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THE STATEWIDE ECONOMIC IMPACTS OF MARITIME CARGO HANDLED AT FLORIDA'S PUBLIC SEAPORTS – 2008

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Final Report

Prepared for:
FLORIDA PORTS COUNCIL

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EXECUTIVE SUMMARY

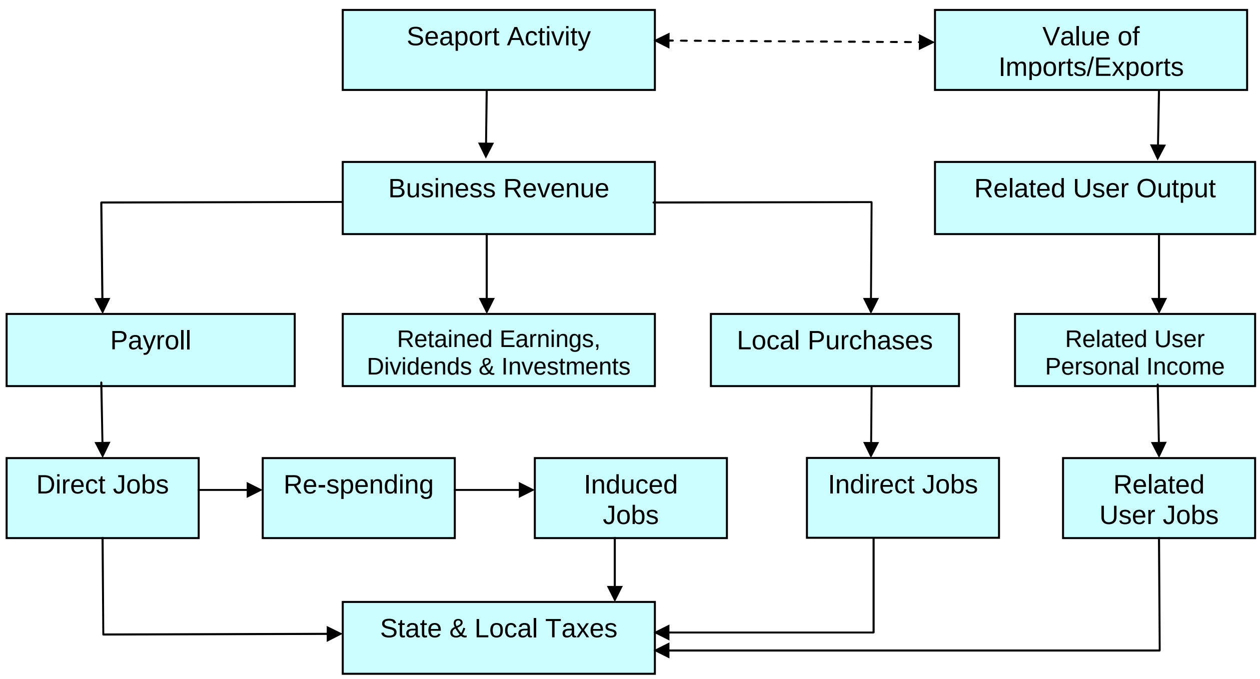
Martin Associates was retained by the Florida Ports Council to measure the statewide economic impacts generated by maritime cargo activity at the fourteen public seaports in the state, and includes cargo moving over both public and private marine terminals within these ports' navigational districts. Economic impacts generated at the cargo facilities include the impacts created by containerized cargo (both dry and refrigerated), steel products, forest products, autos and other roll-on/roll-off (RO/RO) cargo, miscellaneous breakbulk cargo, dry bulk cargo (such as aggregates, phosphate, minerals, etc.), petroleum and petroleum products, and other liquid bulk. Economic impacts of the cruise industry at those ports with cruise operations are not included in this report.

This study focuses on impacts generated in the year 2008. 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 port region and size of port have been prepared that can be used in evaluating specific investment projects as well as the sensitivity of impacts to changes in tonnage, labor productivity, labor work rules, commodity mix, and inland origins/destinations of commodities.

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

Exhibit E-1

Flow of Economic Impacts of Seaport Activity 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 seaport terminals.

As demonstrated by this chart, four impact categories 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:

- <u>Direct jobs</u> are those jobs with local firms providing support services to the respective seaports. 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 the ports' maritime terminals, members of the International Longshoremen's Association (ILA) or other dock workers (both union and non-union), 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 jobs with shippers and consignees (exporters and importers) using the seaport terminals for shipment and receipt of cargo and the jobs supporting the exporters and importers. They include jobs with manufacturing and distribution firms -- such as the construction industry using the lumber and other construction materials imported through the seaport terminals. Related jobs are not dependent upon the seaport marine terminals to the same extent as are the direct, induced, and indirect jobs. For example, these firms can and do use other ports. It is the demand for the final product, i.e. steel products, which creates the demand for the employment with these shippers/consignees, not the use of a particular seaport or maritime terminal.

