The Local and Regional Economic Impacts of the Port of Jacksonville, 2013

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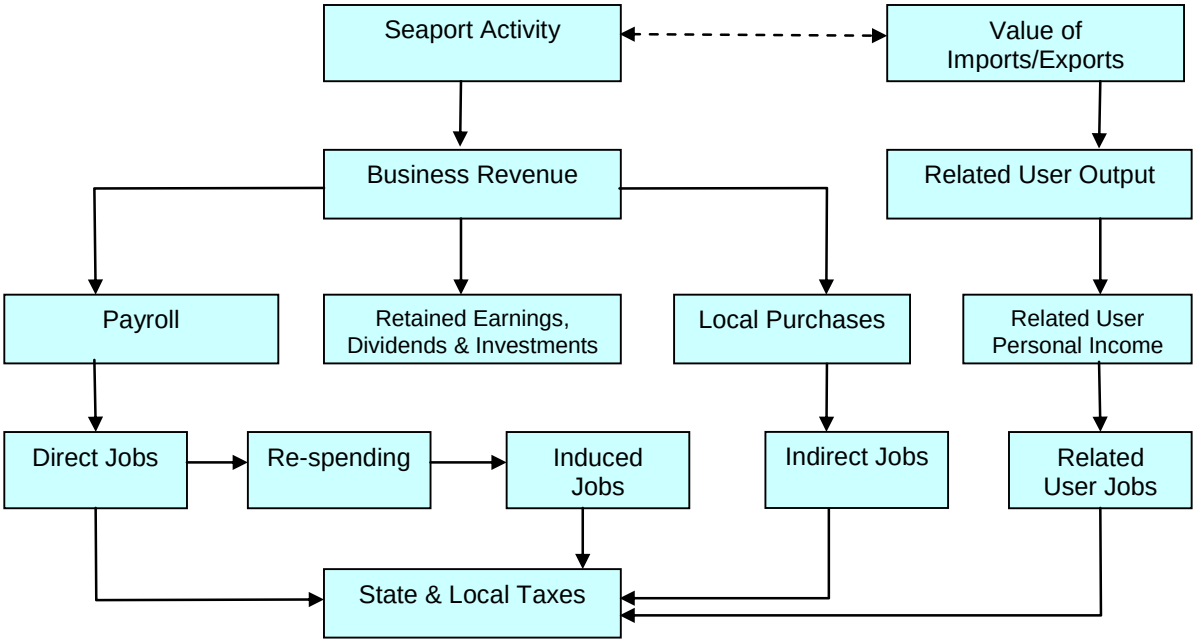
EXECUTIVE SUMMARY

Martin Associates was retained by the Jacksonville Port Authority (JAXPORT) to estimate the economic impacts generated by marine cargo activity at the public and private marine terminals located within the Jacksonville Port District. The public marine terminals are those owned by the Jacksonville Port Authority which include Talleyrand Marine Terminal, Blount Island Marine Terminal and Dames Point Marine Terminal and are leased to terminal operators and marine terminal tenants such as MOL/TraPac, Sea Star Lines, Crowley Maritime Corporation, APM Terminals, American Port Services (AMPORTS), Wallenius Wilhelmsen Logistics, Coastal Maritime Stevedoring, LLC., Seaonus, Westway Trading, Martin Marietta, and Trailer Bridge. Also included are private marine terminals such as the JEA Terminal, Crowley Maritime, Nustar Energy, Keystone Terminal, and Chevron.

This study focuses on impacts generated by marine cargo handled at the public and private marine facilities in Fiscal Year (FY) 2013. Impacts are estimated in terms of jobs, personal earnings, business revenue, and state and local taxes. In addition to the baseline impact estimates, computer models specific to each terminal operation have been prepared that can be used in evaluating the sensitivity of impacts to changes in tonnage, labor productivity, labor work rules, commodity mix, inland origins/destinations of commodities and vessel size.

Exhibit E-1 on the following page graphically demonstrates how seaport activity impacts the local and regional economies. As this Exhibit indicates, the marine cargo and vessel activity initially generate business revenue to the firms supplying marine services. This revenue is used to purchase employment (direct jobs) to provide the services, to pay stockholders and for retained earnings, and to purchase goods and services from local firms, as well as national and international firms (creating indirect jobs with these firms). Businesses also pay taxes from the business revenue.

Exhibit E-1
Flows of Economic Impacts through the Economy



The employees hired by the firms receive wages and salaries (personal income), a portion of which is saved, while another portion is used to buy goods and services such as food, housing, clothing, health care, etc. These purchases create a re-spending impact throughout the economy, known as the personal income multiplier. As a result of these local purchases, additional jobs (known as induced jobs) are created in the local economy. Finally, taxes are paid by individuals employed with the firms providing the services to the marine terminals.

As demonstrated by this chart, four types of impacts are measured:

- Jobs;
- Employee earnings;
- Business revenue; and
- State and local taxes.

With respect to jobs, four types of job impacts are measured. These are direct, induced, indirect and related jobs. The job impacts are defined as follows:

- Direct jobs are those jobs with local firms providing support services to the seaport. These jobs are dependent upon this activity and would suffer immediate dislocation if the seaport activity

were to cease. Seaport direct jobs include jobs with railroads and trucking companies moving cargo to and from Jacksonville Port Authority's marine terminals and private terminals, members of the International Longshoremen's Association (ILA) and non-ILA dockworkers including the Seafarers' International Union (SIU) and Teamsters, steamship agents, freight forwarders, ship chandlers, warehouse operators, bankers, lawyers, terminal operators, stevedores, etc.

- Induced jobs are jobs created locally and throughout the regional economy due to purchases of goods and services by those directly employed. These jobs are with grocery stores, the local construction industry, retail stores, health care providers, local transportation services, etc., and would also be discontinued if seaport activity were to cease.

- Indirect jobs are those jobs generated in the local economy as the result of local purchases by the firms directly dependent upon seaport activity. These jobs include jobs in local office supply firms, equipment and parts suppliers, maintenance and repair services, etc.

- Related user jobs are held throughout the state with manufacturing and wholesale and retail distribution firms using the seaport terminals for the shipment and receipt of cargo. Related jobs are not dependent upon the seaport marine terminals to the same extent as are the direct, induced and indirect jobs. It is the demand for the final products, which creates the demand for the employment with these shippers/consignees, not the use of a particular seaport or maritime terminal, and therefore these firms can and do use other ports

The employee earnings consist of wages and salaries and include a re-spending effect (local purchases of goods and services by those directly employed), while business revenue consists of total business receipts by firms providing services in support of the marine activity. State and local taxes include taxes paid by individuals, as well as firms dependent upon the seaport activity.

The study is based on data collected from interviews with and survey responses from 472 firms providing services to the cargo and vessels handled at the Port's marine terminals and the private terminals within Jacksonville's Port District. These 472 firms represent the defined population of service providers and tenants in the Port Authority's seaport community, as identified from multiple data sources, underscoring the defensibility of the study. Furthermore, the impacts can be traced back to the individual firm. The data collected from the interviews and survey results was then used to develop operational models of public and private marine terminals located at Port of Jacksonville. [1]

1 All data collected by Martin Associates from the individual firm is gathered under a confidentiality agreement and is not available to JAXPORT or any other private or public entity. Similarly, all economic impact models developed in this study are the sole property of John C. Martin Associates, LLC and not provided to JAXPORT or any other private or public entity.

SUMMARY OF IMPACTS GENERATED BY THE PORT OF JACKSONVILLE

The economic impacts generated by the public and private marine terminals are summarized in Exhibit E-2.

