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The Local and Regional Economic Impacts of the Port of Longview

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EXECUTIVE SUMMARY

The marine terminals owned by the Port of Longview, located on the Columbia River, handle bulk agriculture products, bulk chemicals, bulk minerals, logs, steel products, wind energy and general cargoes. In calendar year 2012, 6.27 million metric tons of cargo moved via these terminals and were produced and consumed by exporters and importers located within the metropolitan region, the State of Washington, as well as throughout the Pacific Northwest and the United States. It is the purpose of this study to quantify the regional economic impacts generated by the cargo and vessel activity at these marine terminals.

In calendar year 2012, 12,119 jobs in the Longview region and the State of Washington were in some way related to maritime activity at the Port of Longview marine terminals. Of the 12,119 jobs:

- 817 are **direct** jobs, in that these jobs are generated by activities at the Port, and if such activities should cease, these jobs would be discontinued over the short term. It is these jobs that are most directly dependent upon the vessel and cargo activity at the Port of Longview. These jobs are with the International Longshore and Warehouse Union, terminal operators, stevedores, trucking firms, railroads, steamship agents, freight forwarders and customhouse brokers, federal and state government agencies, towing companies, pilot organizations, and marine construction companies. Sixty percent of these jobs are held by residents of Washington State. Of the sixty percent of Washington State residents, forty-nine percent are residents of Cowlitz County. About forty percent of the direct job holders reside in the Portland-Vancouver Metropolitan area.
- 1,241 are **induced** jobs, or those jobs supporting the local purchases made by the 817 individuals holding the direct jobs due to port activity. Should the direct jobs be lost from the economy, the induced jobs supported by the purchases of the direct jobs holders would also be lost. These jobs are with local grocery stores, retail outlets, restaurants, transportation services, local government services, schools, hospitals, etc.
- The firms dependent upon the marine activity at the Port of Longview made \$56.9 million of local purchases for office supplies, equipment, utilities, communications, maintenance and repair services, transportation services, professional services, and goods and services. These purchases supported 962 **indirect** jobs in the Longview economy.
- In addition to the direct, induced and indirect job impacts, 9,100 regional jobs are related by cargo exported and imported over Port of Longview marine terminals. These jobs are considered to be **related** to activities at the Port, but the degree of dependence on the Port is difficult to estimate and should not be considered as dependent on the port as are the direct, induced and indirect jobs. If the Port of Longview were not available to these

organizations, they 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.

In 2012, marine cargo activity at the Port of Longview generated a total of \$1.7 billion of total economic activity in the region.

- Of the \$1.7 billion, \$315.9 million is the direct business revenue received by the firms directly dependent upon the Port and providing maritime services and inland transportation services to the cargo handled at the marine terminals and the vessels calling the port. The remaining \$1.4 billion represents the value of the output to the Washington/Oregon region that is created due to the cargo moving via the Port of Longview. 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 marine terminals at the Port of Longview and are consumed by industries within the region.
- Marine activity created \$218.8 million of direct, induced and indirect personal wage and salary income and local consumption expenditures for Longview metropolitan residents. An additional \$212.2 million of direct, induced and indirect income was received by the related users of the Port of Longview. The 817 direct job holders received \$52.5 million of wage and salary income for an average salary of \$64,218.

A total of \$40.4 million of state and local tax revenue was supported by maritime activity at the Port of Longview in calendar year 2012.

- \$20.7 million of direct, induced and indirect state and local taxes were generated by maritime activity at the Port of Longview, of which:
 - ✓ \$13.0 million was generated in the State of Washington
 - ✓ \$7.7 million was received by the state and local governments in Oregon
- In addition, \$19.7 million of state and local taxes were created due to the economic activity of the related users of the cargo moving via the Port of Longview.

I. OVERVIEW OF THE ANALYSIS AND SUMMARY OF RESULTS

Martin Associates was retained by the Port of Longview to measure the local and regional economic impacts generated by maritime activity at the Port of Longview. This study focuses on impacts generated by marine cargo handled at the marine facilities in the harbor area of the Port of Longview. It is to be emphasized that all cargo considered in this analysis is handled at facilities owned and leased by the Port of Longview. The Port of Longview is a deep water port located 66 miles from the mouth of the Columbia River. The Port facilities encompass 8 berths handling bulk grains, minerals, and chemicals, and breakbulk cargos such as steel and logs, wind energy and other general cargos. Bulk cargo tenants include EGT, Kinder Morgan and BP. EGT was the first export grain terminal built in the United States in over 25 years. Longview Timber, Brown-Strauss, and Skyline Steel use the port to ship and receive breakbulk cargos. The Port of Longview is also served by two stevedoring operators, Stevedoring Services of America and Jones Stevedoring. Impacts are estimated in terms of jobs, personal earnings, business revenue, and state and local taxes. The impacts are estimated for marine cargo activity in calendar year 2012. In addition to the baseline impact estimates, a computer model specific to the Port of Longview has been prepared which 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 model can also be used to evaluate the impacts of new terminal development and for annual updates.