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 seaport activity. State and local taxes include taxes paid by individuals and businesses dependent upon the seaport activity.

Martin Associates has developed detailed economic impact models for the following Florida seaports:

- Port Everglades,
- The Port of Tampa,
- The Port of Jacksonville, and
- The Port of Miami

These models are based on a 100 percent interview program with tenants at each of the four ports as well as with service providers to cargo and vessel activity at each port. In total, the analysis is based on interviews with more than 1,000 firms that provide services to the cargo and vessel activity at these four ports. In 2008, these four ports handled 98.2 million tons of cargo, both international and domestic, which represents 86% of the 114.2 million tons handled at all Florida ports in FY 2008. The impacts of these four ports were then expanded to estimate the total statewide impacts of the total domestic and international cargo handled at all Florida ports.

The statewide economic impacts generated by the cargo activity at the Florida public ports are summarized in Exhibit E-2.

Exhibit E-2

Summary of the Statewide Impacts Generated by Marine Cargo Handled at Florida's Seaports - 2008

Impact Category	Statewide Impacts
Jobs	
Direct Jobs	36,266
Induced Jobs	45,679
Indirect Jobs	17,968
Total Port Sector Jobs	**99,913**
User Jobs	454,434
Total Jobs	***554,347***
Personal Income (Thousands of Dollars)	
Direct Personal Income	$1,741,250
Re-spending/Local Consumption	$5,099,121
Indirect Income	$761,898
Total Port Sector Income and Local Consumption	**$7,602,269**
User Income	$15,680,487
Total Income and Consumption	***$23,282,757***
Value of Economic Output (Thousands of Dollars)	
Direct Business Revenue	$5,146,907
Local Purchases	$1,466,402
Total Port Sector Revenue	**$6,613,310**
User Revenue	$59,717,225
Total Economic Value	***$66,330,535***
State and Local Taxes (Thousands of Dollars)	
Direct, Induced and Indirect State and Local Taxes	$562,568
Total Port Sector Taxes	**$562,568**
User State and Local Taxes	$1,160,356
Total State and Local Taxes	***$1,722,924***

* Totals may not add due to rounding.

Note: The induced income impact also includes local consumption expenditures and should not be divided by induced jobs to estimate the average salary per induced job. This re-spending throughout the state is estimated using a statewide personal earnings multiplier, which reflects the percentage of purchases by individuals that are made within the State of Florida. Hence, the average salary would be overestimated

The cargo activity at the public seaports within Florida generated the following statewide impacts in the year 2008.

- **<u>554,347 jobs in Florida are in some way related to the cargo activity at the state's public marine cargo facilities. Of the 554,347 total jobs</u>:**

  - **<u>36,266 direct jobs</u>** are generated by the ocean cargo activity.

  - As the result of local and regional purchases by those 36,266 individuals holding the direct jobs, an additional **<u>45,679 induced jobs</u>** are supported in the regional economy.

  - **<u>17,968 indirect jobs</u>** are supported by $1.5 billion of in-state purchases by businesses supplying services at the cargo terminals and by businesses dependent upon the public ports for the shipment and receipt of cargo.

  - The cargo moving via Florida's public seaports supports **<u>454,434 related user jobs</u>** connected with exporters and importers located throughout the state. The majority of these jobs with exporters and importers are associated with the movement of containerized commodities via the Florida seaports. These jobs include the direct, induced, and indirect jobs created at each level of production that are related to an imported product (through the Florida seaports) used as an intermediate input in a manufacturing activity, as well as the jobs created at each level of activity to produce an export product moved via the Florida seaports.

    For <u>retail imports</u>, the related user jobs include all the jobs and economic activity that are required in the logistics chain to move the imported retail good to the point of final sale. For example, the jobs related to the retail imports include:

    - The jobs in retail/wholesale distribution centers that handle the imported retail products received through the Florida ports;
    - The jobs in Florida that support the distribution center activity, such as the suppliers of packaging materials, insurance providers, utilities, business logistics support activities, and maintenance and repair operations in support of the distribution center activity related to those imports through Florida;
    - Trucking activity, including the reloading of the retail products into 53-foot domestic containers to move the imported retail products from the distribution centers to the retail outlets and the impacts created by the trucking activity such as fuel purchases, maintenance and repair activity;
    - The employment in the retail stores where the imported retail goods are sold; and
    - The employment supporting the retail sales activity associated with the imported goods, such as advertising, and material purchases used in product presentations as well as utilities, maintenance and repair activities in support of the retail store.

    In each case, only those jobs -- as identified above and associated with the value of the imported retail goods moving via the Florida ports -- are included as related jobs.

