THE 2013 ECONOMIC IMPACT OF THE PORT OF TACOMA

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I. OVERVIEW OF THE ANALYSIS AND SUMMARY OF RESULTS

Martin Associates was retained by the Port of Tacoma to measure the local and regional economic impacts generated by maritime activity at the Port of Tacoma. This study focuses on impacts generated by marine cargo handled at the public marine terminals owned and leased by the Port of Tacoma. Containerized cargo is handled at six Port of Tacoma terminals; Olympic Container Terminal, Husky Terminal, Totem Ocean Trailer Express, APM Terminals, Washington United Terminals and Pierce County Terminals. Break bulk and bulk commodities including autos, grain and logs are handled at Blair and East Blair Terminals, Marshall Ave Auto Terminal, TPT and Cargill Grain. 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 2013. For the most part, this update uses the same methodology and impact definitions as the 2004 economic impact study for the Port of Tacoma, and, hence, the results are comparable to the earlier study. The major difference from the 2004 impact study is that the impacts of industrial leases are addressed separately from the maritime cargo impacts.

In addition to the baseline impact estimates, a computer model specific to the Port of Tacoma marine terminals 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. A separate model has been developed for the industrial lease line of business operated by the Port.

In addition to the Port of Tacoma, this same methodology has been used by Martin Associates in the last 28 years to assess the economic impacts of activity at more than 500 seaports including:

Los Angeles
Long Beach
San Diego
Port of Hueneme
Oakland
Portland
Longview
Vancouver
Grays Harbor
Everett
Seattle
Bellingham
Sacramento
San Francisco
Vancouver, BC
Houston
Corpus Christi
Freeport, TX
Texas City
Victoria, TX
Baton Rouge
New Orleans
Miami
Port Everglades
Palm Beach
Port Canaveral
Jacksonville
Tampa
Port Manatee
Wilmington/Morehead City, NC
Virginia Port Authority
Baltimore
Philadelphia
Wilmington, DE
Brunswick, GA
Richmond, VA
Providence, RI
Boston
Montreal
Quebec City
Prince Rupert, BC
Halifax
Saint John, NB

36 U.S. and Canadian Great Lakes Ports

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

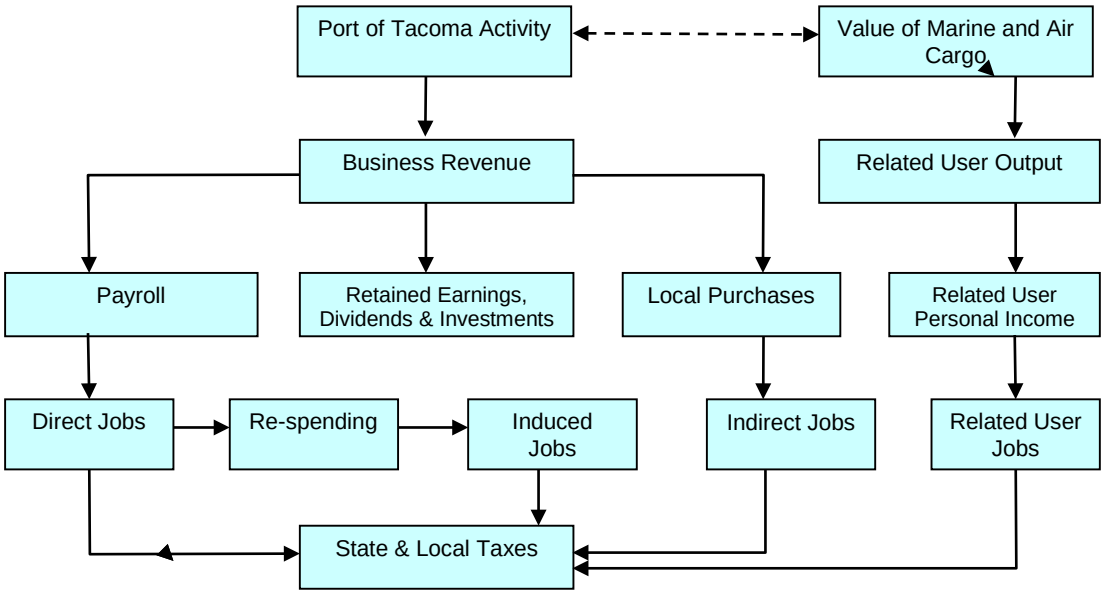
- The types of economic impacts estimated;
- The economic sectors for which impacts have been estimated; and
- The commodities/commodity types for which impacts have been estimated.

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

1. ECONOMIC IMPACT STRUCTURE

Waterborne cargo activity at the Port of Tacoma contributes to the local and regional economy by generating business revenue to local and national firms providing vessel and cargo handling services at the marine terminals. These firms, in turn, provide employment and income to individuals, and pay taxes to state and local governments. Exhibit I-1 shows how activity at marine terminals 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 I-1 shows graphically how activity at the Port of Tacoma marine terminals generates the four impacts.

Exhibit I-1
Flow of Economic Impacts Generated by Maritime Activity



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

The employment impact of seaport activity consists of four levels of job impacts.

- ***Direct employment impact*** -- jobs directly generated by seaport activity. Direct jobs generated by marine cargo include jobs with trucking companies and railroads moving cargo between inland origins and destinations and the marine terminals, longshoremen and dockworkers, steamship agents, freight forwarders, stevedores, etc. It is to be emphasized that these are classified as directly generated in the sense that these jobs would experience near term dislocation if the activity at the Port of Tacoma marine terminals were to be discontinued.

- ***Induced employment impact*** -- jobs created throughout the local economy because individuals directly employed due to seaport activity spend their wages locally on goods and services such as food, housing and clothing. These jobs are held by residents located throughout the region, since they are estimated based on local and regional purchases.

- ***Indirect 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 this study, and include jobs with local office supply firms, maintenance and repair firms, parts and equipment suppliers, etc. It is to be emphasized that special care was taken to avoid double counting, since the current study counts certain jobs as direct (i.e., trucking jobs, jobs with railroads, jobs with insurance companies and admiralty law firms, etc.) which are often classified as indirect by other approaches, notably the input/output model approach.

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

The personal earnings impact is the measure of employee wages and salaries (excluding benefits) received by individuals directly employed due to seaport activity. Re-spending of these earnings throughout the regional economy for purchases of goods and services is also estimated. This, in turn, generates additional jobs -- the induced employment impact. This re-spending throughout the region is estimated using a regional personal earnings multiplier, which reflects the percentage of purchases by individuals that are made within the state of Washington. The re-spending effect varies by state -- 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-region purchases). The direct earnings are a measure of the local impact since they are received by those directly employed by seaport activity.

