
The Port of Portland's Marine Operations

The Local Economic Benefits of Worldwide Trade

Prepared for:



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Table of Contents

Executive Summary	ES-1
1 Introduction.....	1
2 Global Trade, Local Benefits	3
3 Intermodal Transportation Efficiencies	9
4 The Auto-Transport Story	10
5 The Potash Story	12
6 The Portland Shipyard Story.....	14
7 Conclusions.....	16
References	17

Executive Summary

The Port of Portland (Port) asked ECONorthwest staff to review recent economic studies on the economic impacts of the Portland Harbor (Harbor) and the Port, trends in international trade, and Portland's position in the U.S. import/export market. This report illustrates the local benefits and beneficiaries of the Harbor and the Port's economic activities.

Global demand drives the growth of many U.S. businesses. Well-functioning ports provide the transportation infrastructure that businesses rely on to acquire raw materials or ship finished products to markets around the world. The Harbor, which extends upstream on the Willamette River to the Steel Bridge, and upstream on the Columbia River to Hayden Island, provides this infrastructure and acts as a gateway, connecting producers and consumers to the rest of the world. The Harbor is a mix of private terminals, manufacturing areas, and public terminals owned by the Port and leased to private entities.

The businesses that move cargo through the Harbor generate economic activity that supported approximately 18,000 jobs in the Portland region in 2011, and infused about \$1.46 billion into the regional economy. More than 7,000 of the jobs were directly related to activities at the Port's terminals. The direct employment opportunities come from positions in maritime service firms, surface transportation firms, shippers, consignees, governmental agencies, and professional service firms.

Harbor-related activities also generate about \$140 million in tax revenues per year that fund state and local public services, such as police and fire protection and public schools. The Port receives approximately 3 percent of its total operating revenues from taxes—one of the lowest public-finance rates among all ports in the Pacific Northwest. The Port's terminals support economic activities that generate \$7.83 in taxes for every dollar of tax revenue the Port receives.

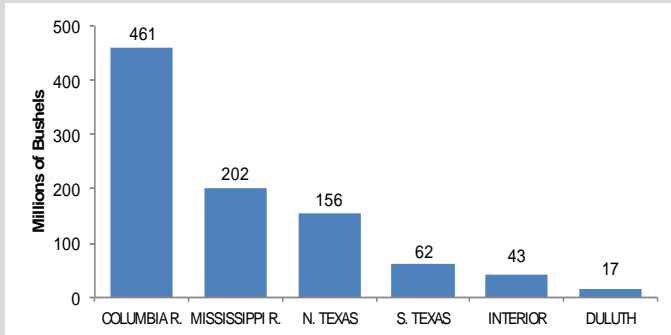
During the 1970s and 1980s, the Port captured a large proportion of the Asian auto import business on the west coast. Continued investments in modern auto-import terminals demonstrate the commitments of Toyota, Honda, and Hyundai to import through Portland. The Port is also developing strategies and relationships to grow a nascent auto export business and has started exporting Ford vehicles to South Korea.

After experiencing the downside of global market shifts for domestic coal in the early 1980s, the Port responded by looking to markets for other bulk goods. As a result, Portland is now the largest Potash exporter in the United States.

When it sold the last remaining publicly owned shipyard in the country a decade ago, the Port bet that private business would take Portland's century-old shipbuilding and repair industry into the twenty-first century. Vigor Industrial brought shipbuilding back to the Harbor and is preparing to bring the largest dry dock in the United States to Portland.

Portland Harbor Facts

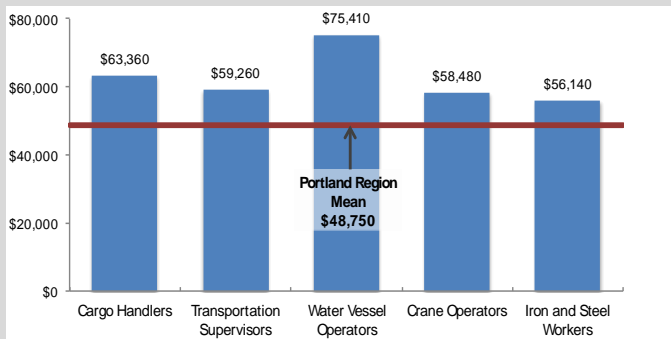
The largest wheat export gateway in the U.S.



