The ECONOMIC IMPACTS of the PORT OF CHICAGO

The ECONOMIC IMPACTS of the GREAT LAKES - ST. LAWRENCE SEAWAY SYSTEM

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Martin Associates
Lancaster, PA

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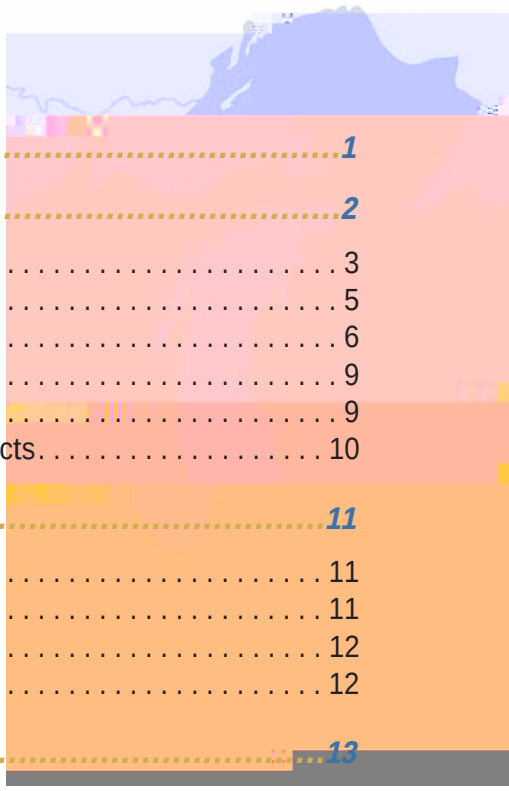

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ABOUT THIS REPORT

A report entitled The Economic Impacts of the Great Lakes-St. Lawrence Seaway System was published on October 18, 2011. (The report is available at www.marinedelivers.com.) Martin Associates of Lancaster, Pennsylvania, was retained to prepare this study by a consortium of Canadian and U.S. Great Lakes-St. Lawrence Seaway System stakeholders.[1]

The analysis includes the economic impacts generated by marine cargo activity on the Great Lakes-Seaway system, including U.S. domestic commerce, Canadian domestic commerce, bi-national commerce between the two countries, and international traffic moving between the Great Lakes-Seaway region and overseas destinations. The impacts are measured for the year 2010 and are presented in terms of total economic impacts at the bi-national regional level, the state/provincial level and the country level.

The study methodology is based on analysis of a core group of 32 Canadian and U.S. Great Lakes-Seaway system ports, which included the Port of Chicago. The Martin Associates' study team conducted detailed interviews with marine terminal operators, service providers, railroads, port tenants and other stakeholders at each port, including the Port of Chicago. All firms were contacted by telephone and interviewed to collect the data required to assess direct impacts and develop the individual port models.

This report, The Economic Impacts of the Port of Chicago, isolates the economic impacts created by all cargo and vessel activity at the Port of Chicago. The impacts include cargo moving on Canadian flag, U.S. flag, and foreign flag vessels to and from the Port.

1 The consortium includes the American Great Lakes Ports Association (AGLPA), the Chamber of Marine Commerce (CMC), the St. Lawrence Seaway Management Corporation (SLSMC), the Saint Lawrence Seaway Development Corporation (SLSDC), the Lake Carriers' Association, the Great Lakes Maritime Task Force, Fednav Limited, Algoma Central Corporation, and Canada Steamship Lines. Technical and project management assistance was provided by Transport Canada.

Chapter I

METHODOLOGY

*This section describes the methodolgy utilized to produce the report entitled **The Economic Impacts of the Great Lakes-St. Lawrence Seaway System**, which was published on October 18, 2011. The economic impacts related specifically to the Port of Chicago are included in that broader Great Lakes-St. Lawrence Seaway study, and have been isolated and reported separately in this report.*

The Great Lakes-Seaway system extends from its western-most point in Duluth, Minnesota, to eastern Quebec. The waterway includes the five Great Lakes, their connecting channels and the St. Lawrence River. This analysis examines the economic impacts created by cargo and vessel activity at all marine terminals located along the system — 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.

It is important to note that the purpose of the study is to quantify the economic benefits of the Great Lakes-Seaway system; therefore, the scope does not include measurement of the net impacts of the system. To ensure the most accurate measurement of Great Lakes-Seaway system impacts, the study excludes impacts created by international maritime commerce through St. Lawrence River ports in Quebec, where cargo does not transit the St. Lawrence Seaway lock system to and from the upper lakes. For example, trade between European ports and the Port of Montreal is not included in the impact analysis.

