

Economic Value of Port of Portland Investment in Infrastructure

**Prepared for:
Port of Portland
July 27, 2011**

**Martin Associates
941 Wheatland Ave., Suite 203
Lancaster, PA 17603
www.martinassoc.net**

TABLE OF CONTENTS

ECONOMIC VALUE OF PORT OF PORTLAND INVESTMENT IN INFRASTRUCTURE	1
ECONOMIC IMPACTS OF THE DEVELOPMENT OF A FREIGHT DISTRIBUTION CENTER.....	3
PROJECTED ECONOMIC IMPACTS OF THE EXPANSION OF A BULK EXPORT OPERATION	7
SUMMARY	13

Economic Value of Port of Portland Investment In Infrastructure

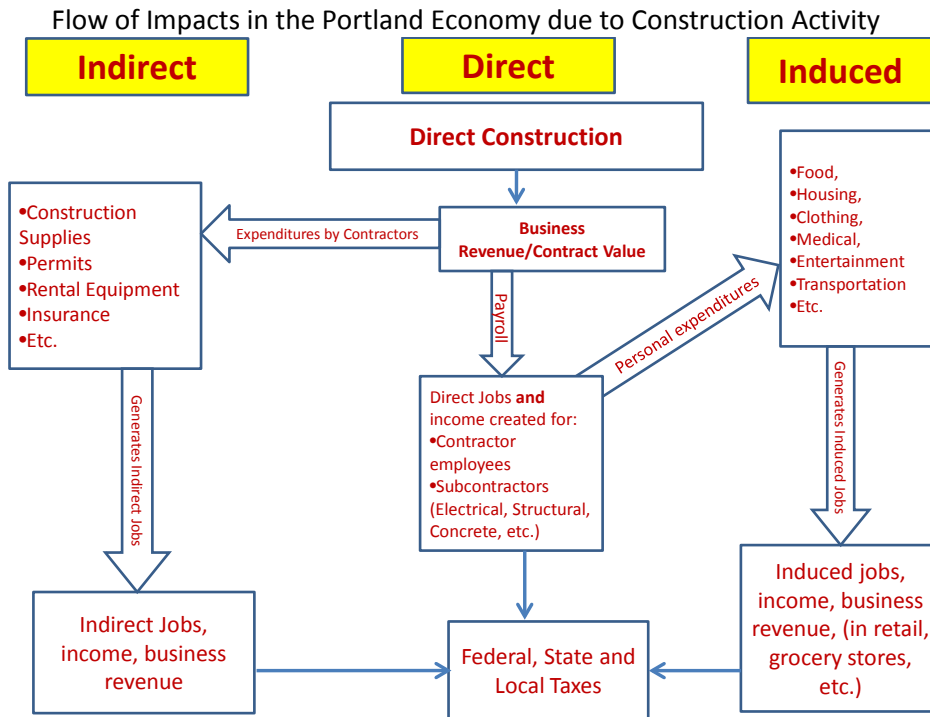
The purpose of this technical report is to define the regional economic impacts of investments by the Port of Portland in airport and seaport transportation and commercial real estate infrastructure development. Investment in infrastructure by the Port creates two types of economic impacts: the short term impacts that are generated by the actual construction dollars spent in the local economy, and the longer term impacts in the infrastructure that supports ongoing business activity. To demonstrate the potential economic impacts of investment in infrastructure, the Port of Portland has identified two hypothetical infrastructure projects. The first project consists of the Port of Portland's procurement of 78 acres of land and the investment by the Port of \$130 million to develop a state-of-the-art 450,000 SF regional freight distribution hub. The facility will handle over the road freight, as well as a smaller share of air cargo.

The second project is the expansion of a cargo facility leased from the Port of Portland. The terminal operator that leases the marine terminal from the Port of Portland will invest \$64 million into a project that will expand the amount of cargo that can move through the marine terminal by 2 million tons annually. In each case, the investments in the infrastructure will create short term jobs, personal wage and salary income, business revenue and taxes due to the actual construction of the infrastructure. After the projects are completed, annual impacts will be sustained in terms of new jobs, personal wage and salary income, state and local taxes and revenue to the businesses operating the freight distribution facility and the marine terminal.