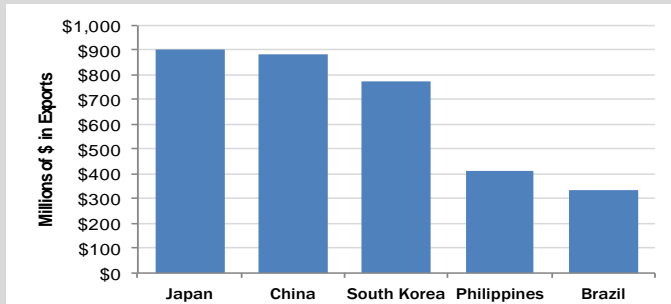
Soon-to-be host (again) to the largest drydock in the Northern Hemisphere



A higher-than-average wage employer in the Portland Metro area



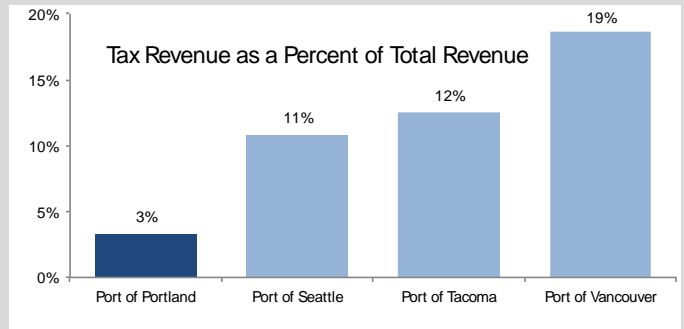
Moving U.S. goods to the rest of the world...



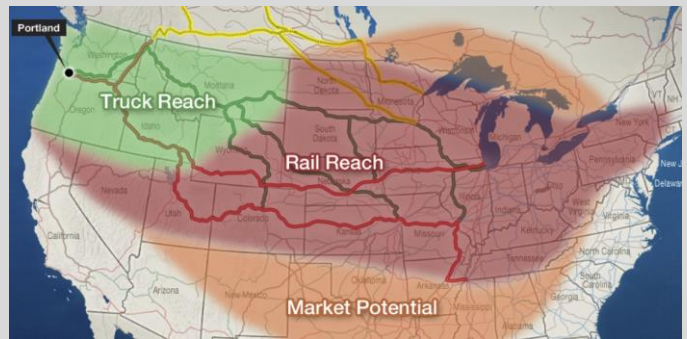
Home to the first Certified Salmon-Safe industrial facility in the nation at Terminal 4



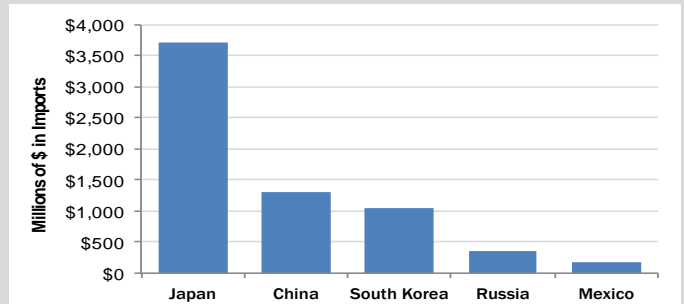
Supported by the lowest tax-to-revenue ratio among west coast ports



One of four Toyota import gateways in the U.S.



...and global goods back into the U.S.



1 Introduction

Port of Portland: By the Numbers

271: Dollars introduced into Portland's economy for each auto imported through Portland Harbor

978: Vessel calls to Portland Harbor in 2012

2,500: Maximum miles Toyotas travel into the U.S. for sale after they leave the Port of Portland

7,275: Jobs directly associated with Portland Harbor in 2011

284,138: Automobiles moved over Port of Portland docks in 2012

4.8 MILLION: Tons of minerals moved through Portland Harbor in 2012

25.5 MILLION: Tons of goods moved through Portland Harbor in 2011

Ports attract businesses seeking least-cost and efficient transport of their goods. Businesses that rely on importing and exporting locate nearby ports, along with businesses that provide supporting goods and services to port facilities. In this way, ports facilitate both global commerce and local economic development.

Though the economy has evolved since the early days of shipping on the Columbia and Willamette Rivers, the relationship between the movement of goods and local economic development still exists in Portland. Today, global demand drives the growth of many U.S. businesses. In the coming decades, a large percent of new demand for goods and services produced in the U.S. will come from consumers in other countries (Brookings Institution 2012). As markets in Asia, the Middle East, and Latin America develop, U.S. companies have an opportunity to meet new demands for both raw materials (e.g., steel and fertilizer) and consumer products (e.g., shoes and microbrews). Meeting these demands requires that businesses ship their goods using least-cost transportation options. Modern, efficient Ports provide the transportation options that make it possible for U.S. companies to compete with companies elsewhere that produce similar goods.

The Portland Harbor (Harbor) is a gateway, connecting producers and consumers to the rest of the world. Within the Harbor, the Port of Portland (Port) provides service that helps facilitate the efficient movement of goods in and out of the region and the country. The Port's mission is to, "enhance the region's economy and quality of life by providing efficient cargo...access to national and global markets" (Port of Portland 2013). By maintaining a direct, local connection to Asia and beyond, the Port reduces the transportation costs businesses incur delivering goods to distant markets. The expertise and relationships cultivated by the Port and its partners help local companies overcome barriers and access new customers, whether it is hay for markets in Asia or parts for a custom bike manufacturer in North Portland. By doing all of these things, the Port helps support the local economy.