The study methodology is based on analysis of a core group of 32 Canadian and U.S. Great Lakes-Seaway system ports. The 32 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 32 individual ports
- Supplemental lists provided by stakeholders

Exhibit I-1 Individual Ports Included in the Study

US Ports (16)	Canadian Ports (16)
Ashtabula	Becancour
Buffalo	Goderich
Burns Harbor	Hamilton
Chicago	Meldrum Bay
Cleveland	Montreal/Contrecoeur
Conneaut	Nanticoke
Detroit	Oshawa
Duluth	Port-Cartier
Erie	Quebec/Levis
Green Bay	Sarnia
Milwaukee	Sept Iles/Pointe-Noire
Monroe	Sorel
Oswego	Thunder Bay
Saginaw	Toronto
Superior	Trois-Rivieres
Toledo	Windsor

In total, 1,095 firms were identified. All firms were contacted by telephone and interviewed to collect the data required to assess direct impacts and develop the individual port models. Of the 1,095 firms contacted, 907 (83 percent) 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 32 ports, Martin Associates developed prototype economic impact models. These models were used to expand the impacts to a state/provincial level, thus incorporating the Great Lakes-Seaway tonnage moving to and from all marine terminals located within a specific state or province.

1. FLOW OF IMPACTS

Waterborne cargo activity at a marine terminal on the Great Lakes-Seaway system 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

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,

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, 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

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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 16 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

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 32 ports.

3.5 Related User Impacts

Related user impacts measure the jobs, income, output and tax impacts with shippers and consignees and supporting industries that move cargo through the marine terminals located at each of the 32 ports. These impacts are classified as "related" because these firms can and do use other ports and marine terminals not necessarily on the Great Lakes-Seaway system. As a result, jobs with these exporters and importers cannot be counted as dependent upon the ports and marine terminals on the system.

The related user jobs are estimated based on the value-per-ton of the commodities exported and imported via each of the 32 ports, and the associated jobs to value-of-output ratios for the respective producing and consuming industries located in the state or province. The value-per-ton of each key commodity moving through each port was developed from the U.S. Census Bureau, USA Trade Online, and also converted into Canadian dollars for the Canadian ports. The average value-per-ton for each commodity moving through each port was then multiplied by the respective tonnage moved in 2010. Ratios of jobs to value-of-output for the corresponding consuming and producing industries were developed by Martin Associates from the U.S. Bureau of Economic Analysis, Regional Input-Output Modeling System, for the United States — for each of the Great Lakes states in which the 16 ports are located. For the 16 Canadian ports, the ratios were developed using data from Statistics Canada, Industry Accounts Division. These jobs-to-value coefficients include the spin-off impacts that would occur at the national level in order to produce the export commodity or use the import commodity in production. The ratios of jobs to value-of-export or import cargo were then combined with the national value of the respective commodities moving via each of the 32 ports; this allowed for the estimation of related jobs and spin-off jobs in the national economies that support the export and import industries using the Great Lakes-Seaway system. Similarly, the respective income and output multipliers were used to estimate the related personal income impacts, as well as the total value of economic output and taxes generated by each port. It is important to note that care was taken to control for double counting of the direct, induced and indirect impacts.

Examples of related user impacts include the following: iron ore mining associated with iron ore shipped via Great Lakes-Seaway ports; the steel industries consuming the iron ore for use in the production of steel; coal mining associated with coal moved through each port; the utilities consuming coal received by water at each of the ports; and farming associated with the volume of grain moving via the ports.

Note that the related user impacts include only the impacts created by the volume of the cargo moving via each specific port. The related impacts include the impacts with the shipper/consignee of the cargo, and also include the impacts with the support industries necessary to deliver that volume of cargo to a port for shipment.

For raw materials and intermediate products received at a port — iron ore, for example —the value of the volume of ore received at the specific port is converted into a "value of steel produced." This value of the steel produced (based on the volume and value of the ore received) is then used to develop the related user jobs, income, inter-industry purchases, value of output, and the taxes paid resulting from the volume and value of the iron ore received at the specific port and resulting steel production.

For example, for a steel mill located in proximity to a port — but receiving a portion of raw materials by rail — the related impact is based only on the volume of the raw materials received via the port **by water**. Therefore, the total employment at the mill is not included in the related jobs, only that share specifically related to the volume of the raw material moving through the marine terminals.

The respective income and output multipliers associated with the industries for which the employment coefficients were developed, were used to estimate the related user personal income impacts,

as well as the total value of economic output and taxes generated by cargo activity at each of the 32 ports, and for the total system. Once again, care was taken to control for double counting of the direct, induced and indirect impacts.