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

2. ECONOMIC IMPACT SECTORS

The movement of cargo through the Port of Tacoma marine cargo terminals generates economic activity in various business sectors of the state and local economy. Specifically, four

distinct economic sectors are involved in providing services to move the cargo through the Port of Tacoma marine terminals. These are the:

- Surface Transportation Sector;
- Maritime Service Sector;
- Port of Tacoma; and
- Shippers/Consignees Using the Port of Tacoma.

Jobs, income, revenue and tax impacts are estimated for each sector, as well as for specific job categories within each sector.

Within each sector, various participants are involved. Separate impacts are estimated for each of the participants. A discussion of each of the four 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 marine terminals and their inland origins and destinations. Two mainline railroads serve the Port of Tacoma, the Burlington Northern/Santa Fe and the Union Pacific railroads. The Port is also served by the Tacoma Railway. In general, the railroads play a key part in the Port of Tacoma's role as a leading intermodal port. Furthermore, the railroads are integral in the movement of grain and autos from Midwestern states to the Port of Tacoma for export.

Many local and national trucking firms serve the seaport, as do numerous individual owner-operators. Trucking firms are involved in distributing local containerized cargo (both full container loads, as well as less-than-container load (LCL) cargo). Typically, trucks distribute the imported containers moving locally, as well as to Canada, and move export containers originating in the Tacoma/Seattle area to the marine terminals for export. Truck transportation is also the major mode used for moving Alaskan-bound cargo to the marine terminals; trucks are also a primary mode to distribute the dry bulk products.

(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; and

- Federal, State, and Local Government Agencies.

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

- Cargo Marine Transportation - Participants in this category are involved in arranging for overland and water transportation for export or import freight through the seaport. 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 seaport and inland destinations, as well as the ocean transportation. This function performed by freight forwarders is most prevalent for general cargo commodities. For bulk cargo, arrangements are often made by the shipper/receiver, and the cargo passes over privately owned docks.

- Vessel Operations - This category consists of several participants. The steamship agents provide a number of services for the vessel as soon as it enters Puget Sound; 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:

    - Pilots - assist vessels navigating Puget Sound between Port Angeles and Tacoma;

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

    - Towing firms - provide tug assist service to vessels docking and undocking at a terminal;

    - 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 seaport 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, including stuffing and stripping containers;

- 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;

- Warehouse operators - store cargo after discharge or prior to loading and consolidate cargo units into shipment lots. Transload operations are also included in the warehouse category;

- Distribution centers - include large wholesale and retail distribution centers that receive cargo through the Port and then store and provide value added services for distribution to local and regional retail outlets.

- Container leasing and repair firms - provide containers to steamship lines and shippers/consignees and repair damaged containers.

- Government Agencies - This maritime service sector category involves federal, state and local government agencies that perform services related to cargo handling and vessel operations at the Port. U.S. Customs and Border Protection, U.S. Department of Labor, U.S. Department of Agriculture and U.S. Department of Commerce employees are involved. In addition, both civilian and military personnel with the U.S. Coast Guard, U.S. Navy and the U.S. Army Corps of Engineers dedicated to the marine cargo moved via Port of Tacoma marine terminals are included. The city police and fire departments are also included, as are federal grain inspectors.

(3) Port of Tacoma

This sector includes those individuals employed by the Port of Tacoma whose purpose is to oversee port activity. The Port of Tacoma leases terminal space to steamship lines and terminal operators and also leases equipment to the terminal operators.

(4) Shippers/Consignees Using the Port of Tacoma Marine Cargo Facilities

Shippers/Consignees included in this category are those shippers and consignees located throughout the state of Washington and particularly Pierce County, whose businesses use the marine cargo facilities for the export and import of cargo. These users also ship and/or receive materials via other ports such as Los Angeles/Long Beach, Oakland

and Vancouver, BC. It is to be emphasized that these shippers/consignees are not dependent upon the use of the Port of Tacoma, since they are users of other ports as well. Since these users are not dependent upon the Port of Tacoma, employment with these shippers/consignees is considered port-related and not port-generated.

3. COMMODITIES INCLUDED IN THE ANALYSIS

A major use of an economic impact analysis is to provide a tool for port development planning. As a port grows, available land and other resources for port facilities become scarce, and decisions must be made as to how to develop the land and utilize the resources in the most efficient manner. Various types of facility configurations are associated with different commodities. For example, automobiles require a large area for storage, while containerized cargo requires container cranes and on-, or near-dock rail. Covered storage is needed for certain break bulk cargo such as steel and lumber. Silos are needed for grain storage.

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 Port of Tacoma:

- Containerized Cargo:
  - International
  - Domestic (Alaskan and Hawaiian)
- Automobiles
- Break Bulk Cargo:
- Grain
- Logs
- Gypsum

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 banking/insurance/law job category, marine construction and the government category.

4. DATA COLLECTION

This Economic Impact Study of the Port of Tacoma is based on a telephone survey of members of each of the economic sectors. Participants were identified by the Port of Tacoma and the Journal of Commerce, "Port Telephone Tickler", the Pacific Northwest Ports Handbook 2014, internal Port of Tacoma tenant lists and Martin Associates' internal data base from the 2004 study.

Telephone interviews were used to achieve a 100 percent response rate in all sectors. Table I-1 summarizes the 663 firms interviewed.

Table I-1
Summary of Interviews

Category	Number of Interviews
Terminals	14
Warehouse/Container Repair	98
Surveyors	46
Lines & Agents	69
Tug & Barge	47
Shipyards/Marine Construction	78
Maritime Services	213
Pilot	1
Railroads	5
Government Agencies	24
Port of Tacoma	1
Real Estate	67
Total	663

*Martin Associates has also developed a database for 116 freight forwarders providing services in the PNW. Data from this source was also used in formulating the freight forwarder impacts.

In addition to data collected from the 663 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
- Annual Survey of Manufacturers.

Other published data was obtained from the U.S. Census Bureau, County Business Patterns; U.S. Bureau of Economic Analysis, Regional Income Division; and U.S. Bureau of Labor Statistics, "Consumer Expenditure Survey, 2013".

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 facilities development.