The Port asked ECONorthwest staff to review recent economic studies on the economic impacts of the Portland Harbor and the Port of Portland, trends in international trade, and Portland's position in the U.S. import/export market. Our task was to synthesize this body of research, and connect generic research findings to faces, facts, and stories that illustrate the local beneficiaries of the Harbor's and the Port's economic contributions. We present our findings in this report.

Figure 1. Map of Portland Harbor and Port of Portland Terminals



Source: Port of Portland

Bulk Cargo:

Goods that are transported unpacked in large quantities in either liquid or granular form. Potash, petroleum, wheat, soybeans, and gravel are examples.

Breakbulk Cargo:

Goods that must be handled individually or in units, but are not bulk or containerized goods. Examples include steel, logs, and windmill parts.

The Portland Harbor sits at the confluence of the Columbia and Willamette Rivers. It extends upstream on the Willamette River to the Steel Bridge, and upstream on the Columbia River to Hayden Island. The Harbor includes public terminals operated by the Port of Portland and leased to private entities, and private terminals and related facilities including the Portland Shipyard, owned and operated by Vigor Industrial, private docks, tank farms, and other infrastructure used to move goods into and out of the Portland region by boat, rail, and truck. Figure 1 shows the public and private facilities in the Harbor.

Terminal 2: Bulk cargo, breakbulk steel, and project cargo.

Terminal 4: Bulk cargo, liquid bulk cargo, and automobiles. Home to Toyota Logistics Services Vehicle Distribution Center.

Terminal 5: Grain and mineral bulk. Home to Canpotex's potash export facility.

Terminal 6: Containers, breakbulk steel, and automobiles.

Vigor Industrial: Site of the Portland Shipyard. Drydocks, ship building and repair.

2 Global Trade, Local Benefits

In this section, we describe how the Port's economic activity benefits the local economy in the Portland region and the state of Oregon. Port-related economic activity generates effects that economists can measure in many ways. In this section, we focus on three measures: jobs, income, and tax revenue.

Jobs Associated with Harbor Economic Activity

Direct Jobs:

Examples include vessel operations, cargo handling, longshoremen, railroad engineers, truckers, and management and support staff for companies who hire these workers.

Many people work for the businesses that operate in the Harbor: in 2011, the economic activity in the Harbor supported approximately 18,000 jobs. Jobs most closely associated with Harbor activities include longshoremen, barge operators, and ship repair specialists. They also include administrators, accountants, and lawyers employed by non-maritime businesses that support vessel activity and businesses engaged in cargo movement. Economists call these **Direct Jobs**. Over 7,000 of the 18,000 Harbor-supported jobs, or about 40 percent, were directly related to Harbor activities.

Indirect Jobs:

Examples include equipment manufacturers and wholesalers, fuel suppliers insurance sales and administrators, construction and repair services, raw materials suppliers.

The jobs supported by Harbor-related economic activity include more than just those directly involved in Harbor activities. Vessel and cargo activity supports jobs at firms that provide goods and services to businesses directly engaged in maritime activity. These are called **Indirect Jobs**. For example, suppliers of communication services, utilities, and office equipment benefit from the Harbor's existence, but are not directly engaged in importing or exporting goods and services. About 4,000, or about 20 percent, of the 18,000 jobs fall into this category.

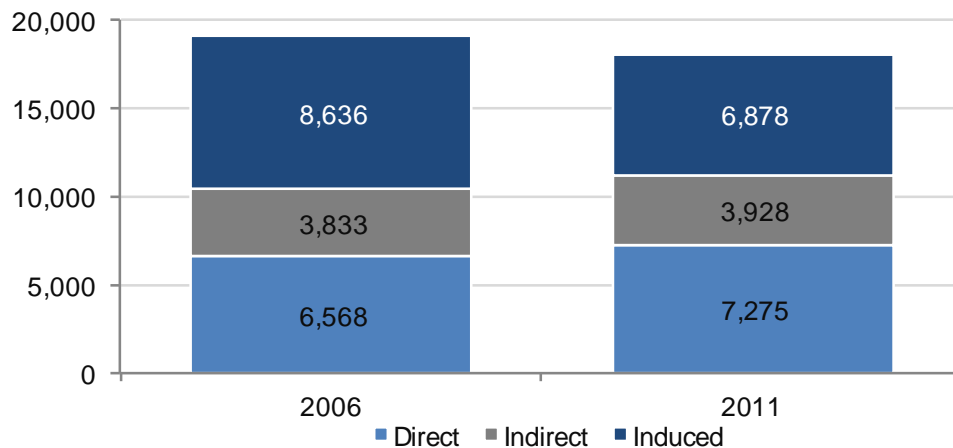
Induced Jobs:

Examples include retail service professionals, food service workers, educators, real estate agents, and many others.

The Harbor also supports jobs throughout the broader community as those directly and indirectly employed by the Harbor spend their earnings, for example by purchasing lunch, daycare for their children, and furniture for their homes. In economic terms, these are known as **Induced Jobs** and account for nearly 7,000 jobs.

