

ECONOMIC IMPACTS OF MARITIME SHIPPING IN THE GREAT LAKES - ST. LAWRENCE REGION



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ORGANIZATION OF STUDY RESULTS

Maritime commerce on the Great Lakes and St. Lawrence River is critical to the economies of the United States and Canada. This study seeks to measure and evaluate commerce and present a description of its economic impacts. Because of the geographic scope of the study area and the diverse stakeholders who might make use of this data, the study presents its results in numerous ways and from many perspectives. The following descriptions are meant to help the reader determine which data set is most appropriate for use.

Great Lakes-St. Lawrence Seaway System Impacts (Chapter II)

This chapter organizes the study results from the perspective of a traditional definition of the Great Lakes-St. Lawrence Seaway System. This includes impacts of domestic and international cargo that has travelled at some point through the Great Lakes, its connecting rivers, and the St. Lawrence Seaway (ending in Montreal). It only includes tonnage at lower St. Lawrence River Quebec ports if destined or originating from the Great Lakes-Seaway system. For example, the economic benefits of container movements to and from the Port of Montreal to overseas markets are not included in this chapter, as this trade does not enter or leave the Great Lakes-Seaway system. However, grain export shipments leaving the Port of Duluth, Minn., destined for overseas markets that are temporarily off-loaded at the Port of Quebec for re-loading onto a larger ocean-going vessel, are included.

This perspective is most relevant to American stakeholders in that it excludes Quebec commerce that moves exclusively between Canadian ports on the lower St. Lawrence River. It also excludes commerce between these Canadian lower St. Lawrence River ports and overseas ports.

Great Lakes-St. Lawrence River Waterway Impacts (Chapter III)

This chapter organizes the study results with a broader perspective that includes the impacts of all domestic and international cargo moving on the Great Lakes, its connecting rivers, the St. Lawrence Seaway, and the Lower St. Lawrence River. For example, it includes the domestic movements of commodities like petroleum products between lower St. Lawrence River ports and container movements to and from Quebec ports to overseas markets.

This perspective is particularly relevant to Canadian stakeholders in that all Quebec impacts along the St. Lawrence are included in this chapter.

St. Lawrence Seaway Impacts (Chapter IV)

This chapter measures the economic impacts of commerce that passes through and is dependent on the St. Lawrence Seaway. The St. Lawrence Seaway extends from St. Lambert Lock (Montreal) to Lake Erie and is composed of a series of 15 consecutive locks (seven locks in the Montreal-Lake Ontario section and eight locks in the Welland Canal section). This data is particularly relevant to those stakeholders who move cargo through the waterway and to policy makers who manage and fund waterway infrastructure.

ABOUT THE STUDY SPONSORS

Martin Associates was retained to perform this analysis by a coalition of U.S. and Canadian Great Lakes and St. Lawrence marine industry stakeholders. The study sponsors are: the Great Lakes St. Lawrence Seaway Development Corporation (U.S.), the St. Lawrence Seaway Management Corporation (Canada), the American Great Lakes Ports Association, the Chamber of Marine Commerce, the Lake Carriers' Association, and the Shipping Federation of Canada.

The following organizations served as members of the project steering committee and provided confidential data, guidance and oversight for this study:

- American Great Lakes Ports Association
- Chamber of Marine Commerce
- Lake Carriers' Association
- Great Lakes St. Lawrence Seaway Development Corporation
- Shipping Federation of Canada
- St. Lawrence Seaway Management Corporation
- Fednav Ltd.
- Transport Canada (Transportation and Economic Analysis Group)

ABOUT MARTIN ASSOCIATES

Martin Associates of Lancaster, Pennsylvania, is a leading provider of economic analysis and consulting services to the maritime industry. Since 1986, the company has developed more than 1,500 economic impact, strategic planning, financial feasibility and market studies for major ports and waterway systems throughout the United States and Canada, as well as for ports in Europe, Asia, Africa, and the Caribbean. Martin Associates' clients include port authorities, marine terminal operators, private investment groups, ocean carriers and federal, provincial, and state governments, as well as maritime trade organizations.

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EXECUTIVE SUMMARY

ECONOMIC IMPACTS OF MARITIME SHIPPING IN THE GREAT LAKES - ST. LAWRENCE REGION



EXECUTIVE SUMMARY

AT A GLANCE – STUDY HIGHLIGHTS

① GREAT LAKES ST. LAWRENCE SEAWAY

135.7 M

tons moved

241,286

jobs supported

US\$26.1 B / Cdn\$33.9 B
of cargo value

US\$17.8 B / Cdn\$23.2 B
wages paid

US\$36 B / Cdn\$46.8 B
of economic activity

② GREAT LAKES ST. LAWRENCE WATERWAY

252.1 M

tons moved

356,858

jobs supported

US\$120.9 B / Cdn\$157.2 B
of cargo value

US\$23.3 B / Cdn\$30.2 B
wages paid

US\$50.8 B / Cdn\$66.1 B
of economic activity

③ ST. LAWRENCE SEAWAY

36.3 M

tons moved

66,594

jobs supported

US\$12.8 B / Cdn\$16.7 B
of cargo value

US\$4.2 B / Cdn\$5.4 B
wages paid

US\$9.5 B / Cdn\$12.3 B
of economic activity

INTRODUCTION

From the earliest days of European settlement, the Great Lakes and St. Lawrence River have been utilized as a means of transportation. Great Lakes cities were founded as trading posts along a vast marine highway that facilitated commerce in an era pre-dating railroads and highways. This relationship to the water has enabled the region to thrive and today, the Great Lakes– St. Lawrence region is the industrial and agricultural heartland of both the United States and Canada.

Over the last 200 years, navigation improvements in both the United States and Canada have enhanced the waterway. The Welland Canal first connected Lake Ontario and Lake Erie in 1829, enabling vessels to bypass Niagara Falls. The Soo Locks have made the St. Marys River navigable, connecting Lake Superior to the lower four Great Lakes and the St. Lawrence Seaway. The St. Lawrence Seaway has tamed the St. Lawrence River, enabling ships to sail from Lake Ontario to the Atlantic Ocean since 1959.

The resulting deep-draft inland navigation system is the longest in the world, extending 3,700 kilometers (2,300 miles) into the North American heartland. This bi-national trade corridor complements the region's rail and highway network and offers customers a cost-effective, safe, reliable, and environmentally smart means of moving raw materials, agricultural commodities, and manufactured products to and from domestic and global markets. Cargoes include iron ore, coal, steel, aluminum, machinery, stone, cement, grain, sugar, fertilizers, road salt, petroleum products and containerized goods. These cargoes become the staples of everyday life – food and other household items; buildings, factories, roads, and bridges; vehicles and planes; and the energy that powers cities and towns.

Three distinct vessel-operator communities serve the waterway. These include U.S. domestic carriers (“U.S. Lakers”) transporting cargo between ports on the Great Lakes, Canadian domestic carriers (“Canadian Lakers”) operating between ports on the Great Lakes and the St. Lawrence River and Canadian coastal waters, and ocean-going vessel operators (“Salties”), which operate between the region's ports and overseas destinations. These carriers serve more than 110 system ports located in each of the eight Great Lakes states and the provinces of Ontario and Quebec.

In addition to locks, ships and ports, a host of maritime service providers work to ensure the safe, reliable, and efficient transport of cargo. These include stevedores, warehouse employees, freight forwarders, dockworkers, crane operators, vessel agents, dredging contractors, marine pilots, truck drivers and port rail operators, tugboat operators and shipyard workers.

PURPOSE

This report is designed to provide the navigation community, transportation planners, government policy makers and the public with a realistic assessment of the contributions made by commercial maritime shipping in the Great Lakes and St. Lawrence region to the bi-national, national, state and provincial economies.

To accomplish this goal, a bi-national consortium of public and private sector stakeholders retained Martin Associates of Lancaster, Pennsylvania – a global leader in transportation economic analysis and strategic planning.¹ Martin Associates has completed more than 1500 economic impact, strategic planning, financial feasibility and market studies for major ports and waterway systems throughout the United States and Canada, as well as for ports in Europe, Asia and the Caribbean.

ORGANIZATION OF STUDY RESULTS

The study provides an assessment of the economic impacts of maritime shipping from three perspectives, as described below:

Chapter II – Great Lakes-St. Lawrence Seaway System

Includes impacts of domestic and international cargo that has travelled at some point through the Great Lakes, its connecting rivers, and the St. Lawrence Seaway (ending in Montreal). This chapter only includes the impacts of tonnage at lower St. Lawrence River Quebec ports if destined to or originating from the Great Lakes-St. Lawrence Seaway System. For example, the economic benefits of container movements to and from the Port of Montreal to overseas markets are not included in this chapter, as this trade does not enter or leave the Great Lakes-St. Lawrence Seaway System. However, grain export shipments leaving the Port of Duluth, Minn., destined for overseas markets that are temporarily off-loaded at the Port of Quebec for re-loading onto a larger ocean-going vessel, are included. This perspective is most relevant to American stakeholders in that it excludes Quebec commerce that moves exclusively between Canadian ports on the lower St. Lawrence River. It also excludes commerce between these Canadian lower St. Lawrence River ports and overseas ports.

Chapter III – Great Lakes-St. Lawrence River Waterway

Includes impacts of all domestic and international cargo moving on the Great Lakes, its connecting rivers, the St. Lawrence Seaway and the Lower St. Lawrence River. This analysis captures the fullest extent of the economic benefits of the entire waterway. For example, it includes the domestic movements of commodities like petroleum products between lower St. Lawrence River ports and container movements to and from Quebec ports to overseas markets. This perspective is particularly relevant to Canadian stakeholders in that all Quebec impacts along the St. Lawrence are included in this chapter.

Chapter IV – St. Lawrence Seaway

Includes impacts of domestic and international cargo that has travelled through the St. Lawrence Seaway, a system of canals and locks, which connects the Great Lakes to the lower St. Lawrence River. The St. Lawrence Seaway extends from St. Lambert Lock in Montreal to Lake Erie and is composed of a series of 15 consecutive locks (seven locks in the Montreal-Lake Ontario section and eight locks in the Welland Canal section). This data is particularly relevant to those stakeholders who move cargo through the waterway and to policy makers who manage and fund waterway infrastructure.

¹ The Great Lakes St. Lawrence Seaway Development Corporation (GLS), the St. Lawrence Seaway Management Corporation (SLSMC), the American Great Lakes Ports Association (AGLPA), the Chamber of Marine Commerce (CMC), the Lake Carriers Association (LCA), and the Shipping Federation of Canada (SFC).

METHODOLOGY

This analysis estimates the combined U.S. and Canadian economic impacts of all marine cargo moving in the bi-national Great Lakes-St. Lawrence region, including domestic cargo moving between U.S. ports; domestic cargo moving between Canadian ports; cross-lake cargo moving between the U.S. and Canada; and international cargo moving between system ports and overseas ports.

Specifically, the study measures the impacts of 2022 cargo movements at 40 U.S. and Canadian ports. The analysis was developed from a comprehensive telephone interview program of more than 800 individual firms with more than 1,100 operations throughout the region. Models were then developed to expand the 40-port impacts to the state-wide and province-wide levels.

The report estimates tonnage volume (and its dollar value) moved for each of the geographic segments detailed in the Organization of Study Results. This is the recorded tonnage transported by vessels.

For the purpose of determining economic impacts, however, the report uses the tonnage “handled” at the Great Lakes-St. Lawrence region’s ports. “Handled” refers to both the shipping (exporting) of the cargo from a system port, and to the receipt (importing) of that cargo in a system port. Because economic activity is created every time cargo is handled, for the purposes of this study, cargo moved between ports within the region has been handled twice. By contrast, cargo moved between system ports and overseas ports has been handled once (in the region). For example, one ton of cargo moved to or from Europe is counted as one ton handled by a port, while one ton of cargo moved from Duluth, Minn., to Cleveland, Ohio, is counted as two tons (one ton exported in Duluth and one ton imported in Cleveland).

Impacts are presented at the regional level, country level, state/provincial level, by commodity, by carrier flag, by employment sector and by waterway segment. Throughout the study, all values are expressed in both U.S. and Canadian dollars (using a 2022 average exchange rate of US\$1.00 = Cdn\$1.3). Cargo volumes are expressed in both metric tons and short tons (1 metric ton = 1.1023 short tons).

CATEGORIES OF IMPACTS

Economic Activity – Total economic activity consists of the direct business revenue received by the businesses supplying the cargo and vessel handling services, plus the re-spending of direct employees’ earnings on goods and services in the province/state.

Employment – Employment is measured in terms of full-time equivalent jobs, as defined by 2,080 hours per year per full-time worker. These impacts consist of three levels:

- **Direct Employment:** jobs directly generated by maritime and port activity. Direct jobs include those of dockworkers, crane operators, ships’ crew, steamship agents, freight forwarders and stevedores, as well as workers with railroad and trucking companies moving the cargo handled at system ports. These jobs also include shippers/consignees that have facilities situated close to ports or marine terminals associated with the production site. These jobs would experience dislocation (likely wouldn’t exist) if the activity at ports and marine terminals were to be discontinued.
- **Induced Employment:** jobs supported when individuals spend their wages locally on goods and services such as food, housing, and clothing.
- **Indirect Employment:** jobs supported due to purchases of goods and services by businesses. These include jobs with office supply firms, maintenance and repair companies, parts, and equipment suppliers, etc.

Personal Income – These impacts are a measure of the employee wages and salaries (excluding benefits) received by individuals directly employed due to port activity and the respending of those earnings on goods and services in the province/state.

Business Revenue – These impacts represent the revenue generated by firms providing services at each port.

Local Purchases – These impacts include the value of goods and services purchased by the firms providing services at each port. Examples are office supplies, communications, utilities, fuel, maintenance and repair, goods/parts, contracted services, insurance, etc.

Taxes – These impacts include payments to federal, state/provincial, and local governments by companies and individuals whose jobs are directly dependent on port activity, as well as induced jobs and indirect jobs generated by the system.

EXHIBIT I-2**INDIVIDUAL PORTS MODELLED****U.S. PORTS (19)**

Ashtabula

Burns Harbor

Calcite

Chicago

Cleveland

Conneaut

Detroit

Duluth

Erie

Green Bay

Lorain

Milwaukee

Monroe

Muskegon

Oswego

Saginaw River

Superior

Toledo

Two Harbors

CANADIAN PORTS (22)

Baie-Comeau

Becancour

Goderich

Hamilton

Havre-Saint-Pierre

Johnstown

Meldrum Bay

Montreal

Nanticoke

Oshawa

Port Alfred

Port-Cartier

Quebec

Saguenay

Sarnia

Sept-Iles

Sorel

Thunder Bay

Toronto

Trois-Rivieres

Valleyfield

Windsor

RESULTS

CHAPTER II

GREAT LAKES-ST. LAWRENCE SEAWAY SYSTEM IMPACTS

This chapter presents the study results from the perspective of the Great Lakes-St. Lawrence Seaway System, which includes the five Great Lakes, their connecting rivers, and the St. Lawrence Seaway (ending in Montreal). This analysis only includes the impacts of cargo tonnage at lower St. Lawrence River Quebec ports if that cargo was destined to or originating from the Great Lakes-Seaway system.

In 2022, a total of **135.7 million metric tons (149.5 million short tons) of cargo valued at US\$26.1 billion (Cdn\$33.9 billion)** moved through the Great Lakes-Seaway system. As noted, a majority of the domestic cargo moving on Canadian and U.S. flag vessels remains in the Great Lakes-Seaway system, creating economic impacts at the loading port as well as the port of discharge. With this accounted for, the actual tons handled at the ports on the Great Lakes-Seaway system is **252.5 million metric tons (278.3 million short tons)**. This cargo generated the following economic impacts:

Economic Activity – The marine cargo and vessel activity in the Great Lakes-Seaway system generated a total of **US\$36.0 billion (Cdn\$46.8 billion)** in economic activity in the United States and Canada.

Employment – Maritime commerce on the Great Lakes-Seaway system supported **241,286 U.S. and Canadian jobs**, including 81,863 direct jobs. As a result of local and regional purchases made by those 81,863 individuals, an additional 84,089 induced jobs were supported in the regional economy. Finally, 75,335 indirect jobs were supported by US\$8.3 billion (Cdn\$10.8 billion) in regional purchases by businesses supplying services at the marine terminals and ports.

Personal Income – Maritime activity supported **US\$17.8 billion (Cdn\$23.2 billion) in total personal wage and salary income and local consumption expenditures** in the regional economies of the U.S. and Canada. The 81,863 direct job holders received US\$4.8 billion (Cdn\$6.2 billion) in wage income.

Local Purchases – Businesses involved in maritime activity in the Great Lakes-Seaway system spent **US\$8.3 billion (Cdn\$10.8 billion) on purchases** in their respective local economies.

Taxes – A total of **US\$6.3 billion (Cdn\$8.3 billion)** in federal, state/provincial, and local tax revenue was generated by maritime activity in the Great Lakes-Seaway system.

GREAT LAKES - ST. LAWRENCE SEAWAY SYSTEM

Duluth / Superior

Montreal

EXHIBIT II-3

GREAT LAKES-ST. LAWRENCE SEAWAY SYSTEM IMPACTS – COUNTRY LEVEL

	United States		Canada		TOTAL	
Jobs						
Direct jobs	50,335		31,528		81,863	
Induced	46,180		37,908		84,089	
Indirect	50,835		24,500		75,335	
Total	147,350		93,936		241,286	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$26,351,285	\$34,256,670	\$9,653,885	\$12,550,051	\$36,005,170	\$46,806,721
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$3,368,765	\$4,379,394	\$1,440,290	\$1,872,377	\$4,809,055	\$6,251,772
Re-Spending/Local Purchases	\$7,349,393	\$9,554,210	\$1,681,401	\$2,185,821	\$9,030,793	\$11,740,031
Indirect	\$2,835,690	\$3,686,397	\$1,135,127	\$1,475,666	\$3,970,817	\$5,162,062
Total	\$13,553,847	\$17,620,001	\$4,256,819	\$5,533,864	\$17,810,666	\$23,153,866
Business Revenue (1,000)	\$19,001,892	\$24,702,460	\$7,972,484	\$10,364,230	\$26,974,377	\$35,066,690
Local Purchases (1,000)	\$5,446,095	\$7,079,924	\$2,864,961	\$3,724,449	\$8,311,056	\$10,804,373
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Province/Local (1,000)	\$1,540,246	\$2,002,320	\$929,492	\$1,208,339	\$2,469,738	\$3,210,659
Federal (1,000)	\$2,600,741	\$3,380,964	\$1,276,756	\$1,659,783	\$3,877,497	\$5,040,746
Total	\$4,140,988	\$5,383,284	\$2,206,248	\$2,868,122	\$6,347,235	\$8,251,406

EXHIBIT II-10

GREAT LAKES-ST. LAWRENCE SEAWAY SYSTEM IMPACTS – BY STATE

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	18,211	20,074	33,281	36,686	53,683	59,175
Jobs						
Direct jobs	22,896		9,376		7,646	
Induced	23,179		8,856		5,802	
Indirect	29,423		13,200		3,609	
Total	75,498		31,432		17,057	
Economic Activity (1,000)	US \$ \$15,123,761	Cdn \$ \$19,660,890	US \$ \$3,737,879	Cdn \$ \$4,859,242	US \$ \$3,291,234	Cdn \$ \$4,278,605
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,733,664	\$2,253,764	\$597,698	\$777,008	\$443,324	\$576,321
Re-Spending/Local Consumption	\$3,798,285	\$4,937,771	\$1,401,483	\$1,821,928	\$898,927	\$1,168,606
Indirect	\$1,601,114	\$2,081,448	\$783,548	\$1,018,612	\$185,791	\$241,528
Total	\$7,133,063	\$9,272,982	\$2,782,730	\$3,617,548	\$1,528,042	\$1,986,454
Business Revenue (1,000)	\$11,325,476	\$14,723,119	\$2,336,395	\$3,037,314	\$2,392,307	\$3,109,999
Local Purchases (1,000)	\$3,055,341	\$3,971,943	\$1,416,300	\$1,841,191	\$402,443	\$523,176
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State and Local Taxes	\$774,365	\$1,006,674	\$278,273	\$361,755	\$160,119	\$208,155
Federal Taxes	\$1,424,367	\$1,851,678	\$468,232	\$608,701	\$303,706	\$394,818
Total	\$2,198,732	\$2,858,352	\$746,505	\$970,456	\$463,826	\$602,973

EXHIBIT II-10 (CONTINUED)

GREAT LAKES-ST. LAWRENCE SEAWAY SYSTEM IMPACTS – BY STATE

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	20,781	22,907	3,951	4,355	22,932	25,278
Jobs						
Direct jobs	1,588		1,389		2,882	
Induced	1,335		1,474		2,278	
Indirect	1,655		386		1,632	
Total	4,579		3,249		6,792	
Economic Activity (1,000)	US \$ \$1,117,817	Cdn \$ \$1,453,162	US \$ \$475,266	Cdn \$ \$617,846	US \$ \$1,428,472	Cdn \$ \$1,857,014
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$83,508	\$108,561	\$83,645	\$108,739	\$166,434	\$216,364
Re-Spending/Local Consumption	\$198,090	\$257,517	\$258,740	\$336,362	\$323,197	\$420,157
Indirect	\$92,260	\$119,939	\$24,212	\$31,476	\$84,954	\$110,440
Total	\$373,859	\$486,017	\$366,598	\$476,577	\$574,585	\$746,961
Business Revenue (1,000)	\$919,727	\$1,195,645	\$216,526	\$281,484	\$1,105,275	\$1,436,857
Local Purchases (1,000)	\$193,555	\$251,622	\$41,492	\$53,939	\$187,503	\$243,754
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State and Local Taxes	\$63,264	\$82,243	\$51,405	\$66,827	\$80,093	\$104,121
Federal Taxes	\$88,352	\$114,857	\$57,852	\$75,207	\$122,841	\$159,694
Total	\$151,615	\$197,100	\$109,257	\$142,034	\$202,934	\$263,815

EXHIBIT II-10 (CONTINUED)

GREAT LAKES-ST. LAWRENCE SEAWAY SYSTEM IMPACTS – BY STATE

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	4,489	4,948	676	745	158,005	174,169
Jobs						
Direct jobs	4,224		334		50,335	
Induced	2,966		290		46,180	
Indirect	700		229		50,835	
Total	7,891		853		147,350	
Economic Activity (1,000)	US \$ \$1,057,659	Cdn,\$ \$1 374 957	US \$ \$119 196	Cdn,\$ \$154 955	US \$ \$26,351,285	Cdn \$ \$34,256,670
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$240,052	\$312 068	\$20 439	\$26 570	\$3,368,765	\$4,379,394
Re-Spending/Local Consumption	\$423,885	\$551 050	\$46 784	\$60 819	\$7,349,393	\$9,554,210
Indirect	\$52,464	\$68 204	\$11 347	\$14 751	\$2,835,690	\$3,686,397
Total	\$716,401	\$931 322	\$78 569	\$102 140	\$13,553,847	\$17,620,001
Business Revenue (1,000)	\$633,775	\$823 907	\$72 412	\$94 136	\$19,001,892	\$24,702,460
Local Purchases (1,000)	\$116,112	\$150 945	\$33 349	\$43 354	\$5,446,095	\$7,079,924
Total Taxes	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State and Local Taxes	\$123,098	\$160 027	\$9 630	\$12 519	\$1,540,246	\$2,002,320
Federal Taxes	\$121,900	\$158 470	\$13 491	\$17 538	\$2,600,741	\$3,380,964
Total	\$244,997	\$318 497	\$23 121	\$30 058	\$4,140,988	\$5,383,284

EXHIBIT II-11

GREAT LAKES-ST. LAWRENCE SEAWAY SYSTEM IMPACTS – BY PROVINCE

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	63,307	69,783	31,136	34,321	94,443	104,105
Jobs						
Direct jobs	22,471		9,057		31,528	
Induced	25,139		12,769		37,908	
Indirect	19,544		4,956		24,500	
Total	67,154		26,782		93,936	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$7,374,017	\$9,586,222	\$2,279,868	\$2,963,829	\$9,653,885	\$12,550,051
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,024,482	\$1,331,827	\$415,808	\$540,550	\$1,440,290	\$1,872,377
Re-Spending/Local Consumption	\$1,099,270	\$1,429,050	\$582,131	\$756,771	\$1,681,401	\$2,185,821
Indirect	\$915,543	\$1,190,206	\$219,585	\$285,460	\$1,135,127	\$1,475,666
Total	\$3,039,295	\$3,951,083	\$1,217,524	\$1,582,781	\$4,256,819	\$5,533,864
Business Revenue (1,000)	\$6,274,747	\$8,157,171	\$1,697,737	\$2,207,058	\$7,972,484	\$10,364,230
Local Purchases (1,000)	\$2,297,964	\$2,987,353	\$566,997	\$737,096	\$2,864,961	\$3,724,449
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Province/Local (1,000)	\$566,781	\$736,816	\$362,710	\$471,524	\$929,492	\$1,208,339
Federal (1,000)	\$930,223	\$930,223	\$930,223	\$930,223	\$930,223	\$930,223
Total	\$1,497,004	\$1,667,038	\$1,292,933	\$1,401,746	\$1,859,714	\$2,138,562

EXHIBIT II-12

GREAT LAKES-ST. LAWRENCE SEAWAY SYSTEM IMPACTS BY FLAG OF CARRIAGE
– REGIONAL LEVEL

	Canadian Flag		U.S. Flag	
Jobs				
Direct jobs	34,346		38,517	
Induced	37,673		36,370	
Indirect	26,228		41,559	
Total	98,247		116,447	
Economic Activity (1,000)	US \$ \$12,977,956	Cdn \$ \$16,871,342	US \$ \$20,048,195	Cdn \$ \$26,062,653
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,716,669	\$2,231,669	\$2,570,759	\$3,341,987
Re-Spending/Local Consumption	\$2,612,475	\$3,396,217	\$5,516,140	\$7,170,982
Indirect	\$1,301,082	\$1,691,407	\$2,276,274	\$2,959,157
Total	\$5,630,226	\$7,319,293	\$10,363,174	\$13,472,126
Business Revenue (1,000)	\$10,365,481	\$13,475,125	\$14,532,054	\$18,891,671
Local Purchases (1,000)	\$3,031,563	\$3,941,031	\$4,453,746	\$5,789,870
Total Taxes	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$1,047,441	\$1,361,673	\$1,164,347	\$1,513,651
Federal Taxes	\$1,468,145	\$1,908,589	\$2,019,181	\$2,624,936
Total	\$2,515,586	\$3,270,262	\$3,183,528	\$4,138,587

EXHIBIT II-12 (CONTINUED)

GREAT LAKES-ST. LAWRENCE SEAWAY SYSTEM IMPACTS BY FLAG OF CARRIAGE
– REGIONAL LEVEL

	Foreign Flag		TOTAL	
Jobs				
Direct jobs	8,999		81,863	
Induced	10,046		84,089	
Indirect	7,548		75,335	
Total	26,592		241,286	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$
	\$2,979,020	\$3,872,726	\$36,005,170	\$46,806,721
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$
Direct	\$521,627	\$678,116	\$4,809,055	\$6,251,772
Re-Spending/Local Consumption	\$902,178	\$1,172,832	\$9,030,793	\$11,740,031
Indirect	\$393,461	\$511,499	\$3,970,817	\$5,162,062
Total	\$1,817,266	\$2,362,446	\$17,810,666	\$23,153,866
Business Revenue (1,000)	\$2,076,842	\$2,699,894	\$26,974,377	\$35,066,690
Local Purchases (1,000)	\$825,748	\$1,073,472	\$8,311,056	\$10,804,373
Total Taxes	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$257,950	\$335,335	\$2,469,738	\$3,210,659
Federal Taxes	\$390,171	\$507,222	\$3,877,497	\$5,040,746
Total	\$648,121	\$842,557	\$6,347,235	\$8,251,406

CHAPTER III

GREAT LAKES-ST. LAWRENCE RIVER WATERWAY IMPACTS

This chapter measures the impacts of maritime shipping on the Great Lakes-St. Lawrence River Waterway. All domestic and international cargo moving on the waterway is included in the analysis, including Great Lakes, St. Lawrence Seaway, and lower St. Lawrence River cargo.

In 2022, a total of **252.1 million metric tons (277.9 million short tons) of cargo valued at \$120.9 billion U.S. (Cdn\$157.2 billion)** moved through the Great Lakes-St. Lawrence River Waterway. As noted, a majority of the domestic cargo moving on Canadian and U.S. flag vessels remains in the waterway, creating economic impacts at the loading port as well as the port of discharge. With this accounted for, the actual tons handled at the ports on the Great Lakes-St. Lawrence River waterway is **368.9 million metric tons (377.4 million short tons)**. This cargo generated the following economic impacts:

Economic Activity – The marine cargo and vessel activity generated a total of **US\$50.9 billion (Cdn\$66.1 billion)** in economic activity in the United States and Canada.

Employment – Maritime commerce supported **356,858 U.S. and Canadian jobs**, including 113,823 direct jobs. As a result of local and regional purchases made by those 113,823 individuals, an additional 131,359 induced jobs were supported in the regional economy. Finally, 111,676 indirect jobs were supported by US\$13.2 billion (Cdn \$17.2 billion) in regional purchases by businesses supplying services at the marine terminals and ports.

Personal Income – Maritime activity supported **U.S.\$23.3 billion (Cdn\$30.2 billion) in total personal wage and salary income and local consumption expenditures** in the regional economies of the U.S. and Canada. The 113,823 direct job holders received US\$6.4 billion (Cdn\$8.3 billion) in wage income.

Local Purchases – Businesses involved in maritime activity spent **US\$13.2 billion (Cdn\$17.2 billion) on purchases** in their respective local economies.

Taxes – A total of **US\$9.8 billion (Cdn\$12.8 billion) in federal, state/provincial, and local tax revenue** was generated by maritime activity.

GREAT LAKES - ST. LAWRENCE RIVER WATERWAY

Duluth / Superior

Havre-Saint-Pierre

EXHIBIT III-3

GREAT LAKES-ST. LAWRENCE RIVER WATERWAY IMPACTS – COUNTRY LEVEL

	United States		Canada		TOTAL	
Jobs						
Direct jobs	50,335		63,488		113,823	
Induced	46,180		85,179		131,359	
Indirect	50,835		60,841		111,676	
Total	147,350		209,508		356,858	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$26,351,285	\$34,256,670	\$24,519,709	\$31,875,621	\$50,870,994	\$66,132,292
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$3,368,765	\$4,379,394	\$2,997,374	\$3,896,586	\$6,366,139	\$8,275,981
Re-Spending/Local Purchases	\$7,349,393	\$9,554,210	\$3,861,318	\$5,019,713	\$11,210,710	\$14,573,923
Indirect	\$2,835,690	\$3,686,397	\$2,850,304	\$3,705,395	\$5,685,994	\$7,391,792
Total	\$13,553,847	\$17,620,001	\$9,708,996	\$12,621,694	\$23,262,843	\$30,241,696
Business Revenue (1,000)	\$19,001,892	\$24,702,460	\$20,658,391	\$26,855,908	\$39,660,283	\$51,558,368
Local Purchases (1,000)	\$5,446,095	\$7,079,924	\$7,764,202	\$10,093,463	\$13,210,297	\$17,173,387
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Province/Local (1,000)	\$1,540,246	\$2,002,320	\$2,673,706	\$3,475,818	\$4,213,952	\$5,478,138
Federal (1,000)	\$2,600,741	\$3,380,964	\$2,991,227	\$3,888,596	\$5,591,969	\$7,269,559
Total	\$4,140,988	\$5,383,284	\$5,664,933	\$7,364,413	\$9,805,921	\$12,747,697

EXHIBIT III-10

GREAT LAKES-ST. LAWRENCE RIVER WATERWAY IMPACTS – BY STATE

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	18,211	20,074	33,281	36,686	53,683	59,175
Jobs						
Direct jobs	22,896		9,376		7,646	
Induced	23,179		8,856		5,802	
Indirect	29,423		13,200		3,609	
Total	75,498		31,432		17,057	
Economic Activity (1,000)	US \$ \$15,123,761	Cdn \$ \$19,660,890	US \$ \$3,737,879	Cdn \$ \$4,859,242	US \$ \$3,291,234	Cdn \$ \$4,278,605
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,733,664	\$2,253,764	\$597,698	\$777,008	\$443,324	\$576,321
Re-Spending/Local Consumption	\$3,798,285	\$4,937,771	\$1,401,483	\$1,821,928	\$898,927	\$1,168,606
Indirect	\$1,601,114	\$2,081,448	\$783,548	\$1,018,612	\$185,791	\$241,528
Total	\$7,133,063	\$9,272,982	\$2,782,730	\$3,617,548	\$1,528,042	\$1,986,454
Business Revenue (1,000)	\$11,325,476	\$14,723,119	\$2,336,395	\$3,037,314	\$2,392,307	\$3,109,999
Local Purchases (1,000)	\$3,055,341	\$3,971,943	\$1,416,300	\$1,841,191	\$402,443	\$523,176
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State and Local Taxes	\$774,365	\$1,006,674	\$278,273	\$361,755	\$160,119	\$208,155
Federal Taxes	\$1,424,367	\$1,851,678	\$468,232	\$608,701	\$303,706	\$394,818
Total	\$2,198,732	\$2,858,352	\$746,505	\$970,456	\$463,826	\$602,973

EXHIBIT III-10 (CONTINUED)

GREAT LAKES-ST. LAWRENCE RIVER WATERWAY IMPACTS – BY STATE

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	20,781	22,907	3,951	4,355	22,932	25,278
Jobs						
Direct jobs	1,588		1,389		2,882	
Induced	1,335		1,474		2,278	
Indirect	1,655		386		1,632	
Total	4,579		3,249		6,792	
Economic Activity (1,000)	US \$ \$1,117,817	Cdn \$ \$1,453,162	US \$ \$475,266	Cdn \$ \$617,846	US \$ \$1,428,472	Cdn \$ \$1,857,014
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$83,508	\$108,561	\$83,645	\$108,739	\$166,434	\$216,364
Re-Spending/Local Consumption	\$198,090	\$257,517	\$258,740	\$336,362	\$323,197	\$420,157
Indirect	\$92,260	\$119,939	\$24,212	\$31,476	\$84,954	\$110,440
Total	\$373,859	\$486,017	\$366,598	\$476,577	\$574,585	\$746,961
Business Revenue (1,000)	\$919,727	\$1,195,645	\$216,526	\$281,484	\$1,105,275	\$1,436,857
Local Purchases (1,000)	\$193,555	\$251,622	\$41,492	\$53,939	\$187,503	\$243,754
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State and Local Taxes	\$63,264	\$82,243	\$51,405	\$66,827	\$80,093	\$104,121
Federal Taxes	\$88,352	\$114,857	\$57,852	\$75,207	\$122,841	\$159,694
Total	\$151,615	\$197,100	\$109,257	\$142,034	\$202,934	\$263,815

EXHIBIT III-10 (CONTINUED)

GREAT LAKES-ST. LAWRENCE RIVER WATERWAY IMPACTS – BY STATE

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	4,489	4,948	676	745	158,005	174,169
Jobs						
Direct jobs	4,224		334		50,335	
Induced	2,966		290		46,180	
Indirect	700		229		50,835	
Total	7,891		853		147,350	
Economic Activity (1,000)	US \$ \$1,057,659	Cdn,\$ \$1 374 957	US \$ \$119 196	Cdn,\$ \$154 955	US \$ \$26,351,285	Cdn \$ \$34,256,670
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$240,052	\$312 068	\$20 439	\$26 570	\$3,368,765	\$4,379,394
Re-Spending/Local Consumption	\$423,885	\$551 050	\$46 784	\$60 819	\$7,349,393	\$9,554,210
Indirect	\$52,464	\$68 204	\$11 347	\$14 751	\$2,835,690	\$3,686,397
Total	\$716,401	\$931 322	\$78 569	\$102 140	\$13,553,847	\$17,620,001
Business Revenue (1,000)	\$633,775	\$823 907	\$72 412	\$94 136	\$19,001,892	\$24,702,460
Local Purchases (1,000)	\$116,112	\$150 945	\$33 349	\$43 354	\$5,446,095	\$7,079,924
Total Taxes	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State and Local Taxes	\$123,098	\$160 027	\$9 630	\$12 519	\$1,540,246	\$2,002,320
Federal Taxes	\$121,900	\$158 470	\$13 491	\$17 538	\$2,600,741	\$3,380,964
Total	\$244,997	\$318 497	\$23 121	\$30 058	\$4,140,988	\$5,383,284

EXHIBIT III-11

GREAT LAKES-ST. LAWRENCE RIVER WATERWAY IMPACTS – BY PROVINCE

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	63,308	69,784	147,564	162,660	210,872	232,444
Jobs						
Direct jobs	22,471		41,018		63,488	
Induced	25,139		60,039		85,179	
Indirect	19,544		41,297		60,841	
Total	67,154		142,354		209,508	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$7,374,017	\$9,586,222	\$17,145,692	\$22,289,399	\$24,519,709	\$31,875,621
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,024,482	\$1,331,827	\$1,972,892	\$2,564,759	\$2,997,374	\$3,896,586
Re-Spending/Local Consumption	\$1,099,270	\$1,429,050	\$2,762,048	\$3,590,663	\$3,861,318	\$5,019,713
Indirect	\$915,543	\$1,190,206	\$1,934,761	\$2,515,189	\$2,850,304	\$3,705,395
Total	\$3,039,295	\$3,951,083	\$6,669,701	\$8,670,611	\$9,708,996	\$12,621,694
Business Revenue (1,000)	\$6,274,747	\$8,157,171	\$14,383,644	\$18,698,737	\$20,658,391	\$26,855,908
Local Purchases (1,000)	\$2,297,964	\$2,987,353	\$5,466,238	\$7,106,110	\$7,764,202	\$10,093,463
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Province/Local (1,000)	\$566,781	\$736,816	\$2,106,925	\$2,739,002	\$2,673,706	\$3,475,818
Federal (1,000)	\$930,223	\$930,223	\$930,223	\$930,223	\$930,223	\$930,223
Total	\$1,497,004	\$1,667,038	\$3,037,147	\$3,669,225	\$3,603,929	\$4,406,040

EXHIBIT III-12

GREAT LAKES-ST. LAWRENCE RIVER WATERWAY IMPACTS BY FLAG OF CARRIAGE
– REGIONAL LEVEL

	Canadian Flag		U.S. Flag	
Jobs				
Direct jobs	38,831		38,517	
Induced	43,588		36,370	
Indirect	28,758		41,559	
Total	111,176		116,447	
Economic Activity (1,000)	US \$ \$14,215,475	Cdn \$ \$18,480,118	US \$ \$20,048,195	Cdn \$ \$26,062,653
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,915,045	\$2,489,559	\$2,570,759	\$3,341,987
Re-Spending/Local Consumption	\$2,878,479	\$3,742,022	\$5,516,140	\$7,170,982
Indirect	\$1,415,034	\$1,839,544	\$2,276,274	\$2,959,157
Total	\$6,208,558	\$8,071,125	\$10,363,174	\$13,472,126
Business Revenue (1,000)	\$11,336,997	\$14,738,096	\$14,532,054	\$18,891,671
Local Purchases (1,000)	\$3,306,842	\$4,298,894	\$4,453,746	\$5,789,870
Total Taxes	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$1,212,175	\$1,575,827	\$1,164,347	\$1,513,651
Federal Taxes	\$1,638,033	\$2,129,443	\$2,019,181	\$2,624,936
Total	\$2,850,208	\$3,705,270	\$3,183,528	\$4,138,587

EXHIBIT III-12 (CONTINUED)

GREAT LAKES-ST. LAWRENCE RIVER WATERWAY IMPACTS BY FLAG OF CARRIAGE
– REGIONAL LEVEL

	Foreign Flag		TOTAL	
Jobs				
Direct jobs	36,475		113,823	
Induced	51,401		131,359	
Indirect	41,359		111,676	
Total	129,235		356,858	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$
	\$16,607,323	\$21,589,520	\$50,870,994	\$66,132,292
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,880,334	\$2,444,435	\$6,366,139	\$8,275,981
Re-Spending/Local Consumption	\$2,816,091	\$3,660,919	\$11,210,710	\$14,573,923
Indirect	\$1,994,686	\$2,593,091	\$5,685,994	\$7,391,792
Total	\$6,691,111	\$8,698,445	\$23,262,843	\$30,241,696
Business Revenue (1,000)	\$13,791,232	\$17,928,602	\$39,660,283	\$51,558,368
Local Purchases (1,000)	\$5,449,710	\$7,084,623	\$13,210,297	\$17,173,387
Total Taxes	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$1,837,431	\$2,388,660	\$4,213,952	\$5,478,138
Federal Taxes	\$1,934,754	\$2,515,180	\$5,591,969	\$7,269,559
Total	\$3,772,185	\$4,903,840	\$9,805,921	\$12,747,697

CHAPTER IV

ST. LAWRENCE SEAWAY IMPACTS

This chapter presents the economic impacts of cargo that specifically transits the St. Lawrence Seaway. The Seaway extends from Montreal to Lake Erie and is composed of a series of 15 consecutive locks that connect the Great Lakes to the lower St. Lawrence River and the Atlantic Ocean. The Welland Canal section consists of eight Canadian locks that enable ships to pass between Lakes Erie and Ontario, bypassing the Niagara Falls. The Montreal-Lake Ontario (MLO) section of the Seaway consists of seven locks – five located in Canada and two in the United States. These locks enable ships to pass between Lake Ontario and the lower St. Lawrence River. This chapter describes the economic impacts of all domestic and international traffic moving through the lock system. The tonnage data base used in this section is from the St. Lawrence Seaway Management Corporation.