Exhibit E-2
Summary of the Local and Regional Economic Impacts Generated by
Jacksonville Port District

	PUBLIC TERMINALS	PRIVATE TERMINALS	TOTAL
JOBS			
DIRECT	6,911	2,756	9,667
INDUCED	7,217	2,883	10,100
INDIRECT	3,490	1,082	4,573
TOTAL	17,618	6,721	24,340
PERSONAL INCOME (1,000)			
DIRECT	$356,738	$142,597	$499,335
RE-SPENDING/CONSUMPTION	$797,203	$318,661	$1,115,864
INDIRECT	$167,757	$52,393	$220,150
TOTAL	$1,321,699	$513,650	$1,835,349
BUSINESS REVENUE (1,000)	$1,808,527	$509,767	$2,318,294
LOCAL PURCHASES (1,000)	$403,216	$103,692	$506,907
STATE & LOCAL TAXES (1,000)	$121,596	$47,256	$168,852
RELATED USER IMPACTS			
RELATED JOBS	87,051	21,209	108,260
RELATED INCOME (1,000)	$5,078,153	$988,669	$6,066,822
RELATED OUTPUT (1,000)	$19,555,190	$3,869,657	$23,424,847
RELATED STATE AND LOCAL TAXES (1,000)	$467,190	$90,958	$558,148

Totals may not add due to rounding. The re-spending/ local consumption impact cannot be divided by the induced jobs impact to estimate induced income, since this also includes local consumption impacts. This would overstate induced income, which is a subsector of the re-spending/ local consumption impact.

Specifically, the vessel and cargo activity at the public and private marine cargo facilities generated the following impacts in the regional economy in 2013:

- **24,340 direct, induced and indirect jobs in Florida** are generated by the cargo moving via the public and private marine terminals in 2013.

- Of the 24,340 direct, induced and indirect jobs, **9,667 direct jobs** are generated by the marine cargo and vessel activity. Seventy-seven percent of these direct jobs are held by residents of Jacksonville/Duval County. The cargo activity at the port facilities owned by JAXPORT creates 6,911 of the direct jobs. In addition, there are 2,756 direct jobs created by the movement of containers, liquid bulk and dry bulk at the private terminals.

- As the result of local and regional purchases by those 9,667 individuals holding the direct jobs, an additional **10,100 induced jobs** are supported in the regional economy.

- **4,573 indirect jobs** were supported by $506.9 million of local purchases by businesses supplying services at the marine terminals and by businesses dependent upon the marine terminals.

- The import and export cargo moving via the public and private terminals supports **108,260 related user jobs with** the state's manufacturing and retail and wholesale and distribution industries and the in-state industries supporting the movement and distribution of commodities, primarily concentrated with containerized cargo imports and exports using the seaport terminals for shipment and receipt of cargo. These are users of the marine terminals in Jacksonville and are related to the terminal activity in 2013, and represent the sphere of influence of the Port's activity.

- **$499.3 million of direct wages and salaries** were received by those 9,667 directly employed, representing an average salary of $51,656. As the result of re-spending this income, an additional $1.1 billion of income and consumption expenditures were created. The 4,573 indirect job holders received $220.2 million of indirect wages and salaries. In total, about **$1.8 billion of direct, induced and indirect personal wages and salaries** were generated by maritime activity at the public and private terminals located in the Jacksonville Port District. In addition, the 108,260 related user job holders received **$6.1 billion in personal income**.

- Businesses providing services at the marine terminals received **$2.3 billion of revenue**, excluding the value of cargo shipped through the public and private marine terminals. A portion of this revenue, $506.9 million, was used by the firms providing the direct services at the marine terminals to purchase goods and services in the regional economy, supporting the 4,573 indirect jobs. In addition, the cargo activity at the Port supported an additional **$23.4 billion of**

total economic output in the state, the majority of which is created by the movement of containers and autos, and the in-state industries supporting these industries.

- **$168.9 million of state and local taxes** were generated by activity at the marine terminals. Related users generated another **$558.1** of state and local taxes throughout the state.

- **The total economic value to the State of Florida of the marine cargo activity at the public and private marine terminals in 2013 is estimated at $26.9 billion.** This consists of the direct business revenue, $2.3 billion; plus the related user output, $23.4; billion plus the re-spending and local consumption impact, $1.1 billion. These dollar measures do not include double counting, and represent the sphere of influence of the public and private marine terminals.

The methodology used by Martin Associates to estimate the economic impacts generated by seaport activity in FY2013 is identical to the methodology used to estimate the economic impacts of the seaport in FY2008, and therefore, direct comparisons can be made.

Between 2008 and 2013, the total tonnage moving via the public and private marine terminals declined by nearly 4.4 million tons. The tonnage decline was driven by the reduction in dry bulk cargo, most notably cement and aggregates and liquid bulk cargo. The decline in cement and aggregates reflects the impact of the recession on the housing and construction market in Northeastern Florida since 2009, as well as the dry bulk fuel receipts. In contrast to the decline in liquid and dry bulk cargo, containerized cargo grew by more than 1.3 million tons. Actual containers handled at JAXPORT increased from about 345,000 moves in 2008 to 468,600 in 2013, a growth of more than 35 percent over 5 years. The majority of this growth was handled at the JAXPORT container terminals, and in particular at the MOL/TraPac Terminal, which was under construction at the time of the previous 2009 Impact Study. In fact, more than 50 percent of the 1.3 million tons of containerized cargo growth was driven by imported Asian cargo.

Fueled by the significant increase in containerized cargo, overall economic impacts generated at JAXPORT and the private marine terminals increased. Direct jobs grew by 702 jobs, while induced jobs grew by 1,255 and indirect jobs grew by 174. Overall, jobs generated by the cargo and vessel activity at JAXPORT and the private marine terminals grew by 2,131 jobs, or nearly 10 percent since 2008, despite the economic recession during that time period. Business revenue grew by $521.5 million, and state and local tax revenue grew by $40.2 million. Cargo activity at the JAXPORT marine terminals accounted for the majority of the growth in economic impacts. The JAXPORT marine terminals accounted for about 80 percent of the growth in total jobs over the period and 90 percent of the growth in direct business revenue.

As demonstrated in this report, the Port of Jacksonville continues to be a major catalyst in economic growth in Northeastern Florida. The investment in port infrastructure, such as the

MOL/TraPac Terminal at JAXPORT, has resulted in significant job growth over the 2008-2013 period. This type of investment has led to increased diversification of the markets and cargoes served by JAXPORT, in turn providing high paying jobs in the local community, and generating state and local tax revenue. Given this demonstrated importance of the cargo activity at the Port of Jacksonville, it is critical that the Port continue to invest in infrastructure projects that return job growth to the region and tax revenue to the State of Florida and the local communities.

I. OVERVIEW OF THE ANALYSIS AND SUMMARY OF METHODOLOGY

Martin Associates was retained by the Jacksonville Port Authority to estimate the economic impacts generated by marine cargo activity at the public and private marine terminals located within the Jacksonville Port District. The public marine terminals are those owned by the Jacksonville Port Authority – Talleyrand Marine Terminal, Blount Island Marine Terminal and Dames Point Marine Terminal and leased to terminal operators and marine terminal tenants such as MOL/TraPac, Sea Star, Crowley Maritime Corporation, American Port Services, Wallenius Wilhelmsen Logistics, Coastal Maritime Stevedoring, Seaonus, Westway, Trading, APM Terminals, Martin Marietta, and Trailer Bridge. Also included are private marine terminals such as the JEA Terminal, Crowley Maritime, Nustar Energy, Keystone Terminal, and Chevron.

The impacts are estimated in terms of jobs, personal earnings, business revenue, and state and local taxes. The impacts are estimated for marine cargo and vessel activity in 2013. In addition to quantifying the baseline impacts of the Jacksonville Port Authority's marine terminals and the impacts of the private marine terminals, an economic impact model has been developed. The model can be used in evaluating the sensitivity of impacts to changes in tonnage, labor productivity, labor work rules, commodity mix, inland origins/destinations of commodities and vessel size. The models can also be used to evaluate the impacts of new terminal development and specific capital development projects as well as annual updates.