Figure 2 shows the different categories of jobs, and the trend in jobs since 1996. Employment at the Harbor fluctuates somewhat with shifts in broader economic conditions in the U.S. and the world. Although the economy has been through a major recession since 2007, Harbor-related employment has almost returned to 2006 levels. Induced jobs declined between 2006 and 2011 for two reasons: the personal savings rate has increased—people are spending less money overall now than they did in 2006; and companies are hiring fewer employees for every dollar of income earned, relative to 2006.

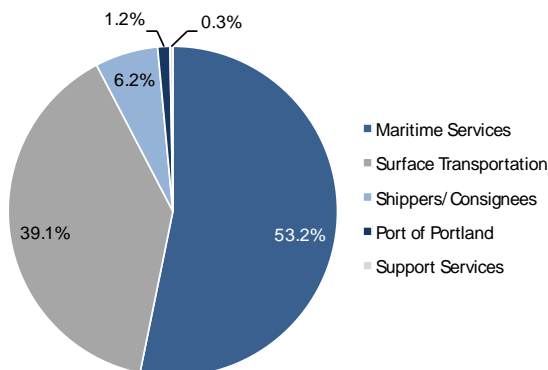
Figure 2. Portland Harbor's Impacts on Jobs



Source: ECONorthwest, with data from Martin Associates (2007, 2012)

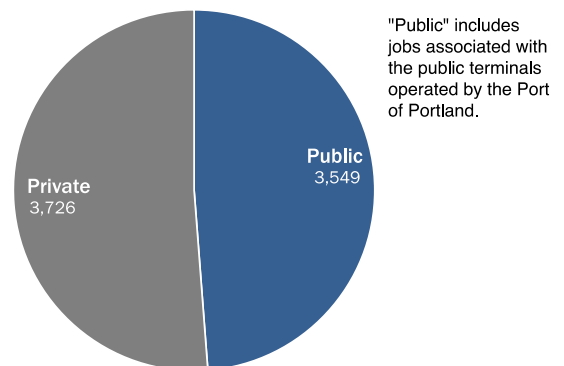
The direct jobs supported by Harbor activity fall into five sectors: **maritime services**, including vessel operations and cargo handling and transport; **surface transportation**, including rail and trucking; **shippers/consignees**, including local and regional or international users of Port facilities; **Port of Portland** employees who oversee Harbor activity; and **support services**, including bankers, insurance agents, and lawyers who facilitate and finance export and import transactions. As Figure 3 shows, more than half of the direct jobs are within the maritime services sector. Surface transportation is the next largest employment sector, followed by shippers/consignees. Trailing these are the Port of Portland and other support services, which together provide for only about 1.5 percent of jobs. Public and private marine terminals support direct jobs about equally. As Figure 4 shows, about 49 percent of the direct jobs in Portland Harbor are associated with the Port of Portland's public terminals.

Figure 3. Sectors that Support Direct Jobs in Portland Harbor



Source: ECONorthwest, with data from Martin Associates (2012)

Figure 4. Number of Direct Jobs at Public vs. Private Terminals in Portland Harbor



Source: ECONorthwest, with data from Martin Associates (2012)

Types of Jobs Supported by Portland Harbor

Cargo Handler

Average Wage: **\$66,056**

Responsibilities: Load and unload ships' cargoes, clean ship holds.

This industry category Includes stevedores and longshoremen, and union and non-union positions. Almost 1,500 jobs fell in this category in the Portland region in 2011. (U.S. BLS 2013, NAICS category 488320)



Tugboat Operator

Average Wage: **\$69,555**

Responsibilities: Assist ships in navigating in and out of docks and the harbor.

About 150 jobs fell in navigational support to shipping, including tugboat operations in the Portland region in 2011. (U.S. BLS 2013, NAICS category 488330)



Railyard Engineer

Average Wage: **\$42,781**

Responsibilities: Drive switching or other locomotive engines within railroad yards and industrial facilities.

About 670 jobs fell in rail transportation in Portland Harbor in 2011. (Martin 2012; U.S. BLS 2013, NAICS category 488210)



Ship Repairer

Average Wage: **\$65,521**

Responsibilities: Work with tools and raw materials to construct and repair ships in shipyards and floating dry docks.

About 1,000 jobs fell in maritime equipment and construction in Portland Harbor in 2011. Over 800 of these fell in ship building and repair specifically. (Martin 2012; U.S. BLS 2013, NAICS category 336611)



Truck Driver

Average Wage: **\$45,593**

Responsibilities: Transport cargo from marine terminals to destinations.

About 2,000 jobs fell in truck transportation associated with Portland Harbor in 2011. (Martin 2012; U.S. BLS 2013, NAICS category 48412)



Business Income:
The money a company receives from normal business activities, used to fund operations and profits. Also called “revenue.”