5. IMPACT SUMMARY

The impacts for activity at both the Port of Tacoma Marine Terminals and the Port's Industrial Leases are summarized in Table I-2

Table I-2
Summary of Economic Impacts Generated By
Port Activity in 2013
(Washington State)

	Port of Tacoma Marine Cargo	Port of Tacoma Industrial Tenants	Port of Tacoma Total
Jobs			
Direct	9,984	2,452	12,436
Induced	9,467	1,288	10,756
Indirect	5,274	644	5,918
Total Jobs	24,725	4,385	29,110
Personal Income ($1,000)			
Direct	$572,711	$142,276	$714,986
Re-spending/Local Consumption	$1,258,818	$122,239	$1,381,057
Indirect	$265,188	$40,936	$306,124
Total	$2,096,717	$305,451	$2,402,168
Business Revenue ($1,000)	$2,472,679	$560,867	$3,033,547
Local Purchases ($1,000)	$542,666	$88,146	$630,812
State and Local Taxes ($1,000)	$194,995	$28,407	$223,402

Note: Totals may not add due to rounding

Table I-3 shows the impacts created in Pierce County and the state of Washington based on where the economic activity takes place.

Table I-3
Economic Impact of the Port of Tacoma by
Place of Economic Activity
2013

	Port of Tacoma Washington	Port of Tacoma Pierce County
Jobs		
Direct	12,436	7,145
Induced	10,756	6,499
Indirect	5,918	2,498
Total Jobs	29,110	16,142
Personal Income ($1,000)		
Direct	$714,986	$473,834
Re-spending/Local Consumption	$1,381,057	$851,005
Indirect	$306,124	$138,861
Total	$2,402,168	$1,463,700
Business Revenue ($1,000)	$3,033,547	$1,423,875
Local Purchases ($1,000)	$630,812	$343,218
State and Local Taxes ($1,000)	$223,402	$136,124

Note: Totals may not add due to rounding. Induced income cannot be estimated by dividing the re-spending impact by the induced jobs, as the re-spending impact includes the value of the local consumption expenditures by those directly employed, and hence would over-state the induced income impact.

As this table indicates, maritime activity and industrial leases at the Port of Tacoma created the following economic impacts:

- In 2013, Port of Tacoma maritime cargo and industrial lease activity generated 29,110 direct, induced and indirect jobs. Of these jobs, 16,142 were generated in Pierce County.
  - 12,436 were directly generated, throughout all Washington counties;
  - 10,756 induced jobs were supported by the purchases of the 12,436 directly employed individuals;

- 5,918 indirect jobs were generated by the $630.8 million of local purchases;

- The 12,436 direct employees earned $715.0 million of wages and salaries, for an average salary of $57,492 per year;

- Businesses providing services to the Port of Tacoma and the revenue generated by the industrial lease holders received $3.0 billion of business revenue;

- A total of $223.4 million of state and local taxes were generated by the seaport activity and industrial lease holders; and

- 266,899 jobs in the state of Washington were related to the cargo moving via the Port of Tacoma marine terminals, the majority of which were related to international and domestic containerized cargo.

II. ECONOMIC IMPACTS OF THE PORT OF TACOMA MARINE CARGO OPERATIONS

In 2013, a total of 17.9 million short tons of cargo moved over marine facilities owned by the Port of Tacoma. These facilities include Olympic Container Terminal, Husky Terminal, TOTE, APM Terminals, Washington United Terminals, Pierce County Terminal, Blair and East Blair Terminals, TPT, GP Gypsum and Temco Grain. Of the 17.9 million tons of cargo, international containerized cargo accounted for 12.2 million tons. Containerized cargo moving to and from Alaska over the Port's marine terminals accounted for another 1.9 million tons and about 2.8 million tons of grain were exported via the Port's grain elevator. About 429,000 tons of logs were exported via the Port's terminals, along with 250,000 tons of automobile and RoRo cargo, 234,000 tons of gypsum, and 205,000 tons of break bulk cargo such as heavy lift and other miscellaneous break bulk cargo.

The economic impacts generated by marine cargo handled at Port of Tacoma marine terminals are summarized in Table II-1.

Table II-1
Economic Impacts of Cargo
Activity at Port of Tacoma Marine Terminals

	Marine Cargo Washington State	Marine Cargo Pierce County
Jobs		
Direct	9,984	4,693
Induced	9,467	5,211
Indirect	5,274	1,853
Total Jobs	24,725	11,757
Personal Income ($1,000)		
Direct	$572,711	$331,559
Re-spending/Local Consumption	$1,258,818	$728,766
Indirect	$265,188	$97,924
Total	$2,096,717	$1,158,249
Business Revenue ($1,000)	$2,472,679	$863,008
Local Purchases ($1,000)	$542,666	$255,073
State and Local Taxes ($1,000)	$194,995	$107,717

Note: Totals may not add due to rounding

As this table indicates, maritime activity (cargo and vessel activity) at the Port of Tacoma marine terminals created the following economic impacts:

- 9,984 direct jobs, of which 4,693 were generated in Pierce County;
- 9,467 induced jobs were supported by the purchases of the 9,984 directly employed individuals;
- 5,274 indirect jobs were generated as a result of $542.7 million of local purchases by firms directly dependent upon seaport activity at Port of Tacoma marine cargo facilities;
- The 9,984 direct employees earned $572.7 million of wages and salaries, for an average salary of $57,363 per year;
- Businesses providing services to the Tacoma cargo operations received $2.5 billion of business revenue;
- A total of $195.0 million of state and local taxes were generated by seaport activity; and
- 266,899 jobs in the state of Washington were related to the cargo moving via the Port of Tacoma marine terminals, the majority of which were related to international and domestic containerized cargo.

The next section details the employment impacts generated by the Tacoma marine cargo operations.

1. EMPLOYMENT IMPACTS

The employment impacts generated by the Port of Tacoma marine terminals are estimated:

- By sector of the local and regional economy, e.g., maritime service sector, surface transportation sector, banking and insurance sector, etc.;
- By commodity group, i.e., containerized cargo, break bulk cargo, automobiles, grain, logs and gypsum
- By the residency of individuals directly employed by the activity at the Port of Tacoma marine terminals.

The next section of this chapter is dedicated to the direct impact category of 9,984 jobs.

1.1 Direct Job Impacts

As a result of port activity, 9,984 full-time jobs were directly created by activity at both public and private marine terminals at the Port of Tacoma[1].