The study employs methodology and definitions that have been used by Martin Associates to measure the economic impacts of seaport activity at more than 300 ports in the United States and Canada, and at the leading airports in the United States. It is to be emphasized that only measurable impacts are included in this study. In order to ensure defensibility, the Martin Associates' approach to economic impact analysis is based on data developed through an extensive interview and telephone survey program of the Port's tenants and the firms providing cargo services at marine terminals owned and leased by the Jacksonville Port Authority (JAXPORT) and private terminals in the Jacksonville Port District. Specific re-spending models have been developed for the Jacksonville area to reflect the unique economic and consumer profiles of the regional economy.[2]

1. FLOW OF ECONOMIC ACTIVITY

Waterborne activity at a seaport contributes to the local and regional economy by generating business revenue to local and national firms providing vessel and cargo handling services at the marine

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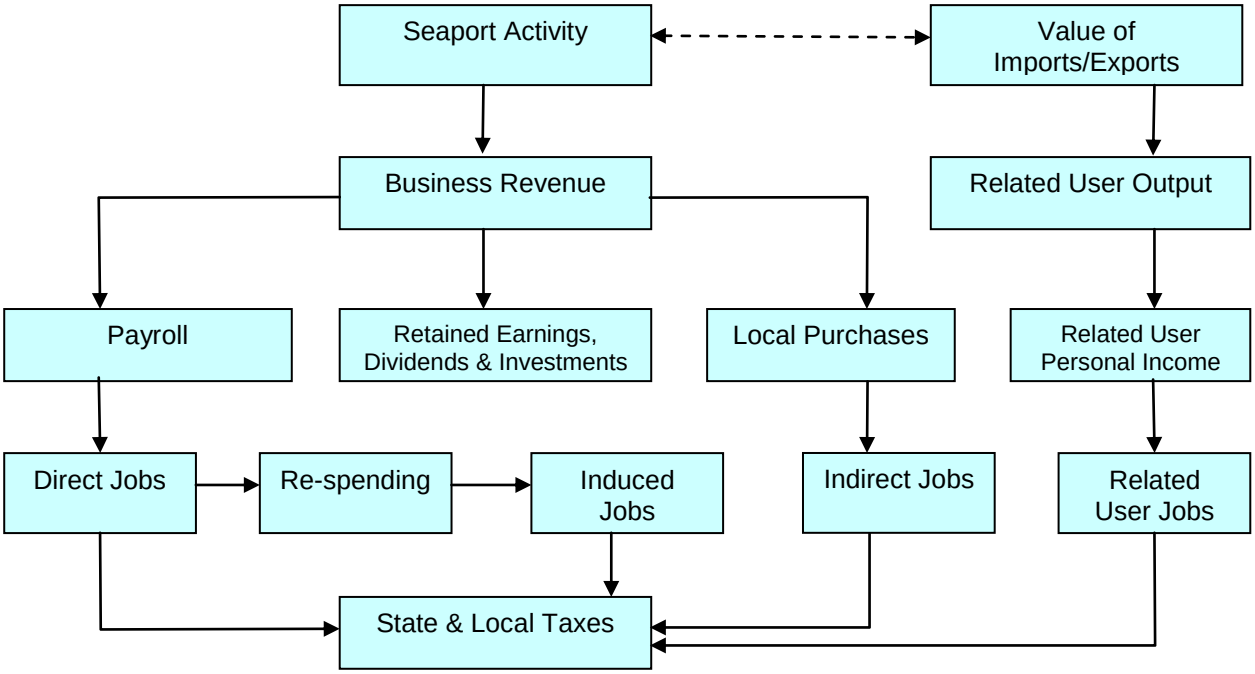
terminals. These firms, in turn, provide employment and income to individuals, and pay taxes to state and local governments. Exhibit I-1, shows how activity at marine terminals generate impacts throughout the local, state and national economies. As this exhibit indicates, the impact of a seaport on a local, state or national economy cannot be reduced to a single number, but instead, the seaport activity creates several impacts. These are the revenue impact, employment impact, personal income impact, and tax impact. These impacts are non-additive. For example, the income impact is a part of the revenue impact, and adding these impacts together would result in double counting. Exhibit I-1 shows graphically how activity at JAXPORT and private marine terminals generate the four impacts.

Exhibit I-1
Flow of Economic Impacts Generated By Marine Activity



1.1. Business Revenue Impact

At the outset, activity at the port generates business revenue for firms which provide services. This business revenue impact is dispersed throughout the economy in several ways. It is used to hire people to provide the services, to purchase goods and services, and to make federal, state and local tax payments. The remainder is used to pay stock-holders, retire debt, make investments, or is held as retained earnings. It is to be emphasized that the only portions of the revenue impact that can be definitely identified as remaining in the local economy are those portions paid out in salaries to local employees, for local purchases by individuals and businesses directly dependent on the seaport, in

contributions to state and local taxes, in lease payments to Jacksonville Port Authority by tenants, and wharfage and dockage fees paid to the Port.

1.2. Employment Impact

The employment impact of seaport activity consists of four 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, longshoremen and dockworkers, steamship agents, freight forwarders, stevedores, etc. It is to be emphasized that these are classified as directly generated in the sense that these jobs would experience near term dislocation if the activity at Jacksonville Port Authority's marine terminals or private terminals were to be discontinued.

- ***Induced employment impact*** -- jobs created throughout the local economy because individuals directly employed due to seaport 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 job impact*** -- are jobs created locally due to purchases of goods and services by firms, not individuals. These jobs are estimated directly from local purchases data supplied to Martin Associates by the companies interviewed as part of this study, and include jobs with local office supply firms, maintenance and repair firms, parts and equipment suppliers, etc. It is to be emphasized that special care was taken to avoid double counting, since the current study counts certain jobs as direct (i.e., trucking jobs, jobs with railroads, jobs with insurance companies and admiralty law firms, etc.) which are often classified as indirect by other approaches, notably the input/output model approach.

- ***Related shipper/consignee (related user) jobs*** -- jobs with shippers and consignees (exporters and importers) supported in the state's manufacturing and retail and wholesale distribution industries and the in-state industries supporting the movement and distribution of commodities, primarily containerized cargo using the seaport terminals for shipment and receipt of cargo.

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 seaport activity. Re-spending of these earnings throughout the regional economy for purchases of goods and services is also estimated. This, in turn, generates additional jobs -- the induced employment impact. This re-spending throughout the region is

estimated using a regional personal earnings multiplier, which reflects the percentage of purchases by individuals that are made within the Jacksonville region. The re-spending effect varies by region -- a larger re-spending 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-regional purchases). The direct earnings are a measure of the local impact since they are received by those directly employed by seaport activity.

1.4. Tax Impact

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

2. IMPACT STRUCTURE

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

- Surface Transportation Sector;
- Maritime Services Sector;
- Jacksonville Port Authority (governing body); and
- Related Users (Shippers/Consignees).

Within each sector, various participants are involved. Separate impacts are estimated for each of the participants. A discussion of each of the economic impact sectors is provided below, including a description of the major participants in each sector.

2.1. The 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. The Maritime Services Sector

This sector consists of numerous firms and participants performing functions related to the following maritime services:

- Cargo Marine Transportation;

- Vessel Operations;
- Cargo Handling; and
- Federal, State and Local Government Agencies.

A brief description of the major participants in each of these four categories is provided below:

- Cargo Marine Transportation

  Participants in this category are involved in arranging for inland and water transportation for export or import freight. The freight forwarder/customshouse broker is the major participant in this category. The freight forwarder/customshouse broker arranges for the freight to be delivered between the terminals and inland destinations, as well as the ocean transportation. This function performed by freight forwarders and customshouse brokers is most prevalent for containerized and general cargo commodities.