During 2022, about **36.3 million metric tons (40.0 million short tons)** of cargo valued at US\$12.8 billion (Cdn\$16.7 billion) passed through the St. Lawrence Seaway's infrastructure. A total of **48.2 million metric tons (53.2 million short tons)** of cargo transiting the St. Lawrence Seaway was handled at the region's ports generating the following economic impacts:

Economic Activity – Marine cargo and vessel activity generated a total of **US\$9.5 billion (Cdn\$12.3 billion)** economic activity in the United States and Canada.

Employment – Maritime commerce supported **66,594 U.S. and Canadian jobs**, including 22,755 direct jobs. As a result of local and regional purchases made by those 22,755 individuals, an additional 24,906 induced jobs were supported in the regional economy. Finally, 18,932 indirect jobs were supported by US\$2.1 billion (Cdn\$2.8 billion) in regional purchases by businesses supplying services at the marine terminals and ports.

Personal Income – Maritime commerce supported **US\$4.2 billion (Cdn\$5.4 billion) in total personal wages and local consumption expenditures**. The 22,755 direct job holders received U.S.\$1.2 billion (Cdn\$1.6 billion) in wage income.

Local Purchases – Businesses involved in maritime activity on the St. Lawrence Seaway spent **US\$2.1 billion (Cdn\$2.8 billion) on purchases** in their respective local economies.

Taxes – St. Lawrence Seaway commercial maritime activity generated **US\$ 1.7 billion (Cdn\$2.2 billion) in local, state/provincial, and federal tax revenues**.

ST. LAWRENCE SEAWAY IMPACTS



EXHIBIT IV-3

ST. LAWRENCE SEAWAY IMPACTS – COUNTRY LEVEL

	United States		Canada		TOTAL	
Jobs						
Direct jobs	8,164		14,591		22,755	
Induced	7,513		17,393		24,906	
Indirect	8,598		10,335		18,932	
Total	24,275		42,319		66,594	
Economic Activity (1,000)	US \$ \$4,907,475	Cdn \$ \$6,379,717	US \$ \$4,578,798	Cdn \$ \$5,952,437	US \$ \$9,486,273	Cdn \$ \$12,332,154
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$549,173	\$713,924	\$673,661	\$875,759	\$1,222,833	\$1,589,683
Re-Spending/Local Purchases	\$1,193,518	\$1,551,573	\$770,922	\$1,002,198	\$1,964,439	\$2,553,771
Indirect	\$490,158	\$637,206	\$479,833	\$623,783	\$969,991	\$1,260,989
Total	\$2,232,849	\$2,902,704	\$1,924,415	\$2,501,740	\$4,157,264	\$5,404,443
Business Revenue (1,000)	\$3,713,957	\$4,828,144	\$3,807,876	\$4,950,239	\$7,521,833	\$9,778,383
Local Purchases (1,000)	\$928,881	\$1,207,546	\$1,202,238	\$1,562,909	\$2,131,119	\$2,770,455
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Province/Local (1,000)	\$270,099	\$351,128	\$410,097	\$533,127	\$680,196	\$884,255
Federal (1,000)	\$452,955	\$588,842	\$583,712	\$758,825	\$1,036,667	\$1,347,667
Total	\$723,054	\$939,970	\$993,809	\$1,291,952	\$1,716,863	\$2,231,921

EXHIBIT IV-10

ST. LAWRENCE SEAWAY IMPACTS – BY STATE

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	656	723	6,294	6,937	2,081	2,294
Jobs						
Direct jobs	3,402		2,068		431	
Induced	3,411		1,988		340	
Indirect	4,371		3,071		253	
Total	11,184		7,127		1,024	
Economic Activity (1,000)	US \$ \$3,092,159	Cdn \$ \$4,019,806	US \$ \$774,625	Cdn \$ \$1,007,013	US \$ \$117,018	Cdn \$ \$152,123
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$254,461	\$330,800	\$134,848	\$175,303	\$26,405	\$34,327
Re-Spending/Local Consumption	\$557,499	\$724,749	\$316,192	\$411,049	\$53,542	\$69,605
Indirect	\$237,880	\$309,244	\$183,051	\$237,967	\$12,724	\$16,542
Total	\$1,049,840	\$1,364,792	\$634,091	\$824,319	\$92,672	\$120,473
Business Revenue (1,000)	\$2,534,660	\$3,295,058	\$458,433	\$595,964	\$63,476	\$82,519
Local Purchases (1,000)	\$453,936	\$590,117	\$325,229	\$422,798	\$28,759	\$37,386
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State and Local Taxes	\$122,475	\$159,217	\$63,409	\$82,432	\$8,731	\$11,351
Federal Taxes	\$246,084	\$319,910	\$103,588	\$134,665	\$14,991	\$19,489
Total	\$368,559	\$479,127	\$166,997	\$217,097	\$23,723	\$30,840

EXHIBIT IV-10 (CONTINUED)

ST. LAWRENCE SEAWAY IMPACTS – BY STATE

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	2,389	2,633	337	371	2,163	2,384
Jobs						
Direct jobs	289		230		275	
Induced	253		238		217	
Indirect	351		64		148	
Total	893		532		640	
Economic Activity (1,000)	US \$ \$140,389	Cdn \$ \$182,505	US \$ \$71,102	Cdn \$ \$92,432	US \$ \$137,220	Cdn \$ \$178,386
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$16,015	\$20,819	\$13,445	\$17,478	\$15,851	\$20,607
Re-Spending/Local Consumption	\$37,989	\$49,385	\$41,588	\$54,064	\$30,781	\$40,016
Indirect	\$19,521	\$25,377	\$4,011	\$5,214	\$7,687	\$9,993
Total	\$73,524	\$95,581	\$59,043	\$76,756	\$54,319	\$70,615
Business Revenue (1,000)	\$102,400	\$133,120	\$29,514	\$38,368	\$106,439	\$138,370
Local Purchases (1,000)	\$40,851	\$53,106	\$6,873	\$8,935	\$17,053	\$22,169
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State and Local Taxes	\$10,903	\$14,175	\$8,177	\$10,631	\$7,603	\$9,883
Federal Taxes	\$14,080	\$18,303	\$9,092	\$11,820	\$11,695	\$15,203
Total	\$24,983	\$32,478	\$17,270	\$22,451	\$19,297	\$25,087

EXHIBIT IV-10 (CONTINUED)

ST. LAWRENCE SEAWAY IMPACTS – BY STATE

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	395	436	9	10	14,323	
Jobs						
Direct jobs	1,460		9		8,164	
Induced	1,059		8		7,513	
Indirect	334		6		8,598	
Total	2,852		23		24,275	
Economic Activity (1,000)	US \$ \$572,691	Cdn,\$ \$744,498	US \$ \$2,272	Cdn,\$ \$2,953	US \$ \$4,907,475	Cdn \$ \$6,379,717
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$87,620	\$113,906	\$527	\$686	\$549,173	\$713,924
Re-Spending/Local Consumption	\$154,720	\$201,135	\$1,207	\$1,569	\$1,193,518	\$1,551,573
Indirect	\$24,981	\$32,475	\$304	\$395	\$490,158	\$637,206
Total	\$267,321	\$347,517	\$2,039	\$2,650	\$2,232,849	\$2,902,704
Business Revenue (1,000)	\$417,971	\$543,362	\$1,064	\$1,384	\$3,713,957	\$4,828,144
Local Purchases (1,000)	\$55,287	\$71,873	\$893	\$1,161	\$928,881	\$1,207,546
Total Taxes	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State and Local Taxes	\$48,565	\$63,134	\$235	\$306	\$270,099	\$351,128
Federal Taxes	\$53,108	\$69,041	\$316	\$411	\$452,955	\$588,842
Total	\$101,673	\$132,175	\$551	\$716	\$723,054	\$939,970

EXHIBIT IV-11

ST. LAWRENCE SEAWAY IMPACTS – BY PROVINCE

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	21,676	23,893	12,192	13,439	33,868	37,332
Jobs						
Direct jobs	11,551		3,040		14,591	
Induced	12,923		4,470		17,393	
Indirect	8,527		1,807		10,335	
Total	33,001		9,318		42,319	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$3,783,169	\$4,918,120	\$795,629	\$1,034,318	\$4,578,798	\$5,952,437
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$526,616	\$684,601	\$147,045	\$191,158	\$673,661	\$875,759
Re-Spending/Local Consumption	\$565,059	\$734,577	\$205,862	\$267,621	\$770,922	\$1,002,198
Indirect	\$398,862	\$518,520	\$80,971	\$105,263	\$479,833	\$623,783
Total	\$1,490,537	\$1,937,698	\$433,878	\$564,042	\$1,924,415	\$2,501,740
Business Revenue (1,000)	\$3,218,110	\$4,183,543	\$589,766	\$766,696	\$3,807,876	\$4,950,239
Local Purchases (1,000)	\$1,006,435	\$1,308,366	\$195,803	\$254,543	\$1,202,238	\$1,562,909
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Province/Local (1,000)	\$281,201	\$365,562	\$128,896	\$167,565	\$410,097	\$533,127
Federal (1,000)	\$460,708	\$460,708	\$460,708	\$460,708	\$460,708	\$460,708
Total	\$741,910	\$826,270	\$589,605	\$628,273	\$870,806	\$993,835

EXHIBIT IV-12

ST. LAWRENCE SEAWAY IMPACTS BY FLAG OF CARRIAGE – REGIONAL LEVEL

	Canadian Flag		U.S. Flag	
Jobs				
Direct jobs	13,896		26	
Induced	14,955		32	
Indirect	11,179		14	
Total	40,029		72	
Economic Activity (1,000)	US \$ \$6,519,209	Cdn \$ \$8,474,972	US \$ \$10,089	Cdn \$ \$13,115
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$
Direct	\$703,507	\$914,559	\$1,259	\$1,637
Re-Spending/Local Consumption	\$1,049,696	\$1,364,604	\$2,102	\$2,733
Indirect	\$568,864	\$739,523	\$695	\$904
Total	\$2,322,066	\$3,018,686	\$4,057	\$5,274
Business Revenue (1,000)	\$5,469,513	\$7,110,367	\$7,986	\$10,382
Local Purchases (1,000)	\$1,275,292	\$1,657,880	\$1,613	\$2,097
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$416,175	\$541,027	\$950	\$1,235
Federal Taxes	\$646,118	\$839,953	\$1,074	\$1,396
Total	\$1,062,293	\$1,380,980	\$2,024	\$2,631

EXHIBIT IV-12 (CONTINUED)

ST. LAWRENCE SEAWAY IMPACTS BY FLAG OF CARRIAGE – REGIONAL LEVEL

	Foreign Flag		TOTAL	
Jobs				
Direct jobs	8,833		22,755	
Induced	9,920		24,906	
Indirect	7,739		18,932	
Total	26,492		66,594	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$
	\$2,956,975	\$3,844,067	\$9,486,273	\$12,332,154
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$
Direct	\$518,068	\$673,488	\$1,222,833	\$1,589,683
Re-Spending/Local Consumption	\$912,641	\$1,186,434	\$1,964,439	\$2,553,771
Indirect	\$400,432	\$520,561	\$969,991	\$1,260,989
Total	\$1,831,141	\$2,380,483	\$4,157,264	\$5,404,443
Business Revenue (1,000)	\$2,044,334	\$2,657,634	\$7,521,833	\$9,778,383
Local Purchases (1,000)	\$854,214	\$1,110,478	\$2,131,119	\$2,770,455
Total Taxes	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$263,071	\$341,993	\$680,196	\$884,255
Federal Taxes	\$389,475	\$506,317	\$1,036,667	\$1,347,667
Total	\$652,546	\$848,310	\$1,716,863	\$2,231,921

Note: The impacts generated by foreign flag vessels transiting the St. Lawrence Seaway differ slightly from the impacts of foreign flag vessels estimated for the Great Lakes-St. Lawrence Seaway System in total due to the use of multiple tonnage data bases from the LCA, CMC and individual ports and terminal operators to estimate the foreign flag impacts at the System and Waterway levels, while tonnage data by laker vs. foreign flag vessels supplied by the St. Lawrence Seaway Management Corp. is used to estimate the impacts of the St. Lawrence Seaway. Overall, the use of the various data bases results in a less than 1 percent difference in impacts generated by foreign flag vessels for the Great Lakes-St. Lawrence Seaway System vs. the impacts of foreign flag vessels for St. Lawrence Seaway segment.



CHAPTER I

METHODOLOGY

METHODOLOGY

Martin Associates of Lancaster, Pennsylvania, was retained by a consortium of U.S. and Canadian Great Lakes-St. Lawrence River stakeholders¹ to analyze the economic impacts generated by marine cargo activity on the Great Lakes-Seaway System and the St. Lawrence River. The analysis includes the economic impacts of all marine cargo moving on the waterways, including U.S. domestic commerce, Canadian domestic commerce, bi-national commerce between the two countries, and international traffic moving between the Great Lakes-St. Lawrence region and overseas destinations.

The impacts are measured for the year 2022 and are presented in terms of total economic impacts at the bi-national regional level, the country level, and the state/provincial level. The impacts are also presented by flag of vessel carriage.

The Great Lakes, their connecting channels and the St. Lawrence River extends from the western-most point in Duluth, Minnesota, to eastern Quebec. This analysis examines the economic impacts created by cargo and vessel activity at all marine terminals located along this transportation corridor – in the states of Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, Pennsylvania and New York, and the provinces of Ontario and Quebec. Included are terminals owned by public port authorities such as municipalities, counties, and independent port agencies, as well as those owned and operated by private companies.

The study methodology is based on analysis of a core group of 40 Canadian and U.S. Great Lakes-St. Lawrence River ports. The 40 individual ports are listed in **Exhibit I-1**.

The study team conducted detailed interviews with marine terminal operators, service providers, railroads, port tenants and other stakeholders at each port.

The firms included in the interview process were identified from the following sources:

- Greenwood's Guide to Great Lakes Shipping
- Port directories
- Interviews with port authorities associated with the 40 individual ports
- Supplemental lists provided by stakeholders

¹ The Great Lakes St. Lawrence Seaway Development Corporation (GLS), the St. Lawrence Seaway Management Corporation (SLSMC), the American Great Lakes Ports Association (AGLPA), the Chamber of Marine Commerce (CMC), the Lake Carriers Association (LCA), and the Shipping Federation of Canada (SFC).

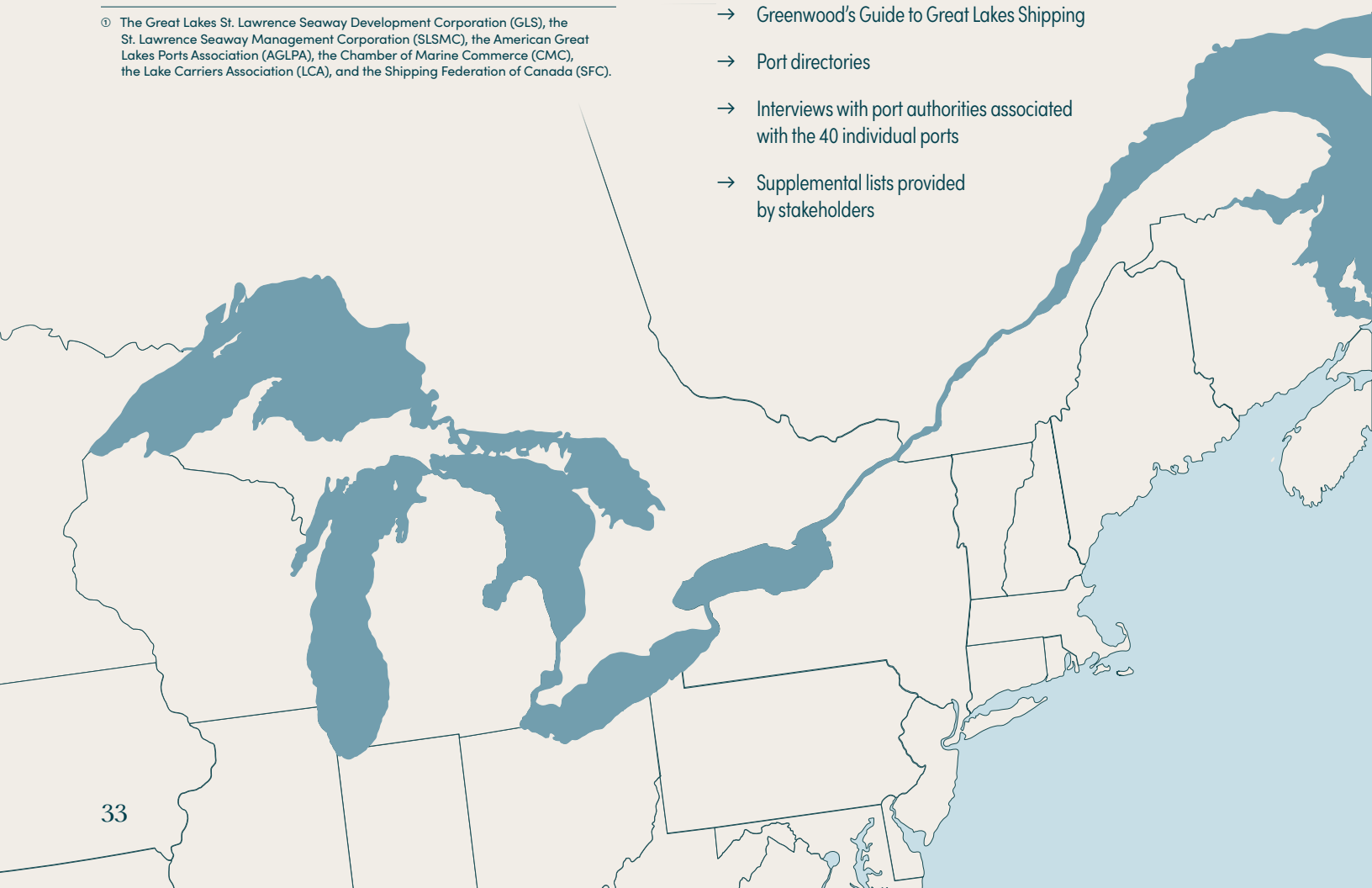


EXHIBIT I-1

INDIVIDUAL PORTS MODELLED

US Ports (19)

Ashtabula

Burns Harbor

Calcite

Chicago

Cleveland

Conneaut

Detroit

Duluth

Erie

Green Bay

Lorain

Milwaukee

Monroe

Muskegon

Oswego

Saginaw River

Superior

Toledo

Two Harbors

Canada Ports (22)

Baie-Comeau

Becancour

Goderich

Hamilton

Havre-Saint-Pierre

Johnstown

Meldrum Bay

Montreal

Nanticoke

Oshawa

Port Alfred

Port-Cartier

Quebec

Saguenay

Sarnia

Sept-Îles

Sorel

Thunder Bay

Toronto

Trois-Rivieres

Valleyfield

Windsor

In total, nearly 800 firms with more than 1,100 operations throughout the region were identified. All firms were contacted by telephone to collect the data required to assess direct impacts and develop the individual port models.

These firms provided data in the following categories:

- Jobs
- Income
- Revenue
- Local purchases
- Terminal operational specifics:
 - Modal splits
 - Hinterland distribution patterns
 - Rail and truck rates
 - Rail yard specifics

To measure the impacts of marine cargo moving via individual ports and private terminals not included in the core group of 40 ports, Martin Associates developed prototype economic impact models.

These models were used to expand the individual port impacts to a state/provincial level, thus incorporating the cargo tonnage at all marine terminals located within a specific state or province.

For the purpose of determining economic impacts, the report uses a tonnage handled figure. "Handled" refers to both the shipping (exporting) of the cargo from a system port, and to the receipt (importing) of that cargo in a system port. Because economic activity is created every time cargo is handled, for the purposes of this study, cargo moved between ports within the region has been handled twice. By contrast, cargo moved between the region's ports and overseas ports has been handled once (in the region).

1. FLOW OF IMPACTS

Waterborne cargo activity at a marine terminal contributes to the local, regional, state/provincial, and national economies by generating business revenue for firms that provide vessel and cargo-handling services at the terminal.

These companies, in turn, provide employment and income to individuals, and pay taxes to federal, state/ provincial, and local governments. **Exhibit I-2** shows how activity at marine terminals generates impacts throughout the local, regional, state/provincial, and national economies. As this exhibit illustrates, the economic impact of a port cannot be reduced to a single number, as the port activity creates several impacts – the **revenue impact, employment impact, personal income impact, and tax impact.**

These impacts are non-additive. For example, the income impact is part of the revenue impact, and adding together these impacts would result in double-counting.

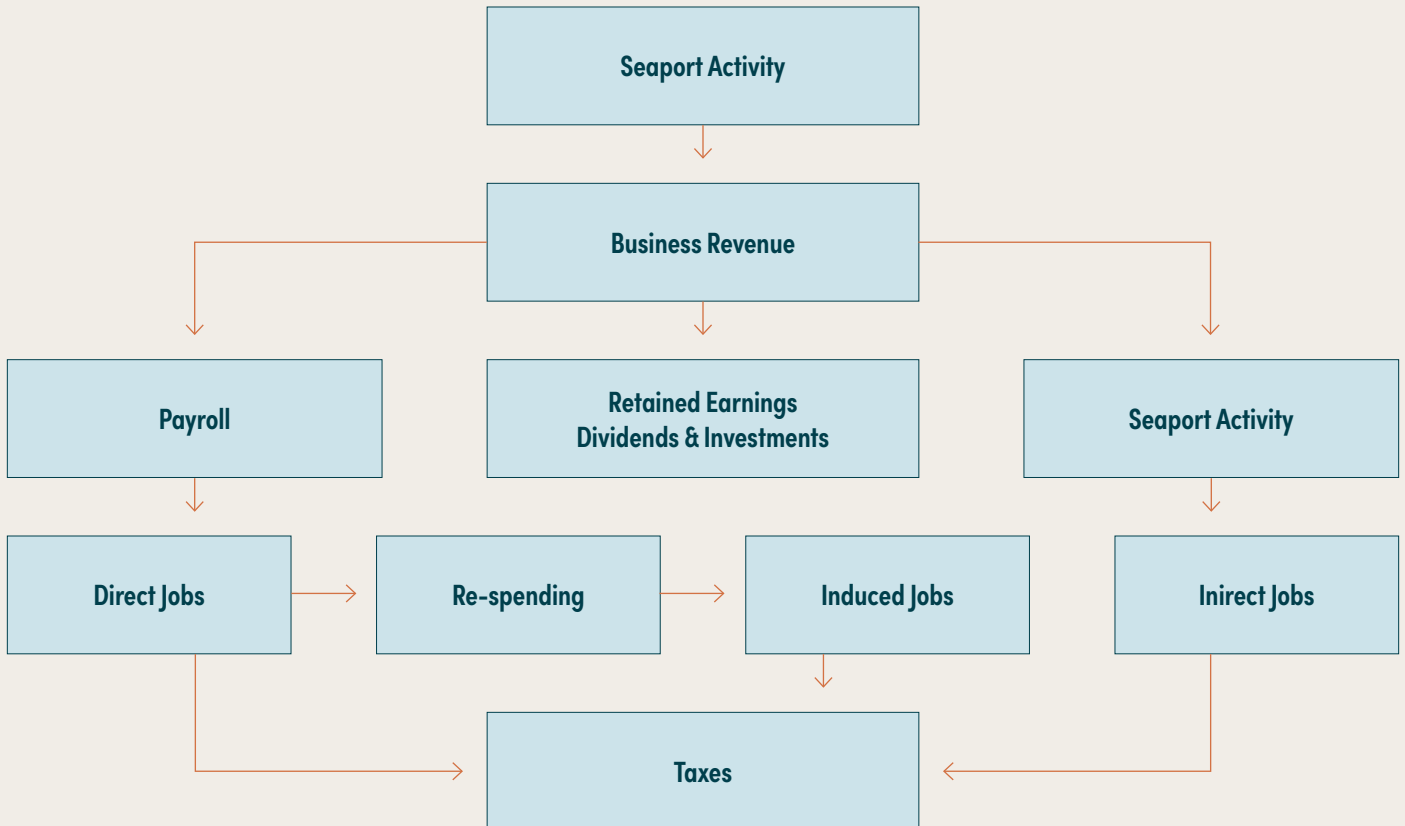
The report also provides a total economic activity value, which is explained later in this chapter.

1.1. BUSINESS REVENUE IMPACT

At the outset, activity at a port generates business revenue for firms that provide services. This business revenue impact is dispersed throughout the economy in several ways; it is used to hire people, purchase goods and services, and pay federal, state and local taxes. The remainder may be used to pay stockholders, retire debt or make investments, or may be held as retained earnings. Note that the only components of the revenue impact that can definitely be identified as remaining in the local economy are those portions dispersed in the following ways: salaries to local employees; local purchases by individuals and businesses directly dependent on the seaport; contributions to federal, state/provincial and local taxes; tenant lease payments to the port authorities; and wharfage and dockage fees paid by the steamship lines to the individual port authorities.

EXHIBIT I-2

FLOW OF ECONOMIC IMPACTS GENERATED BY MARINE ACTIVITY



1.2. EMPLOYMENT IMPACT

Employment is measured in terms of full-time equivalent jobs, as defined by 2,080 hours per year per full-time worker. The employment impact of the port activity consists of three levels of job impacts:

- **Direct employment impact** — jobs directly generated by seaport activity. Direct jobs generated by marine cargo include jobs with railroads and trucking companies moving cargo between inland origins and destinations, and the marine terminals, as well as the jobs of longshoremen and dockworkers, steamship agents, freight forwarders, stevedores, and others. It should be noted that jobs classified as “directly generated” are those that would experience near-term dislocation if the activity at the marine terminals was discontinued.
- **Induced employment impact** — jobs supported throughout the local, regional and national economies because individuals directly employed due to port activity spend their wages locally on goods and services such as food, housing and clothing. These jobs are held by residents located throughout the region, since they are estimated based on local and regional purchases.
- **Indirect employment impact** — jobs supported within the region due to purchases of goods and services by firms, not individuals. These jobs are estimated directly from local purchases data supplied by the 800 companies interviewed as part of this study. They include jobs with office supply firms, maintenance and repair firms, parts and equipment suppliers, and others.

1.3. PERSONAL EARNINGS IMPACT

The personal earnings impact is the measure of employee wages and salaries (excluding benefits) received by individuals directly employed due to port activity. Re-spending of these earnings on goods and services throughout the regional economy is also estimated using a state or provincial personal- earnings multiplier, which reflects the percentage of purchases by individuals that are made within the state/ province in which the port is located. This re-spending generates additional jobs or the “induced” employment impact. The re-spending effect varies by region — a larger effect occurs in regions that produce a relatively large proportion of the goods and services consumed by residents, while lower re-spending effects are associated with regions that import a relatively large share of consumer goods and services (since personal earnings “leak out” of the region for these out-of-region purchases). The direct earnings are a measure of the local impact since they are received by those directly employed by port activity.

1.4. TAX IMPACT

Tax impacts are tax payments to federal, state/provincial and local governments by firms and by individuals whose jobs are directly dependent upon and supported (induced and indirect jobs) by activity at the marine terminals.

1.5. TOTAL ECONOMIC ACTIVITY

The total economic activity value calculated in this report consists of the direct business revenue received by the businesses supplying the cargo and vessel handling services, and the re-spending of direct income and consumption expenditures. These two monetary measures of economic impact are additive, since the re-spending impact is in addition to the direct income impact and the business revenue is independent of other dollar value impacts. The direct personal income, business purchases and taxes are paid from business revenue, and to include these in the total economic impact measure would result in double counting.

2. IMPACT STRUCTURE

The four types of economic impacts are created throughout various business sectors of the local, regional, state/provincial and national economies. Four distinct sectors are impacted as a result of activity at the marine terminals. These are:

- Surface transportation sector
- Maritime services sector
- Shippers/consignees using the port
- Port authorities/Seaway authorities

Within each business sector, various participants are involved. This study estimates separate impacts for each of the participants. Below is a discussion of the four sectors analyzed for economic impacts — including a description of the major participants in each.

2.1. SURFACE TRANSPORTATION SECTOR

The surface transportation sector consists of both the railroad and trucking industries. The trucking firms and railroads are responsible for moving the various cargoes between the marine terminals, and the inland origins and destinations.

2.2. MARITIME SERVICES SECTOR

Waterborne cargoes handled by each port/marine terminal generate economic activity in various business sectors of the local economy. Specifically, these impacts occur in the following categories:

- **Terminal Operations** — includes those companies that hire labor to load/off-load ships, transfer cargo to truck or rail, sort cargo, stage cargo, and provide short- and long-term storage of cargo.
- **Dockworkers** — includes members of the International Longshoremen’s Association, International Union of Operating Engineers, International Brotherhood of Teamsters and the United Steelworkers, as well as those dockworkers with no union affiliation that are involved in the loading/unloading of cargo.

- **Tug Assist** — includes those companies that provide tugboats to assist vessels with docking and undocking
- **Pilots** — includes those companies and organizations that provide navigation-assistance services to vessels as required under U.S. and Canadian law.
- **Agents** — includes those companies that provide vessel and crew-related services, including documentation required to enter and clear the ship, arrangement of pay for crews, and provision of food and supplies.
- **Marine Services** — includes a variety of service providers such as chandlers that supply ships with food, supplies and equipment; marine surveyors that inspect vessels and cargo and provide valuations for insurance purposes; launch operators that provide ferry services for crew to move from ship to shore; and fuel-supply companies that provide vessels with bunker fuel.
- **Freight Forwarders** — includes those companies that provide transportation logistics and management services, and that coordinate both marine and land transportation for cargo.
- **Government** — includes those federal and local government agencies that perform services related to cargo handling and vessel operations, such as the U.S. Army Corps of Engineers, Department of Homeland Security, U.S. Customs and Border Protection, the Canadian and U.S. Coast Guards, Transport Canada, and the Canada Border Services Agency.
- **Ship Repair** — includes those companies that provide ship construction and repair services on both a scheduled and emergency basis.
- **Laker Operators** — includes the crew and headquarters-based management employees of U.S. and Canadian domestic Great Lakes vessel operators that transport cargo.
- **Barge Operators** — includes the crew and headquarters-based management employees of U.S. and Canadian domestic Great Lakes barge operators that transport cargo.

2.3. SHIPPERS/CONSIGNEES SECTOR

This sector includes cargo owners that ship or receive cargo via a specific port. These companies are dependent upon the port and usually located within the port's immediate vicinity.

2.4. PORT AUTHORITIES/ SEAWAY AUTHORITIES

This sector includes the various port authorities operating in the Great Lakes-Seaway and St. Lawrence River. Also included in this category are the employees of the U.S. Saint Lawrence Seaway Development Corporation (SLSDC) and the Canadian St. Lawrence Seaway Management Corporation (SLSMC), as well as the lock operators at each of the lock systems on the Great Lakes-Seaway system — including the Soo Locks, which connect Lake Superior and Lake Huron.

3. SUMMARY OF METHODOLOGY

This section provides a summary of the methodological approach used to analyze the economic impacts of the vessel and cargo activity on the Great Lakes and St. Lawrence River.

3.1. DATA COLLECTION

The cornerstone of Martin Associates' approach is the collection of detailed baseline impact data from firms providing services at the ports and terminals. To ensure accuracy and defensibility, the baseline impact data were collected from interviews with nearly 800 firms that provide services on the Great Lakes and St. Lawrence River.

In most cases, multiple interviews were conducted with several persons in each firm.

The baseline survey data collected from the nearly 800 firms was used to develop operational impact models for each of the 40 ports. This data was also used to develop models to expand the impact calculations beyond the 40 ports and therefore, to estimate state-wide/province-wide impacts.

3.2. DIRECT JOBS, INCOME, REVENUE AND TAX IMPACTS

The results of these interviews were then used to develop the baseline direct job, revenue and income impacts for the business sectors and job categories associated with the cargo activity at the marine terminals in the 40 individual port districts for which specific impact models were developed.

Total state and local tax impacts generated by the cargo activity on the St. Lawrence were estimated from several sources. The U.S. tax impacts were estimated from income indices developed by the Tax Foundation and the U.S. Bureau of Census, "State and Local Government Finances," while the Canadian tax impacts were estimated based on data from Revenue Canada, CANSIM and the Broadbent Institute.

3.3. INDUCED IMPACTS

Induced impacts are those generated by the purchases of individuals directly employed as a result of port and terminal activity. For example, a portion of the personal earnings received by those directly employed due to activity at the marine terminals is used for purchases of goods and services, both regionally, as well as out-of-region. These purchases, in turn, create additional jobs in the region; these jobs are classified as "induced".