For the intermediate imported commodities that are used in the construction industry within the state, such as cement, lumber, and steel, the related jobs not only include the impacts associated with the value of the construction activity that these imports represent, but also all the supporting activity that is required for the construction industry. This supporting activity includes the purchases of additional services from construction supply firms in the state, such as construction equipment and materials, electrical supplies, insurance, fuel, and subcontracted labor.

For export cargo, the related jobs represent the impacts of the international logistics supply chain of moving an export cargo from the point of production in Florida to the Florida seaport. For example, for the export of fertilizers, related users include:

- The employment in mines where the phosphate rock exported is produced;
- The supporting activity to mine the rock, including all the in-state purchases of equipment and support services; and
- The logistics support activities to arrange for the sale of the rock to international markets.

These jobs are considered to be **related** to activities at Florida's seaports, but the degree of dependence on the port system is difficult to estimate, and should not be considered as dependent on the ports as are the direct, induced and indirect jobs. If the Florida seaports were not available to these in-state importers and exporters, the importers and exporters and the support operations would suffer an economic penalty over the longer term. Such a penalty would vary from a loss of employment opportunities in some cases to an increase in total transportation costs in other cases, which could, in turn, result in employment reductions and corporate relocations, further leading to a reduction in the attractiveness of Florida in terms of industrial and economic development activities.

- **Approximately $23.3 billion of wages and salaries and in-state consumption expenditures were generated by cargo activity in 2008.**

  - **$1.7 billion of direct wages and salaries** were received by those 36,266 directly employed. Overall, the cargo activity is higher, however, creating direct jobs earning an average annual salary of $48,013.

  - As the result of re-spending this direct job holder income, an **additional $5.1 billion of income and consumption expenditures were created** and supported the 45,679 induced jobs.

  - The 17,968 indirect job holders received **$761.9 million of indirect wages and salaries**.

  - The 454,434 related user job holders generated **$15.7 billion in personal income**.

- **The cargo activity at Florida's public seaports generated $66.3 billion in statewide economic value. This accounts for 9% of the 2008 Florida Gross Domestic Product of $734.5 billion.**

  - Businesses providing services to the cargo and vessels calling the marine terminals received **$5.1 billion of revenue.**

  - These local businesses providing the cargo handling and vessel services in the state made **$1.5 billion of in-state purchases.**

  - In addition, the cargo activity at the respective seaports created an additional **$59.7 billion of total economic output** in the state, the majority of which is created by the movement of containers, and the in-state industries supporting this movement.

- **$1.7 billion of state and local taxes** were generated by activity at the publicly owned cargo terminals in the state, including **$1.2 billion generated by the related users** throughout the state.

I. INTRODUCTION AND SUMMARY

Martin Associates was retained by the Florida Ports Council to measure the statewide economic impacts generated by maritime cargo activity at the fourteen public seaports in the state, and includes cargo moving over both public and private marine terminals within these ports' navigational districts. Economic impacts generated at the cargo facilities include the impacts created by containerized cargo (both dry and refrigerated), steel products, forest products, autos and other roll-on/roll-off (RO/RO) cargo, miscellaneous break bulk cargo, dry bulk cargo (such as aggregates, phosphate, minerals, etc.), petroleum and petroleum products, and other liquid bulk. Economic impacts of the cruise industry at those ports with cruise operations are not included in this report.

This study focuses on impacts generated in the calendar year 2008, except where otherwise indicated. 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 port region and size of port have been prepared that can be used in evaluating specific investment projects, as well as the sensitivity of impacts to changes in tonnage, labor productivity, labor work rules, commodity mix, inland origins/destinations of commodities, and vessel size.

The study employs methodology and definitions Martin Associates has used to measure the economic impacts of seaport activity in more than 300 economic impact studies for 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. 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 more than 1,000 firms providing services to the ports as well as tenants of the ports.

1. IMPACT DEFINITIONS

The impacts are measured in terms of:

- Jobs [direct, induced, indirect and related shipper/consignee (related users)];
- Personal income;
- Business revenue; and
- State and local taxes.

Each impact measurement is described below:

- **Direct, Induced, Indirect, and Related User Jobs -** ***<u>Direct jobs</u>*** are those that would not exist if activity at the seaports' cargo facilities were to cease.

  Direct employment created by maritime cargo activity at a port's terminals are those jobs with the firms directly providing cargo-handling and vessel services, including trucking companies, terminal operators and stevedores, members of the International Longshoremen's

Association (ILA), stevedores and customhouse brokers, vessel agents, pilots, and tug assist companies.

Induced jobs are jobs created in the state by the purchases of goods and services by those *individuals* directly employed by each of the lines of business at each port. These jobs are based on the in-state purchase patterns of Florida area residents. The induced jobs are jobs with grocery stores, restaurants, health care providers, retail stores, local housing/construction industry, and transportation services, as well as with wholesalers providing the goods to the retailers.