- Vessel Operations

  This category consists of several participants. The steamship agents provide a number of services for the vessel as soon as it enters the port; the agents arrange for pilot services and towing, for medical and dental care of the crew, and for ship supplies. The agents are also responsible for vessel documentation. In addition to the steamship agents arranging for vessel services, those providing the services include:

  - Chandlers - supply the vessels with ship supplies (food, clothing, nautical equipment, etc.);

  - Towing firms - provide the tug service to guide the vessel to and from port;

  - Pilots - assist in navigating the vessels to and from the Jacksonville Port Authority marine terminals and private marine terminals located within the Port District;

  - Bunkering firms - provide fuel to the vessels;

  - Marine surveyors - inspect the vessels and the cargo;

  - Shipyards/marine construction firms - provide repairs (either emergency or scheduled) as well as marine pier construction and dredging.

- Cargo Handling

This category involves the physical handling of the cargo at the terminals between the land and the vessel. Included in this category are the following participants:

- Longshoremen - include members of the International Longshoremen's Association (ILA), as well as non-ILA dockworkers such as Teamsters and Seafarers' International Union (SIU) that are involved in the loading and unloading of cargo from the vessels, as well as handling the cargo prior to loading and after unloading;

- Stevedoring firms - manage the longshoremen and cargo-handling activities. Stevedoring services at the Jacksonville Port Authorities terminals are provided by private stevedoring companies;

- Terminal operators - are often stevedoring firms who operate the maritime terminals where cargo is loaded and off-loaded;

- Warehouse/Consolidation operators - store cargo after discharge or prior to loading and consolidate cargo units into shipment lots.

- Government Agencies

This service sector involves federal, state and local government agencies that perform services related to cargo handling and vessel operations at the Port. U.S. Customs, Bureau of Immigration, U.S. Department of Agriculture, U.S. Coast Guard and the Army Corps of Engineers employees are involved. These services are provided by the government offices located in the Jacksonville area.

Employment, income, output and taxes with related shippers and consignees are considered port related, and not port generated.

2.3. Jacksonville Port Authority

The Jacksonville Port Authority governmental entity includes those individuals employed whose purpose is to oversee port activity at the Jacksonville Port Authority-owned marine terminals.

2.4. Related Shippers/Consignees Using the Marine Terminals

Related shipper/consignee (related user) jobs are jobs with shippers and consignees (exporters and importers) including the state's retail and wholesale and distribution industries and the in-state

industries supporting the movement and distribution of cargo imports and exports using the seaport terminals for shipment and receipt of cargo. While these impacts occur for all commodities, the related shippers and consignees impacts estimated in this study involve the import and export of ocean containerized cargo. Related jobs are not dependent upon the seaport marine terminals to the same extent as are the direct, induced and indirect jobs, since it is the demand for the final products which creates the demand for the employment with these shippers/consignees, not the use of a particular seaport or maritime terminal. These firms can and do use other ports.

It is to be emphasized that these jobs are only related jobs, not jobs dependent upon the Jacksonville Port Authority. These jobs are with shippers/consignees and manufacturers located throughout Florida who ship via the Port's terminals, as well as via other Florida and South Atlantic ports. Therefore, jobs with these shippers and consignees cannot be classified as totally dependent upon the existence of the Jacksonville marine terminals.

3. COMMODITIES INCLUDED IN THE ANALYSIS

A major use of an economic impact analysis is to provide a tool for port development planning. As a port grows, available land and other resources for port facilities become scarce, and decisions must be made as to how to develop the land and utilize the resources in the most efficient manner. Various types of facility configurations are associated with different commodities. For example, containers and automobiles require a large amount of paved, open storage space, while certain types of break bulk cargoes such as pulp, paper and lumber require covered storage. Perishable commodities require temperature controlled warehouses and some dry bulk cargo requires covered storage and special dust removing equipment, while tank farms are needed to store liquid bulk cargo.

An understanding of the commodity's relative economic value in terms of employment and income to the local community, the cost of providing the facilities, and the relative demand for the different commodities is essential in making future port development plans. Because of this need for understanding relative commodity impacts, economic impacts are estimated for the following commodities handled at the public and private marine terminals.

- Containers;
- Steel;
- Lumber, Pulp, Paper;
- Automobiles and RoRo cargo;
- Reefer Break bulk cargo;
- Miscellaneous break bulk cargo;
- Dry Bulk (such as coal, cement, and aggregates); and
- Liquid Bulk (such as refined petroleum products).

It should be emphasized that commodity-specific impacts are not estimated for each of the

economic sectors described in the last section. Specific impacts by commodity could not be allocated to individual commodities with any degree of accuracy for marine construction, ship repair, or the state and federal government. In addition, taxes have not been displayed by specific commodity since these tax impacts will reflect the same distribution over commodities as the employment impact.

4. SUMMARY OF METHODOLOGY

The purpose of this section is to provide a summary of the methodological approach used to estimate the economic impacts of the vessel and cargo activity at the public and private terminals located within the Jacksonville Port District.

4.1. Data Collection

The cornerstone of the Martin Associates' approach is the collection of detailed baseline impact data from firms providing services at the Port of Jacksonville marine terminals and the private terminals. To ensure accuracy and defensibility, the baseline impact data was collected from interviews with and surveys of 472 firms in the Jacksonville maritime community. These firms represent the defined population of firms providing cargo and vessel services at the Jacksonville Port Authority's public and private marine terminals located within the Port District, as identified by:

- Jacksonville Port Authority internal customer and tenant lists;
- Jacksonville Port Authority 2013 Directory; and
- Martin Associates' internal database from the 2009 Jacksonville Economic Impact analysis.

4.2. 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 economic sectors and job categories associated with Jacksonville Port Authority's marine terminals, as well as the private terminals.

The direct tax impacts are estimated at a state, county and local level based on state and local per capita tax burdens as developed by the Tax Foundation.

This baseline survey data was also used to develop operational models which can be used to update the impacts of the JAXPORT marine terminals and private terminals on an annual basis and to evaluate the impacts of changes in:

- Marine cargo tonnage, by commodity;
- Seaport labor productivity, and work rules;

- Modal distribution of seaport cargo (what percent of the inland transportation of a commodity is truck versus rail), as well as the geographical distribution of each commodity;
- Vessel calls and vessel size; and
- New carrier services.

Also, the operational models can be used to evaluate alternative facilities expansion projects and new marine terminal construction, as well as the impacts associated with channel dredging and widening.

4.3. Induced Impacts

Induced impacts are those generated by the purchases of the individuals employed as a result of seaport 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-the region. These purchases, in turn, create additional jobs in the region which are classified as induced. To estimate these induced jobs, a regional personal earnings multiplier was developed from data provided by the Bureau of Economic Analysis, Regional Income Division. This personal earnings multiplier is used to estimate the total personal earnings generated in the region as a result of the activity at the Jacksonville Port Authority's marine terminals and at private marine terminals within the Port District. A portion of this total personal earnings impact is next allocated to specific local purchases (as determined from consumption data for the North Florida residents, as developed from the U.S. Bureau of Labor Statistics, Consumer Expenditure Survey, 2012). These purchases are next converted into retail and wholesale induced jobs in the regional economy.

Induced jobs are not estimated at lower levels of purchasing rounds (after the wholesale round) since it is not possible to geographically trace with a sufficient degree of accuracy, where purchases at the remaining levels occur. However, the majority of the consumption will likely occur at the first two rounds of purchases, which are most likely local retail and wholesale purchases.

4.4. Indirect Jobs

Indirect jobs are generated in the local economy as the result of purchases by firms that are directly dependent upon cargo and vessel activity at the marine terminals, including the dependent shippers/consignees. These purchases are for goods and services such as office supplies and equipment, maintenance and repair services, communications and utilities, transportation services and other professional services. To estimate the indirect economic impact, local purchases, by type of purchase, were collected from the interviews and survey results. 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 for the Northeastern Region of Florida. The indirect job ratios also account for the in-state spin-off effects from multiple rounds of supply chains that are required to provide the locally purchased goods and services.