1.1.1 Direct Jobs by Category

Table II-2 presents the distribution of the 9,984 direct jobs by type of job. The table also shows the number of the jobs by category that are created in Pierce County. As this table shows, the largest job impacts are with trucking firms bringing cargo to and from the port, followed by jobs with distribution centers handling the containerized cargo moving via the marine terminals. Other key job categories are terminal operators, members of the ILWU and other dockworkers (including other union labor utilized at some of the marine terminals) and warehouse operations. About 47% of the direct jobs are located in Pierce County.

[1] Jobs are measured in terms of full-time equivalent workers working 2,080 hours per year. If a worker is employed only 50% of the year, the job is reported as 0.5 direct jobs.

Table II-2
Direct Employment Impacts by Job Category

Direct Jobs	Port of Tacoma Total	Port of Tacoma Pierce County
Surface Transportation		
Rail	967	146
Truck	2,111	528
Maritime Services		
Terminal Employees	1,123	1,123
ILWU/Dockworkers	1,157	1,157
Towing	71	29
Pilots	28	28
Agents	78	9
Surveyors/Chandlers/Misc.Services	216	24
Forwarders	299	81
Warehouse	1,145	745
Government	341	13
Shipyards/Ship Repair/Marine Construction	391	192
Distribution Centers	1,834	395
Port of Tacoma	223	223
Totals	9,984	4,693

Note: Totals may not add due to rounding

1.1.2 Job Impacts by Commodity

Most of the 9,984 jobs considered to be generated by port activity are generated by the handling of specific commodities or commodity groups. Employment with certain types of firms and organizations such as federal, state and local government agencies; insurance and banking sector; 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. To avoid this, such employment categories are not allocated to a commodity.

Table II-3 presents the employment impacts in terms of commodity/commodity group for maritime activity at the Port of Tacoma owned facilities.

Table II-3
Distribution of Direct Job Impact by Commodity

Port of Tacoma Commodity	Jobs	1,000 Short Tons	Jobs per 1,000 Tons
Containerized Cargo			
International	6,380	12,208	0.523
Domestic	1,700	1,867	0.911
Break Bulk	131	205	0.637
Autos	277	250	1.110
Grain	123	2,746	0.045
Logs	93	429	0.218
Gypsum	115	234	0.491
Not Allocated	1,165		
Total	9,984	17,939	

Note: Totals may not add due to rounding

This table indicates that in the year 2013, international containerized cargo generated the largest number of direct jobs, 6,380 jobs; and domestic containers created 1,700 direct jobs. The import and export of automobiles generated 277 jobs in Washington, followed by break bulk cargo and grain. In addition, 1,165 direct jobs were not-allocated to a specific maritime cargo, and the majority of these jobs are with federal government agencies and ship repair and marine construction activity.

Table II-3 also shows the jobs per 1,000 short tons generated by each commodity moving over Port of Tacoma marine terminals. Autos generate the largest number of jobs per 1,000 tons, reflecting the labor intensive nature of the loading, discharge and processing of automobiles and roll-on/roll-off equipment. Domestic containerized cargo generates nearly 1 direct job per 1,000 tons which is nearly double the impact created per 1,000 tons of international containerized cargo. This reflects the more labor intensive nature of the domestic containerized cargo in terms of the use of truck rather than rail to move the containers to and from the Port. On a per unit basis, international containerized cargo generates about 7.9 jobs per 1,000 container moves, and domestic containerized cargo generates about 7.7 jobs per 1,000 container moves. The fact that international and domestic containers generate a similar number of direct jobs per 1,000 container moves despite the difference in jobs per 1,000 tons reflects a lighter load factor for domestic containerized cargo, due to a higher percentage of inbound empty containers. With respect to automobiles, 1.7 jobs are generated per 1,000 auto units handled at the Port.

Exhibit II-4 shows the direct jobs impact by acreage associated with the specific commodity. As shown in this exhibit, eventhough autos generate the highest direct job impact per 1,000 tons, autos generate a very low job impact per acre. This is due to the large amount of acreage required to store the autos, and the longer dwell time of the autos while in port. Grain exports generate the largest impact per acre, depsite the lowest job impact per 1,000 tons, reflecting the large number of off-port jobs associated with the grain exports that require a relatively small footprint at the Port. International containerized cargo generates the highest number of jobs per acre, reflecting the labor intensive loading and discharge operations as well as the associated off-port jobs such as those with distribution centers, forwarders and transload operations. Domestic containerized cargo generates a smaller number of jobs per acre than international containerized cargo due to the smaller number of distribution center jobs associated with movement of domestic containers. The low number of jobs per acre with log exports is due to the high acreage required for the log export operations as well as the relatively small direct job impact. Finally, the relativley high job impact per acre reflects the employment with wallboard manufacturing associated with the acreage of the gypsum operation.

Exhibit II-4
Jobs per Acre

Port of Tacoma Commodity	Jobs	Acreage	Jobs/Acre
Containerized Cargo			
International	6,380	411	16
Domestic	1,700	183	9
Break Bulk	131	31	4
Autos	277	147	2
Grain	123	11	11
Logs	93	40	2
Gypsum	115	15	8

Note: Totals may not add due to rounding

1.1.3 Direct Jobs by Place of Residence

Table II-5 shows the distribution of the direct jobs by place of residence of the job holders. As this table shows, about 41.5 percent of the direct job holders reside in Pierce County, and of that about 39 percent reside in Puyallup.

Table II-5
Distribution of Residence of the Direct Jobs

Place of Residency	Percentage	Total
Auburn	6.20%	619
Bellevue	0.22%	22
Bothell	0.55%	55
Burien	0.49%	49
Des Moines	5.61%	560
Enumclaw	0.54%	54
Federal Way	7.97%	796
Issaquah	0.16%	16
Kent	6.39%	638
Kirkland	1.74%	174
Mercer Island	0.06%	6
Redmond	0.06%	6
Renton	1.46%	146
Sea-Tac	1.32%	132
Seattle	3.95%	394
Tukwila	0.39%	39
Vashon	0.02%	2
Other King Co.	0.24%	24
Edmonds	1.34%	134
Everett	2.26%	225
Mt. Lake Terrace	6.16%	615
Other Snohomish Co.	0.66%	66
Tacoma	8.18%	817
Fife	5.73%	572
Sumner	8.12%	810
Puyallup	16.04%	1,602
Other Pierce Co.	3.48%	347
Kitsap Co.	0.57%	57
Thurston Co.	0.59%	59
Other WA	8.88%	887
Other US	0.62%	62
Total	100%	9,984

Note: Totals may not add due to rounding

1.2 Induced Jobs

The regional purchases by the 9,984 direct job holders with the direct income earned from port activity create additional jobs throughout the state of Washington. In calendar year 2013, $572.7 million was received by those 9,984 directly employed by activity at the Port of Tacoma seaport. As the result of the re-spending of a portion of this income for purchases in the state of Washington, an additional 9,467 induced jobs were generated.