Indirect jobs are created throughout the state as the result of purchases for goods and services by the *firms* directly impacted by the port activity, including the tenants, terminal operators, and firms providing services to cargo operations – which include containerized cargo, petroleum, general cargo, RO/RO, and dry and liquid bulk. The indirect jobs are measured based on in-state purchase patterns of the directly dependent firms, and occur with such industries as utilities, office supplies, contract service providers, maintenance and repair, and construction.

Related shipper/consignee (related user) jobs are jobs with shippers and consignees (exporters and importers) using the seaport terminals for shipment and receipt of cargo. The majority of the in-state shipper and consignee impacts involve the import and export of waterborne containerized cargo, both international and domestic (that is, coastwise shipments). These Florida shippers/consignees also use other ports (i.e., East Coast ports such as Savannah and West Coast ports served via rail), and are not completely dependent upon the use of Florida's seaports. The level of employment with these firms is driven by the demand for the firms' products, not because the Florida ports are used. Therefore, the degree of dependence of the related jobs on the Florida ports is less than the other components of the job impact.[1]

These jobs include the direct, induced, and indirect jobs created at each level of production of an export cargo produced in Florida, as well as the total jobs associated with an imported product consumed in state, either as a final consumption good or as an intermediate or primary raw material used by industries within the state. For example, all aspects of the distribution chain associated with an imported container carrying consumer products are included in the related job impacts, from the time the cargo leaves the distribution center to its final sales at a retail outlet in Florida. The aspects of the distribution chain from the discharge of the containers from a ship through the container terminal to its initial destination (i.e., regional distribution center within the state) are included in the port-generated direct, induced, and indirect jobs, not the related impacts.

- **Personal income impact** consists of wages and salaries received by those directly employed by port activity, and includes a re-spending impact which measures the personal

[1]The related jobs, income, value of output and taxes should not be used when evaluating the incremental economic impacts of specific port projects or the impacts of changes in cargo volume.

consumption activity in the state by those directly employed as the result of cargo activity at the public ports. Indirect personal income measures the wages and salaries received by those indirectly employed.

- **Business revenue** consists of total business receipts by firms providing services in support of the ocean cargo activity. **In-state purchases** for goods and services made by the directly impacted firms are also measured. These purchases by the dependent firms create the indirect impacts.

- **State and local taxes** include taxes paid by individuals as well as firms dependent upon the cargo activity at the public ports.

2. METHODOLOGY

Within the past three years, Martin Associates has developed detailed economic impact models for the following Florida seaports:

- Port Everglades;
- Port of Tampa;
- Port of Jacksonville; and
- Port of Miami.

These models are based on a 100 percent interview program with tenants of each of the four ports as well as service providers to cargo and vessel activity at each port. In total, 1,000 firms were interviewed that provide services to the cargo, vessel, and cruise activity at the Port of Tampa, the Port of Jacksonville, the Port of Miami, and Port Everglades. In 2008, these four ports handled 98.2 million tons of cargo, both international and domestic, which represents 86% of the 114.2 million tons handled at all Florida ports in FY 2008. The impacts of these four ports were then expanded to estimate the total statewide impacts of the total domestic and international cargo handled at all Florida ports.

The induced impacts are based on the current expenditure profile of residents in the State of Florida, as estimated by the U.S. Bureau of Labor Statistics, "Consumer Expenditure Survey." This survey indicates the distribution of consumer expenditures over key consumption categories for residents of the communities in which the ports are located. The consumption categories are:

- Housing;
- Food at restaurants;
- Food at home;
- Entertainment;
- Health care;
- Home furnishings; and
- Transportation equipment and services.

The estimated consumption expenditure generated as a result of the re-spending impact is distributed across these consumption categories. Associated with each consumption category is the relevant retail and wholesale industry. Jobs-to-sales ratios in each industry are then computed for the regions in which each port is located, and induced jobs are estimated for the relevant consumption categories. It is to be emphasized that induced jobs are only estimated at the retail and wholesale level, since these jobs are most likely generated in the state. Further levels of induced jobs are not estimated since it is not possible to defensibly identify geographically where the subsequent rounds of purchasing occur.

The "Consumer Expenditure Survey" does not include information to estimate the job impact with supporting business services, legal, social services, state and local governments, and educational services. To estimate this induced impact, a ratio of Florida employment in these key service industries to total Florida employment is developed. This ratio is then used with the direct and induced consumption jobs to estimate induced jobs with business/financial services, legal, educational, governmental, and other social services.