4.5. Related Impacts

Related impacts measure the jobs with shippers and consignees located in Florida moving containerized cargo and break bulk cargo through the Port's marine terminals and private terminals. These jobs are classified as related jobs, since the exporters and importers using the marine terminals for the movement of cargo can and do use other seaports and marine terminals. Because of the proximity of other ports and the associated steamship service at these ports, such as Savannah, Brunswick, Port Everglades, and Miami, the importers and exporters have some flexibility in port choice. As a result, jobs with these port users cannot be counted as dependent upon the marine terminals.

These related jobs are estimated based on the value per ton of the containerized cargo moving via the marine terminals and the associated weighted job to value of output ratio for retail and wholesale sectors, as well as relevant manufacturing industries in the State of Florida, as developed from the Bureau of Economic Analysis Regional Input-Output Modeling System (RIMS II).

5. ECONOMIC IMPACT MODELS

The impacts are measured for FY2013 and computer models for cargo operations have been developed to test the sensitivity of the impacts to changes in economic conditions and facility utilization. It is to be emphasized that this study is designed to provide a framework which the Jacksonville Port Authority can use in formulating and guiding the future development of Port facilities.[3]

The cargo impact model is designed to test the sensitivity of impacts to changes in such factors as maritime tonnage levels, seaport productivity and work rules, new seaport facilities development, inland distribution patterns of ocean cargo, number of vessel calls and the introduction of new ocean carrier service. The cargo impact model can also be used to assess the impact of developing a parcel of land as a maritime terminal versus other non-cargo land uses. Finally, the maritime cargo impact model can be used to assess the economic benefits of increased maritime activity due to infrastructure development and the opportunity cost of not undertaking specific maritime investments such as dredging, new terminal development or warehouse development.

3 The JAXPORT Economic Impact Model is a proprietary model developed and maintained by Martin Associates. It is not provided to JAXPORT or to any other public or private entity.

II. ECONOMIC IMPACTS OF MARITIME CARGO ACTIVITY

In this chapter, the employment generated by maritime cargo activity at the public and private marine terminals within the Jacksonville Port District is estimated. The chapter is organized as follows:

- First, the total employment that is in some way related to the activities at the public and private marine terminals is estimated.

- Second, the subset of total employment that is judged to be totally dependent (i.e., direct jobs) on port activity is analyzed as follows:

    - The direct job impact is estimated by detailed job category, i.e., trucking, rail, ILA/dockworkers, freight forwarders/customshouse brokers, steamship agents, chandlers, surveyors, etc.

    - The direct job impact is estimated for each of the key commodities/commodity groups.

    - The direct job impact is estimated based on the residency of those directly employed.

- Induced and indirect jobs are estimated.

- Finally, jobs related to the marine activity at the public and private marine terminals are described.

- For each impact category, the impacts generated by activity at public marine terminals and the private terminals are displayed individually.

1. TOTAL MARINE CARGO EMPLOYMENT IMPACT

It is estimated that about 24,340 direct, induced and indirect jobs are generated by cargo and vessel activity at the public and private marine terminals within the Port of Jacksonville Port District. Of these jobs:

- 9,667 jobs are directly generated by activities at the public and private marine terminals and if such activities should cease, these jobs would likely be dislocated over the short term.

- 10,100 jobs (induced jobs) are supported by the local purchases of the 9,667 individuals directly generated by port activity at the marine terminals. An additional 4,573 indirect jobs were supported by $506.9 million of purchases in the local and regional economy by firms providing

direct cargo handling and vessel services, as well as the dependent shippers/consignees using the private terminals.

- 108,260 jobs are related to containerized cargo imported and exported via the public and private marine terminals. These jobs with Florida importers and exporters are considered to be related to activities at the public and private marine terminals, but the degree of dependency on these terminals is difficult to estimate. It is to be emphasized that the level of employment with the Florida exporters and importers is based on the demand for the specific products – consumer goods, auto parts, grocery products, beverages, medical equipment, pharmaceuticals, etc., not by the use of the marine terminals within the Jacksonville Port District. However, if other ports were used, it is likely that the costs of exporting/importing to these shippers/consignees would increase.

1.1. Direct Marine Cargo Job Impacts

In FY2013, nearly 18 million tons of waterborne cargo moved via the public and private marine terminals considered in the analysis. As a result of this activity, 9,667 full-time jobs were directly created[4]. In this section the jobs are analyzed in terms of:

- Distribution by job category;
- Distribution by commodity group; and
- Distribution by county and state of residency.

These distributions are developed in more detail below.

1.2. Job Impacts by Sector

Exhibit II-1 presents the distribution of the 9,667 direct jobs among the following economic sectors:

- Surface transportation sector;
- Maritime service sector; and
- Jacksonville Port Authority (governing body).

Exhibit II-1 shows the job impacts by detailed job category within the sectors. For the public and private terminals, 43.3 percent of the direct jobs are created with local trucking operations, while 23.5 percent of the direct jobs created by activity at the public and private terminals are created with

[4] Jobs are measured in terms of full-time worker equivalents. If a worker is employed only 50 percent of the time by activity at Port of Jacksonville's public and private marine terminals, then this worker is counted as .5 jobs.

terminal employees and dockworkers including members of the International Longshoremen's Association, members of the International Brotherhood of Teamsters, Seafarers' International Union as well as other dockworkers. Nearly 900 workers are employed with shipyards and local marine construction firms, followed by 703 jobs with warehousing and cross-dock operations.

Exhibit II-1
Employment Impacts by Sector and Job Category*

	DIRECT JOBS
SURFACE TRANSPORTATION	
RAIL	507
TRUCK	3,679
MARITIME SERVICES	
TERMINAL EMPLOYEES/LONGSHOREMEN	2,272
TOWING	85
PILOTS	31
STEAMSHIP LINES AND AGENTS	78
SURVEYORS/CHANDLERS/MISC. MARITIME SERVICES	303
FORWARDERS	363
WAREHOUSING	703
GOVERNMENT	341
MARINE CONSTRUCTION/ SHIPYARDS	899
BARGE/BUNKERS	252
PORT AUTHORITY	153
TOTAL	9,667

*ILA and non-ILA dockworkers are included in terminal employees. Totals may not add due to rounding.

1.3. Direct Job Impacts by Commodity

Most of the 9,667 jobs considered to be generated by port activity can be associated with the handling of specific commodities or commodity groups. Certain employment categories such as government employees and employees with marine construction and ship repair cannot be identified with a specific commodity. As a result, employment in these three groups (which totaled 1,710) was not allocated to commodity groups.

Exhibit II-2 presents the direct employment impacts in terms of commodity groups.

Exhibit II-2
Distribution of Direct Job Impact by Commodity

	DIRECT JOBS
CONTAINERS	4,495
STEEL	21
AUTOS	1,060
PAPER/PULP/LUMBER	188
REEFER BREAK BULK	74
OTHER BREAK BULK	46
DRY BULK	739
LIQUID BULK	1,333
NOT ALLOCATED	1,710
TOTALS	9,667

Totals may not add due to rounding

Containerized cargo generated the largest number of direct jobs, followed by jobs supported by the movement of liquid bulk. The majority of these jobs are involved in the local distribution of the liquid bulk cargoes. The import and export of automobiles at the JAXPORT terminals generate the third largest direct jobs impact.

1.4. Job Impacts Per Ton

The assessment of the job impacts on a per 1,000 ton basis provides a tool for port planners to use in evaluating the relative importance of different commodities as economic generators. Exhibit II-3 presents the job impacts per 1,000 tons for each commodity moving via the public and private marine terminals.