The methodology used in this analysis has been used by Martin Associates to estimate the economic impacts of seaport activity at more than 80 United States and Canadian ports, including:

- *Seattle*
- *Tacoma*
- *Longview*
- *Vancouver, BC*
- *Vancouver, WA*
- *Los Angeles (containers only)*
- *Long Beach*
- *Oakland*
- *Sacramento*
- *Houston*
- *Texas City*
- *Freeport, TX*
- *Beaumont/Port Arthur, TX*
- *Victoria, TX*
- *Port Lavaca/Point Comfort, TX*
- *Corpus Christi*
- *Baton Rouge*
- *New Orleans*
- *Gulfport*
- *Port Everglades*
- *Jacksonville*
- *Tampa*
- *Palm Beach*
- *Wilmington, NC*
- *Morehead City, NC*
- *Baltimore*
- *Philadelphia*
- *Wilmington, DE*
- *Boston*
- *Montreal*
- *Halifax*
- *13 US Great Lakes Ports*

This chapter presents an overview of the economic impact analysis by defining the following:

- The types of economic impacts estimated;
- The economic sectors for which impacts have been estimated; and
- The commodities/commodity types for which impacts have been estimated.

In addition, a summary of the data sources used in the analysis is presented.

1. ECONOMIC IMPACT STRUCTURE

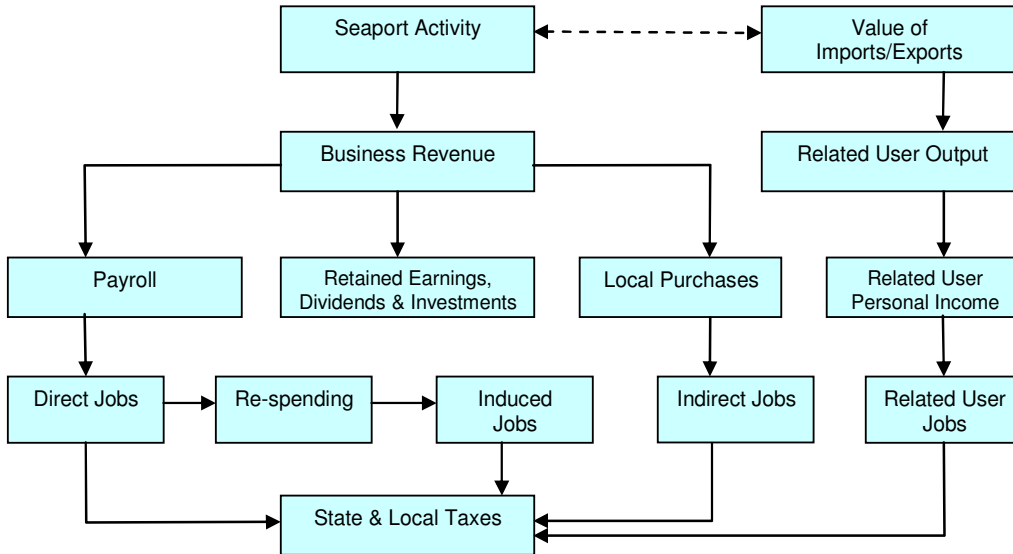
A deep water port such as Longview contributes to the local, regional and national economies by providing employment and income to individuals, tax revenues to local and state governments, customs fees to the federal government and revenue to businesses engaged in handling, shipping, and receiving cargo via the port. Exhibit 1 illustrates the flows of economic impacts throughout the economy. As this exhibit shows, activity at a seaport (i.e., the handling of cargo and the servicing of vessels) initially creates business revenue to firms providing those cargo handling and vessel services. This revenue is in turn used for several purposes:

- To hire employees to provide the services;
- To pay stockholders dividends, retire debt, and invest;
- To buy goods from other firms; and
- To pay federal, state, and local taxes.

The hiring of employees generates personal income. This personal income is spent throughout the state, local and national economy to purchase goods and services. This re-spending of income is known as the multiplier effect, which in turn creates induced jobs throughout the economy. Finally, state and local taxes are paid by those directly employed due to port activity and those employed as a result of the in-state purchases of goods and services by those individuals directly employed.