The indirect impacts are estimated based on the local purchases by the directly dependent firms, combined with indirect jobs, income and revenue coefficients for the supplying industries in Florida, as developed for Martin Associates by the U.S. Bureau of Economic Analysis, Regional Input/Output Modeling System.

3. ECONOMIC IMPACT MODELS

The impacts are measured for 2008, and computer models for cargo operations have been developed to provide an estimate of the impacts of specific investment and development projects, and 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 can be used in formulating and guiding the future development of seaport facilities in Florida.

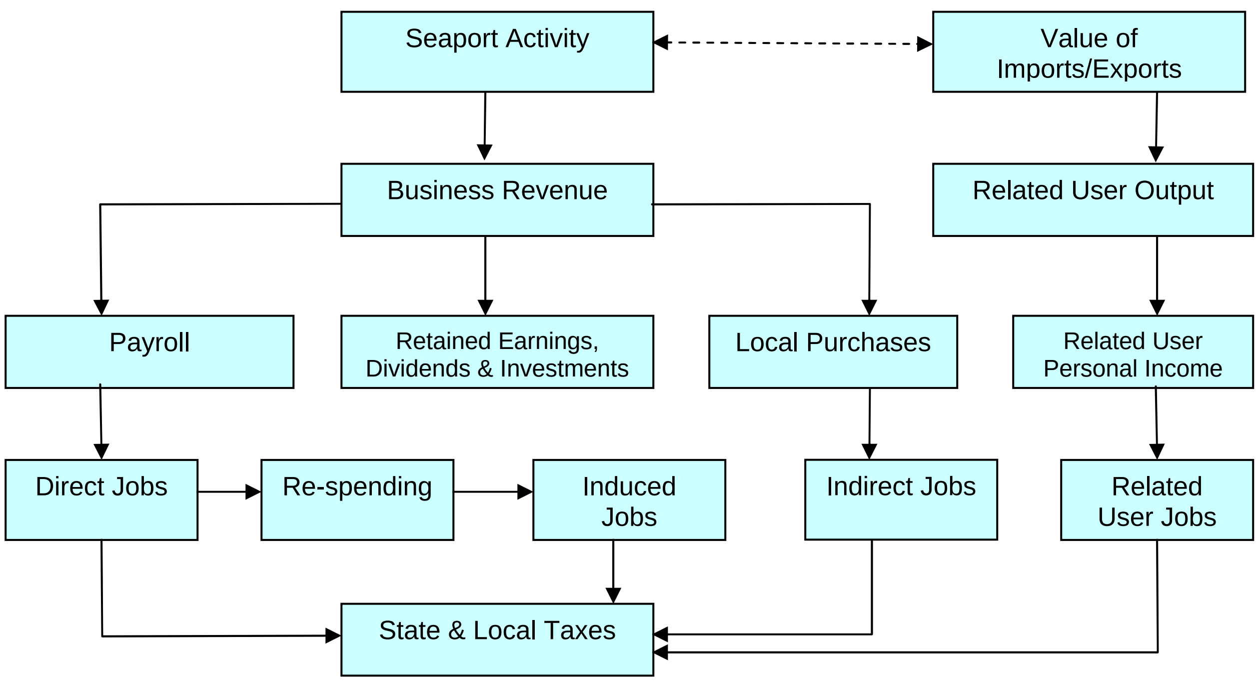
The cargo impact model is designed to test the sensitivity of impacts to changes in such factors as maritime tonnage levels, seaport productivity and work rules, new seaport facility development, inland distribution patterns of ocean cargo, number of vessel calls, and the introduction of new ocean carrier 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 asses 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.

II. ECONOMIC IMPACTS OF MARITIME CARGO ACTIVITY

Waterborne cargo 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 seaport terminals. These firms, in turn, provide employment and income to individuals, and pay taxes to state and local governments. Exhibit II-1 shows how activity at seaport terminals generates 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 II-1 shows graphically how activity at public port marine terminals generates the four impacts.

Exhibit II-1

Flow of Economic Impacts Generated by Maritime Activity



At the outset, activity at a seaport 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 stockholders, retire debt, make investments, or hold 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 the public port agencies by tenants, and wharfage and dockage fees paid to the public port authorities.

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 ocean cargo include jobs with railroads and trucking companies moving cargo between inland origins and destinations and the seaport 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 a port's maritime terminals were to be discontinued.

- ***Induced employment impact*** -- jobs created throughout the state 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 state, since they are estimated based on local and regional purchases at each port.

- ***Indirect Jobs*** -- 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 the studies for Port Everglades, the Port of Jacksonville, the Port of Tampa, and the Port of Palm Beach, and expanded to cover all ports in Florida. These jobs include jobs with local office supply firms, maintenance and repair firms, parts and equipment suppliers, etc.