Exhibit II-3
Job Impacts per 1,000 Tons

	JOBS/1,000 TONS
CONTAINERS	0.74
STEEL	0.23
AUTOS	0.82
PAPER/PULP/LUMBER	0.25
REEFER BREAK BULK	1.46
OTHER BREAK BULK	1.00
DRY BULK	0.19
LIQUID BULK	0.23

As this exhibit indicates, the movement of refrigerated break bulk cargo creates the largest number of direct jobs per 1,000 tons, followed by other break bulk cargo, automobiles, and containerized cargo. Liquid bulk and dry bulk cargoes generate relatively small numbers of jobs per 1,000 tons. The finding that the dry bulk and liquid bulk cargoes generate relatively small direct jobs per 1,000 tons of throughput reflects the fact that the handling of liquid bulk and dry bulk cargoes is much less labor intensive than handling automobiles, containers and break bulk cargoes and further, the supporting infrastructure of agents, freight forwarders and customshouse brokers, warehousing and terminal operators is greater for the general cargo commodities (autos, containers, break bulk paper) than for the dry and liquid bulk cargoes. The high job impact per 1,000 tons for automobiles also reflects the labor intensive processing operations.

1.5. Distribution of Direct Jobs by Place of Residence

To underscore the geographic scope of the impacts generated by the public and private marine terminals, Exhibit II-4 presents the distribution of the 9,667 direct jobs by place of residency. The residency analysis is based on the results of the data collected from the interviews and surveys with the 472 firms. As this exhibit indicates, the majority, 77 percent, of the direct jobs are held by residents of Jacksonville/Duval County.

Exhibit II-4
Distribution of Direct Jobs by Place of Residency

JURISDICTION	DIRECT JOBS	PERCENT
JACKSONVILLE/DUVAL	7,440	76.97%
CLAY	497	5.14%
NASSAU	819	8.47%
ST. JOHNS	500	5.17%
OTHER FLORIDA	204	2.11%
OTHER USA	206	2.13%
TOTAL	9,667	100.00%

Totals may not add due to rounding

2. INDUCED JOBS

The 9,667 directly employed individuals due to activity at the public and private marine terminals received wages and salaries, a part of which was used to purchase local goods and services such as food, housing, clothing, transportation services, etc. As a result of these local purchases, 10,100 jobs in the regional economy were supported. The majority of the induced jobs are with local and regional private sector social services, business services and educational services, followed by jobs in the food and restaurant sector, and then jobs in the construction and home furnishings sector.

3. INDIRECT JOBS

In addition to the induced jobs generated by the purchases by directly employed individuals, the firms providing the direct services and employing the 9,667 direct jobs make local purchases for goods and services. These local purchases by the firms' dependent upon the public and private marine facilities generate additional local jobs -- indirect jobs. Based on the data provided from the interview and survey results of the 472 firms, these dependent firms made $506.9 million of local and in-state purchases in 2013. These direct local purchases created an additional 4,573 indirect jobs in the local economy.

4. RELATED JOBS

It is estimated that about 108,260 jobs with Florida exporters and importers are related to the containerized cargo, automobiles, break bulk and liquid and dry bulk cargo moving via the Jacksonville Port District's public and private marine terminals. These related jobs are estimated based on the value per ton of the containerized cargo and break bulk cargo exported via the Port and the associated weighted job to value of output ratio for retail and wholesale sectors, as well as relevant manufacturing industries in the State of Florida, as developed from the Bureau of Economic Analysis Regional Input-Output Modeling System (RIMS II). These jobs-per-shipment values for the imports and exports were multiplied by value of the cargo moving via the public and private marine terminals, to estimate the

related user jobs.[5] These are related jobs, and would not likely disappear if the marine terminals were rendered inoperable or closed to marine cargo and vessel/barge activity. However, given a level of demand for the cargo, the cargo would most likely shift to another Florida or South Atlantic port and there is the possibility that some related jobs could shift over time.

It is to be further emphasized that when the impact models are used for planning purposes and sensitivity analysis, related jobs should not be used to judge the economic benefits of a particular project. Related jobs are not estimated with the same degree of defensibility as are the direct, induced and indirect jobs. Therefore, only these three types of job impacts should be used in evaluating port investments. The purpose of the related jobs estimate is to provide a proxy for the magnitude of the more general economic development impact of the private and public port facilities.

5 Adjustments were made with retail margins to reflect imported consumer products and automobiles.

III. MARINE CARGO REVENUE, INCOME AND TAX IMPACTS

The 18 million tons of cargo handled at the public and private marine terminals included in the study generated revenue for firms in each of the economic sectors. For example, revenue is received by the railroads, the trucking companies and pipelines within the surface transportation sector as a result of moving export cargo to the marine terminals and distributing the imported commodities inland after receipt at the marine terminals. The firms in the maritime services sector receive revenue from arranging for transportation services, cargo handling, providing services to vessels in port and repairs to vessels calling the port facilities. JAXPORT receives revenue from terminal leases and port charges such as wharfage and dockage assessed on cargo and vessels. In addition, revenue is received by shippers/consignees from the sales of cargo shipped or received via the marine cargo terminals and from the sales of products made with raw materials received through the terminals. Since this chapter is concerned with the revenue generated from providing maritime services, the shipper/consignee revenue (i.e., the value of the cargo shipped or received through the marine terminals, as well as the value of the products produced by the port-dependent shippers/consignees) will be excluded from the remaining discussion.

The revenue generated by port activity consists of many components. For example, gross revenue is used to pay employee salaries and taxes, it is distributed to stockholders of the companies providing the vessel and cargo handling services, and it is used for the purchases of equipment and maintenance services. Of these components, only three can be isolated geographically with any degree of accuracy. These are the personal income component of revenue, which can be traced to geographic locations based on the residence of those receiving the income, the payment of state and local taxes, and the local purchases made by firms dependent upon the maritime activity. The balance of the revenue is distributed in the form of payments to firms located outside the Jacksonville region providing goods and services to the four sectors and for the distribution of company profits to shareholders.

Since it is difficult to trace all the components of the revenue beneficiaries, an estimate of revenue is developed, but no conclusions are formulated as to how the revenue (other than personal income, taxes and local purchases) is distributed, geographically. It is more accurate to trace the distribution of personal income (which is a subset of revenue) through the geographic locations of individuals receiving the income, as well as the local purchases by port-dependent firms.

1. TOTAL ECONOMIC VALUE

The ***total economic activity*** in the state that is associated with the cargo and vessel activity at the Jacksonville Port District consists of the direct business revenue impact generated by providing services to the cargo and vessel activity at JAXPORT and private marine terminals; the economic value associated with the related port users in 2013; and the re-spending and local consumption impact. In 2013, $26.9 billion of total economic value was related to the maritime cargo and vessel activity at the

public and private terminals. Of the $26.9 billion, $2.3 billion is the direct business revenue received by the firms directly dependent on the Port and providing maritime services and inland transportation services to the cargo handled at the maritime terminals and the vessels calling the Port, and $1.1 billion is the re-spending and local consumption impact. The remaining $23.4 billion represents the value of the output to the State of Florida that is associated with the cargo moving via JAXPORT and the private terminals. This includes the value added at each stage of producing an export cargo, as well as the value added at each stage of production for the firms using imported raw materials and intermediate products that flow via the Port terminals and are consumed by industries within the State of Florida. The balance of the discussion focuses on the $2.3 billion of direct business revenue generated from the provision of services to the cargo and vessels handled within the Jacksonville Port District.

In 2013, the cargo and vessel activity at Jacksonville Port District's public and private marine terminals generated $2.3 billion of business revenue to the firms providing cargo handling and vessel services. Included in the $2.3 billion revenue impact are $499.3 million of direct personal earnings, $506.9 million of local purchases by firms providing maritime services, and $168.9 million of state and local taxes.

1.1. Revenue Impacts by Economic Sector

Exhibit III-1 presents the total revenue estimated to have been generated by port activity in 2013. This revenue includes the revenue received by firms providing services to the commodity and vessel activity at the public and private terminals, and includes revenue received by trucking firms, stevedores, Jacksonville Port Authority, chandlers, agents, pilots, towing companies, etc. Not included is the revenue from the use/value of the cargo moving via the marine terminals. Activity at the JAXPORT terminals creates 78 percent of the $2.3 billion direct revenue impact.