As can be seen from Exhibit 1, and the previous discussion, the flow of economic impacts throughout an economy creates four separate and non-additive types of impacts.

Exhibit 1
Flows of Economic Activity
Through the Economy



These four types of impacts are:

- Employment Impact - the number of full-time equivalent jobs generated by activity at the Port of Longview terminals. This consists of jobs directly generated by port activity as well as induced jobs, or jobs created in state due to the purchase of goods and services by those individuals directly dependent upon port activity. In addition, indirect jobs, or those jobs generated in the local economy due to the local purchases of goods and services by firms directly dependent upon maritime activity at the Port of Longview are also measured as part of the employment impact.
- Income Impact - the level of earnings associated with the jobs created by port activity, and adjusted to reflect re-spending throughout the economy.
- Revenue Impact - the sales generated by firms engaged in handling and transporting cargo through the Port of Longview. This impact includes national as well as local and state revenue. The value of shipments through the Port is not included as a revenue impact for the purposes of this analysis.
- Tax Impacts - the state and local tax revenues generated by port activity. These are taxes paid by individuals and firms directly dependent upon the maritime activity.

The Local and Regional Economic Impacts of the Port of Longview

Shipments and receipts of cargo through the terminals at the Port of Longview generate economic activity in various business sectors of the state and local economy.

Specifically, the following economic sectors are involved in providing cargo and vessel handling services at the Port of Longview. These are the:

- Surface Transportation Sector;
- Maritime Service Sector; and
- Marine Division of the Port of Longview.

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) The Surface Transportation Sector

The surface transportation sector consists of both the railroad and trucking industries. These sectors are responsible for moving the various cargoes between the Port and their inland origins and destinations. The railroads are most involved in moving bulk agriculture, minerals and chemicals to the Port.

Many local and national trucking firms serve the marine terminals at the Port of Longview, as do numerous individual owner-operators. The trucking industry's major involvement is in moving steel, logs, wind energy and general cargoes for local distribution.

Barge transportation is also a key component in moving cargo to and from the Port of Longview, and is included in the maritime services sector, which follows.

(2) The Maritime Service Sector

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

- Cargo Marine Transportation;
- Vessel Operations;
- Cargo Handling;
- Linehaul Barge Operators on the Columbia and Snake River System; and
- Federal, State, and Local Government Agencies.

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

The Local and Regional Economic Impacts of the Port of Longview

- Cargo Marine Transportation - Participants in this category are involved in arranging for inland and water transportation for export or import freight through the Port of Longview. 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 marine terminals and inland destinations, as well as the ocean transportation. This function performed by freight forwarders and customhouse brokers is most prevalent for general cargo commodities. For bulk cargo, arrangements are often made by the shipper/receiver.

- 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.);
 - Pilots - provide navigation services to ensure safe transit of vessels between the harbor entrance and docks, and along the Columbia river transit;
 - Towing firms - provide the tug service to guide the vessel to and from the port;
 - Bunkering firms - provide fuel to the vessels;
 - Marine surveyors - inspect the vessels and the cargo;
 - Launch services - provide transportation for the crew between land and vessel;
 - Shipyards/marine construction firms - provide repairs, either emergency or scheduled, as well as marine pier construction and dredging. Also included in this category are one-time impacts generated by the construction of marine facilities;

- Cargo Handling - This category involves the physical handling of the cargo at the Port between the land and the vessel. Included in this category are the following participants:
 - Longshoremen - are members of the International Longshore and Warehouse Union, and are involved in the loading and unloading of cargo from the vessels, as well as handling the cargo prior to loading and after unloading;

The Local and Regional Economic Impacts of the Port of Longview

- Stevedoring firms - manage the longshoremen and cargo-handling activities;
- Terminal operators - are often stevedoring firms who operate the maritime terminals where cargo is loaded and off-loaded;
- Barge Operators - move grain and petroleum products along the Columbia, Willamette, and Snake River Systems between Longview and various locations in Oregon, Washington and Idaho. Barge is very important in the movement of grain from Oregon, Washington and Idaho to export elevators in Longview. About 10 percent of grain exports arrive by barge at the Port of Longview for export. Bunkers to vessels calling the Port of Longview berths are served by tug and barge operators on the Columbia River.
- 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 Labor, Washington State Grain Inspection, and U.S. Department of Commerce employees are involved. In addition, both civilian and military personnel with the U.S. Coast Guard and the U.S. Army Corps of Engineers have been included.

(3) Port of Longview

The Port of Longview includes those individuals employed by the Port whose purpose is to oversee port activity.

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, logs require a large area for storage, while certain types of dry bulk cargoes require a direct rail car to terminal loading.