Note that related user impacts are counted only once for the shipment or receipt of cargo by a port/marine terminal, in contrast to the calculations used for the other types of impacts. For example — for grain shipped via Thunder Bay, received at a St. Lawrence River port such as Quebec and then reloaded onto a foreign-flag vessel for export — direct, induced and indirect impacts are created at the port of shipment (Thunder Bay), the port of discharge (Quebec) and the port where the grain was loaded for international export (Quebec). Therefore, the same ton of grain created direct, induced and indirect impacts at each of the three points of handling. This is not the case for related user impacts, as the user impacts with the grain (the farm jobs, income, revenue, taxes and supporting industries required to deliver a ton of grain to the port for shipment) are counted only for the initial shipment of the grain from Thunder Bay. The related user impacts of the same ton of grain are not counted for the St. Lawrence River ports.

A related user model was developed for each of the 32 ports and then used in each prototype model for "non-port specific" cargo and vessel activity, to estimate the total related user impacts for each state/province and the system as a whole.

4. COMMODITIES INCLUDED IN THE ANALYSIS

Economic impacts were estimated for the following commodities handled at the marine terminals on the Great Lakes-Seaway system:

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

5. ESTIMATE OF TONNAGE

Currently, there is no single data source for the marine cargo moving on the Great Lakes-Seaway system. The U.S. Army Corps of Engineers' (USACE) "Waterborne Commerce Statistics" provides data on total international and domestic shipments by U.S. port district, but does not have information for the Canadian ports. Furthermore, the year 2009 is the latest year for which USACE data is available, and due to the recession, that year's tonnage levels were abnormally low. The Lake Carriers' Association provides tonnage data for vessel activity on the Great Lakes. This tonnage is for bulk cargo moving on U.S. and Canadian flag carriers — by port of loading and broad bulk commodity groups — and this data is available for the year 2010. The Lake Carriers' Association also provides data on U.S. flag vessels moving cross-lake to Canadian ports. Statistics Canada provides port-to-port data flows by commodity, both international and domestic, for the Canadian ports operating on the Great Lakes-Seaway aystem, but this data is for 2009. Finally, the Canadian St. Lawrence Seaway Management Corporation (SLSMC) publishes data for traffic moving via the St. Lawrence Seaway and for traffic movements by lock system on the Great Lakes-Seaway system. However, this database does not include traffic moving within the upper four Great Lakes (and not transiting one of the Seaway locks). All of these sources were used to formulate estimates regarding tonnage by commodity moving on the Great Lakes-Seaway system.

The tonnage estimates used in each of the 32 individual port models were developed from individual port authority tonnage data and through interviews with the terminal operators located in each of the 32 port districts. This data was then cross-checked with the Lake Carriers' Association database for U.S. and Canadian flag carriers — by key commodity group — with specific focus on identifying cargo moving on

the U.S. and Canadian flag fleets. The St. Lawrence Seaway Traffic Statistics database was also used to check and modify the tonnage — by commodity — identified for each port as international tonnage, as well as U.S. and Canadian flag tonnage moving via the St. Lawrence Seaway lock system.

The 322.1 million metric tons of cargo handled via the U.S. and Canadian ports and marine terminals located on the Great Lakes-Seaway system include domestic cargo shipped via the ports, as well as that same cargo received through ports in the system. Therefore, this tonnage represents shipment and receipts of domestic cargo and trans-lake cargo, and will be significantly greater than the domestic cargo identified as moving on the vessels by the Lake Carriers' Association and the St. Lawrence Seaway Traffic Statistics.

The tonnage estimates developed for each of the 32 ports were then used as inputs into the port-specific models, which consist of the direct, induced, indirect and related users sub-modules. Impacts were then estimated for each of the 32 ports.

6. EXPANSION OF THE 32-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 32 port districts for which the individual models were developed. These prototype models also consist of direct, induced, indirect and related 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 "other Great Lakes-Seaway tonnage" (outside the 32 port districts) was calculated based on the following methodology. For the United States, total state tonnage by commodity moving on the Great Lakes was developed from data provided by the U.S. Army Corps of Engineers. This data is for the year 2009, and was expanded based on the growth in tonnage between 2009 and 2010, as reported by the Lake Carriers' Association. The individual port-district tonnage used in the port-specific models for each state was then subtracted from each state's total Great Lakes tonnage — by commodity — to estimate "other Great Lakes-Seaway tonnage," by commodity, for each state.

For Canada, total provincial tonnage for all Great Lakes-Seaway ports was developed from Statistics Canada data. The most recent year for which this data is available is 2009; therefore, the data were adjusted by the rate of growth in Canadian Laker tonnage between 2009 and 2010. The individual port-district tonnage used in the port-specific models for each province was then subtracted from each province's total Great Lakes-Seaway tonnage to estimate "other Great Lakes-Seaway tonnage" for Ontario and Quebec.