About 28 percent of the $2.3 billion revenue impact is received by trucking and rail operations, followed by bunkering operations. The majority of the surface transportation revenue is received by the trucking firms. Warehouse operations account for about 12.6 percent of the total direct revenue impact.

Exhibit III-1
Direct Revenue Generated by Port Activity
($1,000)

	TOTAL
SURFACE TRANSPORTATION	
RAIL	$100,047
TRUCK	$549,516
MARITIME SERVICES	
TERMINAL OPERATIONS	$243,873
TOWING	$9,465
PILOTS	$14,222
AGENTS	$5,701
SURVEYORS/CHANDLERS/MISC. MARINE SERVICES	$72,146
FORWARDERS	$65,298
WAREHOUSING	$293,362
GOVERNMENT	$0
MARINE CONSTRUCTION/ SHIPYARDS	$268,012
BARGE/BUNKERS	$639,576
PORT AUTHORITY	$57,075
TOTAL	$2,318,294

Totals may not add due to rounding

Revenue received by warehouses and consolidators accounts for $293.4 million while terminal operations accounts for $243.9 million of the revenue impact.

1.2. Revenue Impacts by Commodity

Exhibits III-2 and III-3 show the total revenue impact by commodity and the revenue per ton. It is to be emphasized that the revenue received by shippers/consignees from the sales of the products (value of the commodities) moving via the marine terminals is not included in the direct revenue impact, since product value is determined by the demand for the product, not the use of the marine terminals. The two exhibits show that:

- In terms of total direct revenue, containers generate the greatest revenue impact, followed by liquid bulk cargoes.

- In terms of per ton revenue, reefer break bulk cargoes generate the greater revenue per ton impact, reflecting the more labor intensive loading and handling of this cargo and associated support services such as warehousing. Containerized cargo and auto operations follow in terms of revenue per ton.

Exhibit III-2
Revenue Impacts by Commodity
($1,000)

	TOTAL
CONTAINERS	$764.4
STEEL	$3.0
AUTOS	$154.7
PAPER/PULP/LUMBER	$52.5
REEFER BREAK BULK	$16.3
OTHER BREAK BULK	$3.1
DRY BULK	$296.1
LIQUID BULK	$535.7
NOT ALLOCATED	$492.5
TOTALS	$2,318.3

Totals may not add due to rounding

Exhibit III-3
Revenue Per Ton Impacts

	REVENUE/TON
CONTAINERS	$125.80
STEEL	$33.15
AUTOS	$119.34
PAPER/PULP/LUMBER	$70.71
REEFER BREAK BULK	$322.48
OTHER BREAK BULK	$66.93
DRY BULK	$76.27
LIQUID BULK	$92.66

1.3. Personal Earnings Impact

In the previous section of this chapter, the total revenue generated by port activity was identified. As described earlier, the personal income received by those directly dependent upon port activity within the Jacksonville Port District is paid from the business revenue received by the firms supplying direct services at the marine terminals.

The income impact is estimated by multiplying the average annual earnings (excluding benefits) of each port participant, i.e., truckers, steamship agents, pilots, towing firm employees, longshoremen, warehousemen, etc., by the corresponding number of direct jobs in each category. The individual

annual earnings in each category multiplied by the corresponding job impact resulted in $499.3 million in personal wage and salary earnings. It is important to emphasize that the average annual earnings of a port-dependent job is about $51,656. These relatively high paying jobs will have a much greater economic impact in the local economy through stimulating induced jobs than will a job paying lower wages.

The impact of the re-spending of this direct income for local purchases is estimated using a personal earnings multiplier. The personal earnings multiplier is based on data supplied by the Bureau of Economic Analysis (BEA), Regional Input-Output Modeling System (RIMS II). The BEA estimates that for every one dollar earned by direct employees generated by activity at the marine terminals, an additional $2.23 of personal income and consumption expenditures would be created as a result of re-spending the income for purchases of goods and services produced locally. Hence, a personal earnings multiplier of 3.23 was used to estimate the total income and consumption impact of $1.6 billion, inclusive of direct income plus the re-spending/consumption effect. This additional re-spending of the direct income, $1.1 billion, generates the 10,100 induced job impact, described in the previous chapter.

The 4,573 indirect job holders earned $220.2 million in indirect wages and salaries. Combining the direct, induced and indirect personal income impacts, the total income impact is $1.8 billion. Related jobholders throughout the state received $6.1 billion in income.

1.4. Tax Impacts

State and local tax impacts are based on per employee tax burdens which are developed at the county, local and state jurisdictional levels. These tax per employee burdens are essentially tax indices that are used to allocate total taxes at each level of government to economic activity generated by the marine terminals. To estimate the per employee tax indices, total taxes received at each governmental level in Florida were developed from the Tax Foundation, which reports total state and local taxes from all sources as a percent of total personal income.

Activity at the public and private marine terminals generated $168.9 million of state, county and local taxes. Of this, $84.2 million was received at the state level and the balance, $84.7 million, was received at the local and county level. Related users supported $558.1 million in tax payments.

IV. COMPARISON OF CARGO IMPACTS FY2008 TO FY2013

The purpose of this section is to provide a comparison of the economic impacts generated by the Jacksonville Port District cargo activity between FY2008 and FY2013. The methodology used by Martin Associates to estimate the economic impacts generated by seaport activity in FY2013 is identical to the methodology used to estimate the economic impacts of the seaport in FY2008, and therefore, direct comparisons can be made. However, while the methodology is the same as that used in the 2009 study, there has been a structural shift in the level of the personal income multiplier for water transportation developed by the U.S. Bureau of Economic Analysis for the Northeastern Florida region. Due to the recession beginning in 2009, the propensity to save has increased, thus lowering the propensity to consume, and hence, the personal income multiplier. For example, in 2009, the personal income multiplier for the water transportation sector in Northeastern Florida was 3.91. The current personal income multiplier for the waterborne transportation sector in Northeastern Florida is 3.23. Therefore, the re-spending/local consumption impact per dollar of direct personal income will be lower in this current study than in 2009.

Between 2008 and 2013, the total tonnage moving via the public and private marine terminals declined by nearly 4.4 million tons, as shown in Exhibit IV-1.

Exhibit IV-1
Comparison of Tonnage Moving via Public and Private Marine Terminals, FY2008- FY2013
(1,000 Tons)

	2013	2008	CHANGE
CONTAINERS	6,076	4,742	1,335
STEEL	91	51	40
AUTOS	1,296	1,366	-70
PAPER/PULP/LUMBER	742	670	72
REEFER BREAK BULK	50	134	-84
OTHER BREAK BULK	47	98	-51
DRY BULK	3,883	6,139	-2,256
LIQUID BULK	5,781	9,144	-3,362
TOTAL	17,967	22,344	-4,377