- ***Related shipper/consignee (related user) jobs*** -- jobs with shippers and consignees (exporters and importers) using the seaport terminals for shipment and receipt of cargo, and the jobs supporting the exporters and importers.

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 state 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 state is estimated using a regional personal earnings multiplier, which reflects the percentage of purchases by individuals that are made in Florida. The re-spending effect varies by region -- a larger re-spending effect occurs in states that produce a relatively large proportion of the goods and services consumed by residents, while lower re-spending effects are associated with states 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).

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 seaport terminal activity.

1. IMPACT STRUCTURE

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 seaport terminals. These are the:

- Surface transportation sector;
- Maritime services sector;
- Port Authority/Port department of a county or city; and
- Related shippers/Consignees sector.

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.

1.1. 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 seaport terminals and the inland origins and destinations. Also included is the pipeline transportation of petroleum products received at a port.

1.2. The Maritime Services Sector

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

- Maritime cargo 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:

- <u>Maritime Cargo Transportation</u>

  Participants in this category are involved in arranging for inland and water transportation for export or import freight. The freight forwarder/customhouse broker is the major participant in this category. The freight forwarder/customhouse 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 customhouse brokers is most prevalent for containerized and general cargo commodities.

- <u>Vessel Operations</u>

  This category consists of several participants. 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, for ship supplies as well as for payment of various expenses, including port charges. 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 vessels to and from port;

- Pilots - assist in navigating the vessels to and from each port's maritime terminals;

- Bunkering firms - provide fuel to the vessels;

- Marine surveyors - inspect the vessels and the cargo; and

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

- Stevedoring firms - manage the longshoremen and cargo-handling activities. Stevedoring services at each port are most often provided by private stevedoring companies.

- Cargo terminal operators - are stevedoring firms who operate the maritime terminals, track cargo movement, and provide security where cargo is loaded and off-loaded, as well as the petroleum terminal and pipeline operators, including petroleum tank farm operations.

- Warehouse operators - store cargo after discharge or prior to loading and consolidate cargo units into shipment lots. In many cases, the freight forwarders and consolidators are also involved in warehousing activity.

- Foreign Trade Zone (FTZ) Operators - operate facilities in some of the public ports that have FTZs.

- Government Agencies

  This service sector involves Federal, state and local government agencies that perform services related to cargo handling and vessel operations at each of the public ports. The Department of Homeland Security (DHS) [which includes Customs and Border Protection (CBP), U.S. Immigration and Customs Enforcement (ICE) and U.S. Coast Guard], U.S. Department of Labor, U.S. Department of Agriculture, and the U.S. Army Corps of Engineers are involved.

1.3. Public Port Authority/Port Department of a County or City

The Port Authority sector includes those individuals who are employees of the individual port authorities - or county or city department[2] - whose purpose is to oversee activity at the port's cargo terminals. The port authorities or other managing entities provide basic infrastructure, establish usage rules and tariff rates, market the seaport facilities, and negotiate long-term agreements and leases with tenants.

1.4. Related Shipper/Consignees of Florida's Public Seaports

Related jobs consist of jobs with related shippers/consignees (importers and exporters) shipping and receiving cargo through the public cargo terminals at each of the state ports. The majority of these users are attributed to containerized cargo through the ports. Only the user industry activity that can be linked to the movement of cargo (either raw materials or finished products) through the public ports is considered in this related user impact.

[2] The Port of Miami, Port Everglades, and the Port of Fort Pierce are departments of their respective county governments; the Port of Pensacola, the Port of St. Petersburg, and the Port of Key West are entities within their respective cities.

2. 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, automobiles and other roll-on/roll-off (RO/RO) cargo require a large amount of paved, open storage space, while certain types of breakbulk cargoes such as steel coil, pulp, paper, and plywood 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 cargo terminals in Florida:

- Containers (dry and refrigerated);
- Steel products;
- Forest products such as paper, pulp, lumber/plywood;
- Automobiles and other RO/RO cargo;
- Dry bulk;
- Petroleum; and
- Other liquid bulk.

It should be emphasized that commodity-specific impacts are not estimated for each of the economic sectors described in the last section. Specific impacts could not be allocated by individual commodities with any degree of accuracy for maritime construction, ship repair, or the state and Federal government due to the fact that it is difficult to estimate the percentage of resources that are dedicated to one commodity over another. For example, maritime construction may occur at a terminal that is multi-use and cannot be attributed to a specific commodity. Similarly, law enforcement and security operations cannot be attributed to a single commodity.

3. MARITIME CARGO EMPLOYMENT IMPACTS

The employment generated by maritime cargo activity at the public ports within Florida is estimated.