Martin Associates has been providing economic services to the Port of Portland since 1987, and over the last 24 years has developed detailed economic models to assess the impacts of such infrastructure investments on the local economy. These models are based on interviews with more than 1,000 local businesses involved in marine transportation on the Columbia River System, as well as tenants of the Port's industrial parks – Rivergate Industrial District, Swan Island Industrial Park, Portland International Center and Troutdale Reynolds Industrial Park. In addition to the consulting services Martin Associates provides to the Port of Portland, Martin Associates provides economic consulting services to the majority of the seaports and airports in the United States, as well as internationally. The credibility of these studies is anchored in the fact that the economic impact analyses are developed from interviews with the members of the Port's maritime and airport community, and the tenants of Port operated industrial parks. The results of the economic impact studies have been used by the Federal Reserve Board, the US Council of Economic Advisors, and the US Federal Trade Commission in formulating economic policy decisions. The economic impact models that Martin Associates has developed for the Port of Portland's Seaport operations and the Industrial Park commercial and industrial activity were used to assess the short term construction and subsequent annual economic impacts of the two hypothetical projects.

Exhibit I traces the flows of the construction impacts throughout the regional economy.

Exhibit 1



The actual construction of the freight distribution center and the marine terminal expansion creates immediate economic activity throughout the regional economy, albeit short term activity. Initially, the prime contractor receives a payment from the Port (or the lessee) for the construction of the freight distribution center and from the terminal operator to expand the marine terminal. The contractor has at this point established it contracts with sub-contractors, which may include electrical contractors, structural contractors, heavy equipment operators, as well as construction laborers. The employees of the contractor and the sub-contractors are labeled direct employees.

A portion of the construction contract is used to hire these sub-contractors, while another portion is used to purchase the needed construction supplies and materials, including cement, steel, hardware, as well as utilities and equipment (including rented equipment). In addition, the contractor is using a portion of the contract value for permitting as well as the purchase of required insurances, architectural services, and even accounting services. The majority of these local purchases are typically made from local and regional suppliers, further supporting business activity and employment, income and taxes with the suppliers of the services. The jobs, associated wages and salaries, and the value of

the purchases of the materials and equipment made by the contractor and subcontractors are labeled indirect impacts.

The wages and salaries received by the construction laborers hired directly by the prime contractor and the employees of the subcontractors are used by these construction employees to make local purchases of food, clothing, medical services, fuel at the local gasoline station, etc. Also the wages and salaries are used to make mortgage payments and pay rent, and ultimately could be used for a new home purchase. Each of these local purchases by the employees of the contractors and sub-contractors also supports jobs and associated wages and salaries in the regional economy with the suppliers of the services such as the employees of the grocery stores and restaurants, employees of the retail stores, and suppliers of the medical services. The jobs, wages and salaries, and taxes created by the purchases by the individuals (directly employed) are classified as induced impacts, and the induced impacts also include the value of the purchases by the contractor and subcontractor's employees, as well as those holding the indirect jobs.

Finally, state and local taxes, which fund schools, law enforcement and other public services, are paid by the individuals employed not only by the contractor and subcontractors, but also by the companies purchasing goods and services from the local suppliers of construction equipment and supplies, and the employees of the firms providing the materials and services to the contractor and sub contractor. Federal taxes are not included since these are not a regional impact.

It is to be emphasized that upon completion of the construction of the freight distribution center and the expansion of the marine terminal, the construction impacts will cease. At this point the freight distribution center opens and activity begins. Similarly, upon the expansion of the marine terminal, additional capacity is added to the terminal to accommodate the demand for the export cargo. These operational impacts will continue on an annual basis, unlike the one-time construction impacts associated with each project. The construction and operational impacts of each project are described in the following paragraphs.

Economic Impacts of the Development of a Freight Distribution Center

The initial investment of the \$130 million of construction contracts will have a significant impact during the construction of the 450,000 SF freight distribution center. Exhibit 2 presents the construction impacts of the \$130 million construction of the facility.