To estimate these induced jobs for the 19 U.S. Great Lakes ports, the study team developed a state personal-earnings multiplier (for each state in which a port was located) from data provided by the U.S. Bureau of Economic Analysis, Regional Income Division. This personal-earnings multiplier was used to estimate the total personal earnings generated in the state as a result of the activity at the specific Great Lakes port within that state. A portion of this total personal earnings impact was next allocated

to specific local purchases (as determined from consumption data for the relevant state residents), as developed from the U.S. Bureau of Labor Statistics, Consumer Expenditure Survey, 2022. These purchases were next converted into retail and wholesale induced jobs in the state economy – by combining the purchases with the jobs-to-sales ratios in the supplying industries. A portion of the retail purchases was allocated to wholesale purchases, based on industry-specific data developed from the U.S. Bureau of Census, 2017 Economic Census. These wholesale purchases were combined with the relevant jobs-to-sales ratios for the wholesale industries associated with the local purchases. These ratios were developed at the state level in which the specific port was located.

To estimate the induced impacts associated with the cargo moving via the 21 Canadian ports, personal-income multipliers for the waterborne transportation sector in Ontario and Quebec were developed by Statistics Canada, Industry Accounts Division and provided to Martin Associates. Martin Associates developed the distribution of purchases by type of purchase (food at home, food in restaurants, housing, apparel, home furnishings, transportation, medical care, etc.) for each province – using data provided by Statistics Canada (2022 base data). The associated supplying industry jobs-to-sales ratios on a provincial level were also supplied to Martin Associates by Statistics Canada (Provincial Input-Output Models 2018).

These ratios included the retail and wholesale re-spending impacts. The personal consumption expenditures from the port activity were then combined with these job multipliers to estimate the “consumption” induced impacts by the province in which each of the 21 Canadian ports are located.

To estimate the “non-consumption” induced impacts with such sectors as state/provincial governments, education, and other social services, a ratio of state/provincial employment in these key service industries to total state/provincial employment was developed. This ratio was then multiplied by the direct and consumption induced jobs to estimate the total direct and induced job impact.

The re-spending impact includes not only the wage and salary income received by people employed to provide goods and services to the direct job holders, but also the value of the purchases. Therefore, the re-spending/local consumption impact cannot be divided by the induced jobs to estimate the induced income – as this would overestimate the induced personal wage/salary impact per induced job.

A separate induced impacts model was developed for each of the 40 ports.

3.4. INDIRECT JOBS

Indirect jobs are generated in the local economy as the result of purchases by companies that are directly dependent upon cargo and vessel activity at ports and marine terminals, including shippers/consignees. These purchases are for goods such as office supplies and equipment, as well as for services including maintenance and repair, communications and utilities, transportation, and professional services. To estimate the indirect economic impact, data on local purchases – by type of purchase – were collected from each of the firms interviewed. These local purchases were then combined with employment-to-sales ratios in local supplying industries, developed from the U.S. Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II) for the U.S. ports and from Statistics Canada, Industry Accounts Division, for Canadian ports. The indirect job ratios also account for the in-state/in-province spin-off effects from multiple rounds of supply chains that are required to provide the purchased goods and services. Indirect income, local purchases and taxes are also estimated.

A separate indirect impacts model was developed for each of the 40 ports, as well as for the province-wide and state-wide models.





4. COMMODITIES INCLUDED IN THE ANALYSIS

Economic impacts were estimated for the following commodities handled at the marine terminals on the Great Lakes-Seaway and St. Lawrence River.

- Containers
- Steel products
- General cargo (excluding steel)
- Iron ore
- Grain
- Stone/aggregates
- Cement
- Salt
- Other dry bulk
- Other liquid bulk
- Coal
- Petroleum products

Impacts that are related to cargo or activity outside of the listed commodity groups are categorized as Not Allocated. This category includes employees such as the St. Lawrence Seaway Management Corp. and the St. Lawrence Seaway Development Corporation, Customs and Border Protection, Canadian and U.S. Coast Guard, U.S. Army Corps of Engineers assigned to the Great Lakes Districts, ship repair and boatbuilding, portions of marine construction activity, to name a few.

Impacts of cruise passenger activity were not included in the analysis, but the impacts generated by passenger ferry operations were included.

5. ESTIMATE OF TONNAGE

Currently, there is no single data source for the marine cargo moving on the Great Lakes and St. Lawrence River. In order to accurately capture the tonnage moving on the Great Lakes-St. Lawrence waterway an extensive data collection effort was undertaken. The Chamber of Marine Commerce (CMC) provided detailed port to port cargo movements by commodity carried on Canadian-flag vessels. The Lake Carriers' Association (LCA) provided similar port to port movements by commodity and port for tonnage moved on U.S.-flag carriers. International and laker tonnage by commodity and port moving through the St. Lawrence Seaway was provided by the St. Lawrence Seaway Management Corporation. In addition, tonnage data by port and private marine terminal was collected by Martin Associates from port authorities and private terminal operators.

This proprietary database of tonnage represents the only comprehensive database describing port to port cargo flows, by commodity and by flag, for cargo operations on the waterway.

The report estimates tonnage volume (and its dollar value) *moved* for each of the geographic segments detailed in the Organization of Study Results. This is the recorded tonnage transported by vessels.

Tonnage value was calculated for 2022 by using the U.S. Bureau of Census, USA Trade On-Line, which publishes the value per ton of waterborne cargo at a 7-digit commodity code classification, for both containerized and non-containerized commodities moving via Great Lakes Ports. This value per ton at the commodity level excludes the ocean or laker shipping rates as well as the terminal charges and inland transportation costs. The value per ton by commodity was then multiplied by the specific commodities moving on the U.S. Great Lakes and St. Lawrence River. The dollar value of the cargo was then expressed in both U.S. as well as Canadian dollars. No dollar value per ton of waterborne cargo is published by Canada, so the dollar value per ton for the cargo moving via the U.S. Great Lakes ports was used as a proxy for all cargo, by commodity, moving on the Great Lakes.

For the purpose of determining economic impacts, the report uses a *tonnage handled* figure. "Handled" refers to both the shipping (exporting) of the cargo from a system port, and to the receipt (importing) of that cargo in a system port. Because economic activity is created every time cargo is handled, for the purposes of this study, cargo moved between ports within the region has been handled twice. By contrast, cargo moved between the region's ports and overseas ports has been handled once (in the region). For example, one ton of cargo moved to or from Europe is counted as one ton handled by a port, while one ton of cargo moved from Duluth, Minn., to Cleveland, Ohio, is counted as two tons (one ton exported in Duluth and one ton imported in Cleveland).

The tonnage *handled* at each of the 40 ports was then used as inputs into the port-specific models, which consist of the direct, induced, indirect sub-modules. Impacts were then estimated for each of the 40 ports.

6. EXPANSION OF THE 40-PORT IMPACT MODELS TO MEASURE SYSTEM-WIDE IMPACTS

A prototype model was developed for each state and province to measure the cargo that moves through private terminals and ports not located in one of the 40 port districts for which the individual models were developed. These prototype models also consist of direct, induced and indirect sub-modules, and were developed based on revenue-per-ton ratios and jobs-per-ton ratios by commodity and category, estimated from the port-specific models for the ports located in each relevant state or province.

The tonnage handled at ports that was not among the 40 ports was grouped by state and province and used in the other state and province models to develop a comprehensive measure of the economic impact on the bi-national economies.

Using the 40 port-specific models, and the state and provincial models, the economic impacts at the level of the 40 port districts and the "other state and provincial ports" were then combined to estimate total impacts in the following categories:

- Bi-national System-wide
- By country
- By state and province
- By commodity
- By carrier flag
- By employment sector

Note: Total figures on all tables and charts may not add up due to rounding.



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CHAPTER II
GREAT LAKES-ST. LAWRENCE
SEAWAY SYSTEM IMPACTS

GREAT LAKES- ST. LAWRENCE SEAWAY SYSTEM IMPACTS

This chapter organizes the study results from the perspective of a traditional definition of the Great Lakes-St. Lawrence Seaway System. These results include the impacts of domestic and international cargo that has travelled at some point through the Great Lakes, its connecting rivers and/or the St. Lawrence Seaway (ending in Montreal).

This perspective excludes Quebec commerce that moves exclusively between ports on the St. Lawrence River. It also excludes commerce between St. Lawrence River ports in Quebec and overseas ports.

The impacts are measured for the year 2022 and are presented in terms of total economic impacts at the bi-national regional level, the country level, and the state/provincial level. The impacts are also presented by flag of vessel carriage.

GREAT LAKES- ST. LAWRENCE SEAWAY SYSTEM

Duluth /
Superior

Montreal

EXHIBIT II-1

GREAT LAKES-ST. LAWRENCE SEAWAY SYSTEM

Commodity	Tonnage Moved (Millions Metric Tons)	Tonnaged Moved (Million Short Tons)	Value Millions of US\$	Value Millions of Cdn\$
Steel	3.2	3.6	\$4,288.8	\$5,575.39
General Cargo	1.1	1.2	\$2,624.4	\$3,411.69
Iron Ore/Bulk	39.8	43.9	\$3,528.1	\$4,586.56
Grain	16.5	18.2	\$6,233.1	\$8,103.00
Stone/Aggregate	31.7	34.9	\$833.8	\$1,083.98
Cement	6.4	7.0	\$600.5	\$780.59
Salt	9.7	10.7	\$335.1	\$435.57
Other Dry Bulk	5.4	5.9	\$598.6	\$778.23
Other Liquid Bulk	10.2	11.2	\$6,074.9	\$7,897.36
Coal	11.7	12.9	\$938.1	\$1,219.55
TOTAL	135.7	149.5	\$26,055.3	\$33,871.9

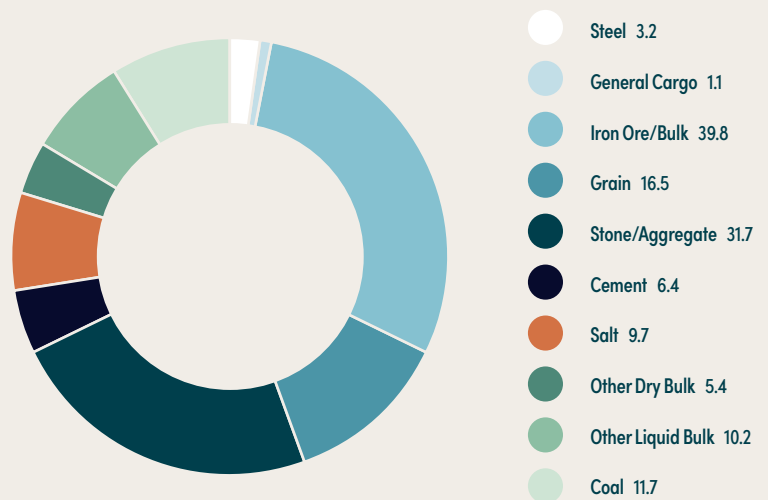
TOTAL CARGO VOLUMES

In 2022, a total of **135.7 million metric tons of cargo (149.5 million short tons)** moved through the Great Lakes-St. Lawrence Seaway System. This tonnage volume represents **US\$26.1 billion (Cdn\$33.9 billion)** of cargo value.

A majority of the domestic cargo moving on Canadian and U.S. flag vessels remains in the Great Lakes-St. Lawrence Seaway System. This cargo is loaded and unloaded at ports within the system creating economic impacts at the loading port as well as the port of discharge. This tonnage “handled” represents shipment and receipt of domestic cargo and trans-lake cargo, and is significantly greater than the tonnage of cargo “moving” on the waterway. The actual tons handled at the ports on the Great Lakes-St. Lawrence Seaway System is **252.5 million metric tons (278.3 million short tons)**.

This activity created a range of economic impacts in the region – defined as the states of Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, Pennsylvania and New York, and the Canadian provinces of Ontario and Quebec.

BREAKDOWN OF CARGO TYPE MOVED (MILLION METRIC TONS, 2022)



Total Value of Cargo Moved = US\$26.1 BILLION (CDN\$33.9 BILLION)

Note: Containerized cargo is included in General Cargo category.

1. TOTAL ECONOMIC IMPACTS

Exhibit II-2 summarizes the economic impacts of all cargo handled by the ports on the Great Lakes–Seaway system. The monetary impacts are expressed in both U.S. and Canadian dollars (shown as US\$ or Cdn\$). The exchange rate used throughout the report is US\$1.00 = Cdn \$1.3. The exchange rate reflects the annual average for 2022.

241,286 jobs in Canada and the United States are in some way related to the cargo handled at the marine terminals located on the Great Lakes–Seaway system.

Of the 241,286 jobs, 81,863 direct jobs were generated by the marine cargo and vessel activity at the marine terminals on the Great Lakes–Seaway system.

As the result of the local and regional purchases by those 81,863 individuals holding the direct jobs, an additional 84,089 induced jobs were supported in the regional economy.

75,335 indirect jobs were supported by \$8.3 billion (Cdn\$10.8 billion) in regional purchases by businesses supplying services at the marine terminals and ports.

In 2022, the marine cargo and vessel activity at the marine terminals on the Great Lakes–Seaway generated a total of US\$36.0 billion (Cdn\$46.8 billion) of economic activity in the United States and Canada.

The total economic activity consists of the direct business revenue received by the businesses supplying the cargo and vessel handling services (US\$27.0 billion (Cdn\$35.1 billion)), and the re-spending of direct income and consumption impact of US\$9.0 billion (Cdn\$11.7 billion).

Marine activity supported US\$17.8 billion (Cdn\$23.2 billion) in total personal wage and salary income, and local consumption expenditures for regional residents of the U.S. and Canada.

EXHIBIT II-2 ECONOMIC IMPACTS – REGIONAL LEVEL

TOTAL		
Jobs		
Direct jobs	81,863	
Induced	84,089	
Indirect	75,335	
Total	241,286	
Economic Activity (1,000)	US \$	Cdn \$
	\$36,005,170	\$46,806,721
Personal income (1,000)	US \$	Cdn \$
Direct	\$4,809,055	\$6,251,772
Re-Spending/Local Purchases	\$9,030,793	\$11,740,031
Indirect	\$3,970,817	\$5,162,062
Total	\$17,810,666	\$23,153,866
Business Revenue (1,000)	\$26,974,377	\$35,066,690
Local Purchases (1,000)	\$8,311,056	\$10,804,373
Total Taxes	US \$	Cdn \$
State/Provincial/Local (1,000)	\$2,469,738	\$3,210,659
Federal (1,000)	\$3,877,497	\$5,040,746
Total	\$6,347,235	\$8,251,406

241,286 JOBS IN CANADA AND THE UNITED STATES ARE IN SOME WAY RELATED TO THE CARGO HANDLED AT THE MARINE TERMINALS LOCATED ON THE GREAT LAKES-SEAWAY SYSTEM.

The 81,863 direct job holders received US\$4.8 billion (Cdn\$6.3 billion) in direct wage and salary income. This equates to an average salary of nearly US\$58,7450 (Cdn\$76,369). The 75,335 indirect job holders received US\$4.0 billion (Cdn\$5.2 billion) in indirect personal income.

A total of US\$6.3 billion (Cdn\$8.3 billion) in direct, induced, and indirect federal, state/provincial, and local tax revenue was generated by maritime activity at the marine terminals located on the Great Lakes-Seaway system.

Of the US\$6.3 billion (Cdn\$8.3 billion), US\$2.5 billion (Cdn\$3.2 billion) was paid to local and state/provincial governments, while US\$3.9 billion (Cdn\$5.1 billion) was paid in federal taxes.

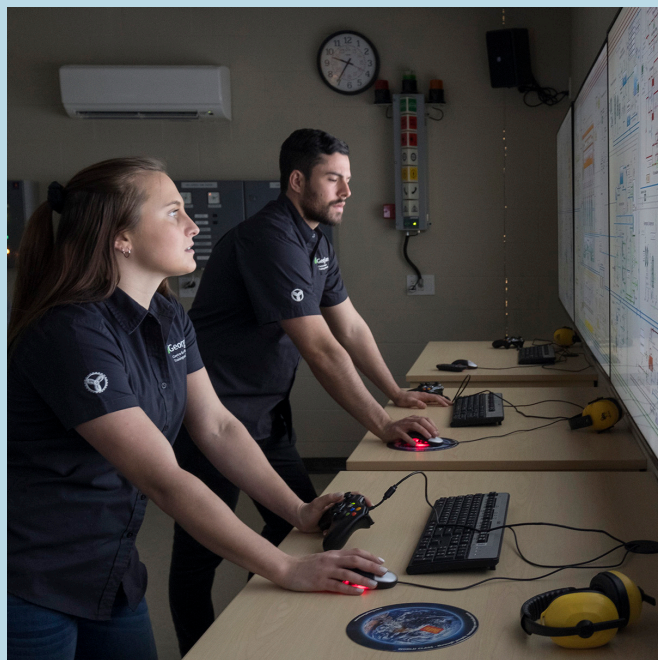


Exhibit II-3 shows the breakdown of the total impacts by country. As shown in this exhibit, 31,528 direct jobs were created in Canada, while 50,335 direct jobs were created in the U.S.

This larger concentration of direct jobs generated at the U.S. ports reflects the presence of steel mills and supporting value-added operations that are located at several of the U.S. port facilities, such as Burns Harbor, Cleveland, and Chicago.

When the induced and indirect jobs are considered, each direct job supports a total of about three jobs in both countries.

The re-spending multiplier in Canada is slightly less than in the U.S., due to a higher Canadian savings rate compared to the U.S. In contrast, the induced jobs supported by a dollar of re-spending by individuals in Canada's two provinces is about three times as great as in the U.S. Great Lakes regional economy. This reflects the fact that less out-of-region spending occurs in Ontario and Quebec. This is consistent with a larger concentration of national population and employment in those two major eastern provinces, compared to the U.S. Great Lakes states.

Indirect jobs generated per dollar of local purchases are lower in Canada than in the U.S., reflecting the fact that in Canada, there are greater leakages of business purchases out of the region. As a result, the jobs-to-sales multipliers used in estimating the indirect jobs ratios are lower in Canada than in the United States.

EXHIBIT II-3 ECONOMIC IMPACTS – COUNTRY LEVEL

	United States		Canada		TOTAL	
Jobs						
Direct jobs	50,335		31,528		81,863	
Induced	46,180		37,908		84,089	
Indirect	50,835		24,500		75,335	
Total	147,350		93,936		241,286	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$26,351,285	\$34,256,670	\$9,653,885	\$12,550,051	\$36,005,170	\$46,806,721
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$3,368,765	\$4,379,394	\$1,440,290	\$1,872,377	\$4,809,055	\$6,251,772
Re-Spending/Local Purchases	\$7,349,393	\$9,554,210	\$1,681,401	\$2,185,821	\$9,030,793	\$11,740,031
Indirect	\$2,835,690	\$3,686,397	\$1,135,127	\$1,475,666	\$3,970,817	\$5,162,062
Total	\$13,553,847	\$17,620,001	\$4,256,819	\$5,533,864	\$17,810,666	\$23,153,866
Business Revenue (1,000)	\$19,001,892	\$24,702,460	\$7,972,484	\$10,364,230	\$26,974,377	\$35,066,690
Local Purchases (1,000)	\$5,446,095	\$7,079,924	\$2,864,961	\$3,724,449	\$8,311,056	\$10,804,373
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Province/Local (1,000)	\$1,540,246	\$2,002,320	\$929,492	\$1,208,339	\$2,469,738	\$3,210,659
Federal (1,000)	\$2,600,741	\$3,380,964	\$1,276,756	\$1,659,783	\$3,877,497	\$5,040,746
Total	\$4,140,988	\$5,383,284	\$2,206,248	\$2,868,122	\$6,347,235	\$8,251,406

2. JOB IMPACTS

This section focuses on the 81,863 direct jobs supported by the 252.5 million tons of cargo handled at the ports and marine terminals on the Great Lakes–Seaway system. **Exhibit II-4** shows the direct jobs impact by commodity moving on the system. As this exhibit shows, the movement of iron ore, which represents the largest tonnage handled at the ports and marine terminals, created the largest number of direct jobs – 22,905. The majority of these jobs are with shippers/ consignees (steel mills) located at the ports that are directly dependent on the receipt of iron ore by vessels, as well as terminal jobs and jobs associated with the movement of ore to the loading ports, such as those in Minnesota and Wisconsin. The movement of steel products generates the second-largest direct jobs impacts, and this is concentrated at ports with steel fabrication tenant’s dependent upon steel imports such as Hamilton, Cleveland, and Chicago.

The majority of impacts are concentrated with the operations of tenants located at the individual ports, as well as private terminals located on the Great Lakes handling and processing of dry bulk cargoes such as alumina and other ores, fertilizers and potash. The majority of these direct jobs were created in Canada.



EXHIBIT II-4
DIRECT JOBS BY COMMODITY
– REGIONAL LEVEL

	1,000 Metric Tons	1,000 Short Tons	Total Direct Jobs
Containers	97	107	30
Steel	4,118	4,539	14,970
General Cargo	1,644	1,812	1,627
Iron Ore	79,570	87,710	22,905
Grain	24,224	26,703	3,798
Stone/Aggregate	61,541	67,836	7,038
Cement	12,330	13,592	2,905
Salt	17,512	19,304	4,192
Other Dry Bulk	9,241	10,186	3,862
Liquid Bulk	18,717	20,632	6,330
Coal	23,453	25,852	2,219
Not Allocated	NA	NA	11,986
TOTAL	252,448	278,273	81,863

Exhibit II-5 shows the direct jobs by commodity for each country.

The majority of the tonnage shipped and received at the U.S. ports and terminals consist of iron ore, stone/aggregates and coal. These cargoes typically move within the Great Lakes on U.S. flag or Canadian Lakers. Grain, iron ore and aggregates are the major commodities shipped and received at the Canadian ports and terminals located on the Great Lakes-Seaway system. The majority of the iron ore handled at Canadian ports is a domestic move, while grain handled at Canadian ports is exported, either directly via international carriers or transshipped by Canadian Lakers to St. Lawrence River ports. Under a transshipment operation, the grain moves from Great Lakes ports such as Thunder Bay and Duluth/Superior by a Canadian Laker to a St. Lawrence River port, and then is reloaded onto an international vessel for shipment to an overseas destination.

The direct jobs generated by category are presented in **Exhibit II-6**. This exhibit shows that 42 percent of the direct job impact is with shippers/consignees that are directly dependent upon the shipment and receipt of cargo by vessel. As noted, the location of steel mills, dependent iron ore, salt and alumina mines in proximity to the ports and marine terminals in the Great Lakes-St. Lawrence region underscores the importance of the transportation system in providing raw materials to the region's industrial economy. The second-largest number of direct jobs is created with the trucking firms serving the ports and marine terminals, followed by the terminal workers, which include jobs with marine terminals located within the port districts and throughout the system, as well as with warehousing operations associated with the terminal operations.

In some cases, these terminal workers are associated with the dependent shippers/consignees. 5,839 direct jobs are with the Canadian and U.S. flag vessel operators, and tug and barge operators moving cargo on the system; 2,643 jobs are with freight forwarders and customs brokers arranging for the handling of the cargo; and another 1,298 jobs are with firms providing maritime services such as ship chandlery, vessel cargo and hull surveys, ship repair and marine equipment sales, and servicing.

EXHIBIT II-5

DIRECT JOBS BY COMMODITY

– COUNTRY LEVEL

	Canada			United States			TOTAL		
	1,000 Metric Tons	1,000 Short Tons	Direct Jobs	1,000 Metric Tons	1,000 Short Tons	Direct Jobs	1,000 Metric Tons	1,000 Short Tons	Direct Jobs
Containers	40	45	4	57	62	26	97	107	30
Steel	1,476	1,627	1,611	2,642	2,912	13,359	4,118	4,539	14,970
General Cargo	1,177	1,298	409	467	515	1,217	1,644	1,812	1,627
Iron Ore	14,126	15,571	9,230	65,444	72,139	13,675	79,570	87,710	22,905
Grain	21,761	23,987	3,121	2,464	2,716	676	24,224	26,703	3,798
Stone/ Aggregate	13,692	15,093	1,904	47,848	52,743	5,134	61,541	67,836	7,038
Cement	3,269	3,604	669	9,061	9,988	2,236	12,330	13,592	2,905
Salt	10,930	12,048	1,998	6,582	7,255	2,194	17,512	19,304	4,192
Other Dry Bulk	5,212	5,745	1,678	4,029	4,441	2,184	9,241	10,186	3,862
Liquid Bulk	15,420	16,998	4,396	3,297	3,634	1,933	18,717	20,632	6,330
Coal	7,338	8,089	710	16,115	17,763	1,509	23,453	25,852	2,219
Not Allocated	NA	NA	15,668	NA	NA	6,190	NA	NA	11,986
TOTAL	94,443	104,105	31,528	158,005	174,169	50,335	252,448	278,273	81,863

EXHIBIT II-6

DIRECT JOBS BY CATEGORY

Direct Jobs	
Surface Transportation	
Rail	2,101
Truck	15,133
Maritime Services	
Terminal Employees	9,541
Dockworkers	1,328
Tug Assists	789
Pilots	139
Agents	227
Maritime Services	1,298
Forwarders	2,643
Government	2,223
Marine Equipment/Ship Repair	5,508
Laker/Barge	5,839
Dependent Shippers/Consignees	34,256
Port Authority	838
TOTAL	81,863

EXHIBIT II-7

DIRECT JOBS BY CATEGORY - COUNTRY LEVEL

Exhibit II-7 shows the direct job impacts by category, by country, for the cargo activity at all ports and terminals on the Great Lakes-Seaway system.

As presented in **Exhibit II-7**, the number of direct jobs with dependent shippers/consignees is greater in the United States, reflecting the dependency of steel mills and steel fabrication complexes located in the U.S. Direct jobs with rail are also significantly higher in the U.S. due to the greater use of rail to move coal and iron ore to the ports for shipment.

	Canada Direct Jobs	United States Direct Jobs	TOTAL
Surface Transportation			
Rail	500	1,601	2,101
Truck	5,984	9,149	15,133
Maritime Services			
Terminal Employees	3,547	5,994	9,541
Dockworkers	619	709	1,328
Tug Assists	358	431	789
Pilots	106	33	139
Agents	155	72	227
Maritime Services	311	987	1,298
Forwarders	989	1,654	2,643
Government	1,022	1,202	2,223
Marine Equipment/Ship Repair	2,753	2,756	5,508
Laker/Barge	1,913	3,926	5,839
Dependent Shippers/Consignees	12,685	21,571	34,256
Port Authority	586	251	838
TOTAL	31,528	50,335	81,863

EXHIBIT II-8

REVENUE IMPACTS BY CATEGORY

	TOTAL	
	Million US	Million Cdn
Surface Transportation		
Rail	\$4,325	\$5,623
Truck	\$1,934	\$2,514
Maritime Services		
Terminal Employees	\$1,109	\$1,441
Tug Assists	\$70	\$91
Pilots	\$44	\$57
Agents	\$34	\$45
Maritime Services	\$395	\$514
Forwarders	\$431	\$561
Marine Equipment/Ship Repair	\$611	\$794
Laker/Barge	\$2,282	\$2,967
Dependent Shippers/Consignees	\$15,570	\$20,241
Port Authority	\$168	\$219
TOTAL	\$26,974	\$35,067

3. REVENUE IMPACTS

In 2022, the direct business revenue received by the firms directly dependent upon the cargo handled at the marine terminals in the Great Lakes Seaway system was US\$27.0 billion (Cdn\$35.1 billion). These firms provide maritime services and inland transportation services for cargo handled at the marine terminals and the vessels calling at the terminals. **Exhibit II-8** shows the distribution of this direct revenue impact by category and economic sector in both U.S. and Canadian dollars.

Similar to the direct jobs' impacts by category, the majority of the direct business revenue is received by the dependent shippers/consignees located at the ports and marine terminals operating on the Great Lakes-St. Lawrence Seaway System

The revenue impacts by category and by country are presented in **Exhibit II-9**.

Consistent with the distribution of direct jobs by category, the largest revenue impacts are with the dependent shippers/ consignees. The revenue from rail operations is greater in the U.S. than in Canada, reflecting the longer haul of the rail moved to and from U.S. ports, particularly the movement of coal from Ohio, West Virginia and the Powder River Basin. Pilotage revenue is higher in the United States, due to higher pilotage charges imposed by the U.S. Coast Guard in recent years in an effort to increase overall U.S. pilot compensation and workforce numbers. The laker revenue for cargo moved to and from the U.S. is nearly double the Canadian laker revenue, primarily due to the higher volume of cargo moving on lakers to U.S. ports compared to Canadian ports.

EXHIBIT II-9

REVENUE IMPACT BY CATEGORY – COUNTRY LEVEL

	Canada		United States		TOTAL	
	Million US	Million Cdn	Million US	Million Cdn	Million US	Million Cdn
Surface Transportation						
Rail	\$809	\$1,052	\$3,516	\$4,571	\$4,325	\$5,623
Truck	\$766	\$996	\$1,167	\$1,518	\$1,934	\$2,514
Maritime Services						
Terminal Employees	\$454	\$590	\$655	\$851	\$1,109	\$1,441
Tug Assists	\$28	\$37	\$42	\$55	\$70	\$91
Pilots	\$31	\$41	\$13	\$16	\$44	\$57
Agents	\$21	\$28	\$13	\$17	\$34	\$45
Maritime Services	\$131	\$171	\$264	\$343	\$395	\$514
Forwarders	\$136	\$177	\$295	\$384	\$431	\$561
Marine Equipment/Ship Repair	\$272	\$353	\$339	\$441	\$611	\$794
Laker/Barge	\$631	\$820	\$1,652	\$2,147	\$2,282	\$2,967
Dependent Shippers/Consignees	\$4,581	\$5,956	\$10,988	\$14,285	\$15,570	\$20,241
Port Authority	\$111	\$144	\$57	\$74	\$168	\$219
TOTAL	\$7,972	\$10,364	\$19,002	\$24,702	\$26,974	\$35,067

4. PERSONAL INCOME AND LOCAL CONSUMPTION IMPACTS

The 81,863 individuals directly employed as a result of the cargo handled at the ports and marine terminals received US\$4.8 billion (Cdn\$6.3 billion) in wages and salaries. The 31,528 direct job holders at the Canadian ports and terminals received US\$1.4 billion (Cdn\$1.9 billion), for an average salary of US\$45,683 (Cdn\$ 58,745). The 50,335 direct job holders at the U.S. ports received US\$3.4 billion (Cdn\$4.4 billion) in direct personal income, for an average salary of US\$66,927 (Cdn\$87,000). The higher average salary received in the U.S. reflects a higher concentration of jobs with terminal operators, dependent shippers/ consignees, lakers, and trucking jobs in moving the cargo at U.S. ports.

These individuals, in turn, used these earnings to purchase goods and services, to pay taxes, and for savings. The purchase of goods and services from regional sources creates a re-spending effect known as the personal-earnings multiplier effect. For the U.S. Great Lakes ports, this re-spending, or multiplier effect, was estimated using a personal-earnings multiplier for the maritime sector, by state, from the U.S. Bureau of Economic Analysis, RIMS II. The income multipliers by province were developed from Statistics Canada, Industry Accounts Division, for the maritime sectors of Ontario and Quebec.

Using the local personal earnings multipliers by state and province for the relevant ports, an additional US\$9.0 billion (Cdn\$11.7 billion) in income and consumption were created in the Great Lakes regional economy.

The re-spending impact and consumption impacts should not be divided by induced jobs to estimate induced income, since the division of the re-spending impact/local consumption impact by the induced jobs will overstate the actual salary of the induced job holders, as this includes the value of the consumption purchases.

The 75,335 indirect job holders received US\$4.0 billion (Cdn\$5.2 billion) in personal income, of which the 24,500 Canadian indirect job holders received US\$1.1 billion (Cdn\$1.5 billion), while the 50,835 indirect job holders in the U.S. received US\$2.8 billion (Cdn\$3.7 billion).

5. FEDERAL, STATE/ PROVINCIAL AND LOCAL TAX IMPACTS

The cargo activity at the U.S. ports and marine terminals created US\$1.5 billion (Cdn\$2.0 billion) in state and local taxes, and US\$2.6 billion (Cdn\$3.4 billion) in federal taxes. The cargo activity at the Canadian ports created US\$929.5 million (Cdn\$1.2 billion) in provincial taxes, and US\$1.3 billion (Cdn\$1.7 billion) in federal taxes.

6. IMPACTS BY STATE AND PROVINCE

The economic impacts were estimated at the port level for 40 U.S. and Canadian Great Lakes and St. Lawrence River ports. The models developed for these 40 individual ports were then used to develop prototype models for each Great Lakes state and province – in order to capture the impacts of cargo activity moving through ports and marine terminals for which specific models were not developed. This process provided a model for each state and province to estimate the total impacts at the state and provincial level.

Exhibit II-10 presents the impacts by state for cargo handled by U.S. ports and marine terminals located on the Great Lakes–Seaway system. As this exhibit shows, in terms of direct, induced, and indirect jobs, the impacts are greatest for the state of Indiana, followed by Ohio and Michigan, reflecting the location of the key steel mills and fabrication facilities at ports in these states.

Exhibit II-11 shows the impacts of the cargo handled on the Great Lakes–Seaway system for the provinces of Ontario and Quebec. As noted earlier, these impacts do not include the impacts of the international cargo handled at St. Lawrence River ports in Quebec, nor domestic cargo moving between ports on the St. Lawrence River. The ports in Ontario account for about 71 percent of the direct job impacts for Canada.