- First, the total employment that is in some way related to the activities at cargo terminals is estimated;

- Second, the subset of total employment that is judged to be <u>totally</u> 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, ILA/dockworkers, freight forwarders/customhouse brokers/warehouse and consolidators, steamship agents, chandlers, surveyors, etc;

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

- Induced and indirect jobs are estimated;

- Finally, jobs related to the maritime activity at the cargo terminals are described.

It is estimated that 554,347 jobs are directly or indirectly generated by port activities at the public marine cargo terminals in Florida. Of the 554,347 jobs:

- 36,266 jobs are directly generated by activities at the cargo terminals and if such activities should cease, these jobs would be discontinued over the short term.

- 45,679 jobs (induced jobs) are supported by the local purchases of the 36,266 individuals directly generated by port activity at the cargo terminals. An additional 17,968 indirect jobs were supported by $1.5 billion of purchases in the state's economy by firms providing direct cargo handling and vessel services.

- 454,434 jobs are related to the cargo exported and imported via the cargo terminals. These jobs are with related shippers/consignees using the public marine cargo terminals, and are mostly concentrated with jobs in the movement of containerized cargo through the public port terminals.

3.1. Direct Maritime Cargo Job Impacts

In 2008, about 114.2 million tons of waterborne cargo moved via the marine facilities in Florida. As a result of this activity, 36,266 full-time jobs were directly created.[3] In this section, the jobs are analyzed in terms of:

- Distribution by job category; and
- Distribution by commodity group.

These distributions are developed in more detail below.

Exhibit II-2 presents the distribution of the 36,266 direct jobs by type of job. The exhibit

[3] Jobs are measured in terms of full-time worker equivalents. If a worker is employed only 50 percent of the time by activity at public marine terminals in Florida, then this worker is counted as .5 jobs.

indicates that the majority of direct jobs are with trucking jobs moving cargo to and from the terminals, followed by directly dependent shippers/consignees (including employees of the phosphate mines supporting the export of fertilizer via the Port of Tampa). The next largest impact is with terminal operators, followed by warehouse operations (including employees within FTZ areas of the ports).

Exhibit II-2

Cargo Employment Impacts by Sector and Job Category

Impact Category	Direct Jobs
Rail	829
Truck	10,012
Terminal Operators	4,345
ILA/Dockworkers	2,106
Towing	171
Pilots	128
Agents	530
Maritime Services	1,241
Freight Forwarders	543
Warehousing	2,854
Government	1,363
Marine Construction/Shipyards	2,593
Barge	1,723
Port Authorities	1,096
Dependent Shippers	6,735
	36,266

*Totals may not add due to rounding

3.2. Induced Jobs

The 36,266 individuals directly employed due to activity at the cargo terminals received wages and salaries, a part of which was used to purchase local goods and services such as food, housing, clothing, and transportation services, etc. As a result of these local purchases, 45,679 jobs in the regional economy were supported. The majority of the induced jobs are with local and regional private sector social services, business services, educational services, and state and local government agencies, followed by jobs in the food and restaurant sector, and jobs in the construction and home furnishings sector.

3.3. Indirect Jobs

In addition to the induced jobs generated by the purchases made by directly employed individuals, the firms providing the direct services and employing the 36,266 direct jobholders make local purchases for goods and services. These local purchases by the firms' dependent upon the cargo facilities generate additional local jobs -- indirect jobs. It is estimated that firms providing direct services to the marine cargo handled at the state's public ports made $1.5 billion in-state purchases in 2008. These direct local purchases created an additional 17,968 indirect jobs in the local economy.

3.4. Related User (Shipper/Consignee) Jobs

It is estimated that about 454,434 jobs are supported in Florida with shippers/consignees that use the public ports, and within the industries supporting the export and import activity. Of the 454,434 total related jobs, it is estimated that about one-third to one-half of the total related jobs are employed directly with the exporters and importers of the cargo moving via the Florida seaports. The balance of the related jobs are induced and indirect jobs that are generated by supplying goods and services to both the employees of the exporters and importers, as well as to the export and import operations. It is important to emphasize that the user jobs are supported by the cargo moving only via the ports in 2008, and do not include jobs supported by cargo moving via other out-of-state ports (i.e., East Coast ports such as Savannah or the West Coast ports) that are consumed or produced by in-state shippers/consignees and manufacturers.

To estimate the related user impact for containerized cargo, the average value per ton of each containerized import and export was estimated using U.S. Maritime Administration, Foreign Trade Statistics. The employment to value of output coefficient for the retail sector related to the exported and imported containerized cargoes was then computed from Bureau of Economic Analysis, Regional Input-Output Model for Florida. To estimate the related containerized cargo jobs, the average value per ton of containerized cargo was multiplied by the tons handled at each of the ports. The job coefficient was next multiplied by the value of the containerized cargo moving via the Florida ports to estimate the related jobs with exported and imported containerized cargo. For retail imports, the value was adjusted to reflect retail margins.