Exhibit 2
Construction Impacts of a 450,000 SF Freight Distribution Center

JOBS	
DIRECT	1,096
INDUCED + INDIRECT	<u>1,314</u>
TOTAL	2,410
PERSONAL INCOME (1,000)	
DIRECT WAGES/SALARIES	\$44,734
INDUCED + INDIRECT	<u>\$44,823</u>
TOTAL	\$89,557
BUSINESS REVENUE (1,000)	\$130,000
LOCAL PURCHASES (1,000)	\$70,859
STATE AND LOCAL TAXES (1,000)	\$11,093

As presented in Exhibit 2, the \$130 million of construction investment will initially support about 2,410 jobs during the construction phase. These impacts were estimated using the U.S. Bureau of Economic Analysis RIMS II Economic Model for the Portland metropolitan area. Of the \$130 million contract value received as a business revenue by the prime contractor, it is estimated that \$44.7 million will be used to pay the direct employees (including subcontractor employees), while \$70.9 million is used for the purchases of equipment, supplies, building materials, etc. About 1,096 direct jobs with the contractor and subcontractors are generated. In addition as the result of the purchases by the job holders and the contractor/sub-contractor, 1,314 induced and indirect jobs are also supported locally during the period of the construction activity. The directly employed individuals make the local purchases for food, clothing, medical supplies and services, transportation services, etc. creating the induced jobs. The contractors and subcontractors also make purchases from local vendors for construction materials, paint, equipment rentals, permitting, goods and parts, further creating the indirect impacts.

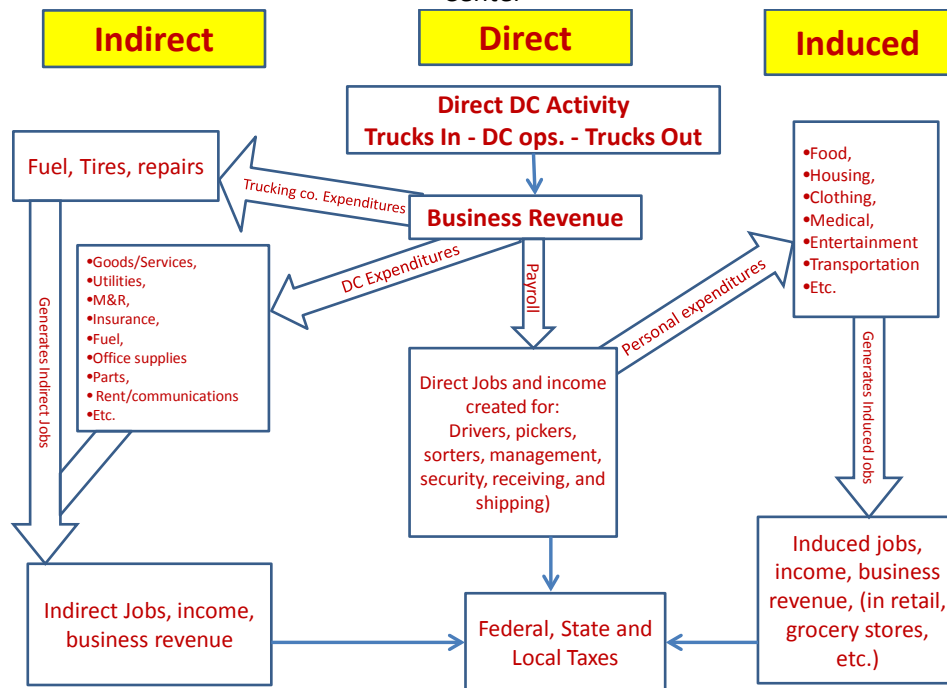
The directly employed workers by the contractor and subcontractors receive \$44.7 million in direct wages and salary income, while the indirect and induced job holders received \$44.8 million. In addition, \$11.1 million of state and local taxes were also created.¹

It is to be emphasized that this construction impact is a “one-time impact”, and upon completion of the construction, these impacts will no longer be generated.

¹ The U.S. Bureau of Economic Analysis, RIMSII model does not provide for a break out between induced and indirect jobs.

The operation of the freight distribution center will create annual impacts to the Portland economy, as presented in Exhibit 3. The functions involved in the distribution center will include the pick-up of packages from remote collection points, both local and out of the area, the delivery of the packages to the distribution center, and then the sorting and repositioning of the packages for ultimate delivery to the customer or the airport for out of the area delivery. Within the facility, the labor functions include sorters, managers, office workers, security, etc. For the most part the truckers are contract workers, but are included as direct jobs.

