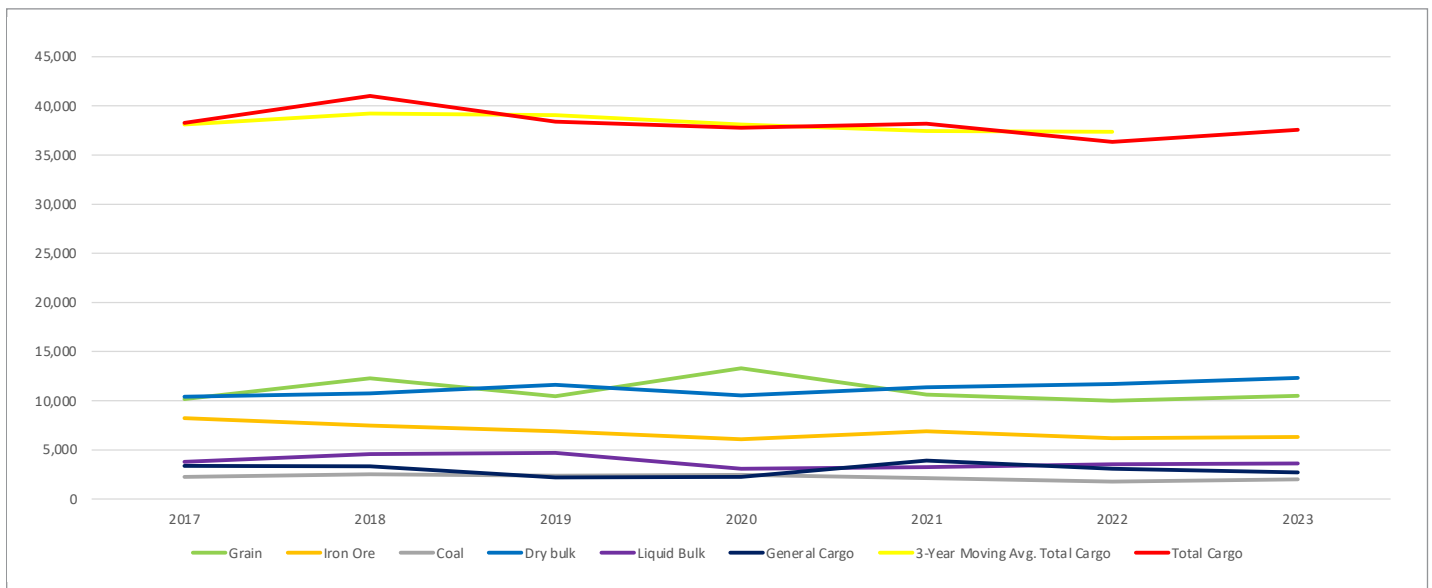
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Figure 6 2023 St. Lawrence Seaway Tonnage Breakdown*

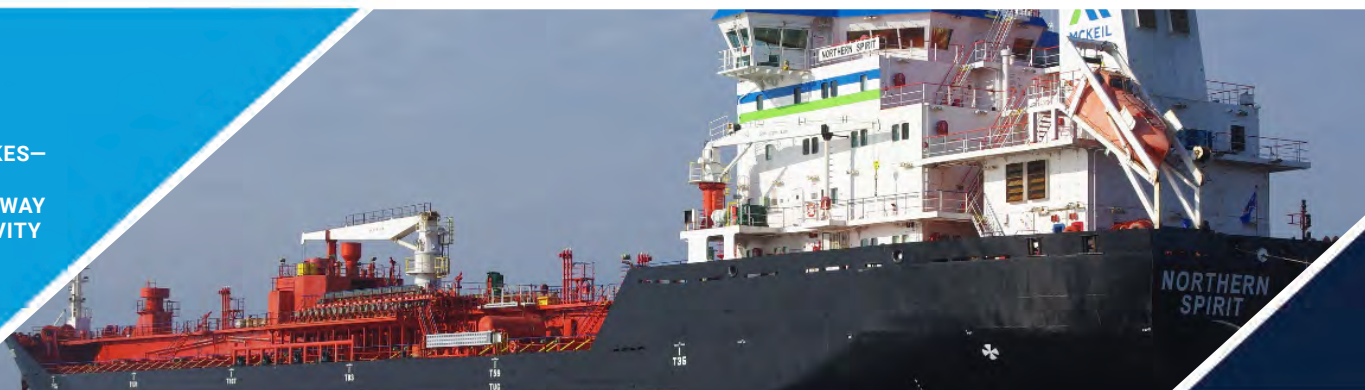


* Source: St. Lawrence Seaway Management Corporation

Figure 7 St. Lawrence Seaway Tonnage (000's Metric Tonnes) (2017-2023)*



* Source: St. Lawrence Seaway Management Corporation



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