It is to be emphasized that these related jobs include the job impacts generated at each stage of delivering an export product to the port for export, including:

- Raw material purchases;
- Purchases of labor and capital to produce the export product;
- Purchases of supporting services and goods to be used in the production process;
- The final delivery of the export cargo to the port; and
- The induced jobs supporting the directly related jobs.

Also, the related jobs include the impact of the entire logistics chain that is, moving an imported container from a distribution center to the point of final consumption, including all jobs created in support of delivering that imported cargo to the final consumption point.

For breakbulk cargoes, the associated consuming and producing industries were identified with each breakbulk commodity. For example, for imported iron and steel products, and lumber and plywood, relationships were developed to convert the dollar value of these imported materials into a dollar value of output in the key consuming industries, which include construction and metal fabrication industries. Relationships between the values of inputs to the value of outputs in these industries were estimated using data from the U.S. Bureau of Census, Census of Manufacturing and Census of Construction. These ratios were then used to convert the dollar value of the imported breakbulk and bulk cargoes, including petroleum into a dollar value of output in the consuming industries in the state. Using the respective jobs-to-value-of-output multipliers for these industries from the Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II) model, the value of the breakbulk and bulk cargoes (i.e., steel products, lumber/plywood, and petroleum) moving via the public ports and remaining in (or produced in) Florida was converted into related shipper/consignee jobs with these users and associated supporting industries within the state.

Finally, the direct, induced, and indirect port sector job impacts associated with each of the cargoes for which related shipper/consignee jobs were estimated, were subtracted from the total related jobs (by commodity and cargo type). This was done to avoid double counting, as the related shipper/consignee jobs include job impacts at each logistical stage of handling the imported and exported cargo, such as the port activity and the trucking and rail activity to move the cargo to and from each port and the induced and indirect jobs associated with the direct port activity.

4. TOTAL ECONOMIC OUTPUT, BUSINESS REVENUE, INCOME AND TAX IMPACTS

The 114.2 million tons of cargo handled at the cargo 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 seaport terminals and distributing the imported commodities inland after receipt at the cargo 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. The Port Authorities or other managing entities receive 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 seaport cargo terminals and from the sales of products made with raw materials received through the terminals. Since this section 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 seaport terminals, as well as the value of the products produced by the port-dependent shippers/consignees) is 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 in-state 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 Florida area providing goods and services to the economic sectors and for the distribution of company profits to shareholders. Many of these firms and owners are located outside of Florida and, thus, it is difficult to trace the ultimate location of the distributed revenue (other than personal income, taxes, and local purchases). The value of output created by in-state related shippers/consignees of the ports is attributed to Florida, and the local purchases from other firms within the state are also included in this user output measure, as defined by the in-state output coefficients (for the user industries) developed from the U.S. Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II).

The revenue impact is a measure of the ***total economic activity*** in the state that is generated by the cargo moving via public ports. In 2008, maritime cargo activity at the Port generated a total of $66.3 billion of total economic activity in the state. This represents about 9% of the total State of Florida Gross Domestic Product. Of the $66.3 billion, $5.1 billion is the direct business revenue received by the firms directly dependent upon the public ports and providing maritime services and inland transportation services to the cargo handled at the maritime terminals and the vessels calling the public ports. Another $1.5 billion was used for in-state purchases, while the balance, $59.7 billion, represents the value of the output to Florida that is created due to the cargo moving via each of the public ports. ***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 ports and are consumed by industries within Florida. Also included are the logistics platform impacts that are generated at each stage of consuming imported containerized goods***.

5. PERSONAL EARNINGS IMPACT

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 $1.7 billion in personal wage and salary earnings. ***It is important to emphasize that the average annual earnings of a port-dependent job is about $48,013.*** 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 cargo terminals, an additional $2.93 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 3.93 was used to estimate the incremental income and consumption impact of nearly $5.1 billion. This additional re-spending of the direct income generates the 45,679 induced job impacts.

The 17,968 indirect job holders earned $761.9 million in indirect wages and salaries. The 454,434 related shipper/consignees of the cargo moving via the respective seaports received about $15.7 billion of personal income.

Therefore, the total personal income impact and consumption impact created by ocean cargo activity is estimated at nearly at $23.3 billion.

6. TAX IMPACTS

State and local tax impacts are based on per capita tax burdens which are developed at the state and local jurisdictional levels. These tax burdens are essentially tax indices that are used to allocate total taxes at each level of government to economic activity generated by the cargo terminals. To estimate the 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, by state.

Cargo activity generated $562.6 million of state and local taxes. As a result of the economic activity created by the related shipper/consignees an additional $1.2 billion of state and local taxes were generated. The State of Florida received approximately 57 percent of the tax revenues, while the local governments received 43 percent of the tax impact.