These induced jobs are estimated based on the current expenditure profile of residents in the Tacoma/Seattle metropolitan region as estimated by the U.S. Bureau of Labor Statistics, "Consumer Expenditure Survey", 2011-12. This survey indicates the distribution of consumer expenditures over key consumption categories for residents of the Tacoma/Seattle metropolitan area. The consumption categories are:

- Housing
- Food at Restaurants
- Food at Home
- Entertainment
- Health Care
- Home Furnishings
- 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 Tacoma/Seattle metropolitan area and for the state of Washington, 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 initially in the Tacoma/ Seattle metropolitan area and subsequently in the state of Washington. 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 employment in these key service industries to total state of Washington employment was 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.

2. INDIRECT JOBS

The firms directly dependent upon the vessel and cargo activity at the Port of Tacoma marine terminals made $542.7 million of purchases from local (in-state) suppliers of parts and equipment, business services, maintenance and repair services, communications and utilities, office equipment and fuel. These purchases supported 5,274 indirect jobs. Of the $542.7 million of purchases, $255.1 million were made in Pierce County, supporting 1,853 indirect jobs in the County.

If maritime activity at the Port of Tacoma 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 both in person and telephone surveys. To estimate the indirect jobs, the local expenditures were used as inputs into a RIMS II model developed for the state of Washington and for Pierce County for Martin Associates by the U.S. Bureau of Economic Analysis, Regional Input-Output Modeling System, 2014.

3. RELATED USER JOBS

Related user jobs are jobs with users of the Port's marine terminals. These industries produce and use both international and domestic containerized cargo; the forest products industry exports logs, farmers produce the grain for export. It is to be emphasized that these users are related to the Port of Tacoma 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, especially those moving containerized cargo through the Port. Furthermore, the level of employment with the related users is driven by the demand for the products produced by these firms, and not as the result of providing cargo handling or vessel support services at the marine terminals. In contrast, the level of direct jobs generated by the public and private marine terminals is driven by the vessel and cargo activity.

To estimate the related user impact, average values per ton of specific key commodities were developed from USA Trade On-Line. The share of each cargo type originating or consumed in the state of Washington was developed from the terminal interviews. A weighted average dollar value per ton of containerized cargo moving via the Port was next developed from this data for both imported and exported international containerized cargo.

For export containerized cargo, employment to value of output coefficients for the export producing industries related to the export containerized cargoes were then computed from Bureau of Economic Analysis, Regional Input-Output Model for the state of Washington. These coefficients include direct, indirect and induced jobs required to deliver one dollar of export containerized cargo through the Port of Tacoma. Next, the average value per ton of containerized export cargo was multiplied by the tons of containerized cargo exported via the Port of Tacoma and the share of containerized cargo that originated in Washington State. The weighted average job coefficients corresponding to the export containerized commodities produced in Washington were

next multiplied by the preceding product to estimate the related jobs with exported containerized cargo.

For import containerized cargo, the majority of the cargo is either a finished or an intermediate product, which is consumed either by individuals or industry. Therefore, the wholesale jobs to value of output coefficients for the Sof Washington was used to estimate related jobs with imported containerized cargo. It is important to note that the wholesale margin was next applied to the value of the imported products as it is the "value added to the commodity that supports the wholesale jobs in the state and in the domestic economy. The wholesale job coefficient also accounts for the various stages involved in the wholesale process, including warehousing and distribution activities associated with the imported cargo.

A similar method was used to estimate related jobs with domestic containers. The Port provided to Martin Associates the composition of the domestic containerized cargo shipped and received via the Port of Tacoma. Based on interviews with the carriers moving the domestic freight, the share consumed or produced in Washington was estimated. It is to be emphasized that a majority of the domestic cargo receipts consists of personal household items or military items which do not have a transaction value. Other than the non-transaction commodities, the key inbound domestic containerized cargo is frozen and canned fish. The outbound domestic containerized cargo consists of items such as groceries, department store items, construction materials, as well as personal items. For the most part the outbound domestic products are associated with wholesale operations in Pierce County and the state of Washington. The weighted average value per ton of domestic inbound and outbound containerized cargo was then estimated, and applied to the tonnage moving via the Port. The weighted average job to sales coefficients (based on the cargo distribution by commodity type) were then applied to the value of the inbound and outbound containerized domestic cargo to estimate total related jobs.

Finally, the direct, induced and indirect job impacts associated with the international and domestic containerized cargo movements were subtracted from the total related jobs to avoid double counting, as the related jobs include job impacts at each stage of handling the imported and exported cargo and domestic cargo, such as the port activity and the trucking and rail activity to move the cargo to and from the port and the induced and indirect jobs associated with the direct port activity.

A similar method was used to estimate jobs related to the shipment of logs and grain.

Using this methodology, it is estimated that 266,899 jobs within Washington are related to the cargo moving via the Port of Tacoma marine terminals.

4. REVENUE, INCOME AND TAX IMPACTS

The maritime activity at the Port of Tacoma terminals generates revenue for the directly dependent firms. For example, revenue is received by surface transportation firms (both railroads and trucks) as a result of moving export cargo to the marine terminals and then distributing the imported commodities inland after receipt at the terminals. The firms in the maritime service sector receive revenue from arranging for transportation services, cargo handling and providing services to vessels in port. Ship repair yards and marine construction firms receive revenue by providing repair services to vessels and new construction and repair work at the marine terminals. The Port of Tacoma receives revenue from leases at the terminals it owns. In addition, revenue is received by shippers/consignees from the sales of cargo shipped or received via Tacoma marine cargo facilities and from the sales of products made with raw materials received through the Port. 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 Port) will be excluded from the remaining discussion.

The revenue generated by port activity consists of many components. For example, gross revenue is used to pay employee salaries and taxes, it is distributed to stockholders 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 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 six 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 Pierce County and Washington State, and, thus, it is difficult to trace the ultimate location of the distributed revenue (other than personal income, taxes and local purchases).