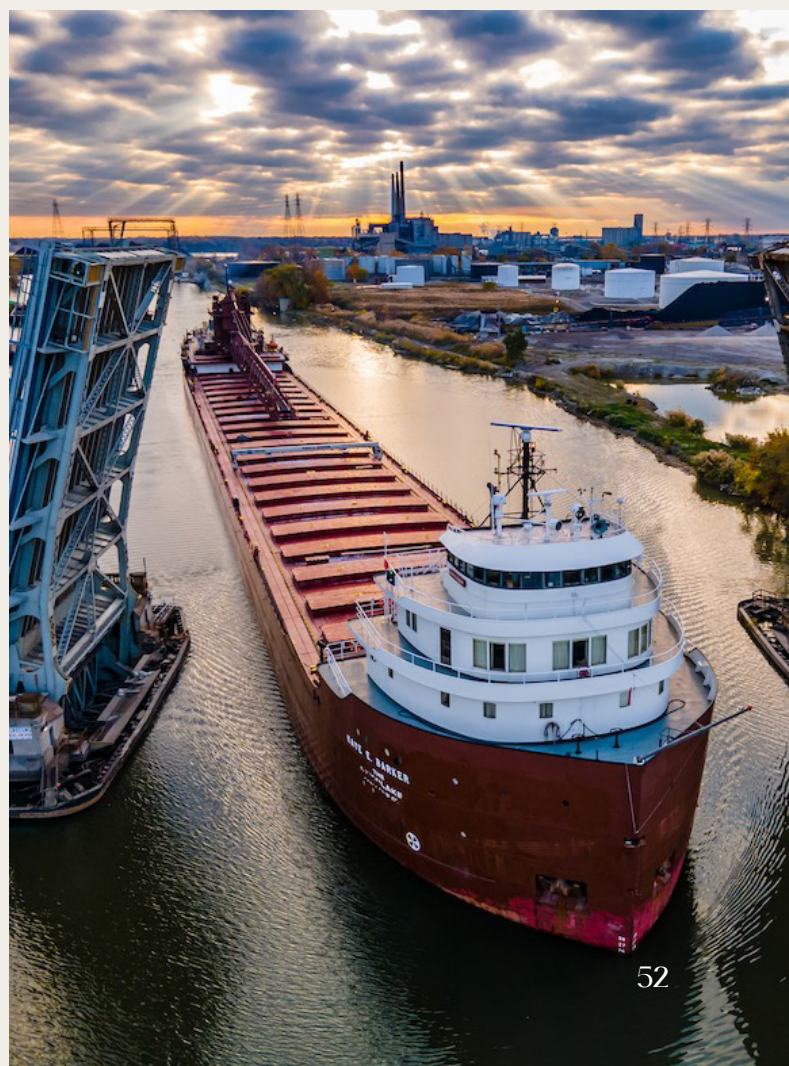


EXHIBIT II-10

ECONOMIC IMPACTS – BY STATE

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	18,211	20,074	33,281	36,686	53,683	59,175
Jobs						
Direct jobs	22,896		9,376		7,646	
Induced	23,179		8,856		5,802	
Indirect	29,423		13,200		3,609	
Total	75,498		31,432		17,057	
Economic Activity (1,000)	US \$ \$15,123,761	Cdn \$ \$19,660,890	US \$ \$3,737,879	Cdn \$ \$4,859,242	US \$ \$3,291,234	Cdn \$ \$4,278,605
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,733,664	\$2,253,764	\$597,698	\$777,008	\$443,324	\$576,321
Re-Spending/Local Consumption	\$3,798,285	\$4,937,771	\$1,401,483	\$1,821,928	\$898,927	\$1,168,606
Indirect	\$1,601,114	\$2,081,448	\$783,548	\$1,018,612	\$185,791	\$241,528
Total	\$7,133,063	\$9,272,982	\$2,782,730	\$3,617,548	\$1,528,042	\$1,986,454
Business Revenue (1,000)	\$11,325,476	\$14,723,119	\$2,336,395	\$3,037,314	\$2,392,307	\$3,109,999
Local Purchases (1,000)	\$3,055,341	\$3,971,943	\$1,416,300	\$1,841,191	\$402,443	\$523,176
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State and Local Taxes	\$774,365	\$1,006,674	\$278,273	\$361,755	\$160,119	\$208,155
Federal Taxes	\$1,424,367	\$1,851,678	\$468,232	\$608,701	\$303,706	\$394,818
Total	\$2,198,732	\$2,858,352	\$746,505	\$970,456	\$463,826	\$602,973

EXHIBIT II-10 (CONTINUED)

ECONOMIC IMPACTS – BY STATE

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	20,781	22,907	3,951	4,355	22,932	25,278
Jobs						
Direct jobs	1,588		1,389		2,882	
Induced	1,335		1,474		2,278	
Indirect	1,655		386		1,632	
Total	4,579		3,249		6,792	
Economic Activity (1,000)	US \$ \$1,117,817	Cdn \$ \$1,453,162	US \$ \$475,266	Cdn \$ \$617,846	US \$ \$1,428,472	Cdn \$ \$1,857,014
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$83,508	\$108,561	\$83,645	\$108,739	\$166,434	\$216,364
Re-Spending/Local Consumption	\$198,090	\$257,517	\$258,740	\$336,362	\$323,197	\$420,157
Indirect	\$92,260	\$119,939	\$24,212	\$31,476	\$84,954	\$110,440
Total	\$373,859	\$486,017	\$366,598	\$476,577	\$574,585	\$746,961
Business Revenue (1,000)	\$919,727	\$1,195,645	\$216,526	\$281,484	\$1,105,275	\$1,436,857
Local Purchases (1,000)	\$193,555	\$251,622	\$41,492	\$53,939	\$187,503	\$243,754
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State and Local Taxes	\$63,264	\$82,243	\$51,405	\$66,827	\$80,093	\$104,121
Federal Taxes	\$88,352	\$114,857	\$57,852	\$75,207	\$122,841	\$159,694
Total	\$151,615	\$197,100	\$109,257	\$142,034	\$202,934	\$263,815

EXHIBIT II-10 (CONTINUED)

ECONOMIC IMPACTS – BY STATE

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	4,489	4,948	676	745	158,005	174,169
Jobs						
Direct jobs	4,224		334		50,335	
Induced	2,966		290		46,180	
Indirect	700		229		50,835	
Total	7,891		853		147,350	
Economic Activity (1,000)	US \$ \$1,057,659	Cdn,\$ \$1 374 957	US \$ \$119 196	Cdn,\$ \$154 955	US \$ \$26,351,285	Cdn \$ \$34,256,670
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$240,052	\$312 068	\$20 439	\$26 570	\$3,368,765	\$4,379,394
Re-Spending/Local Consumption	\$423,885	\$551 050	\$46 784	\$60 819	\$7,349,393	\$9,554,210
Indirect	\$52,464	\$68 204	\$11 347	\$14 751	\$2,835,690	\$3,686,397
Total	\$716,401	\$931 322	\$78 569	\$102 140	\$13,553,847	\$17,620,001
Business Revenue (1,000)	\$633,775	\$823 907	\$72 412	\$94 136	\$19,001,892	\$24,702,460
Local Purchases (1,000)	\$116,112	\$150 945	\$33 349	\$43 354	\$5,446,095	\$7,079,924
Total Taxes	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State and Local Taxes	\$123,098	\$160 027	\$9 630	\$12 519	\$1,540,246	\$2,002,320
Federal Taxes	\$121,900	\$158 470	\$13 491	\$17 538	\$2,600,741	\$3,380,964
Total	\$244,997	\$318 497	\$23 121	\$30 058	\$4,140,988	\$5,383,284

EXHIBIT II-11

ECONOMIC IMPACTS – BY PROVINCE

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	63,307	69,783	31,136	34,321	94,443	104,105
Jobs						
Direct jobs	22,471		9,057		31,528	
Induced	25,139		12,769		37,908	
Indirect	19,544		4,956		24,500	
Total	67,154		26,782		93,936	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$7,374,017	\$9,586,222	\$2,279,868	\$2,963,829	\$9,653,885	\$12,550,051
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,024,482	\$1,331,827	\$415,808	\$540,550	\$1,440,290	\$1,872,377
Re-Spending/Local Consumption	\$1,099,270	\$1,429,050	\$582,131	\$756,771	\$1,681,401	\$2,185,821
Indirect	\$915,543	\$1,190,206	\$219,585	\$285,460	\$1,135,127	\$1,475,666
Total	\$3,039,295	\$3,951,083	\$1,217,524	\$1,582,781	\$4,256,819	\$5,533,864
Business Revenue (1,000)	\$6,274,747	\$8,157,171	\$1,697,737	\$2,207,058	\$7,972,484	\$10,364,230
Local Purchases (1,000)	\$2,297,964	\$2,987,353	\$566,997	\$737,096	\$2,864,961	\$3,724,449
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Province/Local (1,000)	\$566,781	\$736,816	\$362,710	\$471,524	\$929,492	\$1,208,339
Federal (1,000)	\$930,223	\$930,223	\$930,223	\$930,223	\$930,223	\$930,223
Total	\$1,497,004	\$1,667,038	\$1,292,933	\$1,401,746	\$1,859,714	\$2,138,562

7. IMPACTS BY VESSEL FLAG

This section presents economic impacts by vessel operator category. Cargo moves to and from U.S. and Canadian Great Lakes–Seaway system ports/ marine terminals on Canadian flag vessels, U.S. flag vessels and foreign flag vessels. Due to the carriage laws in place for each country, Canadian flag vessels move cargo to and from Canadian ports, while U.S. flag vessels move cargo to and from U.S. ports.

The Canadian flag and U.S. flag vessels also move cargo between the U.S. and Canadian ports in cross-lake operations. Canadian flag vessels often move cargo from points within the Great Lakes to ports on the St. Lawrence River, whereas U.S. flag carriers typically operate exclusively within the Great Lakes and seldom transit the Montreal–Lake Ontario section of the St. Lawrence Seaway.

EXHIBIT II-12 ECONOMIC IMPACTS - BY FLAG

	Canadian Flag		U.S. Flag	
Jobs				
Direct jobs	34,346		38,517	
Induced	37,673		36,370	
Indirect	26,228		41,559	
Total	98,247		116,447	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$
	\$12,977,956	\$16,871,342	\$20,048,195	\$26,062,653
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,716,669	\$2,231,669	\$2,570,759	\$3,341,987
Re-Spending/Local Consumption	\$2,612,475	\$3,396,217	\$5,516,140	\$7,170,982
Indirect	\$1,301,082	\$1,691,407	\$2,276,274	\$2,959,157
Total	\$5,630,226	\$7,319,293	\$10,363,174	\$13,472,126
Business Revenue (1,000)	\$10,365,481	\$13,475,125	\$14,532,054	\$18,891,671
Local Purchases (1,000)	\$3,031,563	\$3,941,031	\$4,453,746	\$5,789,870
Total Taxes	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$1,047,441	\$1,361,673	\$1,164,347	\$1,513,651
Federal Taxes	\$1,468,145	\$1,908,589	\$2,019,181	\$2,624,936
Total	\$2,515,586	\$3,270,262	\$3,183,528	\$4,138,587

Based on the detailed commodity flow data collected for this study, 67.0 million metric tons (73.9 million short tons) were moved on U.S. flag vessels; 49.7 million metric tons (54.8 million short tons) moved on Canadian flag vessels; 18.9 million metric tons (20.8 million short tons) were moved on foreign flag vessels.

In terms of value of cargo moved by flag, U.S. Flag carriers moved US\$5.1 billion (Cdn\$6.6 billion), Canadian flag carriers moved US\$12.1 billion (Cdn\$15.7 billion), and foreign flag carriers US \$8.8 billion (Cdn\$11.5 billion).

It is estimated that 134.1 million metric tons (147.8 million short tons) of cargo were handled at Great Lakes- Seaway ports and marine terminals associated with transportation by U.S.-flag vessels, and 99.5 million metric

tons (109.6 million short tons) of cargo were handled at Great Lakes-Seaway ports and marine terminals associated with transportation by Canadian- flag vessels. Additionally, it is estimated that 18.9 million metric tons (20.8 million short tons) of cargo were handled at Great Lakes ports and marine terminals associated with transportation by foreign flag vessels.

Exhibits II-12 through II-28 summarize the economic impacts of cargo handled by flag on the Great Lakes- St. Lawrence Seaway System. These tables show impacts at the bi-national regional level, by country, by state/ province, by commodity and by job category.

EXHIBIT II-12 (CONTINUED)

ECONOMIC IMPACTS - BY FLAG

	Foreign Flag		TOTAL	
Jobs				
Direct jobs	8,999		81,863	
Induced	10,046		84,089	
Indirect	7,548		75,335	
Total	26,592		241,286	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$
	\$2,979,020	\$3,872,726	\$36,005,170	\$46,806,721
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$
Direct	\$521,627	\$678,116	\$4,809,055	\$6,251,772
Re-Spending/Local Consumption	\$902,178	\$1,172,832	\$9,030,793	\$11,740,031
Indirect	\$393,461	\$511,499	\$3,970,817	\$5,162,062
Total	\$1,817,266	\$2,362,446	\$17,810,666	\$23,153,866
Business Revenue (1,000)	\$2,076,842	\$2,699,894	\$26,974,377	\$35,066,690
Local Purchases (1,000)	\$825,748	\$1,073,472	\$8,311,056	\$10,804,373
Total Taxes	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$257,950	\$335,335	\$2,469,738	\$3,210,659
Federal Taxes	\$390,171	\$507,222	\$3,877,497	\$5,040,746
Total	\$648,121	\$842,557	\$6,347,235	\$8,251,406

EXHIBIT II-13

ECONOMIC IMPACTS BY CANADIAN FLAG - COUNTRY LEVEL

Impacts	Canada		United States		TOTAL	
Jobs						
Direct jobs	24,260		10,086		34,346	
Induced	29,146		8,527		37,673	
Indirect	18,726		7,502		26,228	
Total	72,132		26,115		98,247	
Economic Activity (1,000)	US \$ \$7,651,456	Cdn \$ \$9,946,893	US \$ \$5,326,500	Cdn \$ \$6,924,449	US \$ \$12,977,956	Cdn \$ \$16,871,342
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,092,588	\$1,420,364	\$624,081	\$811,305	\$1,716,669	\$2,231,669
Re-Spending/Local Consumption	\$1,290,810	\$1,678,053	\$1,321,665	\$1,718,164	\$2,612,475	\$3,396,217
Indirect	\$865,025	\$1,124,533	\$436,057	\$566,874	\$1,301,082	\$1,691,407
Total	\$3,248,423	\$4,222,950	\$2,381,802	\$3,096,343	\$5,630,226	\$7,319,293
Business Revenue (1,000)	\$6,360,646	\$8,268,840	\$4,004,835	\$5,206,285	\$10,365,481	\$13,475,125
Local Purchases (1,000)	\$2,189,654	\$2,846,550	\$841,908	\$1,094,481	\$3,031,563	\$3,941,031
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$733,821	\$953,968	\$313,620	\$407,705	\$1,047,441	\$1,361,673
Federal Taxes	\$983,162	\$1,278,111	\$484,983	\$630,478	\$1,468,145	\$1,908,589
Total	\$1,716,983	\$2,232,079	\$798,602	\$1,038,183	\$2,515,586	\$3,270,262

EXHIBIT II-14

ECONOMIC IMPACTS BY U.S. FLAG - COUNTRY LEVEL

Impacts	Canada		United States		TOTAL	
Jobs						
Direct jobs	2,273		36,244		38,517	
Induced	2,593		33,777		36,370	
Indirect	2,768		38,792		41,559	
Total	7,634		108,813		116,447	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$798,650	\$1,038,245	\$19,249,545	\$25,024,408	\$20,048,195	\$26,062,653
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$105,400	\$137,020	\$2,465,359	\$3,204,967	\$2,570,759	\$3,341,987
Re-Spending/Local Consumption	\$114,025	\$148,233	\$5,402,115	\$7,022,750	\$5,516,140	\$7,170,982
Indirect	\$129,914	\$168,888	\$2,146,360	\$2,790,268	\$2,276,274	\$2,959,157
Total	\$349,339	\$454,141	\$10,013,835	\$13,017,985	\$10,363,174	\$13,472,126
Business Revenue (1,000)	\$684,625	\$890,012	\$13,847,429	\$18,001,658	\$14,532,054	\$18,891,671
Local Purchases (1,000)	\$324,303	\$421,594	\$4,129,443	\$5,368,276	\$4,453,746	\$5,789,870
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$65,265	\$84,844	\$1,099,082	\$1,428,807	\$1,164,347	\$1,513,651
Federal Taxes	\$105,749	\$137,474	\$1,913,432	\$2,487,462	\$2,019,181	\$2,624,936
Total	\$171,014	\$222,318	\$3,012,514	\$3,916,269	\$3,183,528	\$4,138,587

EXHIBIT II-15

ECONOMIC IMPACTS BY FOREIGN FLAG - COUNTRY LEVEL

Impacts	Canada		United States		TOTAL	
Jobs						
Direct jobs	4,994		4,005		8,999	
Induced	6,170		3,876		10,046	
Indirect	3,006		4,542		7,548	
Total	14,170		12,422		26,592	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$1,203,779	\$1,564,913	\$1,775,241	\$2,307,813	\$2,979,020	\$3,872,726
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$242,302	\$314,993	\$279,325	\$363,122	\$521,627	\$678,116
Re-Spending/Local Consumption	\$276,566	\$359,535	\$625,613	\$813,296	\$902,178	\$1,172,832
Indirect	\$140,188	\$182,244	\$253,273	\$329,254	\$393,461	\$511,499
Total	\$659,056	\$856,773	\$1,158,210	\$1,505,673	\$1,817,266	\$2,362,446
Business Revenue (1,000)	\$927,214	\$1,205,378	\$1,149,628	\$1,494,517	\$2,076,842	\$2,699,894
Local Purchases (1,000)	\$351,003	\$456,304	\$474,744	\$617,167	\$825,748	\$1,073,472
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$130,406	\$169,527	\$127,545	\$165,808	\$257,950	\$335,335
Federal Taxes	\$187,844	\$244,198	\$202,326	\$263,024	\$390,171	\$507,222
Total	\$318,250	\$413,725	\$329,871	\$428,832	\$648,121	\$842,557

EXHIBIT II-16

DIRECT JOBS BY COMMODITY AND FLAG - REGIONAL LEVEL

	Direct Jobs Canadian Flag	Direct Jobs US Flag	Direct Jobs Foreign Flag	TOTAL
Containers	2	0	28	30
Steel	1,726	8,989	4,255	14,970
General Cargo	1,198	0	429	1,627
Iron Ore	8,937	13,962	6	22,905
Grain	2,110	160	1,528	3,798
Stone/Aggregate	2,099	4,671	269	7,038
Cement	927	1,908	70	2,905
Salt	2,852	988	353	4,192
Other Dry Bulk	2,380	789	693	3,862
Liquid Bulk	4,193	1,513	624	6,330
Coal	690	1,529	0	2,219
Not Allocated	7,232	4,009	746	11,986
TOTAL	34,346	38,517	8,999	81,863

EXHIBIT II-17

DIRECT JOBS BY COMMODITY AND FLAG – COUNTRY LEVEL

	Canada				United States				TOTAL REGION
	Canadian Flag	U.S. Flag	Foreign Flag	Total	Canadian Flag	U.S. Flag	Foreign Flag	Total	
Containers	2	0	2	4	0	0	26	26	30
Steel	321	0	1,290	1,611	1,405	8,989	2,964	13,359	14,970
General Cargo	292	0	117	409	906	0	311	1,217	1,627
Iron Ore	8,416	814	0	9,230	522	13,148	6	13,675	22,905
Grain	1,842	11	1,269	3,121	268	149	259	676	3,798
Stone/ Aggregate	1,299	340	264	1,904	800	4,330	4	5,134	7,038
Cement	627	15	27	669	300	1,893	43	2,236	2,905
Salt	1,611	34	353	1,998	1,241	953	0	2,194	4,192
Other Dry Bulk	1,066	107	506	1,678	1,315	682	187	2,184	3,862
Liquid Bulk	3,668	112	617	4,396	525	1,401	7	1,933	6,330
Coal	266	444	0	710	424	1,085	0	1,509	2,219
Not Allocated	4,851	395	550	5,796	2,381	3,614	196	6,190	11,986
TOTAL	24,260	2,273	4,994	31,528	10,086	36,244	4,005	50,335	81,863

Note p.61-62: Containerized cargo is included in General Cargo category.

EXHIBIT II-18
DIRECT JOBS BY
CATEGORY AND FLAG
– REGIONAL LEVEL

	Canadian Flag	US Flag	Foreign Flag	TOTAL
Surface Transportation				
Rail	724	1,236	141	2,101
Truck	5,662	6,364	3,108	15,133
Maritime Services				
Terminal Employees	3,611	4,471	1,459	9,541
Dockworkers	757	331	241	1,328
Tug Assists	370	312	107	789
Pilots	0	0	139	139
Maritime Services	418	788	319	1,525
Forwarders	1,042	1,404	197	2,643
Government	978	1,115	131	2,223
Marine Equipment/Ship Repair	3,924	1,306	278	5,508
Laker/Barge	2,930	2,765	144	5,839
Dependent Shippers/Consignees	13,382	18,207	2,667	34,256
Port Authority	549	219	69	838
TOTAL	34,346	38,517	8,999	81,863

All pilotage jobs have been allocated to foreign flag vessels. Canadian flag vessels, however, are also subject to compulsory pilotage requirements in the St. Lawrence and Great Lakes region. It was not possible to accurately allocate Canadian-flag pilotage impacts due to lack of information as to duration of time pilots spend on these transits versus foreign-flag transits.

EXHIBIT II-19
DIRECT JOBS IMPACTS BY CATEGORY AND FLAG – COUNTRY LEVEL

	Canada				United States				TOTAL
	Canadian Flag	U.S. Flag	Foreign Flag	Total	Canadian Flag	U.S. Flag	Foreign Flag	Total	Total System
Surface Transportation									
Rail	440	25	35	500	284	1,211	106	1,601	2,101
Truck	3,644	457	1,883	5,984	2,018	5,906	1,225	9,149	15,133
Maritime Services									
Terminal Employees	2,307	195	1,045	3,547	1,304	4,276	414	5,994	9,541
Dockworkers	547	15	57	619	210	316	183	709	1,328
Tug Assists	246	30	82	358	124	282	25	431	789
Pilots	NA	NA	106	106	NA	NA	33	33	139
Maritime Services	211	20	235	466	207	768	84	1,059	1,525
Forwarders	723	106	160	989	319	1,298	37	1,654	2,643
Government	695	220	106	1,022	283	894	25	1,202	2,223
Marine Equipment/Ship Repair	2,529	21	203	2,753	1,395	1,285	75	2,756	5,508
Laker/Barge	1,608	189	115	1,913	1,321	2,576	29	3,926	5,839
Dependent Shippers/Consignees	10,898	876	910	12,685	2,484	17,331	1,757	21,571	34,256
Port Authority	412	118	56	586	137	101	13	251	838
TOTAL	24,260	2,273	4,994	31,528	10,086	36,244	4,005	50,335	81,863

EXHIBIT II-20 REVENUE IMPACT BY CATEGORY AND FLAG – REGIONAL LEVEL

	Canada Flag		US Flag		Foreign Flag		TOTAL	
	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn
Surface Transportation								
Rail	\$1,477.3	\$1,920.5	\$2,659.9	\$3,457.9	\$188.1	\$244.5	\$4,325.3	\$5,622.9
Truck	\$731.8	\$951.3	\$732.9	\$952.8	\$469.2	\$610.0	\$1,933.9	\$2,514.1
Maritime Services								
Terminal Employees	\$458.9	\$596.5	\$540.7	\$702.9	\$109.0	\$141.7	\$1,108.5	\$1,441.1
Tug Assists	\$33.7	\$43.8	\$28.6	\$37.2	\$8.0	\$10.4	\$70.3	\$91.5
Pilots	\$0.0	\$0.0	\$0.0	\$0.0	\$43.8	\$56.9	\$43.8	\$56.9
Maritime Services	\$165.8	\$215.5	\$206.8	\$268.8	\$57.2	\$74.4	\$429.8	\$558.7
Forwarders	\$156.3	\$203.2	\$246.4	\$320.3	\$28.6	\$37.1	\$431.2	\$560.6
Marine Equipment/Ship Repair	\$335.6	\$436.3	\$235.7	\$306.4	\$39.6	\$51.5	\$611.0	\$794.2
Laker/Barge	\$869.0	\$1,129.7	\$1,371.7	\$1,783.2	\$41.7	\$54.2	\$2,282.4	\$2,967.1
Dependent Shippers/ Consignees	\$6,027.1	\$7,835.2	\$8,471.2	\$11,012.6	\$1,071.6	\$1,393.1	\$15,569.9	\$20,240.9
Port Authority	\$110.0	\$143.0	\$38.2	\$49.7	\$20.0	\$26.0	\$168.2	\$218.7
TOTAL	\$10,365.5	\$13,475.1	\$14,532.1	\$18,891.7	\$2,076.8	\$2,699.9	\$26,974.4	\$35,066.7

EXHIBIT II-21 REVENUE IMPACT BY CATEGORY AND FLAG – CANADA

	Canada							
	Canadian Flag		US Flag		Foreign Flag		Total Canada	
	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn
Surface Transportation								
Rail	\$650.5	\$845.6	\$78.2	\$101.7	\$80.8	\$105.0	\$809.5	\$1,052.3
Truck	\$435.6	\$566.3	\$53.0	\$68.9	\$277.8	\$361.2	\$766.5	\$996.4
Maritime Services								
Terminal Employees	\$325.7	\$423.5	\$51.2	\$66.6	\$76.6	\$99.6	\$453.5	\$589.6
Tug Assists	\$19.9	\$25.8	\$2.7	\$3.5	\$5.5	\$7.2	\$28.1	\$36.6
Pilots	\$0.0	\$0.0	\$0.0	\$0.0	\$31.2	\$40.6	\$31.2	\$40.6
Maritime Services/Agents	\$108.1	\$140.5	\$3.5	\$4.5	\$41.0	\$53.2	\$152.5	\$198.2
Forwarders	\$99.3	\$129.2	\$14.5	\$18.9	\$22.0	\$28.6	\$135.9	\$176.6
Marine Equipment/Ship Repair	\$237.3	\$308.5	\$3.1	\$4.1	\$31.5	\$40.9	\$271.9	\$353.4
Laker/Barge	\$524.0	\$681.2	\$70.1	\$91.2	\$36.8	\$47.8	\$630.9	\$820.1
Dependent Shippers/ Consignees	\$3,877.3	\$5,040.5	\$396.3	\$515.2	\$307.9	\$400.2	\$4,581.4	\$5,955.9
Port Authority	\$83.0	\$107.9	\$11.9	\$15.5	\$16.2	\$21.0	\$111.1	\$144.4
TOTAL	\$6,360.6	\$8,268.8	\$684.6	\$890.0	\$927.2	\$1,205.4	\$7,972.5	\$10,364.2

All pilotage revenue impacts have been allocated to foreign flag vessels. Canadian flag vessels, however, are also subject to compulsory pilotage requirements in the St. Lawrence and Great Lakes region. It was not possible to accurately allocate Canadian-flag pilotage impacts due to lack of information as to duration of time pilots spend on these transits versus foreign-flag transits.

EXHIBIT II-22

REVENUE IMPACT BY CATEGORY AND FLAG – UNITED STATES

United States								
	Canadian Flag		US Flag		Foreign Flag		Total US	
	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn
Surface Transportation								
Rail	\$826.86	\$1,074.92	\$2,581.70	\$3,356.21	\$107.30	\$139.50	\$3,515.86	\$4,570.62
Truck	\$296.17	\$385.02	\$679.91	\$883.88	\$191.39	\$248.81	\$1,167.47	\$1,517.71
Maritime Services	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Terminal Employees	\$133.12	\$173.05	\$489.48	\$636.32	\$32.39	\$42.10	\$654.98	\$851.48
Tug Assists	\$13.81	\$17.96	\$25.92	\$33.69	\$2.47	\$3.21	\$42.20	\$54.86
Pilots	\$0.00	\$0.00	\$0.00	\$0.00	\$12.52	\$16.27	\$12.52	\$16.27
Maritime Services/Agents	\$57.75	\$75.07	\$203.27	\$264.25	\$16.26	\$21.14	\$277.28	\$360.46
Forwarders	\$56.92	\$74.00	\$231.85	\$301.41	\$6.59	\$8.56	\$295.36	\$383.97
Marine Equipment/ Ship Repair	\$98.37	\$127.88	\$232.53	\$302.30	\$8.18	\$10.63	\$339.09	\$440.81
Laker/Barge	\$345.02	\$448.52	\$1,301.56	\$1,692.03	\$4.95	\$6.43	\$1,651.53	\$2,146.98
Dependent Shippers/ Consignees	\$2,149.81	\$2,794.76	\$8,074.90	\$10,497.38	\$763.76	\$992.88	\$10,988.47	\$14,285.02
Port Authority	\$27.00	\$35.10	\$26.30	\$34.19	\$3.83	\$4.98	\$57.13	\$74.27
TOTAL	\$4,004.83	\$5,206.29	\$13,847.43	\$18,001.66	\$1,149.63	\$1,494.52	\$19,001.89	\$24,702.46

All pilotage revenue impacts have been allocated to foreign flag vessels. Canadian flag vessels, however, are also subject to compulsory pilotage requirements in the St. Lawrence and Great Lakes region. It was not possible to accurately allocate Canadian-flag pilotage impacts due to lack of information as to duration of time pilots spend on these transits versus foreign-flag transits.

EXHIBIT II-23

ECONOMIC IMPACTS BY STATE – CARGO ON CANADIAN FLAG VESSELS

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	623	687	6,944	7,654	8,514	9,385
Jobs						
Direct jobs	2,123		1,808		1,162	
Induced	2,113		1,683		878	
Indirect	2,728		2,907		583	
Total	6,964		6,399		2,623	
Economic Activity (1,000)	US \$ \$2,592,645	Cdn \$ \$3,370,438	US \$ \$704,280	Cdn \$ \$915,564	US \$ \$451,888	Cdn \$ \$587,454
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$157,393	\$204,611	\$113,136	\$147,076	\$66,996	\$87,094
Re-Spending/Local Consumption	\$344,832	\$448,281	\$265,281	\$344,865	\$135,847	\$176,601
Indirect	\$148,430	\$192,959	\$175,852	\$228,608	\$29,612	\$38,496
Total	\$650,654	\$845,851	\$554,269	\$720,549	\$232,454	\$302,191
Business Revenue (1,000)	\$2,247,813	\$2,922,157	\$438,999	\$570,699	\$316,041	\$410,853
Local Purchases (1,000)	\$283,242	\$368,215	\$318,796	\$414,435	\$63,756	\$82,883
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$82,539	\$107,301	\$55,427	\$72,055	\$23,784	\$30,919
Federal Taxes	\$180,945	\$235,229	\$92,156	\$119,802	\$44,190	\$57,447
Total	\$263,485	\$342,530	\$147,583	\$191,857	\$67,974	\$88,366

EXHIBIT II-23 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CARGO ON CANADIAN FLAG VESSELS

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	2,589	2,854	1,957	2,157	6,166	6,796
Jobs						
Direct jobs	181		681		685	
Induced	153		737		540	
Indirect	126		189		381	
Total	460		1,607		1,605	
Economic Activity (1,000)	US \$ \$130,226	Cdn \$ \$169,293	US \$ \$238,408	Cdn \$ \$309,931	US \$ \$348,946	Cdn \$ \$453,630
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$9,592	\$12,470	\$42,044	\$54,658	\$39,367	\$51,177
Re-Spending/Local Consumption	\$22,754	\$29,580	\$130,056	\$169,073	\$76,447	\$99,381
Indirect	\$7,041	\$9,153	\$11,867	\$15,427	\$19,784	\$25,719
Total	\$39,387	\$51,203	\$183,968	\$239,158	\$135,598	\$176,277
Business Revenue (1,000)	\$107,472	\$139,713	\$108,352	\$140,858	\$272,499	\$354,249
Local Purchases (1,000)	\$14,961	\$19,449	\$20,337	\$26,438	\$43,725	\$56,842
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$6,872	\$8,934	\$25,791	\$33,528	\$19,086	\$24,811
Federal Taxes	\$9,752	\$12,678	\$29,018	\$37,724	\$29,479	\$38,323
Total	\$16,624	\$21,612	\$54,809	\$71,252	\$48,565	\$63,135

EXHIBIT II-23 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CARGO ON CANADIAN FLAG VESSELS

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	3,577	3,943	71	78	30,441	33,555
Jobs						
Direct jobs	3,411		36		10,086	
Induced	2,392		31		8,527	
Indirect	564		25		7,502	
Total	6,366		91		26,115	
Economic Activity (1,000)	US \$ \$847,152	Cdn,\$ \$1,101,297	US \$ \$12,956	Cdn,\$ \$16,843	US \$ \$5,326,500	Cdn \$ \$6,924,449
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$193,372	\$251,384	\$2,181	\$2,835	\$624,081	\$811,305
Re-Spending/Local Consumption	\$341,457	\$443,894	\$4,992	\$6,490	\$1,321,665	\$1,718,164
Indirect	\$42,255	\$54,931	\$1,217	\$1,581	\$436,057	\$566,874
Total	\$577,084	\$750,209	\$8,390	\$10,906	\$2,381,802	\$3,096,343
Business Revenue (1,000)	\$505,695	\$657,403	\$7,964	\$10,353	\$4,004,835	\$5,206,285
Local Purchases (1,000)	\$93,516	\$121,571	\$3,575	\$4,648	\$841,908	\$1,094,481
Total Taxes (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State/Provincial/Local Taxes	\$99,089	\$128,816	\$1,032	\$1,342	\$313,620	\$407,705
Federal Taxes	\$97,991	\$127,389	\$1,450	\$1,885	\$484,983	\$630,478
Total	\$197,080	\$256,204	\$2,483	\$3,228	\$798,602	\$1,038,183

EXHIBIT II-24

ECONOMIC IMPACTS BY PROVINCE – CARGO ON CANADIAN FLAG VESSELS

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	41,160	45,370	27,877	30,729	69,037	76,099
Jobs						
Direct jobs	16,191		8,069		24,260	
Induced	17,971		11,175		29,146	
Indirect	14,164		4,562		18,726	
Total	48,327		23,805		72,132	
Economic Activity (1,000)	US \$ \$5,576,767	Cdn \$ \$7,249,797	US \$ \$2,074,689	Cdn \$ \$2,697,096	US \$ \$7,651,456	Cdn \$ \$9,946,893
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$730,314	\$949,409	\$362,273	\$470,955	\$1,092,588	\$1,420,364
Re-Spending/Local Consumption	\$783,627	\$1,018,716	\$507,183	\$659,337	\$1,290,810	\$1,678,053
Indirect	\$662,616	\$861,400	\$202,410	\$263,133	\$865,025	\$1,124,533
Total	\$2,176,557	\$2,829,525	\$1,071,866	\$1,393,425	\$3,248,423	\$4,222,950
Business Revenue (1,000)	\$4,793,139	\$6,231,081	\$1,567,507	\$2,037,759	\$6,360,646	\$8,268,840
Local Purchases (1,000)	\$1,669,234	\$2,170,005	\$520,420	\$676,546	\$2,189,654	\$2,846,550
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Province/Local Taxes	\$412,784	\$536,619	\$321,038	\$417,349	\$733,821	\$953,968
Federal Taxes	\$675,754	\$878,481	\$307,408	\$399,630	\$983,162	\$1,278,111
Total	\$1,088,538	\$1,415,099	\$628,446	\$816,979	\$1,716,983	\$2,232,079

EXHIBIT II-25

ECONOMIC IMPACTS BY STATE – CARGO ON U.S. FLAG VESSELS

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	17,292	19,061	24,973	27,528	44,652	49,220
Jobs						
Direct jobs	18,687		6,593		6,339	
Induced	18,986		6,185		4,804	
Indirect	24,014		8,975		2,950	
Total	61,687		21,752		14,093	
Economic Activity (1,000)	US \$ \$11,364,328	Cdn \$ \$14,773,627	US \$ \$2,723,571	Cdn \$ \$3,540,643	US \$ \$2,804,011	Cdn \$ \$3,645,215
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,421,323	\$1,847,720	\$416,611	\$541,595	\$366,822	\$476,869
Re-Spending/Local Consumption	\$3,113,978	\$4,048,171	\$976,870	\$1,269,931	\$743,806	\$966,947
Indirect	\$1,306,767	\$1,698,798	\$531,579	\$691,053	\$152,342	\$198,045
Total	\$5,842,068	\$7,594,689	\$1,925,060	\$2,502,578	\$1,262,970	\$1,641,861
Business Revenue (1,000)	\$8,250,351	\$10,725,456	\$1,746,701	\$2,270,712	\$2,060,206	\$2,678,267
Local Purchases (1,000)	\$2,493,652	\$3,241,747	\$966,712	\$1,256,725	\$330,184	\$429,239
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Local Taxes	\$624,166	\$811,416	\$192,506	\$250,258	\$133,338	\$173,339
Federal Taxes	\$1,123,510	\$1,460,563	\$329,394	\$428,213	\$254,504	\$330,855
Total	\$1,747,676	\$2,271,978	\$521,901	\$678,471	\$387,842	\$504,194

EXHIBIT II-25 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CARGO ON U.S. FLAG VESSELS

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	17,628	19,432	1,692	1,866	16,385	18,061
Jobs						
Direct jobs	1,228		490		2,083	
Induced	1,021		511		1,641	
Indirect	1,245		136		1,204	
Total	3,494		1,138		4,929	
Economic Activity (1,000)	US \$ \$937,341	Cdn \$ \$1,218,543	US \$ \$170,757	Cdn \$ \$221,984	US \$ \$1,047,690	Cdn \$ \$1,361,997
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$63,593	\$82,671	\$28,901	\$37,571	\$119,773	\$155,705
Re-Spending/Local Consumption	\$150,849	\$196,104	\$89,399	\$116,218	\$232,588	\$302,364
Indirect	\$69,383	\$90,198	\$8,542	\$11,104	\$62,724	\$81,542
Total	\$283,825	\$368,973	\$126,841	\$164,893	\$415,086	\$539,611
Business Revenue (1,000)	\$786,492	\$1,022,439	\$81,358	\$105,765	\$815,102	\$1,059,633
Local Purchases (1,000)	\$145,619	\$189,304	\$14,638	\$19,029	\$138,259	\$179,736
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Local Taxes	\$49,758	\$64,685	\$17,908	\$23,281	\$58,123	\$75,560
Federal Taxes	\$70,781	\$92,016	\$20,287	\$26,373	\$89,441	\$116,273
Total	\$120,539	\$156,701	\$38,195	\$49,654	\$147,564	\$191,833

EXHIBIT II-25 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CARGO ON U.S. FLAG VESSELS

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	767	845	596	657	123,985	136,669
Jobs						
Direct jobs	535		289		36,244	
Induced	377		252		33,777	
Indirect	69		198		38,792	
Total	982		739		108,813	
Economic Activity (1,000)	US \$ \$97,877	Cdn,\$ \$127,241	US \$ \$103,969	Cdn,\$ \$135,159	US \$ \$19,249,545	Cdn \$ \$25,024,408
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$30,605	\$39,786	\$17,730	\$23,049	\$2,465,359	\$3,204,967
Re-Spending/Local Consumption	\$54,042	\$70,255	\$40,585	\$52,760	\$5,402,115	\$7,022,750
Indirect	\$5,196	\$6,755	\$9,826	\$12,774	\$2,146,360	\$2,790,268
Total	\$89,843	\$116,796	\$68,141	\$88,584	\$10,013,835	\$13,017,985
Business Revenue (1,000)	\$43,836	\$56,986	\$63,384	\$82,399	\$13,847,429	\$18,001,658
Local Purchases (1,000)	\$11,500	\$14,950	\$28,880	\$37,544	\$4,129,443	\$5,368,276
Total Taxes	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State/Local Taxes	\$14,921	\$19,397	\$8,363	\$10,871	\$1,099,082	\$1,428,807
Federal Taxes	\$13,790	\$17,927	\$11,725	\$15,242	\$1,913,432	\$2,487,462
Total	\$28,711	\$37,324	\$20,088	\$26,114	\$3,012,514	\$3,916,269

EXHIBIT II-26

ECONOMIC IMPACTS BY PROVINCE – CARGO ON U.S. FLAG VESSELS

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	10,017	11,042	82	91	10,099	11,133
Jobs						
Direct jobs	2,216		57		2,273	
Induced	2,507		86		2,593	
Indirect	2,751		17		2,768	
Total	7,474		160		7,634	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$774,281	\$1,006,565	\$24,369	\$31,680	\$798,650	\$1,038,245
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$102,554	\$133,320	\$2,846	\$3,700	\$105,400	\$137,020
Re-Spending/Local Consumption	\$110,040	\$143,052	\$3,985	\$5,181	\$114,025	\$148,233
Indirect	\$129,223	\$167,990	\$691	\$898	\$129,914	\$168,888
Total	\$341,817	\$444,362	\$7,523	\$9,779	\$349,339	\$454,141
Business Revenue (1,000)	\$664,241	\$863,513	\$20,384	\$26,499	\$684,625	\$890,012
Local Purchases (1,000)	\$322,520	\$419,275	\$1,784	\$2,319	\$324,303	\$421,594
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Provincial/Local Taxes	\$62,790	\$81,627	\$2,475	\$3,217	\$65,265	\$84,844
Federal Taxes	\$103,292	\$134,279	\$2,458	\$3,195	\$105,749	\$137,474
Total	\$166,082	\$215,906	\$4,932	\$6,412	\$171,014	\$222,318

EXHIBIT II-27

ECONOMIC IMPACTS BY STATE – CARGO ON FOREIGN FLAG VESSELS

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	296	327	1,364	1,504	517	570
Jobs						
Direct jobs	2,087		976		145	
Induced	2,080		987		120	
Indirect	2,681		1,319		76	
Total	6,848		3,281		341	
Economic Activity (1,000)	US \$ \$1,166,788	Cdn \$ \$1,516,825	US \$ \$310,030	Cdn \$ \$403,039	US \$ \$35,337	Cdn \$ \$45,939
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$154,948	\$201,433	\$67,952	\$88,337	\$9,506	\$12,358
Re-Spending/Local Consumption	\$339,476	\$441,319	\$159,333	\$207,134	\$19,276	\$25,059
Indirect	\$145,916	\$189,691	\$76,117	\$98,952	\$3,836	\$4,987
Total	\$640,341	\$832,443	\$303,402	\$394,423	\$32,618	\$42,404
Business Revenue (1,000)	\$827,312	\$1,075,506	\$150,696	\$195,905	\$16,061	\$20,880
Local Purchases (1,000)	\$278,447	\$361,980	\$130,793	\$170,031	\$8,504	\$11,055
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Local Taxes	\$67,659	\$87,957	\$30,340	\$39,442	\$2,998	\$3,897
Federal Taxes	\$119,912	\$155,886	\$46,682	\$60,686	\$5,013	\$6,517
Total	\$187,572	\$243,843	\$77,022	\$100,129	\$8,011	\$10,414

EXHIBIT II-27 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CARGO ON FOREIGN FLAG VESSELS

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	564	622	302	333	382	421
Jobs						
Direct jobs	178		218		114	
Induced	161		225		97	
Indirect	285		61		47	
Total	625		504		258	
Economic Activity (1,000)	US \$ \$50,250	Cdn \$ \$65,325	US \$ \$66,101	Cdn \$ \$85,932	US \$ \$31,836	Cdn \$ \$41,387
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$10,323	\$13,420	\$12,700	\$16,510	\$7,293	\$9,481
Re-Spending/Local Consumption	\$24,487	\$31,833	\$39,286	\$51,071	\$14,163	\$18,412
Indirect	\$15,837	\$20,588	\$3,803	\$4,944	\$2,446	\$3,180
Total	\$50,647	\$65,841	\$55,789	\$72,526	\$23,902	\$31,072
Business Revenue (1,000)	\$25,763	\$33,492	\$26,815	\$34,860	\$17,674	\$22,976
Local Purchases (1,000)	\$32,975	\$42,868	\$6,518	\$8,473	\$5,520	\$7,176
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Local Taxes	\$6,633	\$8,623	\$7,706	\$10,018	\$2,885	\$3,750
Federal Taxes	\$7,818	\$10,164	\$8,546	\$11,110	\$3,921	\$5,098
Total	\$14,451	\$18,787	\$16,253	\$21,128	\$6,806	\$8,848

EXHIBIT II-27 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CARGO ON FOREIGN FLAG VESSELS

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	145	160	9	10	3,579	3,945
Jobs						
Direct jobs	278		9		4,005	
Induced	197		8		3,876	
Indirect	67		6		4,542	
Total	542		23		12,422	
Economic Activity (1,000)	US \$ \$112,630	Cdn,\$ \$146,419	US \$ \$2,272	Cdn,\$ \$2,953	US \$ \$1,775,245	Cdn \$ \$2,307,818
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$16,075	\$20,898	\$527	\$686	\$279,326	\$363,123
Re-Spending/Local Consumption	\$28,386	\$36,902	\$1,207	\$1,569	\$625,614	\$813,299
Indirect	\$5,014	\$6,518	\$304	\$395	\$253,273	\$329,255
Total	\$49,475	\$64,317	\$2,039	\$2,650	\$1,158,213	\$1,505,677
Business Revenue (1,000)	\$84,244	\$109,517	\$1,064	\$1,384	\$1,149,630	\$1,494,520
Local Purchases (1,000)	\$11,096	\$14,424	\$893	\$1,161	\$474,745	\$617,169
Total Taxes (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State/Local Taxes	\$9,088	\$11,814	\$235	\$306	\$127,545	\$165,808
Federal Taxes	\$10,118	\$13,154	\$316	\$411	\$202,327	\$263,025
Total	\$19,206	\$24,968	\$551	\$716	\$329,872	\$428,833

* New York state jobs and other economic impacts are related to St. Lawrence Seaway management and lock maintenance.