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 via facilities at the Port of Longview:

- Bulk Agriculture Products:
 - Corn;
 - Soybeans;
 - Wheat;
- Bulk Chemicals:
 - Coke;
 - Salt;
- Bulk Minerals:
 - Potash; -Iron Oxide Fines;
 - Soda Ash; -Talc;
 - Bentonite Clay;
- Logs;
- Steel;
- Wind Energy; and
- General 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 could not be allocated to individual commodities with any degree of accuracy for the marine construction and the government sectors.

3. DATA COLLECTION

This Economic Impact Study of the Port of Longview is based on a telephone survey of members of each of the economic sectors. Participants were identified from Merchants Exchange of Portland, Oregon, internal Port of Longview tenant lists, and internal data bases maintained by Martin Associates. Telephone interviews were used to achieve a 98 percent response rate in all sectors. In addition to data collected from the 182 interviews, published data was collected from several sources. These publications include:

- Census of Wholesale Trade;
- Census of Retail Trade;
- Census of Construction;
- Census of Service Industries; and
- Annual Survey of Manufacturers.

Other published data was obtained from the U.S. Bureau of Census, County Business Patterns; U.S. Bureau of Economic Analysis, Regional Income Division; and U.S. Bureau of Labor Statistics, "Consumer Expenditure Survey, 2010/2011".

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The economic relationships and methodology have been modeled using Microsoft Excel software. This model has been designed to update the port impact assessment on an annual basis, as well as to test sensitivities of impacts to changes in commodity tonnage, labor productivity, labor work rules, vessel calls (by type of vessel), pilotage and tug assist assumptions. Also, the model is designed to test the impacts of new facility development.

4. **IMPACT SUMMARY**

The resulting economic impacts are presented in Table 1.

Table 1
Summary of Economic Impacts Generated by
Port Activity in 2012

IMPACTS	
JOBS	
DIRECT	817
INDUCED	1,241
INDIRECT	<u>962</u>
TOTAL	3,019
PERSONAL INCOME (\$1,000)	
DIRECT	\$52,466
RESPENDING & LOCAL CONSUMPTION	\$127,970
INDIRECT	<u>\$38,322</u>
TOTAL	\$218,758
BUSINESS REVENUE (\$1,000)	\$315,941
STATE AND LOCAL TAXES (\$1,000)	
OREGON	\$7,668
WASHINGTON	<u>\$13,067</u>
TOTAL	\$20,736
LOCAL PURCHASES (\$1,000)	\$56,919
RELATED USER IMPACTS	
USER JOBS	9,100
TOTAL VALUE OF OUTPUT (\$1,000)	\$1,358,998
USER INCOME (\$1,000)	\$212,245
USER STATE AND LOCAL TAXES (\$1,000)	\$19,739

Note: It is to be emphasized that the re-spending/local consumption impact of \$128.0 million does not represent the average annual earnings of the 1,241 induced jobs. The \$128.0 million re-spending/local consumption impact does include the direct wages received by the employees holding the induced jobs, but the re-spending impact also includes the revenue received by the firms providing the goods and services to the 817 directly employed. To divide the re-spending and local consumption impact by induced jobs overstates the average wage/salary of an induced job holder.

II. EMPLOYMENT IMPACTS

In this chapter, the employment generated by maritime activity at the Port of Longview marine terminals is documented. The chapter is organized as follows:

- First, the total employment that is in some way influenced by the activities at the marine terminals is estimated;
- Second, the subset of total employment that is judged to be totally dependent on maritime activity is analyzed in the following ways:
 - ✓ Direct jobs are estimated in terms of key economic sectors, e.g., surface transportation sector;
 - ✓ Direct jobs are estimated for each of the key commodities/commodity groups;
- Third, the direct jobs are estimated by place of residence;
- Fourth, induced jobs generated by local purchases made by those directly employed as a result of port activity are described;
- Fifth, indirect jobs created by local purchases by the firms directly dependent on maritime activity at the Port's terminals are defined;
- Finally, jobs related by the cargo activity handled by the Port's marine terminals are discussed.

The impacts presented in this chapter are for the year 2012.

1. **TOTAL EMPLOYMENT IMPACT**

It is estimated 12,119 jobs are influenced by cargo and vessel activity at the Port of Longview marine terminals.

- 817 direct jobs are generated by cargo moving over facilities at the Port of Longview. These jobs are classified as direct jobs and if activity at the Port of Longview were to cease, these jobs would be discontinued over the short term.
- 1,241 are employed by providing goods and services to the 817 individuals directly involved with port activity. Consequently, employment in this group is as directly

dependent upon port activity as the first group.