Exhibit 4
Flow of Economic Impacts Created In the Portland Economy by the Operation of a Freight Distribution Center



These directly employed workers will make personal expenditures for food, housing, clothing, medical services, entertainment, and transportation services (gasoline purchases, public transportation, etc.). These individuals also pay state and local taxes from their wages and salaries as well as retail purchases and property taxes. The distribution center operator also makes purchases, including purchases of office supplies, fuel, maintenance and repair services, cleaning services, equipment and parts, utilities and communication services. The trucking firms providing the pick-up and delivery services also make purchases for fuel, tires, maintenance, etc. These purchases by the operator and trucking companies create the indirect impacts. State and local taxes are also created by the indirect impacts.

The Martin Associates' Economic Real Estate Development Impact Model developed for the Port of Portland's industrial parks, was used to estimate the annual impacts on the Portland Economy that would be supported by the operation of a 450,000 SF freight distribution center. These are presented in Exhibit4.

Exhibit 4
Annual Economic Impacts of the Operation of a 450,000 SF Distribution Center

JOBS	
DIRECT	750
INDUCED	453
INDIRECT	<u>138</u>
TOTAL	1,341
PERSONAL INCOME (1,000)	
DIRECT	\$33,750
INDUCED AND LOCAL CONSUMPTION	\$41,850
INDIRECT	<u>\$6,599</u>
TOTAL	\$82,199
BUSINESS REVENUE (1,000)	\$375,000
LOCAL PURCHASES (1,000)	\$13,617
STATE AND LOCAL TAXES (1,000)	\$8,343

It is estimated that the freight distribution center would support about 750 direct jobs. These jobs include the employees of a 24/7 operation, consisting of four shifts. Each shift would employ approximately 150-200 individuals, with the staffing on the peak shifts slightly higher than the off-peak shifts. In addition, supervisors, office staff, security, and truck drivers are employed at the facility. Typically, the supervisors/management covers two shifts. These 750 direct job holders are estimated to receive \$33.8 million of wage and salary income, of which a portion is spent on goods and services, supporting the 453 induced job holders in the economy. These induced job holders are employed by grocery stores and restaurants, retail stores, wholesale distributors, contractors, medical professionals, teachers, gasoline stations, real estate and financial firms, insurance firms, employees of the recreation industries, etc.

In addition, the distribution center operator and the trucking companies providing services to the operation are projected to make \$13.6 million of purchases in the Portland economy for office supplies, cleaning services, business contract services, maintenance and repair, parts, utilities, communication services, fuel, etc. These purchases in turn support the 138 indirect job holders.

The operations are projected to generate about \$375 million annually, and state and local taxes are projected at \$8.3 million annually. The Break down of the state and local tax impacts by type of tax and by state (based on residency of direct jobs with Port of Portland Commercial Real Estate Property), is presented in Exhibit 5.

Exhibit 5
Distribution of State and Local Tax Impact by State and Type of Tax

Type of Tax	Oregon (\$1,000)	Washington (\$1,000)	Total (\$1,000)
Property	\$1,947.6	\$713.8	\$2,661.4
Sales/Gross Receipts	\$504.1	\$1,636.8	\$2,140.9
Personal Income	\$2,274.1	\$0.0	\$2,274.1
Corporate Income	\$246.3	\$0.0	\$246.3
Motor Vehicle	\$217.7	\$47.1	\$264.7
Miscellaneous	\$538.5	\$217.0	\$755.5
Total	\$5,728.3	\$2,614.7	\$8,343.0

Note: Totals may not add due to rounding. The break down of the \$8.3 million of state and local taxes by state is based on the residency of the direct jobs holders for dry bulk operation as developed in the “Economic Impacts of the Port of Portland Real Estate Tenants, 2006”, Prepared for the Port of Portland by Martin Associates, October 6, 2006,

Projected Economic Impacts of the Expansion of a Bulk Export Operation

The second development project evaluated is the \$64 million expansion of a bulk export facility that currently handles bulk exports on the Columbia River System. The terminal is a tenant of the Port of Portland, and is assumed to make the \$64 million expansion investment. The impact of this investment will occur in two phases. In the construction phase, the \$64 million of construction expenditures will occur throughout the Portland economy, as described previously in Exhibit I.