** Pennsylvania tonnage appears as 0 because it is less than 1,000 metric tons.

EXHIBIT II-28

ECONOMIC IMPACTS BY PROVINCE – CARGO ON FOREIGN FLAG VESSELS

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	12,130	13,371	3,177	3,502	15,307	16,873
Jobs						
Direct jobs	4,064		931		4,994	
Induced	4,662		1,508		6,170	
Indirect	2,628		378		3,006	
Total	11,353		2,817		14,170	
Economic Activity (1,000)	US \$ \$1,022,969	Cdn \$ \$1,329,860	US \$ \$180,810	Cdn \$ \$235,053	US \$ \$1,203,779	Cdn \$ \$1,564,913
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$191,614	\$249,098	\$50,688	\$65,895	\$242,302	\$314,993
Re-Spending/Local Consumption	\$205,602	\$267,283	\$70,964	\$92,253	\$276,566	\$359,535
Indirect	\$123,704	\$160,816	\$16,484	\$21,429	\$140,188	\$182,244
Total	\$520,921	\$677,197	\$138,136	\$179,576	\$659,056	\$856,773
Business Revenue (1,000)	\$817,367	\$1,062,577	\$109,846	\$142,800	\$927,214	\$1,205,378
Local Purchases (1,000)	\$306,210	\$398,073	\$44,793	\$58,231	\$351,003	\$456,304
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Provincial/Local Taxes	\$91,207	\$118,570	\$39,198	\$50,958	\$130,406	\$169,527
Federal Taxes	\$151,177	\$196,530	\$36,668	\$47,668	\$187,844	\$244,198
Total	\$242,384	\$315,099	\$75,866	\$98,626	\$318,250	\$413,725



CHAPTER III
GREAT LAKES-ST.LAWRENCE
RIVER WATERWAY IMPACTS

GREAT LAKES- ST. LAWRENCE RIVER WATERWAY IMPACTS

This chapter organizes the study results with a broader perspective that includes impacts of all domestic and international cargo moving on the Great Lakes, its connecting rivers, the St. Lawrence Seaway and the Lower St. Lawrence River.

This perspective is particularly relevant to Canadian stakeholders in that all Quebec impacts along the St. Lawrence are included in this chapter.

The impacts are measured for the year 2022 and are presented in terms of total economic impacts at the bi-national regional level, the country level, and the state/provincial level. The impacts are also presented by flag of vessel carriage.

GREAT LAKES- ST. LAWRENCE RIVER WATERWAY

Havre-Saint-Pierre

Duluth /
Superior



EXHIBIT III-1

GREAT LAKES-ST. LAWRENCE RIVER WATERWAY

Commodity	Tonnage Moved (Millions Metric Tons)	Tonnaged Moved (Million Short Tons)	Value Millions of US\$	Value Millions of Cdn\$
Steel	3.9	4.3	\$5,173.2	\$6,725.21
General Cargo	18.8	20.7	\$75,474.5	\$98,116.83
Iron Ore/Bulk	90.0	99.2	\$7,972.9	\$10,364.75
Grain	21.4	23.6	\$8,062.8	\$10,481.64
Stone/Aggregate	31.9	35.2	\$840.1	\$1,092.14
Cement	6.9	7.7	\$654.1	\$850.39
Salt	11.6	12.8	\$401.4	\$521.86
Other Dry Bulk	23.8	26.3	\$2,651.4	\$3,446.76
Other Liquid Bulk	31.3	34.5	\$18,665.7	\$24,265.35
Coal	12.5	13.8	\$998.1	\$1,297.50
TOTAL	252.1	277.9	\$120,894.2	\$157,162.4

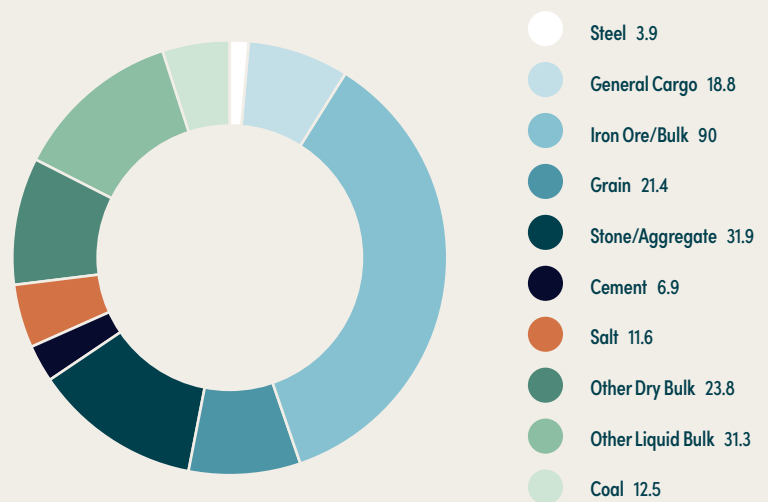
TOTAL CARGO VOLUMES

In 2022, a total of **252.1 million metric tons of cargo (277.9 million short tons)** moved through the Great Lakes-St. Lawrence River Waterway. This tonnage volume represents **US\$120.9 billion (Cdn\$157.2 billion)** of cargo value.

A majority of the domestic cargo moving on Canadian and U.S. flag vessels remains in the Great Lakes-St. Lawrence waterway. This cargo is loaded and unloaded at ports within the system, creating economic impacts at the loading port as well as the port of discharge. This tonnage “handled” represents shipment and receipts of domestic cargo and trans-lake cargo and is significantly greater than the tonnage of cargo “moving” on the waterway. The actual tons handled at the ports were **368.9 million metric tons (406.6 million short tons)**.

This activity created a range of economic impacts (described below) in the region – defined as the states of Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, Pennsylvania, and New York, and the Canadian provinces of Ontario and Quebec.

BREAKDOWN OF CARGO TYPE MOVED (MILLION METRIC TONS, 2022)



Note: Containerized cargo is included in General Cargo category.

Total Value of Cargo Moved = **US\$120.9 BILLION (CDN\$157.2 BILLION)**

1. TOTAL ECONOMIC IMPACTS

Exhibit III-2 summarizes the economic impacts of all cargo handled by the ports on the Great Lakes–St. Lawrence River waterway. The monetary impacts are expressed in both U.S. and Canadian dollars (shown as US\$ or Cdn\$). The exchange rate used throughout the report is US\$1.00 = Cdn\$1.3. The exchange rate reflects the annual average for 2022.

356,858 jobs in Canada and the United States are generated by the cargo handled at the marine terminals located on the Great Lakes–St. Lawrence River Waterway.

Of the 356,858 jobs, 113,823 direct jobs were generated by the marine cargo and vessel activity at the marine terminals.

As the result of the local and regional purchases by those 113,823 individuals holding the direct jobs, an additional 131,359 induced jobs were supported in the regional economy.

111,676 indirect jobs were supported by US\$13.2 billion (Cdn\$17.2 billion) in regional purchases by businesses supplying services at the marine terminals and ports.

In 2022, the marine cargo and vessel activity at the marine terminals on the Great Lakes–St. Lawrence River Waterway generated a total of US\$50.9 billion (Cdn\$66.1 billion) of economic activity in the United States and Canada.

The total economic activity consists of the direct business revenue received by the businesses supplying the cargo and vessel handling services US\$39.7 billion (Cdn\$51.6 billion), and the re-spending of direct income and consumption impact of US\$11.2 billion (Cdn\$14.6 billion).

Marine activity supported US\$23.3 billion (Cdn\$30.2 billion) in total personal wage and salary income, and local consumption expenditures for regional residents of the U.S. and Canada.

EXHIBIT III-2 ECONOMIC IMPACTS – REGIONAL LEVEL

TOTAL		
Jobs		
Direct jobs	113,823	
Induced	131,359	
Indirect	111,676	
Total	356,858	
Economic Activity (1,000)	US \$	Cdn \$
	\$50,870,994	\$66,132,292
Personal income (1,000)	US \$	Cdn \$
Direct	\$6,366,139	\$8,275,981
Re-Spending/Local Purchases	\$11,210,710	\$14,573,923
Indirect	\$5,685,994	\$7,391,792
Total	\$23,262,843	\$30,241,696
Business Revenue (1,000)	\$39,660,283	\$51,558,368
Local Purchases (1,000)	\$13,210,297	\$17,173,387
Total Taxes	US \$	Cdn \$
State/Provincial/Local (1,000)	\$4,213,952	\$5,478,138
Federal (1,000)	\$5,591,969	\$7,269,559
Total	\$9,805,921	\$12,747,697

356,858 JOBS IN CANADA AND THE UNITED STATES ARE GENERATED BY THE CARGO HANDLED AT THE MARINE TERMINALS LOCATED ON THE GREAT LAKES-ST. LAWRENCE RIVER WATERWAY.

The 113,823 direct job holders received US\$6.4 billion (Cdn\$8.3 billion) in direct wage and salary in 2022. This equates to an average salary of US\$55,930 (Cdn\$72,709). The 111,676 indirect jobs holders received US\$5.7 billion (Cdn\$7.4 billion) in indirect personal income.

A total of US\$9.8 billion (Cdn\$12.8 billion) in direct, induced, and indirect federal, state/provincial and local tax revenue was generated by maritime activity at the marine terminals located on the Great Lakes-St. Lawrence River Waterway.

Of the US\$9.8 billion (Cdn\$12.8 billion), US\$4.2 billion (Cdn\$5.5 billion) was paid to local and state/provincial governments, while US\$5.6 billion (Cdn\$7.3 billion) was paid in federal taxes.



Exhibit III-3 shows the breakdown of the total impacts by country.

As shown in **Exhibit III-3**, 63,488 direct jobs were generated in Canada, while 50,335 direct jobs were created in the U.S. When the induced and indirect jobs are considered, each direct job supports a total of about three jobs in both countries.

The re-spending multiplier in Canada is less than in the U.S., reflecting a higher Canadian savings rate compared to the U.S. In contrast, the induced jobs supported by a dollar of re-spending by individuals in Canada's two provinces is nearly three times as great as in the U.S. Great Lakes regional

economy. This reflects the fact that less out-of-region spending occurs in Ontario and Quebec. This is consistent with a larger concentration of national population and employment in those two major eastern provinces, compared to the U.S. Great Lakes states.

Indirect jobs generated per dollar of local purchases are lower in Canada than in the U.S., reflecting the fact that in Canada, there are greater leakages of business purchases out of the region in Canada than in the U.S.

EXHIBIT III-3 ECONOMIC IMPACTS – COUNTRY LEVEL

	United States		Canada		TOTAL	
Jobs						
Direct jobs	50,335		63,488		113,823	
Induced	46,180		85,179		131,359	
Indirect	50,835		60,841		111,676	
Total	147,350		209,508		356,858	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$26,351,285	\$34,256,670	\$24,519,709	\$31,875,621	\$50,870,994	\$66,132,292
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$3,368,765	\$4,379,394	\$2,997,374	\$3,896,586	\$6,366,139	\$8,275,981
Re-Spending/Local Purchases	\$7,349,393	\$9,554,210	\$3,861,318	\$5,019,713	\$11,210,710	\$14,573,923
Indirect	\$2,835,690	\$3,686,397	\$2,850,304	\$3,705,395	\$5,685,994	\$7,391,792
Total	\$13,553,847	\$17,620,001	\$9,708,996	\$12,621,694	\$23,262,843	\$30,241,696
Business Revenue (1,000)	\$19,001,892	\$24,702,460	\$20,658,391	\$26,855,908	\$39,660,283	\$51,558,368
Local Purchases (1,000)	\$5,446,095	\$7,079,924	\$7,764,202	\$10,093,463	\$13,210,297	\$17,173,387
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Province/Local (1,000)	\$1,540,246	\$2,002,320	\$2,673,706	\$3,475,818	\$4,213,952	\$5,478,138
Federal (1,000)	\$2,600,741	\$3,380,964	\$2,991,227	\$3,888,596	\$5,591,969	\$7,269,559
Total	\$4,140,988	\$5,383,284	\$5,664,933	\$7,364,413	\$9,805,921	\$12,747,697

2. JOB IMPACTS

This section focuses on the 113,823 direct jobs supported by the 368.9 million metric tons (406.63 million short tons) of cargo handled at the ports and marine terminals on the Great Lakes-St. Lawrence River Waterway.

Exhibit III-4 shows the direct jobs impact by commodity moving on the system. The movement of iron ore, which represents the largest tonnage handled at the ports and marine terminals, created the largest number of direct jobs – 29,642. The majority of these jobs are with shippers/consignees (steel mills) located at the ports that are directly dependent on the receipt of iron ore by vessels.

The movement of other dry bulk cargoes generates the second-largest direct jobs impacts. These impacts are concentrated with the operations of tenants located at the individual ports, as well as private terminals located on the Great Lakes handling and processing cargoes such as alumina and other ores, fertilizers, and potash. The majority of these direct jobs were created in Canada.

EXHIBIT III-4

DIRECT JOBS BY COMMODITY – REGIONAL LEVEL

	1,000 Metric Tons	1,000 Short Tons	Total Direct Jobs
Containers	14,465	15,945	1,979
Steel	4,788	5,277	15,304
General Cargo	4,988	5,499	3,014
Iron Ore	129,757	143,031	29,642
Grain	29,073	32,047	4,237
Stone/Aggregate	61,779	68,099	7,045
Cement	12,900	14,220	2,924
Salt	19,431	21,419	4,553
Other Dry Bulk	27,694	30,527	15,988
Liquid Bulk	39,799	43,871	9,316
Coal	24,202	26,678	2,257
Not Allocated	NA	NA	17,564
TOTAL	368,877	406,613	113,823

Exhibit III-5 shows the direct jobs by commodity for each country.

The majority of the tonnage shipped and received at the U.S. ports and terminals consists of iron ore, stone/ aggregates, and coal. Iron ore, Other dry bulk, grain, petroleum products, containerized cargo and coal are the major commodities shipped and received at the Canadian ports and terminals located on the Great Lakes-St. Lawrence River Waterway. Iron ore creates the largest number of direct jobs in both countries, followed by the shipment and receipt of other dry bulk cargo at Canadian ports, which reflects the bauxite activity and smelting facilities at the St. Lawrence River ports. Steel products moving on the Great Lakes create larger impacts in the United States, due to the location of major steel fabrication tenants at several of the U.S. Great Lakes ports.

The direct jobs generated by category are presented in **Exhibit III-6**. This exhibit shows that 44.6 percent of the direct jobs impact is with shippers/ consignees that are directly dependent upon the shipment and receipt of cargo by vessel. As noted, the location of steel mills, alumina smelters and dependent iron ore, salt and alumina mines in proximity to the ports and marine terminals on the Great Lakes-St. Lawrence River

Waterway underscores the importance of the transportation system in providing raw materials to the region's industrial economy. The second-largest number of direct jobs is created with the trucking firms serving the ports and marine terminals, followed by the terminal workers, which include jobs with marine terminals located within the port districts and throughout the system, as well as with warehousing operations associated with the terminal operations.

In some cases, these terminal workers are associated with the dependent shippers/consignees. 9,022 jobs are with marine construction, shipyards/ repair yards, and terminal development projects. The majority of these marine construction and shipyard jobs are concentrated along the St. Lawrence River. About 6,900 direct jobs are with the Canadian and U.S. flag vessel operators, and tug and barge operators moving cargo on the system¹; 4,087 jobs are with freight forwarders and customs brokers arranging for the handling of the cargo; and another 1,574 jobs are with firms providing maritime services such as ship chandlery, vessel cargo and hull surveys, ship repair and marine equipment sales, and servicing.

EXHIBIT III-5 DIRECT JOBS BY COMMODITY – COUNTRY LEVEL

	Canada			United States			TOTAL		
	1,000 Metric Tons	1,000 Short Tons	Direct Jobs	1,000 Metric Tons	1,000 Short Tons	Direct Jobs	1,000 Metric Tons	1,000 Short Tons	Direct Jobs
Containers	14,409	15,883	1,953	57	62	26	14,465	15,945	1,979
Steel	2,146	2,365	1,946	2,642	2,912	13,359	4,788	5,277	15,304
General Cargo	4,521	4,984	1,796	467	515	1,217	4,988	5,499	3,014
Iron Ore	64,313	70,892	15,967	65,444	72,139	13,675	129,757	143,031	29,642
Grain	26,610	29,332	3,561	2,464	2,716	676	29,073	32,047	4,237
Stone/ Aggregate	13,931	15,356	1,910	47,848	52,743	5,134	61,779	68,099	7,045
Cement	3,839	4,232	688	9,061	9,988	2,236	12,900	14,220	2,924
Salt	12,849	14,164	2,359	6,582	7,255	2,194	19,431	21,419	4,553
Other Dry Bulk	23,665	26,086	13,804	4,029	4,441	2,184	27,694	30,527	15,988
Liquid Bulk	36,503	40,237	7,383	3,297	3,634	1,933	39,799	43,871	9,316
Coal	8,087	8,915	748	16,115	17,763	1,509	24,202	26,678	2,257
Not Allocated	NA	NA	11,374	NA	NA	6,190	NA	NA	17,564
TOTAL	210,872	232,444	63,488	158,005	174,169	50,335	368,877	406,613	113,823

¹ Note that the barge-operator impacts consist primarily of U.S. flag operations on tug-barge combinations, but also include shoreside jobs with bunker (fueling) operations.

EXHIBIT III-6

DIRECT JOBS BY CATEGORY – REGIONAL LEVEL

Direct Jobs	
Surface Transportation	
Rail	3,180
Truck	17,749
Maritime Services	
Terminal Employees	11,530
Dockworkers	2,247
Tug Assists	1,130
Pilots	446
Agents	1,102
Maritime Services	1,574
Forwarders	4,087
Government	2,798
Marine Equipment/Ship Repair	9,022
Laker/Barge	6,888
Dependent Shippers/Consignees	50,792
Port Authority	1,278
TOTAL	113,823

EXHIBIT III-7

DIRECT JOBS BY CATEGORY – COUNTRY LEVEL

Exhibit III-7 shows the direct job impacts by category, by country, for the cargo activity at all ports and terminals on the Great Lakes-St. Lawrence River Waterway.

As presented in **Exhibit III-7**, the number of direct jobs with dependent shippers/consignees is greater in Canada than in the United States, reflecting the location of alumina smelters at port facilities, as well as fertilizer operations in addition to steel mills and steel fabrication complexes both in Canada and the United States.

	Canada Direct Jobs	United States Direct Jobs	TOTAL
Surface Transportation			
Rail	1,580	1,601	3,180
Truck	8,600	9,149	17,749
Maritime Services			
Terminal Employees	5,536	5,994	11,530
Dockworkers	1,538	709	2,247
Tug Assists	699	431	1,130
Pilots	414	33	446
Agents	1,030	72	1,102
Maritime Services	587	987	1,574
Forwarders	2,433	1,654	4,087
Government	1,596	1,202	2,798
Marine Equipment/Ship Repair	6,266	2,756	9,022
Laker/Barge	2,961	3,926	6,888
Dependent Shippers/Consignees	29,221	21,571	50,792
Port Authority	1,027	251	1,278
TOTAL	63,488	50,335	113,823

EXHIBIT III-8

REVENUE IMPACT BY CATEGORY

– REGIONAL LEVEL

	TOTAL	
	Million US	Million Cdn
Surface Transportation		
Rail	\$6,118	\$7,953
Truck	\$2,240	\$2,912
Maritime Services		
Terminal Employees	\$2,278	\$2,961
Tug Assists	\$98	\$127
Pilots	\$134	\$174
Agents	\$165	\$214
Maritime Services	\$612	\$796
Forwarders	\$630	\$818
Marine Equipment/Ship Repair	\$1,101	\$1,431
Laker/Barge	\$2,477	\$3,220
Dependent Shippers/Consignees	\$23,530	\$30,589
Port Authority	\$278	\$362
TOTAL	\$39,660	\$51,558

3. REVENUE IMPACTS

In 2022, the direct business revenue received by the firms directly dependent upon the cargo handled at the marine terminals in the Great Lakes–St. Lawrence River Waterway was U.S.\$39.7 billion (Cdn\$51.6 billion). These firms provide maritime services and inland transportation services for cargo handled at the marine terminals and the vessels calling at the terminals.

Exhibit III-8 shows the distribution of this direct revenue impact by category and economic sector in both U.S. and Canadian dollars.

Similar to the direct jobs impacts by category, the majority of the direct business revenue is received by the dependent shippers/consignees located at the ports and marine terminals operating on the system.

The revenue impacts by category, by country, are presented in **Exhibit III-9**.

Consistent with the distribution of direct jobs by category, the largest revenue impacts are with the dependent shippers/consignees. The revenue from rail operations is greater in the U.S. than in Canada, reflecting the longer haul of the rail moved to and from U.S. ports, particularly the movement of coal from Ohio, West Virginia, and the Powder River Basin area. workforce numbers.

EXHIBIT III-9

REVENUE IMPACT BY CATEGORY

– COUNTRY LEVEL

	Canada		United States		TOTAL	
	Million US	Million Cdn	Million US	Million Cdn	Million US	Million Cdn
Surface Transportation						
Rail	\$2,602	\$3,382	\$3,516	\$4,571	\$6,118	\$7,953
Truck	\$1,073	\$1,395	\$1,167	\$1,518	\$2,240	\$2,912
Maritime Services						
Terminal Employees	\$1,623	\$2,110	\$655	\$851	\$2,278	\$2,961
Tug Assists	\$56	\$72	\$42	\$55	\$98	\$127
Pilots	\$122	\$158	\$13	\$16	\$134	\$174
Agents	\$152	\$197	\$13	\$17	\$165	\$214
Maritime Services	\$348	\$453	\$264	\$343	\$612	\$796
Forwarders	\$334	\$434	\$295	\$384	\$630	\$818
Marine Equipment/Ship Repair	\$762	\$991	\$339	\$441	\$1,101	\$1,431
Laker/Barge	\$825	\$1,073	\$1,652	\$2,147	\$2,477	\$3,220
Dependent Shippers/Consignees	\$12,541	\$16,304	\$10,988	\$14,285	\$23,530	\$30,589
Port Authority	\$221	\$287	\$57	\$74	\$278	\$362
TOTAL	\$20,658	\$26,856	\$19,002	\$24,702	\$39,660	\$51,558

4. PERSONAL INCOME AND LOCAL CONSUMPTION IMPACTS

The 113,823 individuals directly employed as a result of the cargo handled at the ports and marine terminals received US\$6.4 billion (Cdn\$8.3 billion) in wages and salaries.

The 63,488 direct job holders at the Canadian ports and terminals received US\$3.0 billion (Cdn\$3.9 billion), for an average salary of US\$47,211 (Cdn\$61,375).

The 50,355 direct job holders at the U.S. ports received US\$3.4 billion (Cdn\$4.4 billion) in direct personal income, for an average salary of US\$66,927 (Cdn\$87,055).

These individuals, in turn, used these earnings to purchase goods and services, to pay taxes, and for savings. The purchase of goods and services from regional sources creates a re-spending effect known as the personal-earnings multiplier effect. For the U.S. Great Lakes ports, this re-spending, or multiplier effect, was estimated using a personal-earnings multiplier for the maritime sector, by state, from the U.S. Bureau of Economic Analysis, RIMS II. The income multipliers by province were developed from Statistics Canada, Industry Accounts Division, for the maritime sectors of Ontario and Quebec (released in 2022).

Using the local personal-earnings multipliers by state and province for the relevant ports, an additional US\$11.2 billion (Cdn\$14.6 billion) in income and consumption were created in the Great Lakes regional economy.

The re-spending impact and consumption impacts should not be divided by induced jobs to estimate induced income, since the division of the re-spending impact/local consumption impact by the induced jobs will overstate the actual salary of the induced job holders, as this includes the value of the consumption purchases.

The 111,676 indirect job holders received US\$5.7 billion (Cdn\$7.4 billion) in personal income, of which the 60,841 Canadian indirect job holders received US\$2.9 billion (Cdn\$3.7 billion), while the 50,835 indirect job holders in the U.S. received US\$2.8 billion (Cdn\$3.7 billion).

5. FEDERAL, STATE/ PROVINCIAL AND LOCAL TAX IMPACTS

The cargo activity at the U.S. ports and marine terminals created US\$1.5 billion (Cdn\$2.0 billion) in state and local taxes, and US\$2.6 billion (Cdn\$3.4 billion) in federal taxes. The cargo activity at the Canadian ports created US\$2.7 billion (Cdn\$3.5 billion) in provincial taxes, and US\$3.0 billion (Cdn\$3.9 billion) in federal taxes.

6. IMPACTS BY STATE AND PROVINCE

The economic impacts were estimated at the port level for 40 U.S. and Canadian Great Lakes and St. Lawrence River ports. The models developed for these 40 individual ports were then used to develop prototype models for each Great Lakes state and province – in order to capture the impacts of cargo activity moving through ports and marine terminals for which specific models were not developed. This process provided a model for each state and province to estimate the total impacts at the state and provincial level.

Exhibit III-10 presents the U.S. impacts of total cargo handled by U.S. ports and marine terminals located on the Great Lakes-St. Lawrence River Waterway. As this exhibit shows, in terms of direct, induced, and indirect jobs, the impacts are greatest for the state of Indiana, followed by Ohio and Michigan.

Exhibit III-11 shows the impacts of the cargo handled on the Great Lakes-St. Lawrence River Waterway for the provinces of Ontario and Quebec.

The ports in Quebec account for 142,354 direct, induced, and indirect jobs, or about 68 percent of the direct job impacts for Canada. The direct business revenue generated by cargo activity in Quebec created US\$14.4 billion (Cdn\$18.7 billion) of direct business revenue, or about 70 percent of total direct business revenue generated in Canada.

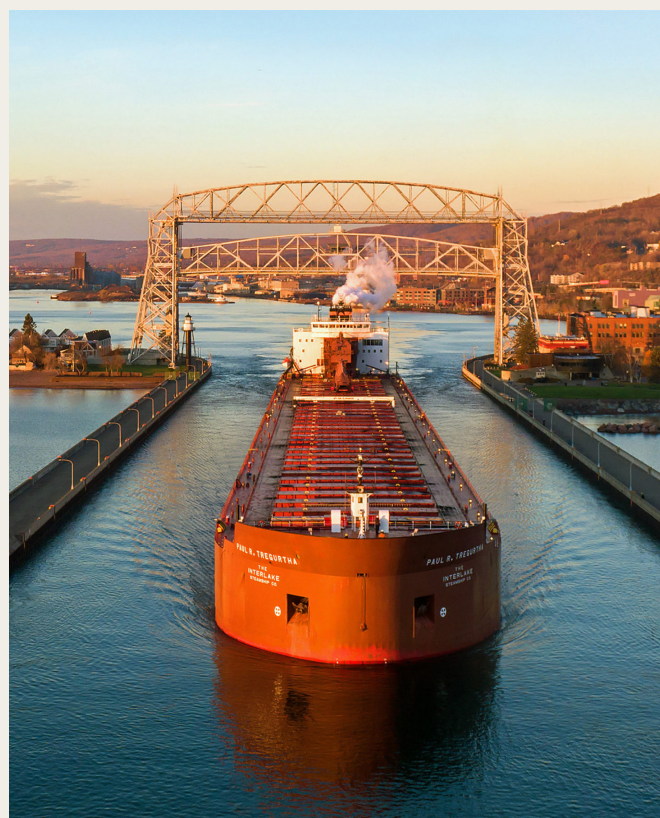


EXHIBIT III-10

ECONOMIC IMPACTS – BY STATE

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	18,211	20,074	33,281	36,686	53,683	59,175
Jobs						
Direct jobs	22,896		9,376		7,646	
Induced	23,179		8,856		5,802	
Indirect	29,423		13,200		3,609	
Total	75,498		31,432		17,057	
Economic Activity (1,000)	US \$ \$15,123,761	Cdn \$ \$19,660,890	US \$ \$3,737,879	Cdn \$ \$4,859,242	US \$ \$3,291,234	Cdn \$ \$4,278,605
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,733,664	\$2,253,764	\$597,698	\$777,008	\$443,324	\$576,321
Re-Spending/Local Consumption	\$3,798,285	\$4,937,771	\$1,401,483	\$1,821,928	\$898,927	\$1,168,606
Indirect	\$1,601,114	\$2,081,448	\$783,548	\$1,018,612	\$185,791	\$241,528
Total	\$7,133,063	\$9,272,982	\$2,782,730	\$3,617,548	\$1,528,042	\$1,986,454
Business Revenue (1,000)	\$11,325,476	\$14,723,119	\$2,336,395	\$3,037,314	\$2,392,307	\$3,109,999
Local Purchases (1,000)	\$3,055,341	\$3,971,943	\$1,416,300	\$1,841,191	\$402,443	\$523,176
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State and Local Taxes	\$774,365	\$1,006,674	\$278,273	\$361,755	\$160,119	\$208,155
Federal Taxes	\$1,424,367	\$1,851,678	\$468,232	\$608,701	\$303,706	\$394,818
Total	\$2,198,732	\$2,858,352	\$746,505	\$970,456	\$463,826	\$602,973

EXHIBIT III-10 (CONTINUED)

ECONOMIC IMPACTS – BY STATE

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	20,781	22,907	3,951	4,355	22,932	25,278
Jobs						
Direct jobs	1,588		1,389		2,882	
Induced	1,335		1,474		2,278	
Indirect	1,655		386		1,632	
Total	4,579		3,249		6,792	
Economic Activity (1,000)	US \$ \$1,117,817	Cdn \$ \$1,453,162	US \$ \$475,266	Cdn \$ \$617,846	US \$ \$1,428,472	Cdn \$ \$1,857,014
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$83,508	\$108,561	\$83,645	\$108,739	\$166,434	\$216,364
Re-Spending/Local Consumption	\$198,090	\$257,517	\$258,740	\$336,362	\$323,197	\$420,157
Indirect	\$92,260	\$119,939	\$24,212	\$31,476	\$84,954	\$110,440
Total	\$373,859	\$486,017	\$366,598	\$476,577	\$574,585	\$746,961
Business Revenue (1,000)	\$919,727	\$1,195,645	\$216,526	\$281,484	\$1,105,275	\$1,436,857
Local Purchases (1,000)	\$193,555	\$251,622	\$41,492	\$53,939	\$187,503	\$243,754
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State and Local Taxes	\$63,264	\$82,243	\$51,405	\$66,827	\$80,093	\$104,121
Federal Taxes	\$88,352	\$114,857	\$57,852	\$75,207	\$122,841	\$159,694
Total	\$151,615	\$197,100	\$109,257	\$142,034	\$202,934	\$263,815

EXHIBIT III-10 (CONTINUED)

ECONOMIC IMPACTS – BY STATE

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	4,489	4,948	676	745	158,005	174,169
Jobs						
Direct jobs	4,224		334		50,335	
Induced	2,966		290		46,180	
Indirect	700		229		50,835	
Total	7,891		853		147,350	
Economic Activity (1,000)	US \$ \$1,057,659	Cdn,\$ \$1 374 957	US \$ \$119 196	Cdn,\$ \$154 955	US \$ \$26,351,285	Cdn \$ \$34,256,670
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$240,052	\$312 068	\$20 439	\$26 570	\$3,368,765	\$4,379,394
Re-Spending/Local Consumption	\$423,885	\$551 050	\$46 784	\$60 819	\$7,349,393	\$9,554,210
Indirect	\$52,464	\$68 204	\$11 347	\$14 751	\$2,835,690	\$3,686,397
Total	\$716,401	\$931 322	\$78 569	\$102 140	\$13,553,847	\$17,620,001
Business Revenue (1,000)	\$633,775	\$823 907	\$72 412	\$94 136	\$19,001,892	\$24,702,460
Local Purchases (1,000)	\$116,112	\$150 945	\$33 349	\$43 354	\$5,446,095	\$7,079,924
Total Taxes	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State and Local Taxes	\$123,098	\$160 027	\$9 630	\$12 519	\$1,540,246	\$2,002,320
Federal Taxes	\$121,900	\$158 470	\$13 491	\$17 538	\$2,600,741	\$3,380,964
Total	\$244,997	\$318 497	\$23 121	\$30 058	\$4,140,988	\$5,383,284

EXHIBIT III-11

ECONOMIC IMPACTS – BY PROVINCE

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	63,308	69,784	147,564	162,660	210,872	232,444
Jobs						
Direct jobs	22,471		41,018		63,488	
Induced	25,139		60,039		85,179	
Indirect	19,544		41,297		60,841	
Total	67,154		142,354		209,508	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$7,374,017	\$9,586,222	\$17,145,692	\$22,289,399	\$24,519,709	\$31,875,621
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,024,482	\$1,331,827	\$1,972,892	\$2,564,759	\$2,997,374	\$3,896,586
Re-Spending/Local Consumption	\$1,099,270	\$1,429,050	\$2,762,048	\$3,590,663	\$3,861,318	\$5,019,713
Indirect	\$915,543	\$1,190,206	\$1,934,761	\$2,515,189	\$2,850,304	\$3,705,395
Total	\$3,039,295	\$3,951,083	\$6,669,701	\$8,670,611	\$9,708,996	\$12,621,694
Business Revenue (1,000)	\$6,274,747	\$8,157,171	\$14,383,644	\$18,698,737	\$20,658,391	\$26,855,908
Local Purchases (1,000)	\$2,297,964	\$2,987,353	\$5,466,238	\$7,106,110	\$7,764,202	\$10,093,463
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Province/Local (1,000)	\$566,781	\$736,816	\$2,106,925	\$2,739,002	\$2,673,706	\$3,475,818
Federal (1,000)	\$930,223	\$930,223	\$930,223	\$930,223	\$930,223	\$930,223
Total	\$1,497,004	\$1,667,038	\$3,037,147	\$3,669,225	\$3,603,929	\$4,406,040

7. IMPACTS BY VESSEL FLAG

This section presents impacts by vessel operator category. Cargo moves to and from the U.S. and Canadian Great Lakes ports/marine terminals on Canadian flag vessels, U.S. flag vessels and foreign flag vessels. Due to the carriage laws in each country, Canadian flag vessels move cargo to and from Canadian ports, while U.S. flag vessels move cargo to and from U.S. ports.