- Firms directly dependent on maritime activity at the Port of Longview made \$56.9 million of local purchases for office supplies, parts and equipment, maintenance and repair services, business services, utilities, communications services and fuel. These local purchases supported 962 indirect jobs in the local economy.
- An additional 9,100 jobs are with firms that ship and receive cargo via the marine terminals at the Port of Longview. These jobs are considered to be related by activities at the Port, but the degree of dependence on the Port is difficult to estimate. The majority of these related jobs are related to grain and log exports. If the marine terminals were not available to these organizations, they 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.

These related jobs are with regional shippers, exporters, and importers using the public marine terminals, as well as other ports and private terminals to ship log and grain products. Grain shippers can use other Columbia River and Puget Sound Ports, as well as the Gulf of Mexico Ports.

The next section of this chapter is dedicated to the 817 direct jobs generated by the Port of Longview.

2. DIRECT JOB IMPACTS

As a result of port activity, 817 full-time jobs were directly created by activity at the marine terminals at the Port of Longview.

In this section the direct jobs are analyzed in terms of:

- Distribution by economic sector; and
- Distribution by commodity group.

These distributions are developed in more detail below.

2.1 Job Impacts by Sector

Table 2 shows the job impacts by detailed job category. As this table shows, the largest job impacts are with the railroads, terminal operators, members of the ILWU and trucking firms.

The terminal operator job impacts include employees of Brown-Strauss Steel, Skyline Steel, Longview Timber, EGT, Kinder Morgan Bulk Terminals, BP, SSA Marine, and Jones Stevedoring Company.

Table 2
Employment Impacts by Job Category

JOB CATEGORY	EMPLOYMENT
SURFACE TRANSPORTATION	
RAIL	243
TRUCK	68
SUBTOTAL	311
MARITIME SERVICES	
TERMINALS	162
ILWU	79
TOWING	34
PILOTS	9
AGENTS	12
SURVEYORS/CHANDLERS/MARITIME SERVICES	46
FORWARDERS	14
GOVERNMENT	60
MARITIME EQUIPMENT/CONSTRUCTION	20
BARGE	15
SUBTOTAL	452
PORT OF LONGVIEW	54
TOTAL	817

Note: Port of Longview employees include both their office and maintenance personnel.

2.2 Job Impacts by Commodity

Most of the 817 jobs considered to be generated by port activity can be related to the handling of specific commodities or commodity groups. Employment with certain types of firms and organizations such as local, state and federal government agencies, and marine construction

firms, is extremely difficult to assign to specific commodity groups, and if such an assignment is made, it is often done so arbitrarily. As a result, employment in these groups (which totaled 177 jobs) was not allocated to commodity groups.

Table 3 presents the direct employment impacts in terms of commodity/commodity group.

Table 3
Distribution of Direct Job Impact by Commodity

COMMODITIES	LONGVIEW TERMINALS		
	JOBS	M.T. (1,000)	JOBS/1,000 M.T.
Bulk Agri-Products	299	4,723	0.06
Bulk Chemicals	54	661	0.08
Bulk Minerals	20	278	0.07
Logs	127	531	0.24
Steel	110	43	2.57
Wind Energy	26	29	0.92
General Products	3	1	2.18
NOT ALLOCATED	177		
TOTALS	817	6,266	

This table indicates that in the year 2012, the handling of grain created the largest number of direct jobs, 299 jobs, while the movement of logs at the Port generated 127 direct jobs.

Steel and wind energy tend to generate the greatest employment impacts among firms in the maritime service sector, such as with longshoremen, terminal operators and stevedoring firms. In contrast, the majority of impacts generated by bulk commodities are concentrated with the terminal operations and surface transportation firms. The employment impacts for grain are concentrated with rail operations.

2.3 Job Impacts per Metric Ton

The assessment of the job impacts on a per 1,000 metric ton basis provides a tool for port planners to use in evaluating the relative importance of different commodities as economic generators. Table 3 also shows the direct job impacts per 1,000 metric ton for each commodity moving via the Port of Longview terminals. Steel, general products, and wind energy generate the greatest impacts on a per 1,000 metric ton (M.T.) basis which reflects the more labor intensive handling of these commodities.