The projected construction impacts are estimated using the U.S. Bureau of Economic Analysis RIMS II Economic Model for the Portland metropolitan area, and presented in Exhibit 6.

Exhibit 6
Construction Impacts of the Expansion of a Bulk Export Facility on the Columbia River

JOBS	
DIRECT	540
INDUCED + INDIRECT	<u>647</u>
TOTAL	1,187
PERSONAL INCOME (1,000)	
DIRECT WAGES/SALARIES	\$21,968
INDUCED + INDIRECT	<u>\$22,122</u>
TOTAL	\$44,090
BUSINESS REVENUE (1,000)	\$64,000
LOCAL PURCHASES (1,000)	\$34,897
STATE AND LOCAL TAXES (1,000)	\$5,908

Of the \$64 million contract value received as a business revenue by the prime contractor, it is estimated that \$22.0 million will be used to pay the direct employees (including sub-contractor employees), while \$34.9 million was used for the purchases of equipment, supplies, building materials, etc. About 540 direct jobs with the contractor and sub-contractors are generated. In addition, as the result of the purchases by the job holders and the contractor/sub-contractor, 647 induced and indirect jobs are also supported locally during the period of the construction activity. The individuals make the local purchases for food, clothing, medical supplies and services, transportation services, etc. creating the induced jobs. The contractors and subcontractors also make purchases from local vendors for construction materials, paint, equipment rentals, permitting, goods, further creating the indirect impacts.

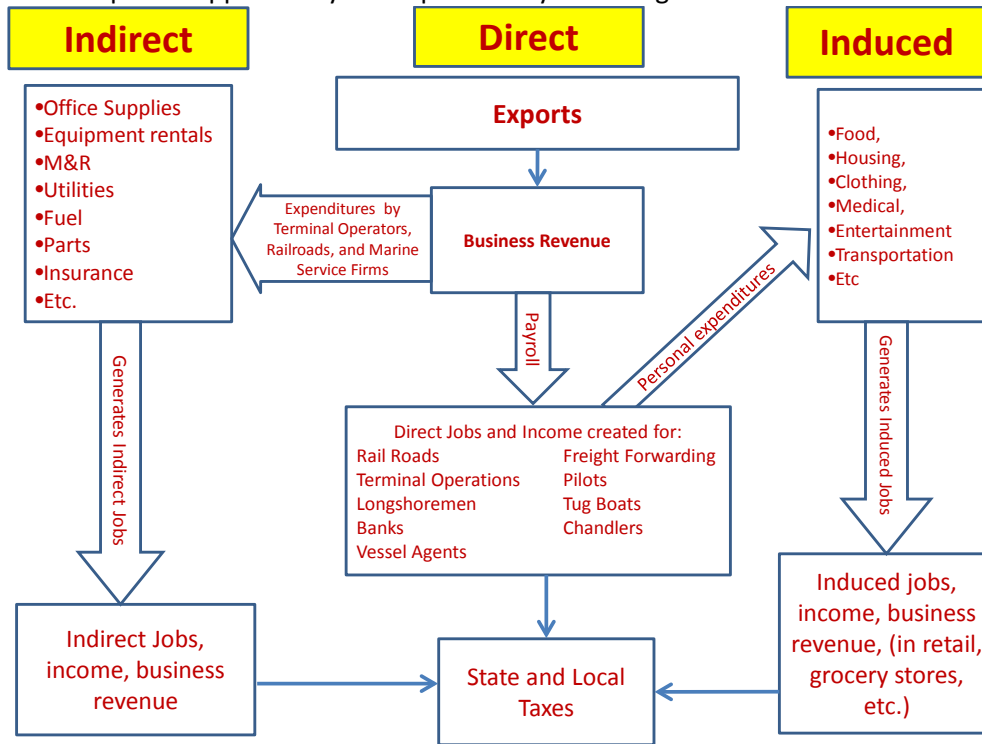
The directly employed workers by the contractor and subcontractors are projected to receive \$22.0 million in direct wages and salary income, while the indirect and induced job holders are projected to receive \$22.1 million. In addition, \$5.9 million of state and local taxes are estimated to be created.