Canadian flag and U.S. flag vessels also move cargo between the U.S. and Canadian ports in cross-lake operations. Canadian flag vessels often move cargo from points within the Great Lakes to ports on the St. Lawrence River, whereas U.S. flag carriers typically operate exclusively within the Great Lakes and seldom transit the Montreal-Lake Ontario Section of the St. Lawrence Seaway. Foreign flag vessels move international cargo to and from both St. Lawrence River and Great Lakes ports to overseas destinations.

A total of 252.1 million metric tons of cargo (277.9 million short tons) moved through the Great Lakes-St. Lawrence River Waterway in 2022. This cargo represents US\$120.9 billion (Cdn\$157.2 billion) of cargo value.

Based on detailed commodity flow data collected for this study, 67.0 million metric tons (73.9 million short tons) were moved on U.S. Flag vessels; 66.6 million metric tons (73.4 million short tons) moved on Canadian flag vessels. The balance of 118.5 million metric tons (130.6 million short tons) was moved on foreign flag vessels.

In terms of value of cargo moved by flag, U.S. Flag carriers moved US\$5.1 billion (Cdn\$6.7 billion), Canadian flag carriers moved US\$16.6 billion (Cdn\$21.6 billion), and foreign flag carriers moved US\$99.1 billion (Cdn\$128.9 billion).

It is estimated that 368.9 million metric tons (406.6 million short tons) of cargo were handled at Great Lakes-St. Lawrence ports and marine terminals. Canadian flag vessels handled 116.3 million metric tons (128.2 million short tons), U.S. flag vessels handled 134.1 million metric tons (147.8 million short tons), and foreign flag vessels handled 118.5 million metric tons (130.6 million short tons).

Exhibit III-12 through **III-28** summarize the economic impacts of cargo handled by flag on the Great Lakes- St. Lawrence River Waterway. These tables show impacts at the bi-national regional level, by country, by state/province, by commodity, and by job category. The monetary impacts are expressed in both U.S. and Canadian dollars.

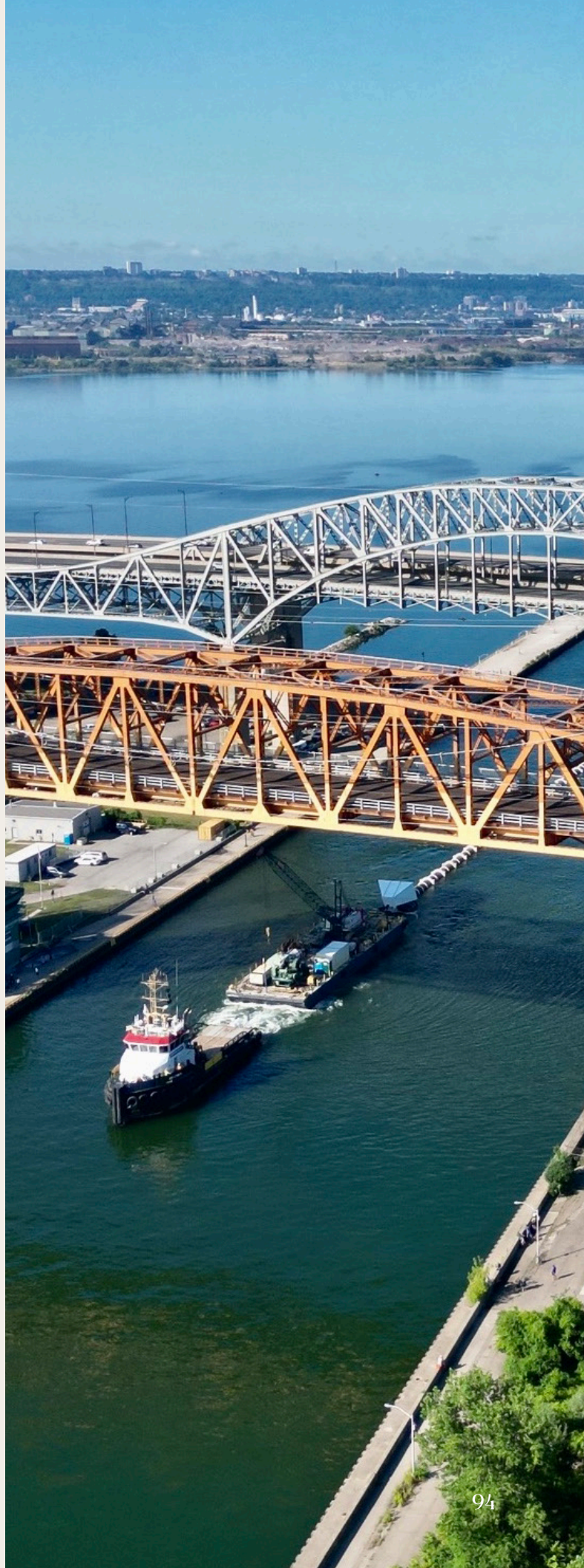


EXHIBIT III-12

ECONOMIC IMPACTS BY FLAG OF CARRIAGE – REGIONAL LEVEL

	Canadian Flag		U.S. Flag	
Jobs				
Direct jobs	38,831		38,517	
Induced	43,588		36,370	
Indirect	28,758		41,559	
Total	111,176		116,447	
Economic Activity (1,000)	US \$ \$14,215,475	Cdn \$ \$18,480,118	US \$ \$20,048,195	Cdn \$ \$26,062,653
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,915,045	\$2,489,559	\$2,570,759	\$3,341,987
Re-Spending/Local Consumption	\$2,878,479	\$3,742,022	\$5,516,140	\$7,170,982
Indirect	\$1,415,034	\$1,839,544	\$2,276,274	\$2,959,157
Total	\$6,208,558	\$8,071,125	\$10,363,174	\$13,472,126
Business Revenue (1,000)	\$11,336,997	\$14,738,096	\$14,532,054	\$18,891,671
Local Purchases (1,000)	\$3,306,842	\$4,298,894	\$4,453,746	\$5,789,870
Total Taxes	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$1,212,175	\$1,575,827	\$1,164,347	\$1,513,651
Federal Taxes	\$1,638,033	\$2,129,443	\$2,019,181	\$2,624,936
Total	\$2,850,208	\$3,705,270	\$3,183,528	\$4,138,587

EXHIBIT III-12 (CONTINUED)

ECONOMIC IMPACTS BY FLAG OF CARRIAGE – REGIONAL LEVEL

	Foreign Flag		TOTAL	
Jobs				
Direct jobs	36,475		113,823	
Induced	51,401		131,359	
Indirect	41,359		111,676	
Total	129,235		356,858	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$
	\$16,607,323	\$21,589,520	\$50,870,994	\$66,132,292
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,880,334	\$2,444,435	\$6,366,139	\$8,275,981
Re-Spending/Local Consumption	\$2,816,091	\$3,660,919	\$11,210,710	\$14,573,923
Indirect	\$1,994,686	\$2,593,091	\$5,685,994	\$7,391,792
Total	\$6,691,111	\$8,698,445	\$23,262,843	\$30,241,696
Business Revenue (1,000)	\$13,791,232	\$17,928,602	\$39,660,283	\$51,558,368
Local Purchases (1,000)	\$5,449,710	\$7,084,623	\$13,210,297	\$17,173,387
Total Taxes	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$1,837,431	\$2,388,660	\$4,213,952	\$5,478,138
Federal Taxes	\$1,934,754	\$2,515,180	\$5,591,969	\$7,269,559
Total	\$3,772,185	\$4,903,840	\$9,805,921	\$12,747,697

EXHIBIT III-13

ECONOMIC IMPACTS BY CANADIAN FLAG – COUNTRY LEVEL

Impacts	Canada		United States		TOTAL	
Jobs						
Direct jobs	28,745		10,086		38,831	
Induced	35,061		8,527		43,588	
Indirect	21,256		7,502		28,758	
Total	85,061		26,115		111,176	
Economic Activity (1,000)	US \$ \$8,888,976	Cdn \$ \$11,555,669	US \$ \$5,326,500	Cdn \$ \$6,924,449	US \$ \$14,215,475	Cdn \$ \$18,480,118
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,290,964	\$1,678,254	\$624,081	\$811,305	\$1,915,045	\$2,489,559
Re-Spending/Local Consumption	\$1,556,814	\$2,023,858	\$1,321,665	\$1,718,164	\$2,878,479	\$3,742,022
Indirect	\$978,977	\$1,272,670	\$436,057	\$566,874	\$1,415,034	\$1,839,544
Total	\$3,826,755	\$4,974,782	\$2,381,802	\$3,096,343	\$6,208,558	\$8,071,125
Business Revenue (1,000)	\$7,332,162	\$9,531,811	\$4,004,835	\$5,206,285	\$11,336,997	\$14,738,096
Local Purchases (1,000)	\$2,464,933	\$3,204,413	\$841,908	\$1,094,481	\$3,306,842	\$4,298,894
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$898,555	\$1,168,122	\$313,620	\$407,705	\$1,212,175	\$1,575,827
Federal Taxes	\$1,153,050	\$1,498,966	\$484,983	\$630,478	\$1,638,033	\$2,129,443
Total	\$2,051,605	\$2,667,087	\$798,602	\$1,038,183	\$2,850,208	\$3,705,270

EXHIBIT III-14

ECONOMIC IMPACTS BY U.S. FLAG - COUNTRY LEVEL

Impacts	Canada		United States		TOTAL	
Jobs						
Direct jobs	2,273		36,244		38,517	
Induced	2,593		33,777		36,370	
Indirect	2,768		38,792		41,559	
Total	7,634		108,813		116,447	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$798,650	\$1,038,245	\$19,249,545	\$25,024,408	\$20,048,195	\$26,062,653
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$105,400	\$137,020	\$2,465,359	\$3,204,967	\$2,570,759	\$3,341,987
Re-Spending/Local Consumption	\$114,025	\$148,233	\$5,402,115	\$7,022,750	\$5,516,140	\$7,170,982
Indirect	\$129,914	\$168,888	\$2,146,360	\$2,790,268	\$2,276,274	\$2,959,157
Total	\$349,339	\$454,141	\$10,013,835	\$13,017,985	\$10,363,174	\$13,472,126
Business Revenue (1,000)	\$684,625	\$890,012	\$13,847,429	\$18,001,658	\$14,532,054	\$18,891,671
Local Purchases (1,000)	\$324,303	\$421,594	\$4,129,443	\$5,368,276	\$4,453,746	\$5,789,870
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$65,265	\$84,844	\$1,099,082	\$1,428,807	\$1,164,347	\$1,513,651
Federal Taxes	\$105,749	\$137,474	\$1,913,432	\$2,487,462	\$2,019,181	\$2,624,936
Total	\$171,014	\$222,318	\$3,012,514	\$3,916,269	\$3,183,528	\$4,138,587

EXHIBIT III-15

ECONOMIC IMPACTS BY FOREIGN FLAG - COUNTRY LEVEL

Impacts	Canada		United States		TOTAL	
Jobs						
Direct jobs	32,471		4,005		36,475	
Induced	47,525		3,876		51,401	
Indirect	36,817		4,542		41,359	
Total	116,813		12,422		129,235	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$14,832,083	\$19,281,708	\$1,775,241	\$2,307,813	\$16,607,323	\$21,589,520
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	1,601,010	2,081,312	279,325	363,122	\$1,880,334	\$2,444,435
Re-Spending/Local Consumption	2,190,479	2,847,622	625,613	813,296	\$2,816,091	\$3,660,919
Indirect	1,741,413	2,263,837	253,273	329,254	\$1,994,686	\$2,593,091
Total	5,532,901	7,192,772	1,158,210	1,505,673	\$6,691,111	\$8,698,445
Business Revenue (1,000)	12,641,604	16,434,085	1,149,628	1,494,517	\$13,791,232	\$17,928,602
Local Purchases (1,000)	4,974,966	6,467,455	474,744	617,167	\$5,449,710	\$7,084,623
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	1,709,886	2,222,852	127,545	165,808	\$1,837,431	\$2,388,660
Federal Taxes	1,732,428	2,252,156	202,326	263,024	\$1,934,754	\$2,515,180
Total	\$3,442,314	\$4,475,008	\$329,871	\$428,832	\$3,772,185	\$4,903,840

EXHIBIT III-16

DIRECT JOBS BY COMMODITY AND FLAG - REGIONAL LEVEL

	Direct Jobs Canadian Flag	Direct Jobs US Flag	Direct Jobs Foreign Flag	TOTAL
Containers	3	NA	1,976	1,979
Steel	1,732	8,989	4,584	15,304
General Cargo	1,198	NA	1,816	3,014
Iron Ore	9,589	13,962	6,091	29,642
Grain	2,165	160	1,912	4,237
Stone/Aggregate	2,367	4,671	7	7,045
Cement	937	1,908	79	2,924
Salt	3,333	988	232	4,553
Other Dry Bulk	2,446	789	12,754	15,988
Liquid Bulk	4,987	1,513	2,816	9,316
Coal	690	1,529	38	2,257
Not Allocated	9,385	4,009	4,170	17,564
TOTAL	38,831	38,517	36,475	113,823

EXHIBIT III-17

DIRECT JOBS BY COMMODITY AND FLAG – COUNTRY LEVEL

	Canada				United States				TOTAL REGION
	Canadian Flag	U.S. Flag	Foreign Flag	Total	Canadian Flag	U.S. Flag	Foreign Flag	Total	
Containers	3	NA	1,950	1,953	NA	NA	26	26	1,979
Steel	326	NA	1,619	1,946	1,405	8,989	2,964	13,359	15,304
General Cargo	292	NA	1,504	1,796	906	NA	311	1,217	3,014
Iron Ore	9,068	814	6,085	15,967	522	13,148	6	13,675	29,642
Grain	1,897	11	1,653	3,561	268	149	259	676	4,237
Stone/ Aggregate	1,568	340	2	1,910	800	4,330	4	5,134	7,045
Cement	637	15	35	688	300	1,893	43	2,236	2,924
Salt	2,092	34	232	2,359	1,241	953	NA	2,194	4,553
Other Dry Bulk	1,131	107	12,567	13,804	1,315	682	187	2,184	15,988
Liquid Bulk	4,461	112	2,810	7,383	525	1,401	7	1,933	9,316
Coal	266	444	38	748	424	1,085	NA	1,509	2,257
Not Allocated	7,004	395	3,974	11,374	2,381	3,614	196	6,190	17,564
TOTAL	28,745	2,273	32,471	63,488	10,086	36,244	4,005	50,335	113,823

EXHIBIT III-18
DIRECT JOBS BY
CATEGORY AND FLAG
– REGIONAL LEVEL

	Canadian Flag	US Flag	Foreign Flag	Total
Surface Transportation				
Rail	890	1,236	1,054	3,180
Truck	6,198	6,364	5,187	17,749
Maritime Services				
Terminal Employees	3,794	4,471	3,265	11,530
Dockworkers	758	331	1,159	2,247
Tug Assists	430	312	388	1,130
Pilots	0	0	446	446
Maritime Services	483	788	1,404	2,676
Forwarders	1,218	1,404	1,465	4,087
Government	1,076	1,115	607	2,798
Marine Equipment/Ship Repair	5,605	1,306	2,111	9,022
Laker/Barge	3,370	2,765	753	6,888
Dependent Shippers/Consignees	14,247	18,207	18,338	50,792
Port Authority	762	219	297	1,278
TOTAL	38,831	38,517	36,475	113,823

All pilotage jobs have been allocated to foreign flag vessels. Canadian flag vessels, however, are also subject to compulsory pilotage requirements in the St. Lawrence and Great Lakes region. It was not possible to accurately allocate Canadian-flag pilotage impacts due to lack of information as to duration of time pilots spend on these transits versus foreign-flag transits.

EXHIBIT III-19
DIRECT JOBS IMPACTS BY CATEGORY AND FLAG – COUNTRY LEVEL

	Canada				United States				TOTAL
	Canadian Flag	U.S. Flag	Foreign Flag	Total	Canadian Flag	U.S. Flag	Foreign Flag	Total	Total System
Surface Transportation									
Rail	607	25	948	1,580	284	1,211	106	1,601	3,180
Truck	4,180	457	3,962	8,600	2,018	5,906	1,225	9,149	17,749
Maritime Services									
Terminal Employees	2,490	195	2,851	5,536	1,304	4,276	414	5,994	11,530
Dockworkers	548	15	975	1,538	210	316	183	709	2,247
Tug Assists	306	30	363	699	124	282	25	431	1,130
Pilots	NA	NA	414	414	NA	NA	33	33	446
Maritime Services	276	20	1,321	1,617	207	768	84	1,059	2,676
Forwarders	899	106	1,428	2,433	319	1,298	37	1,654	4,087
Government	794	220	583	1,596	283	894	25	1,202	2,798
Marine Equipment/Ship Repair	4,209	21	2,036	6,266	1,395	1,285	75	2,756	9,022
Laker/Barge	2,048	189	724	2,961	1,321	2,576	29	3,926	6,888
Dependent Shippers/Consignees	11,763	876	16,581	29,221	2,484	17,331	1,757	21,571	50,792
Port Authority	624	118	284	1,027	137	101	13	251	1,278
TOTAL	28,745	2,273	32,471	63,488	10,086	36,244	4,005	50,335	113,823

EXHIBIT III-20 REVENUE IMPACT BY CATEGORY AND FLAG – REGIONAL LEVEL

	Canada Flag		US Flag		Foreign Flag		TOTAL	
	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn
Surface Transportation								
Rail	\$1,653.7	\$2,149.8	\$2,659.9	\$3,457.9	\$1,804.0	\$2,345.1	\$6,117.6	\$7,952.8
Truck	\$796.0	\$1,034.9	\$732.9	\$952.8	\$711.3	\$924.6	\$2,240.2	\$2,912.3
Maritime Services								
Terminal Employees	\$566.5	\$736.4	\$540.7	\$702.9	\$1,170.6	\$1,521.7	\$2,277.7	\$2,961.1
Tug Assists	\$39.2	\$50.9	\$28.6	\$37.2	\$30.0	\$39.0	\$97.8	\$127.2
Pilots	\$0.0	\$0.0	\$0.0	\$0.0	\$134.2	\$174.4	\$134.2	\$174.4
Maritime Services	\$197.2	\$256.3	\$206.8	\$268.8	\$373.2	\$485.1	\$777.1	\$1,010.3
Forwarders	\$180.4	\$234.6	\$246.4	\$320.3	\$202.8	\$263.6	\$629.6	\$818.4
Marine Equipment/Ship Repair	\$488.8	\$635.5	\$235.7	\$306.4	\$376.7	\$489.7	\$1,101.1	\$1,431.5
Laker/Barge	\$999.1	\$1,298.8	\$1,371.7	\$1,783.2	\$105.9	\$137.7	\$2,476.6	\$3,219.6
Dependent Shippers/ Consignees	\$6,279.5	\$8,163.3	\$8,471.2	\$11,012.6	\$8,779.3	\$11,413.1	\$23,530.0	\$30,589.0
Port Authority	\$136.6	\$177.6	\$38.2	\$49.7	\$103.5	\$134.5	\$278.3	\$361.8
TOTAL	\$11,337.0	\$14,738.1	\$14,532.1	\$18,891.7	\$13,791.2	\$17,928.6	\$39,660.3	\$51,558.4

EXHIBIT III-21 REVENUE IMPACT BY CATEGORY AND FLAG – CANADA

	Canada							
	Canadian Flag		US Flag		Foreign Flag		Total Canada	
	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn
Surface Transportation								
Rail	\$826.9	\$1,074.9	\$78.2	\$101.7	\$1,696.6	\$2,205.6	\$2,601.7	\$3,382.2
Truck	\$499.9	\$649.8	\$53.0	\$68.9	\$519.9	\$675.8	\$1,072.8	\$1,394.6
Maritime Services								
Terminal Employees	\$433.4	\$563.4	\$51.2	\$66.6	\$1,138.2	\$1,479.6	\$1,622.8	\$2,109.6
Tug Assists	\$25.4	\$33.0	\$2.7	\$3.5	\$27.5	\$35.8	\$55.6	\$72.3
Pilots	\$0.0	\$0.0	\$0.0	\$0.0	\$121.7	\$158.2	\$121.7	\$158.2
Maritime Services/Agents	\$139.4	\$181.3	\$3.5	\$4.5	\$356.9	\$464.0	\$499.9	\$649.8
Forwarders	\$123.5	\$160.6	\$14.5	\$18.9	\$196.2	\$255.0	\$334.2	\$434.5
Marine Equipment/Ship Repair	\$390.4	\$507.6	\$3.1	\$4.1	\$368.5	\$479.0	\$762.1	\$990.7
Laker/Barge	\$654.0	\$850.3	\$70.1	\$91.2	\$101.0	\$131.2	\$825.1	\$1,072.7
Dependent Shippers/ Consignees	\$4,129.7	\$5,368.6	\$396.3	\$515.2	\$8,015.5	\$10,420.2	\$12,541.5	\$16,303.9
Port Authority	\$109.6	\$142.5	\$11.9	\$15.5	\$99.6	\$129.5	\$221.1	\$287.5
TOTAL	\$7,332.2	\$9,531.8	\$684.6	\$890.0	\$12,641.6	\$16,434.1	\$20,658.4	\$26,855.9

All pilotage revenue impacts have been allocated to foreign flag vessels. Canadian flag vessels, however, are also subject to compulsory pilotage requirements in the St. Lawrence and Great Lakes region. It was not possible to accurately allocate Canadian-flag pilotage impacts due to lack of information as to duration of time pilots spend on these transits versus foreign-flag transits.

EXHIBIT III-22

REVENUE IMPACT BY CATEGORY AND FLAG – UNITED STATES

United States								
	Canadian Flag		US Flag		Foreign Flag		Total US	
	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn
Surface Transportation								
Rail	\$826.86	\$1,074.92	\$2,581.70	\$3,356.21	\$107.30	\$139.50	\$3,515.86	\$4,570.62
Truck	\$296.17	\$385.02	\$679.91	\$883.88	\$191.39	\$248.81	\$1,167.47	\$1,517.71
Maritime Services								
Terminal Employees	\$133.12	\$173.05	\$489.48	\$636.32	\$32.39	\$42.10	\$654.98	\$851.48
Tug Assists	\$13.81	\$17.96	\$25.92	\$33.69	\$2.47	\$3.21	\$42.20	\$54.86
Pilots	\$0.00	\$0.00	\$0.00	\$0.00	\$12.52	\$16.27	\$12.52	\$16.27
Maritime Services/Agents	\$57.75	\$75.07	\$203.27	\$264.25	\$16.26	\$21.14	\$277.28	\$360.46
Forwarders	\$56.92	\$74.00	\$231.85	\$301.41	\$6.59	\$8.56	\$295.36	\$383.97
Marine Equipment/ Ship Repair	\$98.37	\$127.88	\$232.53	\$302.30	\$8.18	\$10.63	\$339.09	\$440.81
Laker/Barge	\$345.02	\$448.52	\$1,301.56	\$1,692.03	\$4.95	\$6.43	\$1,651.53	\$2,146.98
Dependent Shippers/ Consignees	\$2,149.81	\$2,794.76	\$8,074.90	\$10,497.38	\$763.76	\$992.88	\$10,988.47	\$14,285.02
Port Authority	\$27.00	\$35.10	\$26.30	\$34.19	\$3.83	\$4.98	\$57.13	\$74.27
TOTAL	\$4,004.83	\$5,206.29	\$13,847.43	\$18,001.66	\$1,149.63	\$1,494.52	\$19,001.89	\$24,702.46

All pilotage revenue impacts have been allocated to foreign flag vessels. Canadian flag vessels, however, are also subject to compulsory pilotage requirements in the St. Lawrence and Great Lakes region. It was not possible to accurately allocate Canadian-flag pilotage impacts due to lack of information as to duration of time pilots spend on these transits versus foreign-flag transits.

EXHIBIT III-23

ECONOMIC IMPACTS BY STATE – CANADIAN FLAG VESSELS

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	623	687	6,944	7,654	8,514	9,385
Jobs						
Direct jobs	2,123		1,808		1,162	
Induced	2,113		1,683		878	
Indirect	2,728		2,907		583	
Total	6,964		6,399		2,623	
Economic Activity (1,000)	US \$ \$2,592,645	Cdn \$ \$3,370,438	US \$ \$704,280	Cdn \$ \$915,564	US \$ \$451,888	Cdn \$ \$587,454
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$157,393	\$204,611	\$113,136	\$147,076	\$66,996	\$87,094
Re-Spending/Local Consumption	\$344,832	\$448,281	\$265,281	\$344,865	\$135,847	\$176,601
Indirect	\$148,430	\$192,959	\$175,852	\$228,608	\$29,612	\$38,496
Total	\$650,654	\$845,851	\$554,269	\$720,549	\$232,454	\$302,191
Business Revenue (1,000)	\$2,247,813	\$2,922,157	\$438,999	\$570,699	\$316,041	\$410,853
Local Purchases (1,000)	\$283,242	\$368,215	\$318,796	\$414,435	\$63,756	\$82,883
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$82,539	\$107,301	\$55,427	\$72,055	\$23,784	\$30,919
Federal Taxes	\$180,945	\$235,229	\$92,156	\$119,802	\$44,190	\$57,447
Total	\$263,485	\$342,530	\$147,583	\$191,857	\$67,974	\$88,366

EXHIBIT III-23 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CANADIAN FLAG VESSELS

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	2,589	2,854	1,957	2,157	6,166	6,796
Jobs						
Direct jobs	181		681		685	
Induced	153		737		540	
Indirect	126		189		381	
Total	460		1,607		1,605	
Economic Activity (1,000)	US \$ \$130,226	Cdn \$ \$169,293	US \$ \$238,408	Cdn \$ \$309,931	US \$ \$348,946	Cdn \$ \$453,630
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$9,592	\$12,470	\$42,044	\$54,658	\$39,367	\$51,177
Re-Spending/Local Consumption	\$22,754	\$29,580	\$130,056	\$169,073	\$76,447	\$99,381
Indirect	\$7,041	\$9,153	\$11,867	\$15,427	\$19,784	\$25,719
Total	\$39,387	\$51,203	\$183,968	\$239,158	\$135,598	\$176,277
Business Revenue (1,000)	\$107,472	\$139,713	\$108,352	\$140,858	\$272,499	\$354,249
Local Purchases (1,000)	\$14,961	\$19,449	\$20,337	\$26,438	\$43,725	\$56,842
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$6,872	\$8,934	\$25,791	\$33,528	\$19,086	\$24,811
Federal Taxes	\$9,752	\$12,678	\$29,018	\$37,724	\$29,479	\$38,323
Total	\$16,624	\$21,612	\$54,809	\$71,252	\$48,565	\$63,135

EXHIBIT III-23 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CANADIAN FLAG VESSELS

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	3,577	3,943	71	78	30,441	33,555
Jobs						
Direct jobs	3,411		36		10,086	
Induced	2,392		31		8,527	
Indirect	564		25		7,502	
Total	6,366		91		26,115	
Economic Activity (1,000)	US \$ \$847,152	Cdn,\$ \$1,101,297	US \$ \$12,956	Cdn,\$ \$16,843	US \$ \$5,326,500	Cdn \$ \$6,924,449
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$193,372	\$251,384	\$2,181	\$2,835	\$624,081	\$811,305
Re-Spending/Local Consumption	\$341,457	\$443,894	\$4,992	\$6,490	\$1,321,665	\$1,718,164
Indirect	\$42,255	\$54,931	\$1,217	\$1,581	\$436,057	\$566,874
Total	\$577,084	\$750,209	\$8,390	\$10,906	\$2,381,802	\$3,096,343
Business Revenue (1,000)	\$505,695	\$657,403	\$7,964	\$10,353	\$4,004,835	\$5,206,285
Local Purchases (1,000)	\$93,516	\$121,571	\$3,575	\$4,648	\$841,908	\$1,094,481
Total Taxes	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State/Provincial/Local Taxes	\$99,089	\$128,816	\$1,032	\$1,342	\$313,620	\$407,705
Federal Taxes	\$97,991	\$127,389	\$1,450	\$1,885	\$484,983	\$630,478
Total	\$197,080	\$256,204	\$2,483	\$3,228	\$798,602	\$1,038,183

EXHIBIT III-24

ECONOMIC IMPACTS BY PROVINCE – CANADIAN FLAG VESSELS

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	45,542	50,201	40,298	44,421	85,841	94,622
Jobs						
Direct jobs	16,986		11,758		28,745	
Induced	18,853		16,207		35,061	
Indirect	14,468		6,788		21,256	
Total	50,307		34,754		85,061	
Economic Activity (1,000)	US \$ \$5,771,415	Cdn \$ \$7,502,839	US \$ \$3,117,561	Cdn \$ \$4,052,830	US \$ \$8,888,976	Cdn \$ \$11,555,669
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$766,166	\$996,015	\$524,799	\$682,238	\$1,290,964	\$1,678,254
Re-Spending/Local Consumption	\$822,096	\$1,068,724	\$734,718	\$955,134	\$1,556,814	\$2,023,858
Indirect	\$678,441	\$881,973	\$300,536	\$390,697	\$978,977	\$1,272,670
Total	\$2,266,702	\$2,946,713	\$1,560,053	\$2,028,069	\$3,826,755	\$4,974,782
Business Revenue (1,000)	\$4,949,319	\$6,434,115	\$2,382,843	\$3,097,696	\$7,332,162	\$9,531,811
Local Purchases (1,000)	\$1,699,648	\$2,209,543	\$765,285	\$994,870	\$2,464,933	\$3,204,413
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Provincial/Local Taxes	\$428,906	\$557,578	\$469,649	\$610,544	\$898,555	\$1,168,122
Federal Taxes	\$702,387	\$913,103	\$450,664	\$585,863	\$1,153,050	\$1,498,966
Total	\$1,131,293	\$1,470,681	\$920,313	\$1,196,407	\$2,051,605	\$2,667,087

EXHIBIT III-25

ECONOMIC IMPACTS BY STATE – U.S. FLAG VESSELS

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	17,292	19,061	24,973	27,528	44,652	49,220
Jobs						
Direct jobs	18,687		6,593		6,339	
Induced	18,986		6,185		4,804	
Indirect	24,014		8,975		2,950	
Total	61,687		21,752		14,093	
Economic Activity (1,000)	US \$ \$11,364,328	Cdn \$ \$14,773,627	US \$ \$2,723,569	Cdn \$ \$3,540,640	US \$ \$2,804,009	Cdn \$ \$3,645,212
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$1,421,323	\$1,847,720	\$416,611	\$541,594	\$366,822	\$476,868
Re-Spending/Local Consumption	\$3,113,978	\$4,048,171	\$976,869	\$1,269,930	\$743,805	\$966,946
Indirect	\$1,306,767	\$1,698,798	\$531,579	\$691,052	\$152,342	\$198,045
Total	\$5,842,068	\$7,594,689	\$1,925,059	\$2,502,576	\$1,262,969	\$1,641,859
Business Revenue (1,000)	\$8,250,351	\$10,725,456	\$1,746,700	\$2,270,710	\$2,060,205	\$2,678,266
Local Purchases (1,000)	\$2,493,652	\$3,241,747	\$966,711	\$1,256,724	\$330,183	\$429,238
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$624,166	\$811,416	\$192,506	\$250,258	\$133,338	\$173,339
Federal Taxes	\$1,123,510	\$1,460,563	\$329,394	\$428,212	\$254,503	\$330,854
Total	\$1,747,676	\$2,271,978	\$521,900	\$678,470	\$387,841	\$504,194

EXHIBIT III-25 (CONTINUED)

ECONOMIC IMPACTS BY STATE – U.S. FLAG VESSELS

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	17,628	19,432	1,692	1,866	16,385	18,061
Jobs						
Direct jobs	1,228		490		2,083	
Induced	1,021		511		1,641	
Indirect	1,245		136		1,204	
Total	3,494		1,138		4,929	
Economic Activity (1,000)	US \$ \$937,341	Cdn \$ \$1,218,543	US \$ \$170,757	Cdn \$ \$221,984	US \$ \$1,047,690	Cdn \$ \$1,361,997
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$63,593	\$82,671	\$28,901	\$37,571	\$119,773	\$155,705
Re-Spending/Local Consumption	\$150,849	\$196,104	\$89,399	\$116,218	\$232,588	\$302,364
Indirect	\$69,383	\$90,198	\$8,542	\$11,104	\$62,724	\$81,542
Total	\$283,825	\$368,973	\$126,841	\$164,893	\$415,086	\$539,611
Business Revenue (1,000)	\$786,492	\$1,022,439	\$81,358	\$105,765	\$815,102	\$1,059,633
Local Purchases (1,000)	\$145,619	\$189,304	\$14,638	\$19,029	\$138,259	\$179,736
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$49,758	\$64,685	\$17,908	\$23,281	\$58,123	\$75,560
Federal Taxes	\$70,781	\$92,016	\$20,287	\$26,373	\$89,441	\$116,273
Total	\$120,539	\$156,701	\$38,195	\$49,654	\$147,564	\$191,833

EXHIBIT III-25 (CONTINUED)

ECONOMIC IMPACTS BY STATE – U.S. FLAG VESSELS

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	767	845	596	657	123,985	136,669
Jobs						
Direct jobs	535		289		36,244	
Induced	377		252		33,777	
Indirect	69		198		38,792	
Total	982		739		108,813	
Economic Activity (1,000)	US \$ \$97,877	Cdn,\$ \$127,241	US \$ \$103,969	Cdn,\$ \$135,159	US \$ \$19,249,540	Cdn \$ \$25,024,403
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$30,605	\$39,786	\$17,730	\$23,049	\$2,465,358	\$3,204,966
Re-Spending/Local Consumption	\$54,042	\$70,255	\$40,585	\$52,760	\$5,402,113	\$7,022,747
Indirect	\$5,196	\$6,755	\$9,826	\$12,774	\$2,146,360	\$2,790,268
Total	\$89,843	\$116,796	\$68,141	\$88,584	\$10,013,832	\$13,017,981
Business Revenue (1,000)	\$43,836	\$56,986	\$63,384	\$82,399	\$13,847,427	\$18,001,655
Local Purchases (1,000)	\$11,500	\$14,950	\$28,880	\$37,544	\$4,129,442	\$5,368,274
Total Taxes (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State/Provincial/Local Taxes	\$14,921	\$19,397	\$8,363	\$10,871	\$1,099,082	\$1,428,807
Federal Taxes	\$13,790	\$17,927	\$11,725	\$15,242	\$1,913,432	\$2,487,461
Total	\$28,711	\$37,324	\$20,088	\$26,114	\$3,012,514	\$3,916,268

EXHIBIT III-26

ECONOMIC IMPACTS BY PROVINCE – U.S. FLAG VESSELS

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	10,017	11,042	82	91	10,099	11,133
Jobs						
Direct jobs	2,216		57		2,273	
Induced	2,507		86		2,593	
Indirect	2,751		17		2,768	
Total	7,474		160		7,634	
Economic Activity (1,000)	US \$ \$774,281	Cdn \$ \$1,006,565	US \$ \$24,369	Cdn \$ \$31,680	US \$ \$798,650	Cdn \$ \$1,038,245
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$102,554	\$133,320	\$2,846	\$3,700	\$105,400	\$137,020
Re-Spending/Local Consumption	\$110,040	\$143,052	\$3,985	\$5,181	\$114,025	\$148,233
Indirect	\$129,223	\$167,990	\$691	\$898	\$129,914	\$168,888
Total	\$341,817	\$444,362	\$7,523	\$9,779	\$349,339	\$454,141
Business Revenue (1,000)	\$664,241	\$863,513	\$20,384	\$26,499	\$684,625	\$890,012
Local Purchases (1,000)	\$322,520	\$419,275	\$1,784	\$2,319	\$324,303	\$421,594
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Provincial/Local Taxes	\$62,790	\$81,627	\$2,475	\$3,217	\$65,265	\$84,844
Federal Taxes	\$103,292	\$134,279	\$2,458	\$3,195	\$105,749	\$137,474
Total	\$166,082	\$215,906	\$4,932	\$6,412	\$171,014	\$222,318

EXHIBIT III-27

ECONOMIC IMPACTS BY STATE – FOREIGN-FLAG VESSELS

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	296	327	1,364	1,504	517	570
Jobs						
Direct jobs	2,087		976		145	
Induced	2,080		987		120	
Indirect	2,681		1,319		76	
Total	6,848		3,281		341	
Economic Activity (1,000)	US \$ \$1,166,788	Cdn \$ \$1,516,825	US \$ \$310,030	Cdn \$ \$403,039	US \$ \$35,337	Cdn \$ \$45,939
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$154,948	\$201,433	\$67,952	\$88,337	\$9,506	\$12,358
Re-Spending/Local Consumption	\$339,476	\$441,319	\$159,333	\$207,134	\$19,276	\$25,059
Indirect	\$145,916	\$189,691	\$76,117	\$98,952	\$3,836	\$4,987
Total	\$640,341	\$832,443	\$303,402	\$394,423	\$32,618	\$42,404
Business Revenue (1,000)	\$827,312	\$1,075,506	\$150,696	\$195,905	\$16,061	\$20,880
Local Purchases (1,000)	\$278,447	\$361,980	\$130,793	\$170,031	\$8,504	\$11,055
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$67,659	\$87,957	\$30,340	\$39,442	\$2,998	\$3,897
Federal Taxes	\$119,912	\$155,886	\$46,682	\$60,686	\$5,013	\$6,517
Total	\$187,572	\$243,843	\$77,022	\$100,129	\$8,011	\$10,414

EXHIBIT III-27 (CONTINUED)

ECONOMIC IMPACTS BY STATE – FOREIGN-FLAG VESSELS

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	564	622	302	332	382	421
Jobs						
Direct jobs	178		218		114	
Induced	161		225		97	
Indirect	285		61		47	
Total	625		504		258	
Economic Activity (1,000)	US \$ \$50,250	Cdn \$ \$65,325	US \$ \$66,101	Cdn \$ \$85,932	US \$ \$31,836	Cdn \$ \$41,387
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$10,323	\$13,420	\$12,700	\$16,510	\$7,293	\$9,481
Re-Spending/Local Consumption	\$24,487	\$31,833	\$39,286	\$51,071	\$14,163	\$18,412
Indirect	\$15,837	\$20,588	\$3,803	\$4,944	\$2,446	\$3,180
Total	\$50,647	\$65,841	\$55,789	\$72,526	\$23,902	\$31,072
Business Revenue (1,000)	\$25,763	\$33,492	\$26,815	\$34,860	\$17,674	\$22,976
Local Purchases (1,000)	\$32,975	\$42,868	\$6,518	\$8,473	\$5,520	\$7,176
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$6,633	\$8,623	\$7,706	\$10,018	\$2,885	\$3,750
Federal Taxes	\$7,818	\$10,164	\$8,546	\$11,110	\$3,921	\$5,098
Total	\$14,451	\$18,787	\$16,253	\$21,128	\$6,806	\$8,848

EXHIBIT III-27 (CONTINUED)

ECONOMIC IMPACTS BY STATE – FOREIGN-FLAG VESSELS

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	145	160	9	10	3,579	3,945
Jobs						
Direct jobs	278		9		4,005	
Induced	197		8		3,876	
Indirect	67		6		4,542	
Total	542		23		12,422	
Economic Activity (1,000)	US \$ \$112,630	Cdn,\$ \$146,419	US \$ \$2,272	Cdn,\$ \$2,953	US \$ \$1,775,241	Cdn \$ \$2,307,813
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$16,075	\$20,898	\$527	\$686	\$279,325	\$363,122
Re-Spending/Local Consumption	\$28,386	\$36,902	\$1,207	\$1,569	\$625,613	\$813,296
Indirect	\$5,014	\$6,518	\$304	\$395	\$253,273	\$329,254
Total	\$49,475	\$64,317	\$2,039	\$2,650	\$1,158,210	\$1,505,673
Business Revenue (1,000)	\$84,244	\$109,517	\$1,064	\$1,384	\$1,149,628	\$1,494,517
Local Purchases (1,000)	\$11,096	\$14,424	\$893	\$1,161	\$474,744	\$617,167
Total Taxes (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State/Provincial/Local Taxes	\$9,088	\$11,814	\$235	\$306	\$127,545	\$165,808
Federal Taxes	\$10,118	\$13,154	\$316	\$411	\$202,326	\$263,024
Total	\$19,206	\$24,968	\$551	\$716	\$329,871	\$428,832

* New York state jobs and other economic impacts are related to St. Lawrence Seaway management and lock maintenance.