3. GEOGRAPHIC DISTRIBUTION OF DIRECT JOB IMPACTS

The distribution of the direct jobs by place of residence is a useful measure of the geographic importance of the seaport to the local economy. Except for rail crew and rail headquarter employment, the direct jobs were identified by place of residence of those holding the direct jobs. The majority of the firms responding to the interviews provided Martin Associates with the zip code distribution of their workforce. Based on these zip codes, the direct jobs (excluding the rail crew and rail headquarters employment) were allocated to a city and county level of detail. Rail crew jobs and rail headquarters jobs are not included in the distribution of the jobs by place of residence, since rail crew jobs and headquarters jobs are, for the most part, held by non-residents of the Longview area. Also, the rail crew jobs were estimated from the average number of crew changes per rail linehaul required to move the rail cargo for each commodity group, and, as a result, it is not possible to trace the exact location of the residence of these crew jobs.

Table 4 shows the distribution of the direct jobs by place of residence. Sixty percent of those directly employed (excluding rail crew and rail headquarter employment) due to port activity, live in Washington State, while another thirty-eight percent reside in Oregon. Forty-eight percent live in Cowlitz County, and thirty-eight percent reside in the Portland-Vancouver metropolitan area.

Table 4
Distribution of Direct Jobs*
by Place of Residence

PLACE OF RESIDENCE	%	DIRECT JOBS
WASHINGTON		
LONGVIEW	31.5%	181
KELSO	9.2%	53
VANCOUVER	4.8%	28
CASTLE ROCK	3.7%	21
KALAMA	3.2%	18
TOLEDO	1.2%	7
WOODLAND	0.6%	4
CATHLAMET	0.5%	3
OTHER CLARK CO.	2.0%	12
OTHER LEWIS CO.	1.1%	6
OTHER COWLITZ CO.	0.5%	3
OTHER WAHKIAKUM CO.	0.1%	1
OTHER WA	1.1%	6
WA SUBTOTAL	59.5%	342
OREGON		
PORTLAND	33.4%	192
RAINIER	1.0%	6
OTHER COLUMBIA CO.	1.1%	6
OTHER OR	3.6%	21
OR SUBTOTAL	39.1%	224
OTHER US	1.4%	8

* This excludes rail crew jobs and railroad headquarters jobs

4. **INDUCED JOBS**

The regional purchases by the 817 direct job holders with the direct income earned from port activity creates additional jobs throughout the Longview area. In calendar year 2012, \$52.5 million was received by those 817 directly employed by activity at the Port of Longview marine terminals. As the result of the re-spending of a portion of this income for purchases in the Longview region, an additional 1,241 induced jobs were generated throughout the Longview area. If maritime activity at the Port of Longview were to cease, these induced jobs would also be lost.

These induced jobs are estimated based on the current expenditure profile of residents in the Longview area, 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 Longview area residents. The consumption categories are:

- Housing;
- Food at Restaurants;
- Food at Home;
- Entertainment;
- Health Care;
- Home Furnishings; and
- Transportation Equipment and Services.

The estimated consumption expenditures 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 Longview area, 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 Longview area. 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 and educational services. To estimate this induced impact, a ratio of State of Washington/Oregon employment in these key service industries to total state 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 and other social services.

5. INDIRECT JOBS

The firms directly dependent upon the vessel and cargo activity at the Port of Longview made \$56.9 million of purchases from local suppliers of parts and equipment, business services, maintenance and repair services, communications, utilities, rent, office equipment, and fuel. These local purchases supported 962 local indirect jobs. If maritime activity at the Port of Longview were to cease, these indirect jobs would also be lost. To estimate these indirect jobs, actual local expenditures by port-dependent firms were estimated from the telephone surveys. To estimate the indirect jobs, the local expenditures were used as inputs into a regional input-output model developed for the Longview/Vancouver/Portland region for Martin Associates by the U.S. Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II).

6. RELATED JOBS

Related jobs are jobs with users of the Port of Longview. These users include local manufacturers exporting and importing cargo; local construction firms importing steel products, and Pacific Northwest (PNW) logging companies and grain farmers exporting logs and grain through the Port. It is to be emphasized that these users are related to the Port of Longview marine terminals, in that if these facilities were not available the users could ship and receive cargo via other ports. In fact, the majority of these users currently use multiple ports for export and import.

To estimate the related user impact, the average values per ton of export grain and export logs were developed from USA Trade-Online, a publication estimated using U.S. Census Bureau, Foreign Trade Statistics. Employment to value of output coefficients for the grain production and logging were then computed from Bureau of Economic Analysis, Regional Input-Output Model (RIMSII) for the Oregon/Washington region. The job coefficients corresponding to the commodities produced or consumed in the region were next multiplied by the local share of the cargo to estimate the related jobs with the cargo moving via the Port of Longview. The tons of grain and logs exported via Longview in 2012 were multiplied by the share of the logs and grain originating in the regional economy, and then combined with the jobs to value of output coefficients to estimate the related jobs.