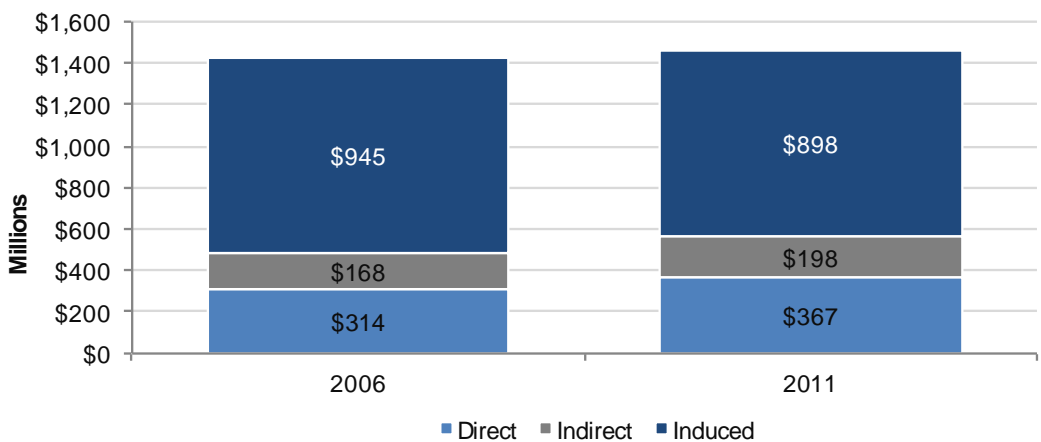
Personal Income:
A worker’s earnings from their employer, including wages and salaries.

Income Associated with Harbor Economic Activity

Harbor-related businesses earned over \$1.5 billion in income in 2011. This excludes the value of the cargo moving through the Harbor, but includes the income earned as each business adds value through each stage of importing or exporting the cargo.

Harbor-related businesses spent some of the income they earned in the Portland region to pay employees and purchase local goods and services that support their operations. In 2011, these expenditures amount to about \$367 million in *direct income* in the Portland economy. Income paid to local firms that support Harbor-related businesses, in turn, translated into almost \$200 million in additional employee wages and local purchases. This is known as *indirect income*. Employees spend some of their income in the Portland economy on goods and services that support their quality of life. This spending—almost \$900 million—represents *induced income*. Figure 5 shows that direct and indirect income increased slightly from 2006 to 2011, while induced income fell slightly. This decline in induced income stems primarily from an increase in the personal savings rate between 2006 and 2011 (Martin 2012).

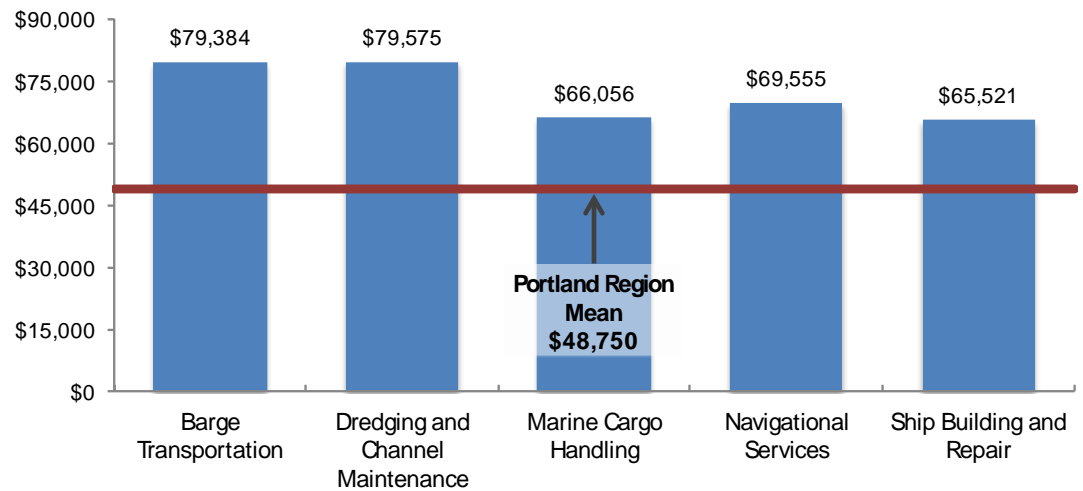
Figure 5. Portland Harbor’s Impacts on Personal Income



Source: ECONorthwest, with data from Martin Associates (2007, 2012)

Harbor-related jobs are generally higher paying than the average wage employees in the Portland region earn. Figure 6 shows the average annual wage for workers in several industries that provide Harbor-related jobs. The red line in the figure represents the average wage for the Portland region.