** Pennsylvania tonnage appears as 0 because it is less than 1,000 metric tons.

EXHIBIT III-28

ECONOMIC IMPACTS BY PROVINCE – FOREIGN FLAG VESSELS

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	7,748	8,541	107,184	118,148	114,932	126,689
Jobs						
Direct jobs	3,269		29,202		32,471	
Induced	3,779		43,746		47,525	
Indirect	2,325		34,492		36,817	
Total	9,373		107,441		116,813	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$828,321	\$1,076,818	\$14,003,761	\$18,204,890	\$14,832,083	\$19,281,708
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$155,763	\$202,492	\$1,445,246	\$1,878,820	\$1,601,010	\$2,081,312
Re-Spending/Local Consumption	\$167,134	\$217,274	\$2,023,345	\$2,630,349	\$2,190,479	\$2,847,622
Indirect	\$107,879	\$140,243	\$1,633,534	\$2,123,594	\$1,741,413	\$2,263,837
Total	\$430,776	\$560,008	\$5,102,126	\$6,632,763	\$5,532,901	\$7,192,772
Business Revenue (1,000)	\$661,188	\$859,544	\$11,980,416	\$15,574,541	\$12,641,604	\$16,434,085
Local Purchases (1,000)	\$275,796	\$358,535	\$4,699,169	\$6,108,920	\$4,974,966	\$6,467,455
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Provincial/Local Taxes	\$75,085	\$97,611	\$1,634,801	\$2,125,241	\$1,709,886	\$2,222,852
Federal Taxes	\$124,544	\$161,907	\$1,607,883	\$2,090,249	\$1,732,428	\$2,252,156
Total	\$199,629	\$259,518	\$3,242,685	\$4,215,490	\$3,442,314	\$4,475,008



**CHAPTER IV
ST. LAWRENCE
SEAWAY IMPACTS**

ST. LAWRENCE SEAWAY IMPACTS

This chapter presents the results of the economic impact analysis exclusively for cargo moving through the St. Lawrence Seaway. Vessel traffic that does not utilize the St. Lawrence Seaway is traffic that trades exclusively in the upper four Great Lakes (Superior, Huron, Michigan, and Erie) or exclusively in the Lower St. Lawrence River and does not utilize U.S. or Canadian Seaway infrastructure.

The impacts are measured for the year 2022 and are presented in terms of total economic impacts at the bi-national regional level, the country level, and the state/provincial level. The impacts are also presented by flag of vessel carriage.

ST. LAWRENCE SEAWAY





Opened to vessel traffic in 1959, the St. Lawrence Seaway connects the Great Lakes to the lower St. Lawrence River and Atlantic Ocean. Its infrastructure includes the following segments.

WELLAND CANAL SECTION

Linking Lake Erie to Lake Ontario, the Welland Canal cuts 42 km (27 miles) across Canada's Niagara Peninsula from Port Colborne, Ontario, to Port Weller, Ontario. A series of eight locks lifts or lowers vessels and enables maritime commerce to bypass Niagara Falls. Each of the eight locks on the Welland Canal measures 233.5 m (766 feet) long x 24 m (80 feet) wide x 9.14 m (30 feet) deep. The Welland Canal is owned by the Government of Canada and managed by The St. Lawrence Seaway Management Corporation (SLSMC).

MONTREAL-LAKE ONTARIO SECTION

Located on the St. Lawrence River between Iroquois, Ontario, and Montreal, Quebec, a series of seven locks lifts or lowers vessels and enables maritime commerce to navigate between Lake Ontario and the lower St. Lawrence – effectively connecting the Great Lakes to the Atlantic Ocean. Of the seven locks, the Iroquois, Upper Beauharnois, Lower Beauharnois, Cote Ste.

Catherine and St. Lambert locks are on the Canadian side of the waterway. These locks are owned by the Government of Canada and managed by the SLSMC. The Eisenhower and Snell locks are located on the American side. They are owned and managed by the Saint Lawrence Seaway Development Corporation (SLSDC). Each of the seven locks measures 233.5 m (766 feet) long x 24 m (80 feet) wide x 9.14 m (30 feet) deep.

This analysis includes cargo moving through one or both of the sections described above. Impacts are presented in terms of total economic impacts at the regional level, the country level, and the state/provincial level.

EXHIBIT IV-1

ST. LAWRENCE SEAWAY

Commodity	Tonnage Moved (Millions Metric Tons)	Tonnaged Moved (Million Short Tons)	Value Millions of US\$	Value Millions of Cdn\$
Steel	2.4	2.6	\$3,158.5	\$4,106.00
General Cargo	0.8	0.9	\$2,009.5	\$2,612.41
Iron Ore/Bulk	6.8	7.5	\$604.0	\$785.19
Grain	9.9	11.0	\$3,749.1	\$4,873.77
Stone/Aggregate	0.2	0.2	\$4.9	\$6.40
Cement	2.0	2.2	\$183.9	\$239.01
Salt	2.9	3.2	\$101.8	\$132.35
Other Dry Bulk	5.9	6.5	\$655.5	\$852.16
Other Liquid Bulk	3.7	4.1	\$2,211.2	\$2,874.50
Coal	1.7	1.9	\$138.8	\$180.38
TOTAL	36.3	40.1	\$12,817.1	\$16,662.2

Note: Containerized cargo is included in General Cargo category.

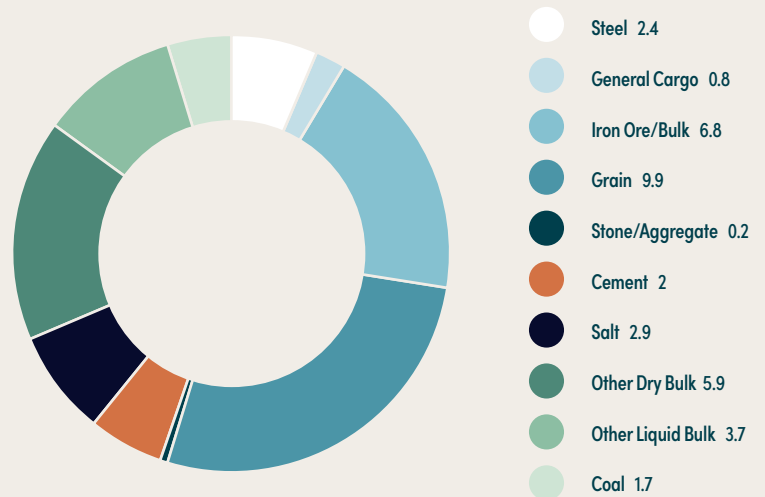
TOTAL CARGO VOLUMES

In 2022, a total of **36.3 million metric tons of cargo (40.1 million short tons)** moved through the St. Lawrence Seaway. This tonnage volume represents **US\$12.8 billion (Cdn\$16.7 billion)** of cargo value.

A majority of the domestic cargo moving on Canadian and U.S. flag vessels remains in the Great Lakes-St. Lawrence Seaway System. This cargo is loaded and unloaded at Great Lakes and St. Lawrence River ports, creating economic impacts at the loading port as well as the port of discharge. This tonnage "handled" represents shipment and receipts of domestic cargo and trans-lake cargo. The actual tons transiting the Seaway lock system and handled at Great Lakes -Seaway system ports is **48.3 million metric tons (53.2 million short tons)**.

This activity created a range of economic impacts in the region – defined as the states of Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, Pennsylvania and New York, and the Canadian provinces of Ontario and Quebec.

BREAKDOWN OF CARGO TYPE MOVED (MILLION METRIC TONS, 2022)



Total Value of Cargo Moved = **US\$12.8 BILLION (CDN\$16.7 BILLION)**

1. TOTAL ECONOMIC IMPACTS

Exhibit IV-2 summarizes the economic impacts of all cargo transiting the St. Lawrence Seaway and handled at the region's ports. The monetary impacts are expressed in both U.S. and Canadian dollars (shown as US\$ or Cdn\$). The exchange rate used throughout the report is US\$1.00 = Cdn \$1.3.

66,594 jobs in Canada and the United States are generated by the cargo transiting the St. Lawrence Seaway.

Of the 66,594 jobs, 22,755 direct jobs were generated by the marine cargo and vessel activity at the marine terminals on the Great Lakes-Seaway system.

As the result of the local and regional purchases by those 22,755 individuals holding the direct jobs, an additional 24,906 induced jobs were supported in the regional economy.

18,932 indirect jobs were supported by US\$2.0 billion (Cdn\$2.6 billion) in regional purchases by businesses supplying services at the marine terminals and ports.

In 2022, the St. Lawrence Seaway marine cargo and vessel activity generated a total of US\$9.5 billion (Cdn\$12.3 billion) in total economic activity in the United States and Canada.

The total economic activity consists of the direct business revenue received by the businesses supplying the cargo and vessel handling services US\$7.5 billion (Cdn\$9.8 billion), and the re-spending of direct income and consumption impact of US\$2.0 billion (Cdn\$2.6 billion).

The 22,755 direct job holders received US\$1.2 billion (Cdn\$1.6 billion) in direct wage and salary income. This equates to an average salary of nearly US\$53,739 (Cdn\$69,861). The 18,932 indirect jobs holders received US\$969.9 million (Cdn\$1.3 billion) in indirect personal income.

EXHIBIT IV-2 ECONOMIC IMPACTS – REGIONAL LEVEL

TOTAL		
Jobs		
Direct jobs	22,755	
Induced	24,906	
Indirect	18,932	
Total	66,594	
Economic Activity (1,000)	US \$	Cdn \$
	\$9,486,273	\$12,332,154
Personal income (1,000)	US \$	Cdn \$
Direct	\$1,222,833	\$1,589,683
Re-Spending/Local Purchases	\$1,964,439	\$2,553,771
Indirect	\$969,991	\$1,260,989
Total	\$4,157,264	\$5,404,443
Business Revenue (1,000)	\$7,521,833	\$9,778,383
Local Purchases (1,000)	\$2,131,119	\$2,770,455
Total Taxes	US \$	Cdn \$
State/Province/Local (1,000)	\$680,196	\$884,255
Federal (1,000)	\$1,036,667	\$1,347,667
Total	\$1,716,863	\$2,231,921

66,594 JOBS IN CANADA AND THE UNITED STATES ARE GENERATED BY THE CARGO TRANSITING THE ST. LAWRENCE SEAWAY.

Marine activity supported US\$4.2 billion (Cdn\$5.4 billion) in total personal wage and salary income, and local consumption expenditures for regional residents of the U.S. and Canada.

A total of US\$1.7 billion (Cdn\$2.2 billion) in direct, induced and indirect federal, state/provincial and local tax revenue was generated by maritime activity transiting the St. Lawrence Seaway system

Of the US\$1.7 billion (Cdn\$2.2 billion), US\$680.2 million (Cdn\$884.3 million) was paid to local and state/provincial governments, while US\$1.0 billion (Cdn\$1.3 billion) was paid in federal taxes.

Exhibit IV-3 shows the breakdown of the total impacts by country. 14,591 direct jobs or 66 percent were generated in Canada, while 8,164 direct jobs were created in the U.S. When the induced and indirect jobs are considered, each direct job supports a total of about three jobs in both countries.

The re-spending multiplier in Canada is slightly less than in the U.S., reflecting a higher savings rate compared to the U.S. In contrast, the induced jobs supported by a dollar of re-spending by individuals in Canada's two provinces is nearly three times as great as in the U.S. Great Lakes regional economy. This reflects the fact that less out-of-region spending occurs in Ontario and Quebec. This is consistent with a larger concentration of national population and employment in those two major eastern provinces, compared to the U.S. Great Lakes states.

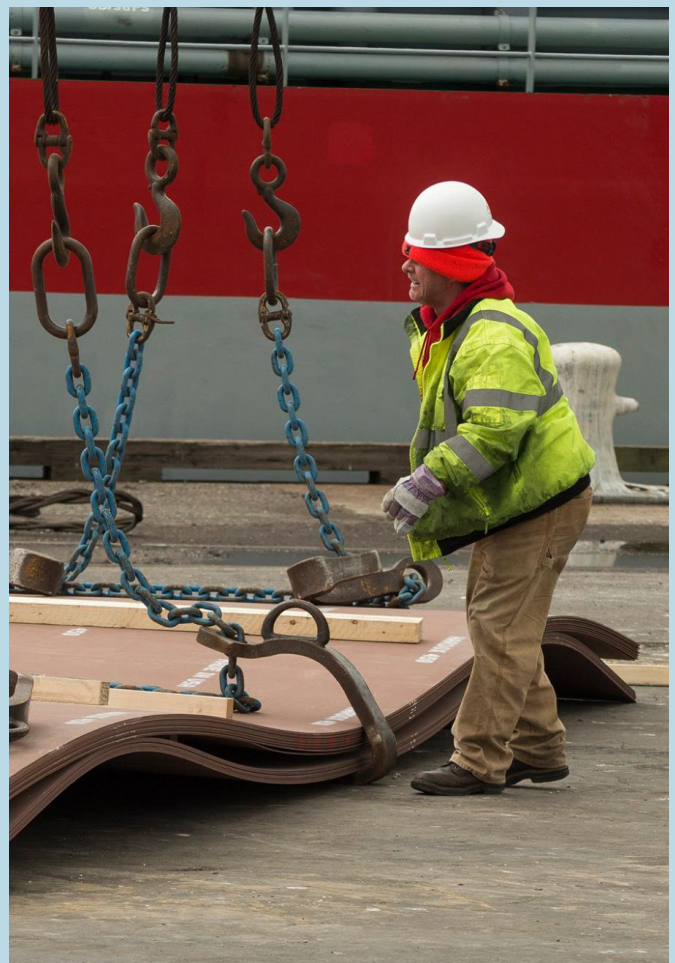




EXHIBIT IV-3

ECONOMIC IMPACTS – COUNTRY LEVEL

	United States		Canada		TOTAL	
Jobs						
Direct jobs	8,164		14,591		22,755	
Induced	7,513		17,393		24,906	
Indirect	8,598		10,335		18,932	
Total	24,275		42,319		66,594	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$4,907,475	\$6,379,717	\$4,578,798	\$5,952,437	\$9,486,273	\$12,332,154
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$549,173	\$713,924	\$673,661	\$875,759	\$1,222,833	\$1,589,683
Re-Spending/Local Purchases	\$1,193,518	\$1,551,573	\$770,922	\$1,002,198	\$1,964,439	\$2,553,771
Indirect	\$490,158	\$637,206	\$479,833	\$623,783	\$969,991	\$1,260,989
Total	\$2,232,849	\$2,902,704	\$1,924,415	\$2,501,740	\$4,157,264	\$5,404,443
Business Revenue (1,000)	\$3,713,957	\$4,828,144	\$3,807,876	\$4,950,239	\$7,521,833	\$9,778,383
Local Purchases (1,000)	\$928,881	\$1,207,546	\$1,202,238	\$1,562,909	\$2,131,119	\$2,770,455
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Province/Local (1,000)	\$270,099	\$351,128	\$410,097	\$533,127	\$680,196	\$884,255
Federal (1,000)	\$452,955	\$588,842	\$583,712	\$758,825	\$1,036,667	\$1,347,667
Total	\$723,054	\$939,970	\$993,809	\$1,291,952	\$1,716,863	\$2,231,921

2. JOB IMPACTS

This section focuses on the **22,755 direct jobs** supported by the **48.3 million metric tons (53.2 million short tons)** of cargo that transited the St. Lawrence Seaway and was handled at system ports and marine terminals.

Exhibit IV-4 shows the direct jobs impact by commodity. The movement of iron ore, which represents the largest tonnage handled at the ports and marine terminals, created the largest number of direct jobs – 5,995. The majority of these jobs are with shippers/consignees (steel mills) located at the ports that are directly dependent on the receipt of iron ore by vessels. The movement of steel products through the Seaway created the second largest direct job impact, despite the fact that tonnage of steel products

is smaller than other commodities. This represents the fact that break bulk cargoes such as iron and steel products support more jobs on a per ton basis than bulk cargoes, as the break bulk cargoes are more labor intensive in the ship discharge and use truck transportation to a much greater extent than bulk cargoes, such as grain, which are more dependent on rail to move the grain from inland farms to export elevators at the Great Lakes ports. The movement of steel products, iron ore and grain account for 65 percent of the total direct jobs generated by cargo moving through the Seaway lock system.

EXHIBIT IV-4

DIRECT JOBS BY COMMODITY – REGIONAL LEVEL

	1,000 Metric Tons	1,000 Short Tons	Total Direct Jobs
Containers	98	108	30
Steel	2,390	2,635	4,294
General Cargo	684	754	1,355
Iron Ore	8,520	9,391	5,995
Grain	18,603	20,506	2,980
Stone/Aggregate	1,208	1,332	66
Cement	1,951	2,150	332
Salt	3,263	3,596	776
Other Dry Bulk	5,904	6,508	2,959
Liquid Bulk	3,836	4,228	1,479
Coal	1,771	1,952	121
Not Allocated	NA	NA	2,365
TOTAL	48,227	53,160	22,755

Note: Containerized cargo is included in General Cargo category.

Exhibit IV-5 shows the direct jobs by commodity for each country.

Canadian ports handle 70 percent of the cargo transiting the St. Lawrence Seaway lock system, and 64 percent of the direct jobs are generated in Canada. There is a higher concentration of steel-related direct jobs in the U.S. because of the location of a large steel processing campus at one U.S. port. Iron ore transiting the Seaway lock system created the largest job impact in Canada, reflecting the consumption of ore at the steel mills located in the Hamilton, Ontario area. Grain moved from Thunder Bay and Hamilton on both foreign flag vessels and lakers (for transshipment at Quebec ports created a significant number of direct jobs in Canada.

The direct jobs generated by category are presented in **Exhibit IV-6**. This exhibit shows that 46.2 percent of the direct jobs impact is with shippers/ consignees that are directly dependent upon the shipment and receipt of cargo by vessel. The St. Lawrence Seaway is an important transportation corridor for ships to deliver iron ore to Ontario steel mills. In addition, large steel fabrication facilities located in such ports as Burns Harbor, Chicago and Cleveland receive imported iron and steel products via the Seaway lock system. The second-largest number of direct jobs is created with the trucking firms serving the ports and marine terminals, followed by the terminal workers, which include jobs with marine terminals located within the port districts and throughout the system, as well as with warehousing operations associated with the terminal operations. In some cases, these terminal workers are associated with the dependent shippers/consignees.

EXHIBIT IV-5

DIRECT JOBS BY COMMODITY – COUNTRY LEVEL

	Canada			United States			TOTAL		
	1,000 Metric Tons	1,000 Short Tons	Direct Jobs	1,000 Metric Tons	1,000 Short Tons	Direct Jobs	1,000 Metric Tons	1,000 Short Tons	Direct Jobs
Containers	41	46	4	57	62	26	98	108	30
Steel	1,130	1,245	1,330	1,261	1,390	2,965	2,390	2,635	4,294
General Cargo	217	239	138	467	515	1,217	684	754	1,355
Iron Ore	4,661	5,138	5,732	3,858	4,253	262	8,520	9,391	5,995
Grain	17,210	18,971	2,608	1,393	1,535	372	18,603	20,506	2,980
Stone/Aggregate	126	139	21	1,082	1,193	45	1,208	1,332	66
Cement	655	722	48	1,296	1,428	285	1,951	2,150	332
Salt	2,436	2,685	415	827	912	361	3,263	3,596	776
Other Dry Bulk	3,826	4,217	1,276	2,078	2,291	1,683	5,904	6,508	2,959
Liquid Bulk	3,519	3,879	1,457	317	349	22	3,836	4,228	1,479
Coal	47	52	3	1,723	1,900	119	1,771	1,952	121
Not Allocated	NA	NA	1,560	NA	NA	806	NA	NA	2,365
TOTAL	33,868	37,332	14,591	14,359	15,828	8,164	48,227	53,160	22,755

Note: Containerized cargo is included in General Cargo category.

EXHIBIT IV-6

DIRECT JOBS BY CATEGORY – REGIONAL LEVEL

Direct Jobs	
Surface Transportation	
Rail	457
Truck	4,455
Maritime Services	
Terminal Employees	2,819
Dockworkers	461
Tug Assists	213
Pilots	139
Agents	209
Maritime Services	212
Forwarders	505
Government	872
Marine Equipment/Ship Repair	734
Laker/Barge	882
Dependent Shippers/Consignees	10,523
Port Authority	273
TOTAL	22,755

EXHIBIT IV-7

DIRECT JOBS BY CATEGORY

– COUNTRY LEVEL

Exhibit IV-7 shows the direct job impacts by category, by country. The number of direct jobs with dependent shippers/consignees is greater in Canada than in the United States, reflecting the location of steel mills in Ontario that receive iron ore moving through the Seaway lock system, as well as dependent shippers/ consignees shipping and receiving fertilizer, petroleum products and salt.

	Canada Direct Jobs	United States Direct Jobs	TOTAL
Surface Transportation			
Rail	260	198	457
Truck	2,712	1,743	4,455
Maritime Services			
Terminal Employees	1,964	855	2,819
Dockworkers	210	251	461
Tug Assists	159	54	213
Pilots	106	33	139
Agents	155	54	209
Maritime Services	108	104	212
Forwarders	355	150	505
Government	654	218	872
Marine Equipment/Ship Repair	487	247	734
Laker/Barge	533	349	882
Dependent Shippers/Consignees	6,766	3,757	10,523
Port Authority	121	152	273
TOTAL	14,591	8,164	22,755

EXHIBIT IV-8

REVENUE IMPACT BY CATEGORY

– REGIONAL LEVEL

	TOTAL	
	Million US	Million Cdn
Surface Transportation		
Rail	\$563	\$732
Truck	\$637	\$829
Maritime Services		
Terminal Employees	\$292	\$380
Tug Assists	\$17	\$23
Pilots	\$44	\$57
Agents	\$29	\$38
Maritime Services	\$70	\$91
Forwarders	\$75	\$98
Marine Equipment/Ship Repair	\$97	\$126
Laker	\$261	\$339
Barge	\$33	\$43
Dependent Shippers/Consignees	\$5,342	\$6,945
Port Authority	\$60	\$78
TOTAL	\$7,522	\$9,778

3. REVENUE IMPACTS

In 2022, the direct business revenue received by firms dependent upon Seaway cargo handled at the marine terminals located in the Great Lakes-Seaway system was billion). These firms provide maritime services and inland transportation services for the cargo. **Exhibit IV-8** shows the distribution of this direct revenue impact by category and economic sector in both U.S. and Canadian dollars.

Similar to the direct jobs impacts by category, the majority of the direct business revenue is received by the dependent shippers/consignees located at the ports and marine terminals operating on the system.

The revenue impacts by category, by country, are presented in **Exhibit IV-9**.

The largest revenue impacts are with the dependent shippers/consignees.

EXHIBIT IV-9

REVENUE IMPACT BY CATEGORY

– COUNTRY LEVEL

	Canada		United States		TOTAL	
	Million US	Million Cdn	Million US	Million Cdn	Million US	Million Cdn
Surface Transportation						
Rail	\$266	\$345	\$297	\$386	\$563	\$732
Truck	\$378	\$492	\$259	\$337	\$637	\$829
Maritime Services						
Terminal Employees	\$208	\$270	\$85	\$110	\$292	\$380
Tug Assists	\$11	\$14	\$6	\$8	\$17	\$23
Pilots	\$31	\$41	\$13	\$16	\$44	\$57
Agents	\$21	\$28	\$8	\$10	\$29	\$38
Maritime Services	\$42	\$55	\$28	\$36	\$70	\$91
Forwarders	\$49	\$63	\$27	\$35	\$75	\$98
Marine Equipment/Ship Repair	\$70	\$91	\$27	\$35	\$97	\$126
Laker/Barge	\$184	\$239	\$110	\$143	\$294	\$382
Dependent Shippers/Consignees	\$2,514	\$3,268	\$2,828	\$3,677	\$5,342	\$6,945
Port Authority	\$34	\$44	\$27	\$34	\$60	\$78
TOTAL	\$3,808	\$4,950	\$3,714	\$4,828	\$7,522	\$9,778

4. PERSONAL INCOME AND LOCAL CONSUMPTION IMPACTS

The 22,755 individuals directly employed as a result of the Seaway cargo handled at the ports and marine terminals received US\$1.2 billion (Cdn\$1.6 billion) in wages and salaries.

The 14,591 direct job holders at the Canadian ports and terminals received US\$673.7 million (Cdn\$875.8 million), for an average salary of US\$46,169 (Cdn\$60,020).

The 8,164 direct job holders at the U.S. ports received US\$549.2 million (Cdn\$713.9 million) in direct personal income, for an average salary of US\$67,268 (Cdn\$87,448).

These individuals, in turn, used these earnings to purchase goods and services, to pay taxes, and for savings. The purchase of goods and services from regional sources creates a re-spending effect known as the personal-earnings multiplier effect. For the U.S. Great Lakes ports, this re-spending, or multiplier effect, was estimated using a personal-earnings multiplier for the maritime sector, by state, from the U.S. Bureau of Economic Analysis, RIMS II. The income multipliers by province were developed from Statistics Canada, Industry Accounts Division, for the maritime sectors of Ontario and Quebec.

Using the local personal-earnings multipliers by state and province for the relevant ports, an additional US\$2.0 billion (Cdn\$2.6 billion) in income and consumption were created in the Great Lakes regional economy.

The re-spending impact and consumption impacts should not be divided by induced jobs to estimate induced income, since the division of the re-spending impact/local consumption impact by the induced jobs will overstate the actual salary of the induced job holders, as this includes the value of the consumption purchases.

The 18,932 indirect job holders received US\$1.0 billion (Cdn\$1.3 billion) in personal income, of which the 10,335 Canadian indirect job holders received US\$479.8 million (Cdn\$623.8 million), while the 8,598 indirect job holders in the U.S. received US\$490.2 million (Cdn\$637.2 million).

5. FEDERAL, STATE/ PROVINCIAL AND LOCAL TAX IMPACTS

The cargo activity at the U.S. ports and marine terminals created US\$270.1 million (Cdn\$351.1 million) in state and local taxes, and US\$453.0 million (Cdn\$588.8 million) in federal taxes. The cargo activity at the Canadian ports created US\$410.1 million (Cdn\$533.1 million) in provincial taxes, and US\$583.7 million (Cdn\$758.8 million) in federal taxes.

6. IMPACTS BY STATE AND PROVINCE

The economic impacts were estimated at the port level for the 40 U.S. and Canadian Great Lakes and St. Lawrence River ports. The models developed for these 40 individual ports were then used to develop prototype models for each Great Lakes state and province – in order to capture the impacts of cargo activity moving through ports and marine terminals for which specific models were not developed. This process provided a model for each state and province to estimate the total impacts at the state and provincial level.

Exhibit IV-10 presents the U.S. impacts of total Seaway cargo handled at U.S. ports and marine terminals located on the Great Lakes–St. Lawrence Seaway system. In terms of direct, induced, and indirect jobs, the impacts are greatest for the state of Indiana, followed by Ohio reflecting ore movements into steel mills located in these states as well as iron and steel imports.

Exhibit IV-11 shows the impacts of cargo transiting the St. Lawrence Seaway for the provinces of Ontario and Quebec.

As this exhibit indicates, the ports in Ontario account for 33,001 direct, induced, and indirect jobs, or about 78 percent of the job impacts for Canada. This reflects the movement of iron ore from the upper lakes to the steel mills in Ontario, as well as grain exports from Thunder Bay.

EXHIBIT IV-10

ECONOMIC IMPACTS – BY STATE

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	656	723	6,294	6,937	2,081	2,294
Jobs						
Direct jobs	3,402		2,068		431	
Induced	3,411		1,988		340	
Indirect	4,371		3,071		253	
Total	11,184		7,127		1,024	
Economic Activity (1,000)	US \$ \$3,092,159	Cdn \$ \$4,019,806	US \$ \$774,625	Cdn \$ \$1,007,013	US \$ \$117,018	Cdn \$ \$152,123
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$254,461	\$330,800	\$134,848	\$175,303	\$26,405	\$34,327
Re-Spending/Local Consumption	\$557,499	\$724,749	\$316,192	\$411,049	\$53,542	\$69,605
Indirect	\$237,880	\$309,244	\$183,051	\$237,967	\$12,724	\$16,542
Total	\$1,049,840	\$1,364,792	\$634,091	\$824,319	\$92,672	\$120,473
Business Revenue (1,000)	\$2,534,660	\$3,295,058	\$458,433	\$595,964	\$63,476	\$82,519
Local Purchases (1,000)	\$453,936	\$590,117	\$325,229	\$422,798	\$28,759	\$37,386
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State and Local Taxes	\$122,475	\$159,217	\$63,409	\$82,432	\$8,731	\$11,351
Federal Taxes	\$246,084	\$319,910	\$103,588	\$134,665	\$14,991	\$19,489
Total	\$368,559	\$479,127	\$166,997	\$217,097	\$23,723	\$30,840

EXHIBIT IV-10 (CONTINUED)

ECONOMIC IMPACTS – BY STATE

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	2,389	2,633	337	371	2,163	2,384
Jobs						
Direct jobs	289		230		275	
Induced	253		238		217	
Indirect	351		64		148	
Total	893		532		640	
Economic Activity (1,000)	US \$ \$140,389	Cdn \$ \$182,505	US \$ \$71,102	Cdn \$ \$92,432	US \$ \$137,220	Cdn \$ \$178,386
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$16,015	\$20,819	\$13,445	\$17,478	\$15,851	\$20,607
Re-Spending/Local Consumption	\$37,989	\$49,385	\$41,588	\$54,064	\$30,781	\$40,016
Indirect	\$19,521	\$25,377	\$4,011	\$5,214	\$7,687	\$9,993
Total	\$73,524	\$95,581	\$59,043	\$76,756	\$54,319	\$70,615
Business Revenue (1,000)	\$102,400	\$133,120	\$29,514	\$38,368	\$106,439	\$138,370
Local Purchases (1,000)	\$40,851	\$53,106	\$6,873	\$8,935	\$17,053	\$22,169
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State and Local Taxes	\$10,903	\$14,175	\$8,177	\$10,631	\$7,603	\$9,883
Federal Taxes	\$14,080	\$18,303	\$9,092	\$11,820	\$11,695	\$15,203
Total	\$24,983	\$32,478	\$17,270	\$22,451	\$19,297	\$25,087

EXHIBIT IV-10 (CONTINUED)

ECONOMIC IMPACTS – BY STATE

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	395	436	9	10	14,323	15,789
Jobs						
Direct jobs	1,460		9		8,164	
Induced	1,059		8		7,513	
Indirect	334		6		8,598	
Total	<u>2,852</u>		<u>23</u>		<u>24,275</u>	
Economic Activity (1,000)	US \$ \$572,691	Cdn,\$ \$744,498	US \$ \$2,272	Cdn,\$ \$2,953	US \$ \$4,907,475	Cdn \$ \$6,379,717
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$87,620	\$113,906	\$527	\$686	\$549,173	\$713,924
Re-Spending/Local Consumption	\$154,720	\$201,135	\$1,207	\$1,569	\$1,193,518	\$1,551,573
Indirect	\$24,981	\$32,475	\$304	\$395	\$490,158	\$637,206
Total	<u>\$267,321</u>	<u>\$347,517</u>	<u>\$2,039</u>	<u>\$2,650</u>	<u>\$2,232,849</u>	<u>\$2,902,704</u>
Business Revenue (1,000)	\$417,971	\$543,362	\$1,064	\$1,384	\$3,713,957	\$4,828,144
Local Purchases (1,000)	\$55,287	\$71,873	\$893	\$1,161	\$928,881	\$1,207,546
Total Taxes	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State and Local Taxes	\$48,565	\$63,134	\$235	\$306	\$270,099	\$351,128
Federal Taxes	\$53,108	\$69,041	\$316	\$411	\$452,955	\$588,842
Total	<u>\$101,673</u>	<u>\$132,175</u>	<u>\$551</u>	<u>\$716</u>	<u>\$723,054</u>	<u>\$939,970</u>

EXHIBIT IV-11

ECONOMIC IMPACTS – BY PROVINCE

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	21,676	23,893	12,192	13,439	33,868	37,332
Jobs						
Direct jobs	11,551		3,040		14,591	
Induced	12,923		4,470		17,393	
Indirect	8,527		1,807		10,335	
Total	33,001		9,318		42,319	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$3,783,169	\$4,918,120	\$795,629	\$1,034,318	\$4,578,798	\$5,952,437
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$526,616	\$684,601	\$147,045	\$191,158	\$673,661	\$875,759
Re-Spending/Local Consumption	\$565,059	\$734,577	\$205,862	\$267,621	\$770,922	\$1,002,198
Indirect	\$398,862	\$518,520	\$80,971	\$105,263	\$479,833	\$623,783
Total	\$1,490,537	\$1,937,698	\$433,878	\$564,042	\$1,924,415	\$2,501,740
Business Revenue (1,000)	\$3,218,110	\$4,183,543	\$589,766	\$766,696	\$3,807,876	\$4,950,239
Local Purchases (1,000)	\$1,006,435	\$1,308,366	\$195,803	\$254,543	\$1,202,238	\$1,562,909
Total Taxes	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Province/Local (1,000)	\$281,201	\$365,562	\$128,896	\$167,565	\$410,097	\$533,127
Federal (1,000)	\$460,708	\$460,708	\$460,708	\$460,708	\$460,708	\$460,708
Total	\$741,910	\$826,270	\$589,605	\$628,273	\$870,806	\$993,835

7. IMPACTS BY VESSEL FLAG

This section presents the impacts of cargo transiting the St. Lawrence Seaway by vessel operator category. Cargo moves to and from the U.S. and Canadian Great Lakes ports/marine terminals on Canadian flag vessels, U.S. flag vessels and foreign flag vessels. Due to the carriage laws in each country, Canadian flag vessels move cargo to and from Canadian ports, while U.S. flag vessels move cargo to and from U.S. ports. Canadian flag and U.S. flag vessels also move cargo between U.S. and Canadian ports in cross-lake operations. Canadian flag vessels often move cargo from ports within the Great Lakes to ports on the St. Lawrence River, whereas U.S. flag carriers typically operate exclusively within the

Great Lakes and seldom transit the Montreal-Lake Ontario section of the St. Lawrence Seaway. Foreign flag vessels move international cargo to and from both St. Lawrence River ports and Great Lakes ports and overseas destinations.