5. TOTAL REVENUE IMPACT

The revenue impact is a measure of the ***total economic activity*** in the state of Washington that is associated at a given point in time with the cargo moving via the Port of Tacoma. In 2013, $90.7 billion of total economic activity in the state was associated with cargo activity at the Port of Tacoma. Of the $90.7 billion, $2.5 billion 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 $88.2 billion represents the value of the output to the state of Washington that is associated with the cargo moving via the Port of Tacoma marine terminals. This includes the value added at each stage of producing an export cargo, as well as the value added at each stage of production for the firms using

imported raw materials and intermediate products that flow via the marine terminals and are consumed by industries within the state.

The balance of the discussion focuses on the $2.5 billion of direct business revenue generated from the provision of services to the cargo and vessels handled at the Port of Tacoma marine terminals. Of the $2.5 billion of direct revenue, $863.0 million was received by firms located in Pierce County.

5.1 Revenue by Category

Table II-6 presents the revenue impact generated by impact category for maritime activity at public and private terminals.

Table II-6
Revenue Impacts by Category

Port of Tacoma	Revenue $1,000
Surface Transportation	
Rail	$1,466,306
Truck	$179,299
Maritime Services	
Terminal	$230,612
Towing	$17,950
Pilots	$10,103
Agents	$2,784
Surveyors/Chandlers/Misc. Services	$36,313
Forwarders	$74,859
Warehouse	$208,941
Shipyards/Ship Repair	$113,433
Port of Tacoma	$132,077
Total	$2,472,679

Note: Totals may not add due to rounding. Revenue for ILWU/dockworkers is included in terminal operator revenue.

Firms in the surface transportation sector (railroads and trucking) received 67 percent of the $2.5 billion impact, and the majority of the surface transportation revenue was received by the railroads. More than 60 percent of the international containers move to and from the Port by rail,

and 100 percent of the grain moves to the Port by rail. Revenue for the distribution centers is not included since these are cost centers for the users of the Port of Tacoma and will be reflected in the value of the user impacts

Marine terminals received $230.6 million while the warehousing operations received $208.9 million. Shipyard and marine construction firms received $113.4 million.

The Port of Tacoma received about $132.1 million in revenue, from Port tariffs, and revenue generated by marine terminal leases.

5.2 Revenue Impact by Commodity

Table II-7 shows the revenue impact by commodity and per ton for cargo moving over Port of Tacoma owned and leased terminals**.** The not-allocated revenue includes revenue from shipyard and ship repair operations and marine terminal construction. In terms of total revenue, international containerized cargo generates the largest total revenue impact, followed by domestic (primarily Alaskan) containerized cargo, grain and automobiles.

Also shown in Table II-7 is the revenue impact per ton. Automobiles generate the highest revenue per ton, reflecting the processing charges as well as the relatively high transportation cost per unit. International containerized cargo generates the second largest revenue impact per ton, reflecting the terminal charges as well as the rail revenue to move the containers to and from the Port of Tacoma marine terminals. Domestic containerized cargo is less revenue intensive than international containerized cargo, as the majority of the cargo moves by truck. The low revenue per ton of logs and gypsum is indicative of bulk cargoes that tend to be less labor intensive in the vessel loading operations and ancillary maritime support services.

Table II-7
Revenue Impacts by Commodity

Port of Tacoma Commodity	Revenue ($1,000)	1,000 Short Tons	Revenue per Ton
Containerized Cargo			
International	$1,818,948	12,208	$148.99
Domestic	$183,080	1,867	$98.06
Break Bulk	$8,640	205	$42.12
Autos	$43,860	250	$175.75
Grain	$127,570	2,746	$46.46
Logs	$6,783	429	$15.82
Gypsum	$3,136	234	$13.39
Not Allocated	$280,663		
Total	$2,472,679	17,939	

Note: Totals may not add due to rounding

Table II-8 shows the revenue per acre associated with each commodity . It is important to note that this is revenue from the supplying of services to the vessels and cargo handled at the Port, and not revenue received by the Port of Tacoma from the leases and other associated fees paid to the port by the terminal operators.

Table II-8
Revenue per Acre

Port of Tacoma Commodity	Revenue ($1,000)	Acreage	Revenue/Acre ($1,000)
Containerized Cargo			
International	$1,818,948	411	$4,425.7
Domestic	$183,080	183	$1,000.4
Break Bulk	$8,640	31	$278.7
Autos	$43,860	147	$298.4
Grain	$127,570	11	$11,597.3
Logs	$6,783	40	$169.6
Gypsum	$3,136	15	$209.0

Note: Totals may not add due to rounding

Grain exports generate the greatest revenue per acre due to the off-port revenue associated with railing the grain to the Port for export, and the relatively small footprint of the grain elevator. Similarly, international containerized cargo generates a much greater revenue impact per acre than domestic containerized cargo due to the rail component of the revenue impact for the international containerized cargo. Autos generate a low revenue per acre impact due to the acreage associated with the storage of the autos, similar to log export operations. Gypsum generates a relatively low revenue per acre due to the fact that the revenue from the sales of wall board is not included in the revenue impact.

6. 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 Tacoma 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 $572.7 million in personal income. This represents an average salary of $57,363.

Based on data developed by the U.S. Bureau of Economic Analysis[2], it is assumed that for every one dollar earned by Tacoma area residents as a result of jobs directly generated by port activity, an additional $2.198 of income would be created as a result of re-spending the direct income for purchases of goods and services in the state of Washington. Applying this multiplier to the direct income impact, the re-spending generated an additional $1.3 billion of personal income and consumption expenditures in business and service providers located throughout the state. This additional re-spending of the direct income generates the induced job impact, jobs, described in the previous chapter. According to the Bureau of Economic Analysis, for every one dollar earned in the Tacoma/Seattle regional economy, about 69 percent is spent on goods and services within the region, while the remaining 31 percent is used to purchase items produced out-of-area, or to pay federal, state and local taxes or held as savings. The full income multiplier effect results from successive rounds of re-spending. For example, in the initial round, one dollar is earned. Of that $1.00, nearly $.69 is used to purchase goods and services. Of that $.69, 69 percent, or about $.47, will be used for the next round of purchases of goods and services. Of this $.47, again 69 percent, or about $.32 will be used for further regional purchases. These successive re-spending rounds will continue until an additional $2.198 of spending in the Tacoma economy is generated for every dollar of income. At each stage of the re-spending, additional jobs are created. These are the induced jobs described in the employment section.[3]

[2] U.S. Department of Commerce, Bureau of Economic Analysis, RIMS II, 2014.