It is to be emphasized that this construction impact is a “one-time impact”, and upon completion of the construction, these impacts will no longer be generated.

The purpose of the \$64 million project is to increase the capacity of the current terminal by 2 million tons annually. Martin Associates has developed a detailed economic impact model of maritime operations at each of the Port’s marine terminals. This model is based on more than 450 interviews with members of the Portland maritime community, and provides a structure to assess the economic impacts of cargo and vessel activity on the Portland economy. The increased export tonnage through the marine terminal will support jobs throughout the system. Exhibit 7 presents a schematic of the export move.

Exhibit 7

Flow of Economic Impacts Supported by the Export of Dry Bulk Cargo Due to Marine Terminal Expansion



The dry bulk cargo moves to the Port’s marine terminal by railroad, is then offloaded at the terminal and stored in covered warehouses prior to the ship loading. At the terminal, rail jobs are supported, as are warehousing/terminal side jobs. The dry bulk cargo is then moved onto the ship by members of the International Longshore and Warehouse Union (ILWU). Each vessel handles about 35,000 tons of the dry bulk cargo. Vessel agents arrange for the vessel call at the Port, and make arrangements for crew needs such as medical needs as well as payment of the crew when the vessel arrives in port. When the vessel enters the Columbia River to sail to the marine terminal, the vessel is boarded by pilots who are certified to assist in navigating the Columbia River. Tug boats are also deployed as the vessel approaches the terminal to assist in maneuvering and docking the vessel. Linesmen then secure the vessel at the terminal. Prior to arrival of the vessel, freight forwarders are typically engaged to assist in arranging for the cargo to be delivered to the terminal for vessel loading. In addition, local banks may be involved in handling letters of credit for the transfer of ownership of the bulk cargo as it is exported from the marine terminal. If problems occur in loading the cargo, such as damage to the cargo or the vessel, marine surveyors may be called to assess the impact of the damage. Similarly, when the vessel arrives at the terminal, repairs may be required to the vessel or to equipment. Chandlers who supply the marine equipment, crew supplies, food, and electronics repairs may provide services to the vessel while at port. These purchases and repairs will be arranged in advance of the port

call by the steamship agent responsible for the vessel and to the vessel owners. As the vessel is loaded by the members of the ILWU, arrangements for sailing are made. Tugs again are required to assist in the departure of the vessel, and linesmen again release the vessel from the dock. The pilot boards the vessel and assists the vessel in navigating through the Columbia River to open sea at the Astoria Bar where the Columbia River meets the Pacific Ocean.

Those directly involved in moving the export cargo from the mines to export via the Columbia River receive wages and salaries, while the businesses providing the services receive business revenue (from which the direct wages and salaries are paid). A portion of the wages and salaries are then used by those directly employed to make the purchases for food at home and at restaurants; for retail purchases including clothing and home furnishings; for transportation services such as gasoline, public transportation, and new automobile purchases; medical services; entertainment; financial services and education services. At each stage of these purchases by those directly employed induced jobs and income are generated in the industries providing the goods and services purchased by those directly employed.

In addition, purchases are also made by the providers of the services to move the bulk cargo to export. For example the railroads purchase fuel, equipment, maintenance and repair services, while the terminal operators purchase utilities, equipment, fuel for the terminal equipment, goods and services, business services, maintenance and repair services, security, insurance, and office supplies. As a result of these purchases by the companies providing the direct services to move the additional dry bulk cargo for export, indirect jobs and wages and salaries are created in the supplying industries. Many of the bulk cargos handled through the Portland Harbor originate East of Portland and also benefit U.S. export related jobs outside of the region. These jobs are not captured or represented in this study.

Finally, state and local taxes are created at the direct, induced and indirect levels of impacts.

Exhibit 8 presents the economic impacts projected to be created by the \$64 million to increase the capacity of the bulk export terminal by 2 million tons. It is to be emphasized that these are annual impacts associated with the additional export of million tons of dry bulk cargo.