Figure 6. Average Wages to Harbor-Related Workers, Compared with Regional Average



Source: ECONorthwest, with data from U.S. BLS 2013

Note: Based on Average Annual Pay for these NAICS codes (from left to right): 483211 (Inland Water Freight Transportation), 237990 (Other Heavy and Civil Engineering Construction), 488320 (Marine Cargo Handling), 488330 (Navigational Services to Shipping), 336611 (Ship Building and Repairing)

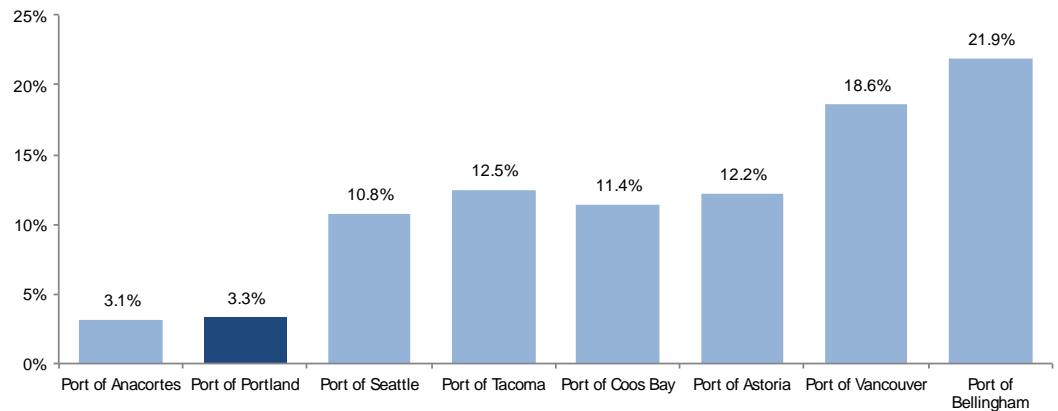
Tax Revenue Generated from Port Economic Activity

The economic activity in Portland Harbor generates tax revenue that supports services throughout the Portland area. The largest amounts of taxes come from the personal and corporate income taxes. In 2011, businesses and individuals engaged in Port-related economic activity paid \$140 million in taxes to state and local governments in Oregon and Washington. These taxes support public services provided by all levels of government, from hiring local police officers to maintaining state highways. To put this amount into context, \$140 million is about half of the City of Portland's 2013-2014 budget for operating the Police and Fire & Rescue Bureaus combined (City of Portland 2013).

Tax Revenue Applied to Port Operations

The Port of Portland receives a portion of its operating revenues from property taxes through a permanent levy. The Port receives 50 cents per 100 dollars in property taxes collected in Multnomah County (Multnomah County 2013). Only about 3 percent of the Port's total revenues come from government taxes, which is small compared to the revenue other Ports receive from tax revenues. Figure 7 shows the Port's tax revenues as a percent of its total operating revenue, compared to the same for other Ports in the Pacific Northwest. The Port of Vancouver, Washington, for example, receives over 18 percent of its operating revenue from taxes (Washington State Auditor's Office 2013).

Figure 7. Property Tax Revenue as a Percent of Total Revenue for Ports in the Pacific Northwest, 2011



Source: ECONorthwest, with data from Washington State Auditor's Office 2012, Merina & Company, LLP 2012, Port of Bellingham Finance Division 2011, Pauly Rogers & Co., PC 2012, Port of Portland 2012a, Port of Seattle 2013, Port of Tacoma 2012, Washington State Auditor's Office 2013.

Given that the Port receives relatively little tax support to fund its operations, but generates large amounts of taxes because of its activity, there is a large return for local and state government entities. In 2011, the Port received about \$9 million in property taxes to help support Port operations. The same year, the Port's marine terminals generated about \$70 million in tax revenues, resulting in almost eight dollars in taxes paid for every tax dollar received by the Port (Martin Associates 2012).

With its low dependence on tax support, the Port must operate with a similar approach as a private business. In effect, the Port functions as a landlord leasing terminals to private firms. This requires that the Port follow and anticipate upcoming business trends, cycles and related economic changes and developments.

3 Intermodal Transportation Efficiencies

By operating efficiently and staying ahead of global trends in transportation, the Port and businesses operating in the Harbor contribute to economic growth across a wide range of import- and export-dependent sectors of the economy. A factor contributing to the Harbor's success in serving these sectors is its transportation efficiency and an important comparative advantage over other ports is Portland's intermodal connectivity: the Harbor serves as a hub for goods moving from sea, to rail, to river, to road.

Figure 8. Mainline Rail Connections from Portland Harbor



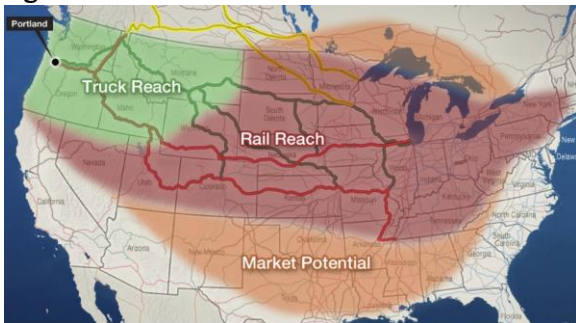
Source: Port of Portland

Note: **Green** represents BNSF, **red** represents Union Pacific, and **yellow** represents Canadian Pacific Railway

Rail Connections

Rail connections move potash from Canada; grain from as far away as Minnesota; soda ash from Wyoming; and automobiles to and from the Midwest. The Port's rail connections are one of its strengths. They benefit from competition between two U.S. rail carriers and access to Canadian railways. The routes in and out of Portland are relatively flat, reducing fuel costs. With continued investment, carriers have capacity to increase the length of trains and number of rail trips.