[3] It is to be emphasized that the re-spending impact of $1.3 billion million does not represent the earnings of the 9,467 induced jobs. The $1.3 billion re-spending impact does include the direct earnings received by the employees holding

The indirect jobholders received $265.2 million of personal wages and salaries. Combining the direct, induced and indirect income impacts, maritime cargo activity at the Port of Tacoma marine terminals created $2.1 billion of wages and salaries and consumption expenditures in the state of Washington.

The 266,899 related users of the Port of Tacoma marine terminals received $10.9 billion of personal income, for an average salary of $40,839.

7. LOCAL PURCHASES

The firms directly dependent upon the maritime activity at the Port of Tacoma marine terminals made $542.7 million of purchases in the state of Washington. These purchases were for maintenance and repair services, utilities, communications services, office products, parts and equipment, fuel, etc. The $542.7 million of purchases generated the 5,274 indirect jobs described in the previous chapter.

8. TAX IMPACTS

State and local tax impacts are based on state and local tax burdens for the state of Washington, which are developed from data provided by the Tax Foundation.[4] The tax burdens are the *total* state and local taxes collected divided by total state income. Maritime activity at the Port of Tacoma marine terminals generated nearly $195 million of state and local taxes, of which about $118.9 million was collected at the state level, and $76.1 million at the county and local level. Activity in Pierce County created $107.7 million of the state and local taxes.

In addition to these direct, induced and indirect taxes, $927.8 million of state and local taxes were created by the users of the Port of Tacoma marine terminals.

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the induced jobs, but the re-spending impact also includes the revenue received by the firms providing the goods and services to the 9,984 directly employed.

4 The Tax Foundation is an educational organization formed in 1937 to provide American citizens with a better understanding of the tax system and the effects of tax policy. (www.taxfoundation.org).

III. ECONOMIC IMPACTS OF INDUSTRIAL LEASE HOLDERS OF THE PORT OF TACOMA

In addition to the marine cargo operations of the Port of Tacoma, the Port also leases land to non-maritime related tenants. This property is leased for manufacturing, office, warehouse and distribution, equipment maintenance and repair, construction contractors and equipment storage, fish processing and office space. Essentially these are classified as industrial tenants of the Port of Tacoma and are not included in the cargo impacts.

With respect to the real estate analysis, the impacts created with the industrial real estate tenants of the Port of Tacoma are generated by the demand for the goods and services produced by the tenants, and not by activity specific to transportation services provided by the Port. In contrast, the capital investments made by the Port in the marine terminals are essential for the existence of maritime operations in Tacoma. As a result, the impacts generated by tenants of the Port's industrial leases are not as directly dependent upon the Port and its investment as are the marine cargo impacts. Some of these companies are located on Port-owned property as a direct result of efforts by the Port of Tacoma to recruit them, and would likely not have located in Tacoma otherwise. Other firms would likely have located in Tacoma regardless of the Port's efforts and infrastructure investment.

The impact analysis of the real estate tenants are based on a survey of 67 tenants not included in other seaport operations. Martin Associates developed a separate real estate impact model to estimate the impacts of these tenants on the Tacoma economy. In addition, the impact model can be used to assess the impacts of potential uses of Port-owned property, including, office, distribution and industrial uses.

Table III-1 summarizes the economic impacts of the industrial lease tenants of the Port of Tacoma.

Table III-1
Economic Impacts of the Port of Tacoma Industrial Lease Tenants

	Port of Tacoma Industrial Tenants
Jobs	
Direct	2,452
Induced	1,288
Indirect	644
Total Jobs	4,385
Personal Income ($1,000)	
Direct	$142,276
Re-spending/Local Consumption	$122,239
Indirect	$40,936
Business Revenue ($1,000)	$560,867
Local Purchases ($1,000)	$88,146
State and Local Taxes ($1,000)	$28,407

Note: Totals may not add due to rounding

As summarized in Table III-1, the Port of Tacoma Industrial lease tenants create the following economic impacts:

- 2,452 direct jobs are generated by these tenants, and as the result of local purchases by these direct employees, another 1,288 induced jobs are supported in the Tacoma area. Due to $88.1 million of local purchases, 644 indirect jobs are supported. This indirect impact reflects the dependency on the local economy supply infrastructure for port tenants such as warehouses, construction contractors and fish processing.

- The 2,452 directly employed workers received $142.3 million of wages and salaries, for an average salary of $58,015. As the result of the local purchases by these employees, another $122.2 million of income and consumption expenditures were generated, resulting in the induced job impact. The 644 indirect jobholders received $40.9 million of indirect wages and salaries for a total personal income impact of $305.5 million.

- The Port tenants received $560.9 million of revenue, of which $88.2 million was used for local purchases, as identified from the surveys of these tenants. These local purchases supported the 644 indirect jobs.

- The Port of Tacoma industrial lease tenants generated $28.4 million of state and local taxes.

Exhibit III-2 shows the distribution of the 2,452 direct jobs by type of business. Manufacturing tenants generate the greatest number of jobs, followed by the fish processing activity and the warehouse and distribution operations.

Table III-2
Distribution of Direct Jobs with Port of Tacoma Industrial Lease Tenants

	DIRECT JOBS
Manufacturing	939
Fishing	646
Warehousing and Distribution	341
Contractors	158
Marine Construction and Manufacturing	140
Equipment Maintenance and Repair	125
Miscellaneous	77
Office	28
Total	2,452

Note: Totals may not add due to rounding

IV. COMPARISONS WITH 2004 IMPACTS

The purpose of this chapter is to provide a comparison of the 2013 economic impacts generated by the Port of Tacoma marine terminals with the impacts generated by maritime activity at the Port in 2004. The methodology used by Martin Associates to measure the direct local and regional economic impacts generated by the Port in 2004 is, for the most part, identical to the methodology used to measure the direct impacts generated by maritime activity at the Port of Tacoma in 2004. However, there is one key structural change to the analysis. The jobs to sales ratios for industries providing induced and indirect jobs have been updated and reflect the growth in labor productivity over time. In general, fewer jobs are required to produce the induced and indirect services and goods to support the port industry in Tacoma. Secondly, in 2014, the industrial lease impacts were estimated separately based on the development of detailed non-maritime real estate impact model for the Port. In 2004, the industrial lease impacts were included in the marine cargo impacts. In order to provide direct comparisons between marine cargo activity in 2013 with that in 2004, the industrial lease impacts were removed from the 2004 impacts.