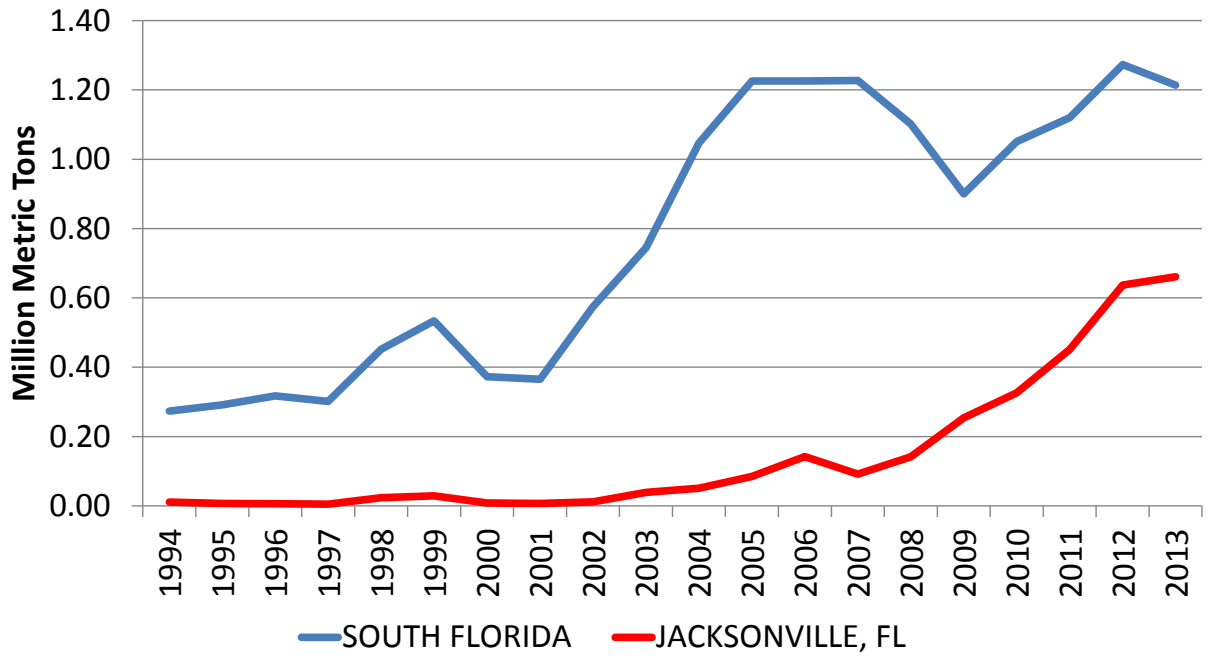
Totals may not add due to rounding

The tonnage decline was driven by the reduction in dry bulk cargo, most notably cement and aggregates, and liquid bulk cargo. The decline in cement and aggregates reflects the impact of the recession on the housing and construction market in Northeastern Florida since 2009, as well changes in dry bulk fuel receipts. The change in the level of liquid bulk fuel receipts also drives the decline in liquid bulk tonnage. Tonnage losses were also recorded for automobiles (reflecting the loss of a key account to

Brunswick, GA), and refrigerated break bulk (reflecting the changing export markets of break bulk poultry to the former Soviet Union countries).

In contrast to the decline in liquid and dry bulk cargo, containerized cargo grew by more than 1.3 million tons. Actual containers handled at JAXPORT increased from about 345,000 moves in 2008 to 468,600 in 2013, a growth of more than 35 percent over 5 years. The majority of this growth was handled at the JAXPORT container terminals, and in particular at the MOL/TraPac Terminal, which was under construction at the time of the previous 2009 Impact Study. In fact, more than 50 percent of the 1.3 million tons of containerized cargo growth was driven by imported Asian cargo, handled at the MOL/TraPac Terminal. Exhibit IV-2 demonstrates the importance of the opening of the MOL/TraPac Terminal on JAXPORT's participation in the all-water Asian services. This exhibit also demonstrates the rapid increase in Asian cargo at JAXPORT compared to other Florida ports.

Exhibit IV-2
Growth in Asian Cargo at JAXPORT Marine Terminals



Source: USA Trade On-Line, U.S. Bureau of the Census

This growth in Asian cargo at JAXPORT is significant, as it results in a diversification of trade routes served by JAXPORT, and underscores the importance of the development of a deeper channel to accommodate the increasingly larger ships deployed on the Asian all-water trade lanes.

Fueled by the significant increase in containerized cargo, overall economic impacts generated at JAXPORT and the private marine terminals increased. Direct jobs grew by 702 jobs, while induced jobs grew by 1,255 and indirect jobs grew by 174. Overall, jobs generated by the cargo and vessel activity at JAXPORT and the private marine terminals grew by 2,131 jobs, or nearly 10 percent since 2008, despite the economic recession during that time period. During this same time, employment in Duval County declined by 2.7 percent.

Exhibit IV-3
Comparison of Cargo Impacts FY2008-FY2014

	2013	2008	CHANGE
JOBS			
DIRECT	9,667	8,965	702
INDUCED	10,100	8,845	1,255
INDIRECT	4,573	4,399	174
TOTAL	24,340	22,209	2,131
PERSONAL INCOME (1,000)			
DIRECT	$499,335	$396,534	$102,801
RE-SPENDING/CONSUMPTION	$1,115,864	$1,155,579	-$39,715
INDIRECT	$220,150	$186,565	$33,585
TOTAL	$1,835,349	$1,738,678	$96,671
BUSINESS REVENUE (1,000)	$2,318,294	$1,796,756	$521,538
LOCAL PURCHASES (1,000)	$506,907	$378,048	$128,859
STATE & LOCAL TAXES (1,000)	$168,852	$128,662	$40,190

Totals may not add due to rounding

Direct income grew by $102.8 million, but the re-spending and local consumption income fell by $39.7 million reflecting the change in the personal income multiplier.[6] Business revenue grew by $521.5 million, reflecting the growth in containerized cargo, and state and local tax revenue grew by $40.2 million.

6 Induced jobs grew due to a change in the composition of consumption behavior, reflecting an increase in local purchases for food at restaurants and entertainment, and away from food at home. Also adding to the growth of induced jobs was the growth in non-consumption driven induced impacts such as jobs with public schools, and state and local government.

Cargo activity at the JAXPORT marine terminals accounted for the majority of the growth in economic impacts, as shown in Exhibit IV-4. The JAXPORT marine terminals accounted for about 80 percent of the growth in total jobs over the period and 90 percent of the growth in direct business revenue.

Exhibit IV-4
Comparison of Economic Impacts at JAXPORT Marine Terminals

	2013	2008	CHANGE
JOBS			
DIRECT	6,911	6,335	576
INDUCED	7,217	6,182	1,035
INDIRECT	3,490	3,413	77
TOTAL	17,618	15,930	1,688
PERSONAL INCOME (1,000)			
DIRECT	$356,738	$276,033	$80,705
RE-SPENDING/CONSUMPTION	$797,203	$804,415	-$7,212
INDIRECT	$167,757	$142,838	$24,919
TOTAL	$1,321,699	$1,223,286	$98,413
BUSINESS REVENUE (1,000)	$1,808,527	$1,338,630	$469,897
LOCAL PURCHASES (1,000)	$403,216	$280,754	$122,462
STATE & LOCAL TAXES (1,000)	$121,596	$90,523	$31,073

Totals may not add due to rounding

The greatest growth in direct jobs was with containerized cargo, as shown in Exhibit IV-5. Jobs associated with containerized cargo grew by 57 percent over the period, reflecting the strong growth in containerized cargo moving through JAXPORT terminals. The decline with autos reflects the loss of a key auto account to Brunswick, and the loss in non-allocated jobs reflects the decline in construction related jobs that were included in the previous study which were involved in the construction of the MOL/TraPac Terminal. Also, there has been a decline in ship repair activity since 2008. The growth in liquid bulk jobs, despite the loss in tonnage reflects a larger distribution area of the petroleum and liquid bulk products received at the private terminals.

Exhibit IV-5
Comparison of Direct Job Impacts by Commodity

	2013	2008	CHANGE
CONTAINERS	4,495	2,861	1,634
STEEL	21	20	2
AUTOS	1,060	1,489	-429
PAPER/PULP/LUMBER	188	412	-224
REEFER BREAK BULK	74	77	-3
OTHER BREAK BULK	46	148	-102
DRY BULK	739	705	34
LIQUID BULK	1,333	1,195	139
NOT ALLOCATED	1,710	2,059	-349
TOTALS	9,667	8,965	702

Totals may not add due to rounding

In summary, the Port of Jacksonville continues to be a major catalyst in economic growth in Northeastern Florida. The investment in port infrastructure, such as the MOL/TraPac Terminal at JAXPORT, has resulted in significant job growth over the 2008-2013 period. This type of investment has led to increased diversification of the markets and cargoes served by JAXPORT, in turn providing high paying jobs in the local community, and generating state and local tax revenue. Given this demonstrated importance of the cargo activity at the Port of Jacksonville, it is critical that the Port continue to invest in infrastructure projects that return job growth to the region and tax revenue to the State of Florida and the local communities.