Exhibit 8
Annual Economic Impacts Generated by 2 Million Ton Increase in Bulk Exports due to the \$64 Million
Terminal Expansion Project

JOBS	
DIRECT	62
INDUCED	74
INDIRECT	<u>186</u>
TOTAL	322
PERSONAL INCOME (1,000)	
DIRECT	\$4,156
INDUCED AND LOCAL CONSUMPTION	\$10,174
INDIRECT	<u>\$9,525</u>
TOTAL	\$23,854
BUSINESS REVENUE (1,000)	\$71,935
LOCAL PURCHASES (1,000)	\$20,937
STATE AND LOCAL TAXES (1,000)	\$2,290

The additional 2 million tons of dry bulk export cargo generated by the \$64 million of investment will support 62 jobs annually. These direct job holders are projected receive \$4.2 million of direct wages and salaries, for an average salary of about \$67,000. These 62 job holders include about 30 rail employees, 10 terminal and warehousing jobs, 17 members of the International Longshore and Warehouse Union, five jobs with the pilots and tug assist operators, two jobs with steamship agents and 7 jobs with surveyors and ship chandlers. To move the 2 million tons of cargo, 57 new ship calls per year will be created at the port, requiring the pilotage and tug services.

The 74 induced jobs are supported by the local purchases by those directly employed, and include jobs with restaurants, food stores, retail outlets (clothing, home furnishings, etc.), health care services, entertainment, and educational services. Also included are jobs with real estate, banking and the local and state government to support the 62 new jobs annually.²

The businesses providing the services to moving and storing the 2 million tons of bulk cargo, and servicing the 57 new vessel calls annually, will receive about \$71.9 million annually, of which \$4.2 million is paid out in direct wages and \$20.9 million is spent on local purchases to support the terminal operations, rail operations and vessel services. These local purchases for goods and services, utilities, insurance, maintenance and repair services, business services, communications, etc., supports the 186

² It is to be emphasized that the \$10.2 million of induced income and local consumption expenditures include the wages and salaries received by the 74 induced job holders, as well as the sales revenue received by the firms supplying the goods and services to those directly employed. Therefore, the \$10.2 million of induced income and local consumption expenditures should not be divided by the 74 induced jobs, as this would overstate the induced wages and salaries.

indirect jobs in the local economy. These indirect jobs holders are employed in the industries supplying the goods and services to the direct service providers, and the indirect job holders are projected to earn \$9.5 million in indirect income annually.

The increased 2 million tons of export bulk cargo will also generate \$2.3 million of state and local taxes annually. The breakdown of the annual \$2.3 million state and local taxes, by state (based on estimated residency of the direct jobs holders) is shown in Exhibit 9.

Exhibit 9
Distribution of State and Local Tax Impact by State and Type of Tax

Type of Tax	Oregon (\$1,000)	Washington (\$1,000)	Total (\$1,000)
Property	\$479.3	\$240.4	\$719.7
Sales/Gross Receipts	\$124.0	\$551.3	\$675.4
Personal Income	\$559.6	\$0.0	\$559.6
Corporate Income	\$60.6	\$0.0	\$60.6
Motor Vehicle	\$53.6	\$15.9	\$69.4
Miscellaneous	\$132.5	\$73.1	\$205.6
Total	\$1,409.6	\$880.7	\$2,290.4

Note: Totals may not add due to rounding. The break down of the \$2.3 million of state and local taxes by state is based on the residency of the direct jobs holders for dry bulk operation as developed in the “Economic Impacts of the Portland Harbor, 2010”, Prepared for the Port of Portland by Martin Associates, August 27, 2011,

Summary

The examples of investment in a new freight distribution center and the expansion of a bulk marine terminal underscore the importance of investment in infrastructure in the Portland Area Economy. The ability for the Port to access capital for investment projects through the issue of tax free municipal bonds provides a major catalyst to stimulate job growth and subsequent economic activity in the Portland Area economy. Furthermore, the infrastructure in which the Port has invested -- Portland International Airport, the Port's marine terminals, and the industrial parks at Swann Island Industrial Park, Rivergate Industrial District, Portland International Center and Troutdale Reynolds Industrial Park -- has supported significant economic activity in the regional economy, and continued investment in such infrastructure is necessary to maintain and grow the Port of Portland's economic contribution to the local and regional economy.