Figure 9. Road and Rail Market Potential



Source: Port of Portland

Road Connections

The Port of Portland sits at the intersection of two major interstate highways: I-5 and I-84. This provides an economically-viable delivery radius of approximately 400 miles: throughout Oregon, Washington, and Idaho, and well into Montana and California.

Figure 10. Inland Ports Beyond Portland



Source: Port of Portland

River Connections

The Port of Portland is the largest deep-draft inland port in the country, and it connects to several shallow-draft ports upriver along the upper Columbia and Snake Rivers. This allows companies to bypass both rail and truck routes in Portland and ship goods by fuel-efficient barge, from as far inland as Lewiston, Idaho.

4 The Auto-Transport Story

Honda

American Honda, Inc. began shipping through Portland in 1973. The Port handled the first exports of American-made Hondas back to Japan in 1988. In 2011, Auto Warehousing, the company that processes Hondas and Acuras through the Port of Portland, received the 2010 Processor of the Year Award from American Honda.

Hyundai

Hyundai selected Portland as one of its first ports of entry in the US in 1986. As demand for Hyundai cars heated up, Portland became the primary entry port in 1988. In July of 2013, Hyundai celebrated the shipment of its 2-millionth vehicle through the Port.

Ford

In 2012, the first Ford vehicles were shipped to South Korea via the Port of Portland from nine different production plants in the U.S., Canada, and Mexico. A vessel arrived in Portland carrying new Hyundais and returned to South Korea carrying Fords.

The Port of Portland handled its first automobile imports in 1953, beginning with Volkswagens and other European models. Though Asian imports have largely replaced European imports, from this starting point, the Port of Portland built a robust business in auto imports that remains a cornerstone of its marine cargo operations today. Toyota, Honda, and Hyundai have all made long-term investments at terminals they lease.

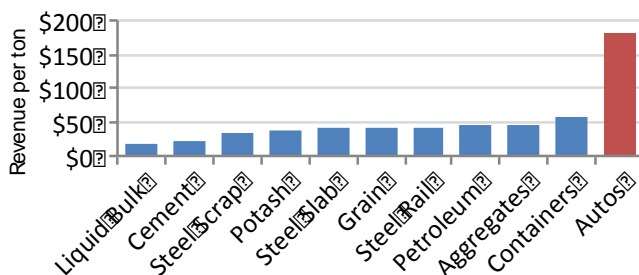
As auto volumes increased during the 1950s, the Port of Portland invested in terminal improvements to increase the efficiency of off-loading automobiles. Originally centered at Terminal 1, auto-import activity moved to Terminal 2 in the mid-1960s. In the late 1960s, the Port built a dedicated auto facility at Terminal 4, using modified hulls of Liberty ships as floating docks (Port of Portland 2012b).

Lured by these investments, Portland's central location on the Pacific Rim, and its inland climate away from corrosive coastal air, Asian auto companies began calling. In 1971, Toyota imported its first cars through Portland. The first Hondas were imported through Portland in 1973. In 1975, Tacoma and Portland competed to become the port of entry for all Toyota cars distributed in the Pacific Northwest and the Midwest. Portland won. As a result, between 1976 and 1978, auto imports doubled, from 100,000 to over 200,000 (Port of Portland 2012b). The Port built another auto facility at Terminal 6 to handle the increased demand, and by 1985, no Port in the world was receiving more Toyotas, and no port in America more Hondas (Peterson 1985).

These early investments created momentum, and Portland is now the second largest auto import gateway on the U.S. West Coast, and fifth largest in the nation. About 20 percent of Toyota vehicles imported through Portland stay in the Pacific Northwest. About 80 percent are loaded onto auto-carrier train cars and delivered by rail to 23 states in the West and Midwest, a distance of up to 2,500 miles (Port of Portland 2012b; Personal communication with Port of Portland staff).

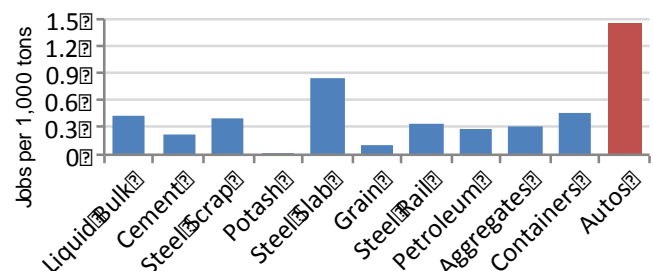
While all types of cargo support jobs and produce income for the region's economy, auto imports produce greater impacts per ton than any other product or good

Figure 11. Income per Ton of Cargo



Source: ECONorthwest, with data from Martin Associates (2012)

Figure 12. Jobs per Thousand Tons of Cargo



Source: ECONorthwest, with data from Martin Associates (2012)

Reading and Adjusting to Global Trends

Automobile imports through Portland reached an all-time high in 2006, with 463,557 vehicles moving through Port facilities.