Using this methodology, it is estimated that 9,100 jobs with area exporters and importers are related to the cargo moving via the Port of Longview marine terminals. The majority of these jobs are related to the imported steel products and exported grain and logs.¹

Personal income, taxes and value of output were estimated in a similar fashion, using the respective income and output multipliers from the US Bureau of Economic Analysis, RIMS II for those industries associated with the export and import cargo. The value of related income, state and local taxes and value of output are discussed in the following chapter.

¹ The related jobs include the jobs throughout the state in the export producing or import consuming industry and also include the jobs with local industries needed to produce the export cargo and use the import cargo moved via the Port. The direct, induced and indirect jobs involved in transporting the cargo to and from the port as well as serving the cargo while in port are excluded from the related jobs to avoid double counting.

III. ECONOMIC VALUE, REVENUE, INCOME AND TAX IMPACTS

The movement of cargo via the Port of Longview marine terminals generates revenue for firms in each of the economic sectors. For example, revenue is received by surface transportation firms (both railroads and trucks) as a result of moving export cargo to the Port and distributing the imported commodities inland after receipt at the Port. The firms in the maritime service sector receive revenue from arranging for transportation services, cargo handling, providing services to vessels in port and repairs to vessels calling the Port. The Port of Longview receives revenue from leases at the terminals it owns, wharfage and dockage. In addition, revenue is received by shippers/consignees from the sales of cargo shipped or received via Longview marine cargo facilities and from the sales of products made with raw materials received through the Port. Steamship lines' revenue from the ocean linehaul portion of the cargo movements is excluded from the revenue impact, since very few vessels calling the Port are American flag vessels, and it is not likely that a large portion of the revenue from ocean transportation remains in the local or even national economy.

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, 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. The personal income component of revenue can be traced to geographic locations based on the residence of those receiving the income. The local purchases by firms dependent upon maritime activity at marine terminals at the Port of Longview are identified through the interviews and used to estimate the indirect job impacts. Finally, state and local taxes paid by individuals and businesses can be traced to a geographic location based on the residency of the individuals directly employed and the location of the firms dependent on maritime activity. The balance of the revenue is distributed in the form of non-local payments to firms providing goods and services to the five sectors, for the distribution of company profits to shareholders and to payment of federal taxes. Many of these firms and owners are located outside of the Washington/Oregon region, 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 users of the Port is attributed to the region consisting of the States of Oregon and Washington, and the local purchases from other firms within the region 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).

1. REVENUE IMPACT—TOTAL ECONOMIC ACTIVITY

The revenue impact is a measure of the total economic activity in the state that is generated by the cargo moving via the Port of Longview. In 2012, marine cargo activity at the Port generated a total of \$1.7 billion of total economic activity in the region. Of the \$1.7 billion, \$315.9 million is the direct business revenue received by the firms directly dependent upon the Port and providing maritime services and inland transportation services to the cargo handled at the marine terminals and the vessels calling the port. The remaining \$1.4 billion represents the value of the output to the Washington/Oregon region that is created due to the cargo moving via

the Port of Longview marine terminals. This includes the value added at each stage of producing an export cargo (i.e. logs and grain), including the impacts generated in firms providing support to the logging and grain industries

The balance of the discussion focuses on the \$315.9 million of direct business revenue generated from the provision of services to the cargo and vessels handled at the Port of Longview. Table 5 presents the \$315.9 million revenue impact generated by impact category.

Table 5
Direct Revenue by Impact Category

IMPACT CATEGORY	DIRECT REVENUE (1,000)
SURFACE TRANSPORTATION	
RAIL	\$210,042
TRUCK	\$11,113
SUBTOTAL	\$221,155
MARITIME SERVICES	
TERMINAL EMPLOYEE	\$35,639
TOWING	\$3,180
PILOTS	\$4,444
AGENTS	\$454
SURVEYORS/CHANDLERS/MARITIME SERVICES	\$7,798
FORWARDERS	\$2,754
GOVERNMENT	NA
MARITIME SERVICES/CONSTRUCTION	\$4,637
BARGE	\$2,078
SUBTOTAL	\$60,984
PORT OF LONGVIEW	\$33,802
TOTAL	\$315,941

Note: Totals may not add due to rounding

Firms in the surface transportation sector received \$221.1 million of revenue. Of this revenue, the railroads received \$210 million, primarily as the result of the movement of grain and bulk minerals and chemicals. The revenue generated by the surface transportation sector is based on the relevant modal (rail or truck) rate for a commodity multiplied by the tonnage of that commodity moved to and from the Port by the specified mode. The share of each commodity transported by rail and truck was estimated from interviews with the terminal operators handling the respective commodities, as well as from steamship lines.