In addition, the U.S. Bureau of Economic Analysis has updated and revised the personal income multipliers for the state of Washington and Pierce County, and now estimates the income multipliers for the water transportation sector separately. In 2004, an income multiplier was only developed for the entire transportation sector. In 2004, the personal income multiplier was 3.9452, compared to 3.198 in 2013. Therefore, comparisons of induced jobs and the re-spending/local consumption impacts are difficult.

1. COMPARISON OF TONNAGE ACTIVITY

Table IV-1 shows that the tonnage handled at the Port of Tacoma marine terminals fell by 2.8 million tons since 2004. As this table further shows, the loss in tonnage was driven by the 4.6 million decline in grain exports. Over the period, domestic containerized cargo declined by 590,000 tons and wood chips are no longer handled at the Port. Off-setting the declines in these cargoes was the growth in nearly 2 million tons of international containerized cargo and the addition of logs and gypsum tonnage.

Table IV-1
Tonnage Comparison
(1,000 Short Tons)

Commodity	Tons (1,000) 2014	Tons (1,000) 2004	Change
Containerized Cargo			
International	12,208	10,210	1,999
Domestic	1,867	2,457	-590
Break Bulk	205	198	7
Autos	250	272	-23
Grain	2,746	7,372	-4,626
Chips		290	-290
Logs	429		429
Gypsum	234		234
Total	17,939	20,730	-2,791

Gypsum tonnage was included with private terminals in 2004.
Note: Totals may not add due to rounding

2. COMPARISON OF TOTAL IMPACTS

Table IV-2 shows that between 2004 and 2013 the number of direct jobs generated by activity at the Port of Tacoma increased by 1,803, reflecting the increase in international containers moving via the Port. Direct personal income grew by $176.3 million while business revenue grew by nearly $1 billion. Indirect jobs grew by 3,031 jobs, reflecting the increase of local purchase by the firms providing the marine cargo services increased by $335.3 million. As noted, due to a change in the definition of the personal income multiplier which drives the induced jobs and re-spending impacts, comparisons of the induced jobs and the re-spending impact and local consumption impact are not possible.

State and local taxes increased by $109.2 million.

Table IV-2
Comparison of Port of Tacoma Marine Cargo Impacts
2004-2013

Port of Tacoma Marine Cargo	2013	2004	Change
Jobs			
Direct	9,984	8,181	1,803
Induced	9,467	4,108	5,359
Indirect	5,274	2,243	3,031
Total Jobs	24,725	14,532	10,193
Personal Income ($1,000)			
Direct	$572,711	$396,373	$176,338
Re-spending and Local Consumption	$1,258,818	$388,842	$869,976
Indirect	$265,188	$81,336	$183,852
Total	$2,096,717	$866,551	$1,230,166
Business Revenue ($1,000)	$2,472,679	$1,492,111	$980,568
Local Purchases ($1,000)	$542,666	$207,388	$335,278
State and Local Taxes ($1,000)	$194,995	$85,788	$109,207

Note: Totals may not add due to rounding

3. COMPARISON OF DIRECT JOB IMPACTS

Table IV-3 shows the direct job impacts generated by job category. Direct jobs increased in nearly every category, reflecting the growth of nearly 2 million tons of international containerized cargo at the Port of Tacoma. The largest gain was with jobs in distribution centers handling the containerized cargo, followed by growth in terminal employment and rail jobs. The growth in terminal employees not only reflects the growth in containerized cargo, but also the employment associated with the gypsum operation that was included as a private terminal in 2004.

The major decline was the reduction in jobs with shipyards and marine construction activity. This reduction is driven by the high capital expenditures by the Port of Tacoma in 2004. The Port of Tacoma spent $105 million in 2004 compared to $27.8 million in 2013.

Table IV-3
Comparison of Direct Jobs by Job Category

Direct Jobs	2013	2004	Change
Surface Transportation			
Rail	967	586	381
Truck	2,111	1,912	199
Maritime Services			
Terminal Employees	1,123	600	523
ILWU/Dockworkers	1,157	1,080	77
Towing	71	39	32
Pilots	28	27	1
Agents	78	90	-12
Surveyors/Chandlers/M.Services	216	105	111
Forwarders	299	267	32
Warehouse	1,145	847	298
Government	341	50	291
Shipyards/Ship Repair/Marine Construction	391	1,203	-812
Distribution Centers	1,834	1,136	698
Port of Tacoma	223	239	-16
Totals	9,984	8,181	1,803

Note: Totals may not add due to rounding

With respect to direct jobs by commodity, Table IV-4 shows the largest gains in direct jobs were reported for both international and domestic containerized cargo. Job losses were recorded for break bulk, automobiles, grain and chips, reflecting the tonnage declines.

Table IV-4
Comparison of Direct Jobs by Commodity
Public Terminals

Port of Tacoma Commodity	Direct Jobs 2013	Direct Jobs 2004	Change
Containerized Cargo			
International	6,380	5,664	716
Domestic	1,700	962	738
Break Bulk	131	249	-118
Autos	277	397	-120
Grain	123	265	-142
Logs	93	NA	
Chips		53	-53
Gypsum	115		115
Not Allocated	1,165	591	574
Total	9,984	8,181	1,803

Totals may not add due to rounding. In 2004, 87 jobs were associated with gypsum, but reported as jobs with a private terminal.

4. SUMMARY OF IMPACT COMPARISONS

In summary, between 2004 and 2013, the Port of Tacoma experienced a strong growth in containerized cargo, adding nearly 2 million tons of international containerized cargo. The growth in containerized cargo fueled the growth in 1,803 direct jobs at the Port of Tacoma marine terminals, despite the loss of 4.6 million tons of grain exports. This does not include the growth of direct jobs with the industrial lease tenants from 1,189 direct jobs in 2004 to 2,452 direct jobs in 2013.

The fact that the Port of Tacoma continues to increase its importance in the local economy as a major source of job creation, particularly of jobs with an average annual salary of $57,363 underscores the importance of the Port as a major force in the Pierce County and state of Washington economies. In order to sustain this growth as an economic engine, it is critical that the Port continues to invest in terminal, rail and highway access infrastructure to meet future demand, and to continue to attract industrial real estate tenants to stimulate further economic development in Pierce County.