Chapter II

PORT OF CHICAGO ECONOMIC IMPACTS

Cargo and vessel activity at the Port of Chicago generated the following economic impacts in 2010:

Exhibit II-1 **Economic Impacts of the Port of Chicago**

Jobs	
Direct	2,711
Induced	2,431
Indirect	1,792
Total	6,934
Personal Income	
Direct (1,000)	$117,631
Re-spending / Local consumption (1,000)	$371,162
Indirect (1,000)	$85,087
Total (1,000)	$573,881
Business Revenue (1,000)	$425,866
Local Purchases (1,000)	$148,500
State Taxes (1,000)	$57,388
Federal Taxes (1,000)	$103,299
Total Taxes (1,000)	$160,687

Note: Totals may not add due to rounding

1. JOB IMPACTS

6,934 jobs in Illinois were supported by the cargo moving via the marine terminals located at the Port of Chicago.

- Of the 6,934 jobs, **2,711 jobs were directly** generated by the marine cargo and vessel activity at the marine terminals at the Port of Chicago.
- As a result of the local and regional purchases by those 2,711 individuals holding the direct jobs, an additional **2,431 induced jobs** were supported in the regional economy.
- **1,792 indirect jobs** were supported by $148.5 million of regional purchases by businesses supplying services at the marine terminals at the Port of Chicago.

2. REVENUE IMPACTS

In 2010, the direct business revenue received by the firms directly dependent upon the cargo handled at the marine terminals located in the Port of Chicago was $425.9 million. These firms provide maritime services and inland transportation services for the cargo handled at the marine terminals and the vessels calling at the terminals.

3. PERSONAL INCOME AND LOCAL CONSUMPTION IMPACTS

The 2,711 individuals directly employed as a result of the cargo handled at the ports and marine terminals at the Port of Chicago received $117.6 million in wages and salaries. 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. Using the local personal-earnings multipliers, an additional $371.2 million in income and consumption were created by the Port of Chicago. In developing the personal-income multiplier impacts, Martin Associates relied on the national government

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Chapter III

RELATED USER IMPACTS

Related user impacts measure the jobs, income, output and tax impacts with shippers, consignees and supporting industries that move cargo through the marine terminals located at the Port of Chicago. These impacts are classified as related, since the firms using the marine terminals at the Port of Chicago for the movement of cargo can and do use other ports and marine terminals, not necessarily on the Great Lakes-St. Lawrence Seaway System. For example, exporters of breakbulk cargo often use freight forwarders, which in turn choose the port of export. Importers of breakbulk cargo often use several ports, based on market locations. Because of the proximity of other ports and the associated steamship service at these ports — particularly coastal ports such as New York, Baltimore, Montreal and Halifax — both importers as well as exporters of breakbulk and bulk cargo have some flexibility in port choice. As a result, the impacts with these exporters (shippers) and importers (consignees) cannot be counted as dependent upon the marine terminals at the Port.

The related user jobs are estimated based on the value-per-ton of the commodities exported and imported via the Port of Chicago and the associated jobs to value-of-output ratios for the respective producing and consuming industries. The value-per-ton of each of the key commodities moving via the Port was developed from the U.S. Census Bureau, USA Trade Online. The average value-per-ton for each commodity moving through the Port of Chicago was then multiplied by the respective tonnage moved at the Port in 2010. These jobs-to-value coefficients include the national spin-off impacts that would occur in order to produce the export (shipped) commodity or use the import (received) commodity in production. The ratios of jobs to the value of shipped or received cargo were then combined with the national value of the respective commodities moving via the Port of Chicago to estimate related jobs and the spin-off jobs in the national economy to support the industries using the Port's marine terminals.

It is important to note that the related impacts include only the impacts created by the volume of the cargo moving via the Port of Chicago. For raw materials and intermediate products received at the Port, the value of the volume of ore received at the specific port is converted into a "value of product produced", and the associated jobs, income and inter-industry purchases required to deliver that product (based only on the volume of the raw materials received at the specific port). For example, for a steel mill located in proximity to a port — but receiving a portion of raw materials by rail — the related impact is based only on the volume of the raw materials received via the port by water. Thus, the total employment at the mill is not included in the related jobs, only that share specifically related to the volume of the raw material moving via the marine terminals.

The respective income and output multipliers associated with the industries for which the employment coefficients were developed were used to estimate the related personal income impacts, as well as the total value of economic output and taxes generated by cargo moving via the Port of Chicago. Note that care was taken to control for double counting of the direct, induced and indirect impacts.

ABOUT MARTIN ASSOCIATES

Martin Associates of Lancaster, Pennsylvania, is a leading provider of economic analysis and consulting services to the maritime industry. The company has developed more than 250 economic impact and strategic planning studies for major ports and waterways systems throughout the United States and Canada, including the Port of Seattle, Port of Vancouver, Port of Los Angeles, Port of Houston, Port of New Orleans, Port of Miami, and Port of Halifax. Martin Associates has also provided analysis for maritime trade associations such as the World Shipping Council and American Association of Port Authorities, and government agencies such as the U.S. Army Corps of Engineers and Canadian Coast Guard.

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