Based on the detailed commodity flow data collected for this study, 36.3 million metric tons of cargo (40.9 million short tons) moved through the St. Lawrence Seaway Locks in 2022. This cargo represents US\$12,8 billion (Cdn\$16,7 billion) of cargo value.

EXHIBIT IV-12

Economic Impacts by Flag of Carriage – Regional Level

	Canadian Flag		U.S. Flag	
Jobs				
Direct jobs	13,896		26	
Induced	14,955		32	
Indirect	11,179		14	
Total	40,029		72	
Economic Activity (1,000)	US \$ \$6,519,209	Cdn \$ \$8,474,972	US \$ \$10,089	Cdn \$ \$13,115
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$
Direct	\$703,507	\$914,559	\$1,259	\$1,637
Re-Spending/Local Consumption	\$1,049,696	\$1,364,604	\$2,102	\$2,733
Indirect	\$568,864	\$739,523	\$695	\$904
Total	\$2,322,066	\$3,018,686	\$4,057	\$5,274
Business Revenue (1,000)	\$5,469,513	\$7,110,367	\$7,986	\$10,382
Local Purchases (1,000)	\$1,275,292	\$1,657,880	\$1,613	\$2,097
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$416,175	\$541,027	\$950	\$1,235
Federal Taxes	\$646,118	\$839,953	\$1,074	\$1,396
Total	\$1,062,293	\$1,380,980	\$2,024	\$2,631

Of this total, 24.6 million metric tons (27.1 million short tons) were moved on Canadian Flag vessels; 165,000 metric tons (181,880 million short tons) moved on U.S. flag vessels. The balance, 11.6 million metric tons (12.8 million short tons) moved on foreign flag vessels.

In terms of value of cargo moved by flag, Canadian flag carriers moved US\$5.9 billion (Cdn\$7.7 billion), U.S. flag carriers moved US\$34.8 million (Cdn\$45.3 million), and foreign flag carriers moved US\$6.6 billion (Cdn\$8.6 billion).

Exhibits IV-12 through IV-28 summarize the economic impacts of cargo transiting the Seaway locks by flag of vessel carriage. These tables show impacts at the bi-national regional level, by country, by state/province, by commodity and by job category.

EXHIBIT IV-12 (CONTINUED)

ECONOMIC IMPACTS BY FLAG OF CARRIAGE – REGIONAL LEVEL

	Foreign Flag		TOTAL	
Jobs				
Direct jobs	8,833		22,755	
Induced	9,920		24,906	
Indirect	7,739		18,932	
Total	26,492		66,594	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$
	\$2,956,975	\$3,844,067	\$9,486,273	\$12,332,154
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$
Direct	\$518,068	\$673,488	\$1,222,833	\$1,589,683
Re-Spending/Local Consumption	\$912,641	\$1,186,434	\$1,964,439	\$2,553,771
Indirect	\$400,432	\$520,561	\$969,991	\$1,260,989
Total	\$1,831,141	\$2,380,483	\$4,157,264	\$5,404,443
Business Revenue (1,000)	\$2,044,334	\$2,657,634	\$7,521,833	\$9,778,383
Local Purchases (1,000)	\$854,214	\$1,110,478	\$2,131,119	\$2,770,455
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$263,071	\$341,993	\$680,196	\$884,255
Federal Taxes	\$389,475	\$506,317	\$1,036,667	\$1,347,667
Total	\$652,546	\$848,310	\$1,716,863	\$2,231,921

EXHIBIT IV-13

ECONOMIC IMPACTS CANADIAN FLAG – COUNTRY LEVEL

Impacts	Canada		United States		TOTAL	
Jobs						
Direct jobs	9,902		3,994		13,896	
Induced	11,456		3,498		14,955	
Indirect	7,153		4,026		11,179	
Total	28,511		11,518		40,029	
Economic Activity (1,000)	US \$ \$3,462,220	Cdn \$ \$4,500,886	US \$ \$3,056,989	Cdn \$ \$3,974,086	US \$ \$6,519,209	Cdn \$ \$8,474,972
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$444,429	\$577,758	\$259,077	\$336,801	\$703,507	\$914,559
Re-Spending/Local Consumption	\$503,511	\$654,564	\$546,185	\$710,041	\$1,049,696	\$1,364,604
Indirect	\$333,842	\$433,995	\$235,022	\$305,528	\$568,864	\$739,523
Total	\$1,281,782	\$1,666,317	\$1,040,284	\$1,352,369	\$2,322,066	\$3,018,686
Business Revenue (1,000)	\$2,958,709	\$3,846,322	\$2,510,804	\$3,264,045	\$5,469,513	\$7,110,367
Local Purchases (1,000)	\$824,945	\$1,072,429	\$450,347	\$585,451	\$1,275,292	\$1,657,880
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$278,230	\$361,699	\$137,945	\$179,328	\$416,175	\$541,027
Federal Taxes	\$402,306	\$522,998	\$243,812	\$316,955	\$646,118	\$839,953
Total	\$680,536	\$884,697	\$381,757	\$496,284	\$1,062,293	\$1,380,980

EXHIBIT IV-14

ECONOMIC IMPACTS BY U.S. FLAG - COUNTRY LEVEL

Impacts	Canada		United States		TOTAL	
Jobs						
Direct jobs	18		8		26	
Induced	26		6		32	
Indirect	6		8		14	
Total	<u>50</u>		<u>22</u>		<u>72</u>	
Economic Activity (1,000)	US \$ \$5,407	Cdn \$ \$7,029	US \$ \$4,682	Cdn \$ \$6,086	US \$ \$10,089	Cdn \$ \$13,115
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$826	\$1,074	\$433	\$563	\$1,259	\$1,637
Re-Spending/Local Consumption	\$1,157	\$1,504	\$945	\$1,229	\$2,102	\$2,733
Indirect	\$274	\$356	\$421	\$548	\$695	\$904
Total	<u>\$2,257</u>	<u>\$2,935</u>	<u>\$1,800</u>	<u>\$2,340</u>	<u>\$4,057</u>	<u>\$5,274</u>
Business Revenue (1,000)	\$4,250	\$5,525	\$3,736	\$4,857	\$7,986	\$10,382
Local Purchases (1,000)	\$736	\$957	\$877	\$1,140	\$1,613	\$2,097
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$699	\$908	\$251	\$327	\$950	\$1,235
Federal Taxes	\$678	\$881	\$396	\$515	\$1,074	\$1,396
Total	<u>\$1,376</u>	<u>\$1,789</u>	<u>\$648</u>	<u>\$842</u>	<u>\$2,024</u>	<u>\$2,631</u>

EXHIBIT IV-15

ECONOMIC IMPACTS BY FOREIGN FLAG – COUNTRY LEVEL

Impacts	Canada		United States		TOTAL	
Jobs						
Direct jobs	4,671		4,162		8,833	
Induced	5,911		4,009		9,920	
Indirect	3,176		4,564		7,739	
Total	13,757		12,735		26,492	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$1,111,171	\$1,444,522	\$1,845,804	\$2,399,545	\$2,956,975	\$3,844,067
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	228,405	296,927	289,662	376,561	\$518,068	\$673,488
Re-Spending/Local Consumption	266,254	346,130	646,387	840,304	\$912,641	\$1,186,434
Indirect	145,716	189,431	254,715	331,130	\$400,432	\$520,561
Total	640,376	832,488	1,190,765	1,547,995	\$1,831,141	\$2,380,483
Business Revenue (1,000)	844,917	1,098,392	1,199,417	1,559,242	\$2,044,334	\$2,657,634
Local Purchases (1,000)	376,557	489,524	477,657	620,955	\$854,214	\$1,110,478
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	131,169	170,520	131,902	171,473	\$263,071	\$341,993
Federal Taxes	180,728	234,946	208,747	271,371	\$389,475	\$506,317
Total	\$311,897	\$405,466	\$340,649	\$442,844	\$652,546	\$848,310

EXHIBIT IV-16

DIRECT JOBS BY COMMODITY AND FLAG – REGIONAL LEVEL

	Direct Jobs Canadian Flag	Direct Jobs US Flag	Direct Jobs Foreign Flag	TOTAL
Containers	2	0	28	30
Steel	44	0	4,251	4,294
General Cargo	927	0	428	1,355
Iron Ore	5,983	6	6	5,995
Grain	1,506	0	1,474	2,980
Stone/Aggregate	21	0	45	66
Cement	267	0	65	332
Salt	769	0	8	776
Other Dry Bulk	1,953	4	1,003	2,959
Liquid Bulk	888	10	581	1,479
Coal	121	0	0	121
Not Allocated	1,414	8	944	2,365
TOTAL	13,896	26	8,833	22,755

EXHIBIT IV-17

DIRECT JOBS BY COMMODITY AND FLAG – COUNTRY LEVEL

	Canada				United States				TOTAL REGION
	Canadian Flag	U.S. Flag	Foreign Flag	Total	Canadian Flag	U.S. Flag	Foreign Flag	Total	
Containers	2	0	2	4	0	0	26	26	30
Steel	43	0	1,286	1,330	0	0	2,964	2,965	4,294
General Cargo	21	0	117	138	906	0	311	1,217	1,355
Iron Ore	5,730	3	0	5,732	254	3	6	262	5,995
Grain	1,393	0	1,215	2,608	113	0	259	372	2,980
Stone/ Aggregate	21	0	0	21	0	0	45	45	66
Cement	26	0	22	48	241	0	43	285	332
Salt	413	0	2	415	356	0	6	361	776
Other Dry Bulk	460	0	816	1,276	1,493	4	187	1,683	2,959
Liquid Bulk	872	10	575	1,457	16	0	7	22	1,479
Coal	3	0	0	3	119	0	0	119	121
Not Allocated	917	6	637	1,560	497	1	307	806	2,365
TOTAL	9,902	18	4,671	14,591	3,994	8	4,162	8,164	22,755

Exhibit IV-16 and IV-17

Note: Containerized cargo is included in General Cargo category.

EXHIBIT IV-18
DIRECT JOBS BY
CATEGORY AND FLAG
– REGIONAL LEVEL

	Canadian Flag	US Flag	Foreign Flag	Total
Surface Transportation				
Rail	271	2	185	457
Truck	1,519	6	2,930	4,455
Maritime Services				
Terminal Employees	1,394	5	1,420	2,819
Dockworkers	143	0	317	461
Tug Assists	111	1	101	213
Pilots	0	0	139	139
Maritime Services	138	1	283	422
Forwarders	325	2	178	505
Government	565	1	306	872
Marine Equipment/Ship Repair	433	4	296	734
Laker/Barge	766	5	112	882
Dependent Shippers/Consignees	8,065	NA	2,457	10,523
Port Authority	164	NA	109	273
TOTAL	13,896	26	8,833	22,755

All pilotage jobs have been allocated to foreign flag vessels. Canadian flag vessels, however, are also subject to compulsory pilotage requirements in the St. Lawrence and Great Lakes region. It was not possible to accurately allocate Canadian-flag pilotage impacts due to lack of information as to duration of time pilots spend on these transits versus foreign-flag transits.

EXHIBIT IV-19
DIRECT JOBS BY CATEGORY – COUNTRY LEVEL

	Canada				United States				TOTAL
	Canadian Flag	U.S. Flag	Foreign Flag	Total	Canadian Flag	U.S. Flag	Foreign Flag	Total	Total System
Surface Transportation									
Rail	198	0	61	260	73	1	124	198	457
Truck	1,003	4	1,705	2,712	517	1	1,225	1,743	4,455
Maritime Services									
Terminal Employees	965	4	995	1,964	430	1	425	855	2,819
Dockworkers	76	0	134	210	67	0	183	251	461
Tug Assists	83	0	75	159	28	0	25	54	213
Pilots	NA	NA	106	106	NA	NA	33	33	139
Maritime Services	68	0	196	264	70	0	87	158	422
Forwarders	224	1	130	355	101	1	48	150	505
Government	419	0	234	654	146	1	72	218	872
Marine Equipment/Ship Repair	276	4	207	487	157	0	90	247	734
Laker/Barge	454	3	76	533	312	2	35	349	882
Dependent Shippers/Consignees	6,065	NA	701	6,766	2,000	NA	1,757	3,757	10,523
Port Authority	70	NA	50	121	93	NA	58	152	273
TOTAL	9,902	18	4,671	14,591	3,994	8	4,162	8,164	22,755

EXHIBIT IV-20 REVENUE IMPACT BY CATEGORY – REGIONAL LEVEL

	Canada Flag		US Flag		Foreign Flag		TOTAL	
	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn
Surface Transportation								
Rail	\$328.9	\$427.5	\$3.3	\$4.3	\$230.5	\$299.7	\$562.7	\$731.6
Truck	\$185.9	\$241.7	\$0.7	\$1.0	\$450.8	\$586.0	\$637.4	\$828.7
Maritime Services								
Terminal Employees	\$191.7	\$249.2	\$0.6	\$0.8	\$100.1	\$130.1	\$292.3	\$380.0
Tug Assists	\$9.7	\$12.6	\$0.1	\$0.1	\$7.6	\$9.9	\$17.3	\$22.5
Pilots	\$0.0	\$0.0	\$0.0	\$0.0	\$43.8	\$56.9	\$43.8	\$56.9
Maritime Services	\$41.6	\$54.0	\$0.3	\$0.4	\$57.6	\$74.8	\$99.4	\$129.3
Forwarders	\$48.8	\$63.5	\$0.3	\$0.4	\$26.4	\$34.3	\$75.5	\$98.1
Marine Equipment/Ship Repair	\$56.5	\$73.5	\$1.0	\$1.3	\$39.5	\$51.3	\$97.0	\$126.1
Laker/Barge	\$266.1	\$345.9	\$1.5	\$2.0	\$26.1	\$34.0	\$293.8	\$381.9
Dependent Shippers/ Consignees	\$4,305.2	\$5,596.7	\$0.0	\$0.0	\$1,037.3	\$1,348.5	\$5,342.5	\$6,945.2
Port Authority	\$35.2	\$45.8	\$0.1	\$0.2	\$24.8	\$32.2	\$60.1	\$78.1
TOTAL	\$5,469.5	\$7,110.4	\$8.0	\$10.4	\$2,044.3	\$2,657.6	\$7,521.8	\$9,778.4

EXHIBIT IV-21 REVENUE IMPACT BY CATEGORY AND FLAG – CANADA

	Canada							
	Canadian Flag		US Flag		Foreign Flag		Total Canada	
	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn
Surface Transportation								
Rail	\$167.3	\$217.5	\$1.2	\$1.6	\$97.1	\$126.2	\$265.6	\$345.2
Truck	\$118.5	\$154.0	\$0.5	\$0.7	\$259.4	\$337.2	\$378.4	\$491.9
Maritime Services								
Terminal Employees	\$142.7	\$185.5	\$0.3	\$0.4	\$64.7	\$84.1	\$207.7	\$270.0
Tug Assists	\$5.8	\$7.5	\$0.0	\$0.0	\$5.1	\$6.6	\$10.9	\$14.2
Pilots	\$0.0	\$0.0	\$0.0	\$0.0	\$31.2	\$40.6	\$31.2	\$40.6
Maritime Services/Agents	\$23.2	\$30.1	\$0.3	\$0.4	\$40.3	\$52.4	\$63.7	\$82.9
Forwarders	\$30.8	\$40.0	\$0.1	\$0.2	\$17.8	\$23.2	\$48.7	\$63.3
Marine Equipment/Ship Repair	\$37.8	\$49.1	\$0.9	\$1.2	\$31.1	\$40.5	\$69.8	\$90.7
Laker	\$172.7	\$224.5	\$0.7	\$1.0	\$10.7	\$13.9	\$184.1	\$239.4
Dependent Shippers/ Consignees	\$2,240.5	\$2,912.7	\$0.0	\$0.0	\$273.6	\$355.7	\$2,514.1	\$3,268.3
Port Authority	\$19.5	\$25.3	\$0.1	\$0.2	\$14.0	\$18.2	\$33.6	\$43.7
TOTAL	\$2,958.7	\$3,846.3	\$4.3	\$5.5	\$844.9	\$1,098.4	\$3,807.9	\$4,950.2

All pilotage revenue impacts have been allocated to foreign flag vessels. Canadian flag vessels, however, are also subject to compulsory pilotage requirements in the St. Lawrence and Great Lakes region. It was not possible to accurately allocate Canadian-flag pilotage impacts due to lack of information as to duration of time pilots spend on these transits versus foreign-flag transits.

EXHIBIT IV-22

REVENUE IMPACT BY CATEGORY AND FLAG – UNITED STATES

United States								
	Canadian Flag		US Flag		Foreign Flag		Total US	
	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn	Millions US	Millions Cdn
Surface Transportation								
Rail	\$161.60	\$210.08	\$2.09	\$2.72	\$133.47	\$173.51	\$297.16	\$386.30
Truck	\$67.47	\$87.71	\$0.21	\$0.27	\$191.39	\$248.81	\$259.07	\$336.79
Maritime Services	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Terminal Employees	\$48.94	\$63.63	\$0.33	\$0.43	\$35.34	\$45.94	\$84.61	\$110.00
Tug Assists	\$3.87	\$5.03	\$0.03	\$0.03	\$2.52	\$3.27	\$6.41	\$8.33
Pilots	\$0.00	\$0.00	\$0.00	\$0.00	\$12.52	\$16.27	\$12.52	\$16.27
Maritime Services/Agents	\$18.39	\$23.91	\$0.06	\$0.08	\$17.24	\$22.41	\$35.70	\$46.41
Forwarders	\$18.03	\$23.44	\$0.15	\$0.20	\$8.56	\$11.13	\$26.75	\$34.77
Marine Equipment/ Ship Repair	\$18.74	\$24.36	\$0.07	\$0.09	\$8.37	\$10.88	\$27.18	\$35.34
Laker/Barge	\$93.38	\$121.39	\$0.79	\$1.02	\$15.48	\$20.12	\$109.64	\$142.53
Dependent Shippers/ Consignees	\$2,064.64	\$2,684.03	\$0.00	\$0.00	\$763.76	\$992.88	\$2,828.40	\$3,676.92
Port Authority	\$15.74	\$20.47	\$0.01	\$0.01	\$10.78	\$14.01	\$26.53	\$34.49
TOTAL	\$2,510.80	\$3,264.05	\$3.74	\$4.86	\$1,199.42	\$1,559.24	\$3,713.96	\$4,828.14

All pilotage revenue impacts have been allocated to foreign flag vessels. Canadian flag vessels, however, are also subject to compulsory pilotage requirements in the St. Lawrence and Great Lakes region. It was not possible to accurately allocate Canadian-flag pilotage impacts due to lack of information as to duration of time pilots spend on these transits versus foreign-flag transits.

EXHIBIT IV-23

ECONOMIC IMPACTS BY STATE – CARGO ON CANADIAN FLAG VESSELS

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	360	397	3,872	4,268	1,526	1,682
Jobs						
Direct jobs	1,315		1,014		282	
Induced	1,331		934		217	
Indirect	1,690		1,741		175	
Total	4,336		3,689		674	
Economic Activity (1,000)	US \$ \$1,925,371	Cdn \$ \$2,502,982	US \$ \$410,129	Cdn \$ \$533,168	US \$ \$79,656	Cdn \$ \$103,552
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$99,513	\$129,367	\$62,543	\$81,306	\$16,663	\$21,662
Re-Spending/Local Consumption	\$218,023	\$283,430	\$146,651	\$190,646	\$33,788	\$43,925
Indirect	\$91,963	\$119,552	\$106,264	\$138,143	\$8,806	\$11,447
Total	\$409,499	\$532,349	\$315,457	\$410,094	\$59,257	\$77,035
Business Revenue (1,000)	\$1,707,348	\$2,219,552	\$263,479	\$342,522	\$45,867	\$59,627
Local Purchases (1,000)	\$175,490	\$228,137	\$193,231	\$251,201	\$20,084	\$26,109
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$54,815	\$71,260	\$31,546	\$41,009	\$5,647	\$7,341
Federal Taxes	\$126,172	\$164,024	\$53,022	\$68,928	\$9,808	\$12,750
Total	\$180,987	\$235,284	\$84,568	\$109,938	\$15,454	\$20,090

EXHIBIT IV-23 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CARGO ON CANADIAN FLAG VESSELS

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	1,781	1,963	35	39	1,781	1,963
Jobs						
Direct jobs	107		12		161	
Induced	88		13		120	
Indirect	59		3		101	
Total	255		28		383	
Economic Activity (1,000)	US \$ \$87,484	Cdn \$ \$113,729	US \$ \$5,001	Cdn \$ \$6,501	US \$ \$105,384	Cdn \$ \$136,999
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$5,495	\$7,144	\$744	\$968	\$8,558	\$11,125
Re-Spending/Local Consumption	\$13,035	\$16,945	\$2,302	\$2,993	\$16,619	\$21,604
Indirect	\$3,345	\$4,348	\$207	\$270	\$5,241	\$6,813
Total	\$21,875	\$28,437	\$3,254	\$4,230	\$30,417	\$39,543
Business Revenue (1,000)	\$74,449	\$96,784	\$2,698	\$3,508	\$88,765	\$115,395
Local Purchases (1,000)	\$7,170	\$9,321	\$355	\$462	\$11,533	\$14,993
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$4,106	\$5,338	\$471	\$612	\$4,718	\$6,133
Federal Taxes	\$6,036	\$7,847	\$546	\$710	\$7,774	\$10,106
Total	\$10,142	\$13,185	\$1,017	\$1,322	\$12,492	\$16,239

EXHIBIT IV-23 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CARGO ON CANADIAN FLAG VESSELS

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	250	276	0	0	9,605	10,587
Jobs						
Direct jobs	1,102		0		3,994	
Induced	795		0		3,498	
Indirect	256		0		4,026	
Total	2,154		0		11,518	
Economic Activity (1,000)	US \$ \$443,965	Cdn,\$ \$577,155	US \$ \$0	Cdn,\$ \$0	US \$ \$3,056,989	Cdn \$ \$3,974,086
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$65,561	\$85,229	\$0	\$0	\$259,077	\$336,801
Re-Spending/Local Consumption	\$115,767	\$150,498	\$0	\$0	\$546,185	\$710,041
Indirect	\$19,196	\$24,955	\$0	\$0	\$235,022	\$305,528
Total	\$200,524	\$260,681	\$0	\$0	\$1,040,284	\$1,352,369
Business Revenue (1,000)	\$328,198	\$426,657	\$0	\$0	\$2,510,804	\$3,264,045
Local Purchases (1,000)	\$42,484	\$55,229	\$0	\$0	\$450,347	\$585,451
Total Taxes (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State/Provincial/Local Taxes	\$36,642	\$47,635	\$0	\$0	\$137,945	\$179,328
Federal Taxes	\$40,454	\$52,590	\$0	\$0	\$243,812	\$316,955
Total	\$77,096	\$100,225	\$0	\$0	\$381,757	\$496,284

EXHIBIT IV-24

ECONOMIC IMPACTS BY PROVINCE – CARGO ON CANADIAN FLAG VESSELS

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	13,931	15,356	7,468	8,232	21,399	23,588
Jobs						
Direct jobs	8,134		1,767		9,902	
Induced	8,957		2,500		11,456	
Indirect	5,909		1,244		7,153	
Total	23,000		5,511		28,511	
Economic Activity (1,000)	US \$ \$2,943,827	Cdn \$ \$3,826,976	US \$ \$518,392	Cdn \$ \$673,910	US \$ \$3,462,220	Cdn \$ \$4,500,886
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$362,967	\$471,857	\$81,462	\$105,900	\$444,429	\$577,758
Re-Spending/Local Consumption	\$389,464	\$506,303	\$114,047	\$148,261	\$503,511	\$654,564
Indirect	\$277,216	\$360,381	\$56,627	\$73,615	\$333,842	\$433,995
Total	\$1,029,647	\$1,338,541	\$252,135	\$327,776	\$1,281,782	\$1,666,317
Business Revenue (1,000)	\$2,554,363	\$3,320,673	\$404,346	\$525,650	\$2,958,709	\$3,846,322
Local Purchases (1,000)	\$696,102	\$904,933	\$128,843	\$167,496	\$824,945	\$1,072,429
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Provincial/Local Taxes	\$201,871	\$262,433	\$76,358	\$99,266	\$278,230	\$361,699
Federal Taxes	\$328,855	\$427,511	\$73,451	\$95,487	\$402,306	\$522,998
Total	\$530,726	\$689,944	\$149,810	\$194,753	\$680,536	\$884,697

EXHIBIT IV-25

ECONOMIC IMPACTS BY STATE – CARGO ON U.S. FLAG VESSELS

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	0	0	0	0	38	42
Jobs						
Direct jobs	0		0		4	
Induced	0		0		3	
Indirect	0		0		2	
Total	<u>0</u>		<u>0</u>		<u>9</u>	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$0	\$0	\$0	\$0	\$2,027	\$2,635
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$0	\$0	\$0	\$0	\$236	\$307
Re-Spending/Local Consumption	\$0	\$0	\$0	\$0	\$479	\$622
Indirect	\$0	\$0	\$0	\$0	\$82	\$107
Total	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$797</u>	<u>\$1,037</u>
Business Revenue (1,000)	\$0	\$0	\$0	\$0	\$1,548	\$2,012
Local Purchases (1,000)	\$0	\$0	\$0	\$0	\$172	\$223
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$0	\$0	\$0	\$0	\$87	\$113
Federal Taxes	\$0	\$0	\$0	\$0	\$171	\$222
Total	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$258</u>	<u>\$336</u>

EXHIBIT IV-25 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CARGO ON U.S. FLAG VESSELS

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	44	49	0	0	0	0
Jobs						
Direct jobs	4		0		0	
Induced	3		0		0	
Indirect	6		0		0	
Total	13		0		0	
Economic Activity (1,000)	US \$ \$2,655	Cdn \$ \$3,451	US \$ \$0	Cdn \$ \$0	US \$ \$0	Cdn \$ \$0
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$197	\$256	\$0	\$0	\$0	\$0
Re-Spending/Local Consumption	\$467	\$607	\$0	\$0	\$0	\$0
Indirect	\$339	\$440	\$0	\$0	\$0	\$0
Total	\$1,002	\$1,303	\$0	\$0	\$0	\$0
Business Revenue (1,000)	\$2,188	\$2,844	\$0	\$0	\$0	\$0
Local Purchases (1,000)	\$705	\$917	\$0	\$0	\$0	\$0
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$164	\$213	\$0	\$0	\$0	\$0
Federal Taxes	\$225	\$293	\$0	\$0	\$0	\$0
Total	\$389	\$506	\$0	\$0	\$0	\$0

EXHIBIT IV-25 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CARGO ON U.S. FLAG VESSELS

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	0	0	0	0	82	91
Jobs						
Direct jobs	0		0		8	
Induced	0		0		6	
Indirect	0		0		8	
Total	<u>0</u>		<u>0</u>		<u>22</u>	
Economic Activity (1,000)	US \$ \$0	Cdn,\$ \$0	US \$ \$0	Cdn,\$ \$0	US \$ \$4,682	Cdn \$ \$6,086
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$0	\$0	\$0	\$0	\$433	\$563
Re-Spending/Local Consumption	\$0	\$0	\$0	\$0	\$945	\$1,229
Indirect	\$0	\$0	\$0	\$0	\$421	\$548
Total	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$1,800</u>	<u>\$2,340</u>
Business Revenue (1,000)	\$0	\$0	\$0	\$0	\$3,736	\$4,857
Local Purchases (1,000)	\$0	\$0	\$0	\$0	\$877	\$1,140
Total Taxes (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State/Provincial/Local Taxes	\$0	\$0	\$0	\$0	\$251	\$327
Federal Taxes	\$0	\$0	\$0	\$0	\$396	\$515
Total	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$648</u>	<u>\$842</u>

EXHIBIT IV-26

ECONOMIC IMPACTS BY PROVINCE – CARGO ON U.S. FLAG VESSELS

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	0	0	82	91	82	91
Jobs						
Direct jobs	0		18		18	
Induced	0		26		26	
Indirect	0		6		6	
Total	<u>0</u>		<u>50</u>		<u>50</u>	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$0	\$0	\$5,407	\$7,029	\$5,407	\$7,029
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$0	\$0	\$826	\$1,074	\$826	\$1,074
Re-Spending/Local Consumption	\$0	\$0	\$1,157	\$1,504	\$1,157	\$1,504
Indirect	\$0	\$0	\$274	\$356	\$274	\$356
Total	<u>\$0</u>	<u>\$0</u>	<u>\$2,257</u>	<u>\$2,935</u>	<u>\$2,257</u>	<u>\$2,935</u>
Business Revenue (1,000)	\$0	\$0	\$4,250	\$5,525	\$4,250	\$5,525
Local Purchases (1,000)	\$0	\$0	\$736	\$957	\$736	\$957
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Provincial/Local Taxes	\$0	\$0	\$699	\$908	\$699	\$908
Federal Taxes	\$0	\$0	\$678	\$881	\$678	\$881
Total	<u>\$0</u>	<u>\$0</u>	<u>\$1,376</u>	<u>\$1,789</u>	<u>\$1,376</u>	<u>\$1,789</u>

EXHIBIT IV-27

ECONOMIC IMPACTS BY STATE – CARGO ON FOREIGN FLAG VESSELS

	Indiana		Ohio		Michigan	
1,000 Tons Handled- Metric Tons and Short Tons	296	327	2,421	2,669	517	570
Jobs						
Direct jobs	2,087		1,054		145	
Induced	2,080		1,054		120	
Indirect	2,681		1,331		76	
Total	6,848		3,438		341	
Economic Activity (1,000)	US \$ \$1,166,788	Cdn \$ \$1,516,825	US \$ \$364,496	Cdn \$ \$473,845	US \$ \$35,335	Cdn \$ \$45,936
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$154,948	\$201,433	\$72,305	\$93,997	\$9,506	\$12,358
Re-Spending/Local Consumption	\$339,476	\$441,319	\$169,541	\$220,404	\$19,275	\$25,057
Indirect	\$145,916	\$189,691	\$76,788	\$99,824	\$3,836	\$4,987
Total	\$640,341	\$832,443	\$318,634	\$414,224	\$32,617	\$42,402
Business Revenue (1,000)	\$827,312	\$1,075,506	\$194,955	\$253,441	\$16,061	\$20,879
Local Purchases (1,000)	\$278,447	\$361,980	\$131,998	\$171,598	\$8,503	\$11,054
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$67,659	\$87,957	\$31,863	\$41,422	\$2,998	\$3,897
Federal Taxes	\$119,912	\$155,886	\$50,566	\$65,736	\$5,013	\$6,516
Total	\$187,572	\$243,843	\$82,430	\$107,159	\$8,010	\$10,413

EXHIBIT IV-27 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CARGO ON FOREIGN FLAG VESSELS

	Minnesota		Illinois		Wisconsin	
1,000 Tons Handled- Metric Tons and Short Tons	564	622	302	332	382	421
Jobs						
Direct jobs	178		218		114	
Induced	161		225		97	
Indirect	285		61		47	
Total	625		504		258	
Economic Activity (1,000)	US \$ \$50,250	Cdn \$ \$65,325	US \$ \$66,101	Cdn \$ \$85,932	US \$ \$31,836	Cdn \$ \$41,387
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$10,323	\$13,420	\$12,700	\$16,510	\$7,293	\$9,481
Re-Spending/Local Consumption	\$24,487	\$31,833	\$39,286	\$51,071	\$14,163	\$18,412
Indirect	\$15,837	\$20,588	\$3,803	\$4,944	\$2,446	\$3,180
Total	\$50,647	\$65,841	\$55,789	\$72,526	\$23,902	\$31,072
Business Revenue (1,000)	\$25,763	\$33,492	\$26,815	\$34,860	\$17,674	\$22,976
Local Purchases (1,000)	\$32,975	\$42,868	\$6,518	\$8,473	\$5,520	\$7,176
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
State/Provincial/Local Taxes	\$6,633	\$8,623	\$7,706	\$10,018	\$2,885	\$3,750
Federal Taxes	\$7,818	\$10,164	\$8,546	\$11,110	\$3,921	\$5,098
Total	\$14,451	\$18,787	\$16,253	\$21,128	\$6,806	\$8,848

EXHIBIT IV-27 (CONTINUED)

ECONOMIC IMPACTS BY STATE – CARGO ON FOREIGN FLAG VESSELS

	New York		Pennsylvania		TOTAL US	
1,000 Tons Handled- Metric Tons and Short Tons	145	160	9	10	4,636	5,111
Jobs						
Direct jobs	358		9		4,162	
Induced	264		8		4,009	
Indirect	77		6		4,564	
Total	699		23		12,735	
Economic Activity (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
	\$128,725	\$167,343	\$2,272	\$2,953	\$1,845,804	\$2,399,545
Personal income (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
Direct	\$22,059	\$28,677	\$527	\$686	\$289,662	\$376,561
Re-Spending/Local Consumption	\$38,952	\$50,638	\$1,207	\$1,569	\$646,387	\$840,304
Indirect	\$5,785	\$7,521	\$304	\$395	\$254,715	\$331,130
Total	\$66,796	\$86,835	\$2,039	\$2,650	\$1,190,765	\$1,547,995
Business Revenue (1,000)	\$89,773	\$116,705	\$1,064	\$1,384	\$1,199,417	\$1,559,242
Local Purchases (1,000)	\$12,803	\$16,644	\$893	\$1,161	\$477,657	\$620,955
Total Taxes (1,000)	US \$	Cdn,\$	US \$	Cdn,\$	US \$	Cdn \$
State/Provincial/Local Taxes	\$11,922	\$15,499	\$235	\$306	\$131,902	\$171,473
Federal Taxes	\$12,654	\$16,451	\$316	\$411	\$208,747	\$271,371
Total	\$24,577	\$31,950	\$551	\$716	\$340,649	\$442,844

* New York state jobs and other economic impacts are related to St Lawrence Seaway management and lock maintenance. The impacts generated by foreign flag vessels transiting the St. Lawrence Seaway differ slightly from the impacts of foreign flag vessels estimated for the Great Lakes-St. Lawrence Seaway System in total due to the use of multiple tonnage data bases from the LCA, CMC and individual ports and terminal operators to estimate the foreign flag impacts at the System level, while tonnage data by laker vs. foreign flag vessels supplied by the St. Lawrence Seaway Management Corp. is used to estimate the impacts of the St. Lawrence Seaway. Overall, the use of the various data bases results in a less than 1 percent difference in impacts generated by foreign flag vessels for the Great Lakes-St. Lawrence Seaway System vs. the impacts of foreign flag vessels for St. Lawrence Seaway.

EXHIBIT IV-28

ECONOMIC IMPACTS BY PROVINCE – CARGO ON FOREIGN FLAG VESSELS

	Ontario		Quebec		TOTAL	
1,000 Tons Handled- Metric Tons and Short Tons	7,745	8,537	4,642	5,117	12,387	13,654
Jobs						
Direct jobs	3,417		1,254		4,671	
Induced	3,966		1,945		5,911	
Indirect	2,619		557		3,176	
Total	10,001		3,756		13,757	
Economic Activity (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
	\$839,342	\$1,091,144	\$271,829	\$353,378	\$1,111,171	\$1,444,522
Personal income (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Direct	\$163,649	\$212,743	\$64,756	\$84,183	\$228,405	\$296,927
Re-Spending/Local Consumption	\$175,595	\$228,274	\$90,659	\$117,857	\$266,254	\$346,130
Indirect	\$121,646	\$158,140	\$24,071	\$31,292	\$145,716	\$189,431
Total	\$460,890	\$599,157	\$179,486	\$233,331	\$640,376	\$832,488
Business Revenue (1,000)	\$663,746	\$862,870	\$181,170	\$235,521	\$844,917	\$1,098,392
Local Purchases (1,000)	\$310,333	\$403,434	\$66,223	\$86,090	\$376,557	\$489,524
Total Taxes (1,000)	US \$	Cdn \$	US \$	Cdn \$	US \$	Cdn \$
Province/Local Taxes	\$79,330	\$103,129	\$51,839	\$67,391	\$131,169	\$170,520
Federal Taxes	\$131,853	\$171,410	\$48,874	\$63,536	\$180,728	\$234,946
Total	\$211,183	\$274,538	\$100,713	\$130,927	\$311,897	\$405,466