The relative modal shares were then applied to the port tonnage (or units) of the specific cargo. Average rail rates were obtained from the Burlington Northern/Santa Fe and the Union Pacific railroads, as well as from steamship lines. These rates were multiplied by the tonnage of

each commodity carried by rail to estimate revenue accruing to railroads. The trucking revenue was based on interviews with terminal operators, steamship lines, and trucking firms.

Terminal operators received \$35.6 million of revenue from the handling of the cargo, including stevedoring charges as well as terminal charges, followed by revenue received by marine construction activity. Nearly \$8 million was received by firms providing maritime services, including surveyors and ship chandlers.

Table 6 shows the revenue impact by commodity for cargo handled at the Port of Longview marine terminals. In terms of total revenue, bulk agriculture products generate the largest total revenue impact, followed by bulk chemicals and bulk minerals.

Also shown in Table 6 is the revenue impact per ton. Wind energy generates the largest revenue per ton, reflecting the high value of the cargo. Bulk cargoes generate relatively low revenue impacts per ton reflecting the less-labor intensive handling process associated with bulk cargoes.

Table 6
Revenue Impacts by Commodity

COMMODITIES	LONGVIEW TERMINALS		REVENUE/M.T.
	REVENUE (\$1,000)	M.T. (1,000)	
Bulk Agri-Products	\$208,875	4,723	\$44.23
Bulk Chemicals	\$26,297	661	\$39.78
Bulk Minerals	\$13,340	278	\$47.91
Logs	\$7,623	531	\$14.37
Steel	\$4,545	43	\$105.90
Wind Energy	\$9,600	29	\$334.51
General Products	\$49	1	\$39.07
NOT ALLOCATED	\$45,613	0	
TOTALS	\$315,941	6,266	

Note: Totals may not add due to rounding

2. **PERSONAL INCOME IMPACTS**

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 is one of the components of revenue that can be traced to the Longview area. The income impact is estimated by multiplying the average annual earnings of each port participant, i.e., railroad employees, truckers, steamship agents, freight forwarders, bankers, insurance agents, etc., by the corresponding number of jobs in each category. The individual annual earnings in each category multiplied by the corresponding job impact resulted in \$52.5 million in personal income.

Based on data developed by the U.S. Bureau of Economic Analysis, it is assumed that for every one dollar earned by Longview area residents as a result of jobs directly generated by port activity, an additional \$2.44 of income would be created as a result of re-spending the income for purchases of Longview area-produced goods and services. This re-spending generated an

additional \$128 million of local personal income and consumption expenditures with local business and service providers. This additional re-spending of the direct income generates the induced job impact, 1,241 jobs, described in the previous chapter. It is to be emphasized that the re-spending/local consumption impact of \$128.0 million does not represent the earnings of the 1,241 induced jobs. The \$128.0 million re-spending/local consumption impact does include the direct wages received by the employees holding the induced jobs, but the re-spending impact also includes the revenue received by the firms providing the goods and services to the 817 directly employed. To divide the re-spending and local consumption impact by induced jobs overstates the average wage/salary of an induced job holder.

The indirect jobholders received \$38.3 million of personal wages and salaries. Combining the direct, induced and indirect income impacts, maritime cargo activity at the Port's marine terminals at the Port of Longview created \$218.8 million of wages and salaries and local consumption expenditures.

The 9,100 jobs with the related users of the Port of Longview received \$212.2 million of wages and salaries. This figure is estimated using the corresponding income multipliers for logging and agriculture production developed by the U.S. Bureau of Economic Analysis.

3. LOCAL PURCHASES

The firms directly dependent upon the maritime activity at the Port of Longview terminals made \$56.9 million of local purchases. These local purchases were for maintenance and repair services, utilities, communications services, office products, parts and equipment, fuel, etc. The \$56.9 million of local purchases generated the 962 indirect jobs.

4. TAX IMPACTS

State and local tax impacts are based on state and local tax burdens for Oregon and Washington, which are developed from data provided by the Tax Foundation. The tax burdens are the total state and local taxes collected divided by total state income, and include tax revenue from all state and local taxes, such as.

- State and local personal and corporate income tax;
- Insurance tax;
- State fuel tax;
- Municipal school district taxes; and

Maritime activity at the marine terminals at the Port of Longview generated \$20.7 million of state and local taxes. The State of Washington and counties and municipalities within the state received \$13 million of tax revenue, while the State of Oregon and local and county governments received about \$7.7 million of state and local taxes from activity at the Port of Longview marine terminals.

The related user state and local tax impact is estimated at \$19.7 million.