Global economic forces have reduced the overall level of imports in recent years:

- The Great Recession reduced consumer demand for cars, and the financial crisis made auto loans more difficult to obtain. The market has yet to recover to 2007 levels.

- The 2011 Japanese tsunami reduced import volumes from Japan.

- The 2011 flooding in Thailand further affected the Japanese auto makers, which depend on parts from elsewhere in Asia.

- A strong Yen relative to the Dollar has caused Japanese auto makers to increase production at U.S. factories.

Many of these factors are temporary. Others may signal more permanent changes. The Port of Portland is paying attention to these dynamics and adjusting accordingly.

For example, the Port is looking to Chinese auto makers to import through the Portland. They're also working with foreign and domestic producers to increase auto exports to Asia.

handled through Portland Harbor (Martin 2012). As Figure 11 and Figure 12 show, autos produce about \$181 of revenue per ton and 1.45 jobs per 1,000 tons.

The value of auto imports, in terms of both income and jobs, comes in part from the fact that once autos are unloaded in Portland, workers do more than simply load them onto trains and trucks. Workers in Portland accessorize and customize the autos before they reach their final destination in the American market.

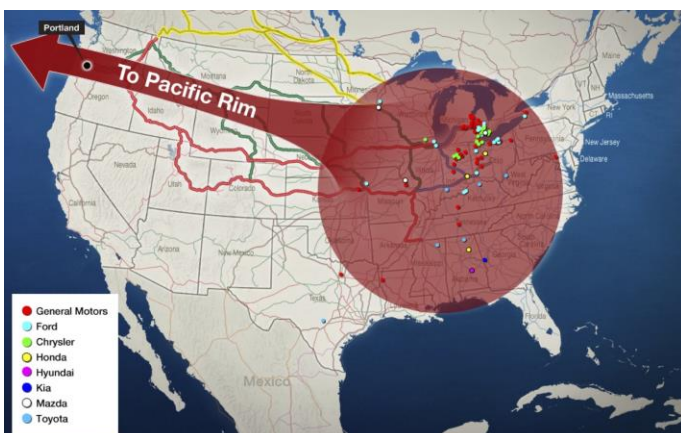
Approximately 200 Toyota employees accessorize cars once they arrive in Portland. In this way, demand for Toyotas in Chicago help support employment in the Portland area.

While not the only automobile company to invest in Portland Harbor, Toyota has one of the longest tenures at the Port. In 2003, Toyota solicited bids from West Coast ports for an auto terminal operation. It selected Portland citing financial considerations, relationship with the Port, and transportation connectivity. In 2004, when it embarked on a \$40 million renovation of Terminal 4, Toyota committed to developing in a way that highlighted its and the City of Portland's commitment to social and environmental responsibility. The facility integrated many elements that achieved both environmental improvements and business efficiency (Port of Portland 2012b):

- Energy consumption has been reduced by 33 percent, using skylights, efficient lighting, and waste heat recovery.
- Water consumption has been reduced by 75 percent, by harvesting rainwater for interior and exterior purposes and changing car-washing practices.
- Waste reduction practices led to a 96 percent recycling rate, averaging only 6 ounces of waste per vehicle.
- Storm water runoff is managed using both natural and mechanical filtration to remove pollutants before it reaches the Willamette River.
- The banks of the Willamette River were restored during development with native vegetation to achieve higher quality habitat for native species.
- The facility was one of the first industrial developments to receive LEED

Gold certification, and the first industrial facility to achieve Salmon Safe certification.

Figure 13. Potential for Auto Exports through Portland



Source: Port of Portland

Auto imports helped carry the Port of Portland through the last century. As the Port looks forward, it anticipates building a market for auto exports. The first shipment of Fords manufactured in the U.S. and headed to South Korea left Portland in 2012. With more Asian manufacturers producing cars in the U.S. and demand for vehicles in Asia picking up, this may be an important source of future growth.

5 The Potash Story

Potash: What is it?

Have you ever noticed the N-P-K labels on fertilizer bags? Potash is the K in this mix: potassium (potassium chloride, to be exact). It boosts plants' water retention, yield, nutrient value, and disease resistance. It's a critical ingredient for plants to grow and agriculture to thrive. It's water soluble, which is why keeping it dry (in covered freight cars, storage buildings, and ships) until it's applied to crops is so important. It's also caustic, which is why it's stored in wood and concrete buildings. (Lang 1995)

Saskatchewan has the world's largest recoverable reserve of potash, amounting to almost 50 percent of global reserves. In 2012, about 25 percent of the potash produced in the world was mined in Canada. (Jasinski 2013)

"Operators of Western coal mines foresee annual export sales to Pacific Rim countries by the year 2000 of 100 million tons or more." So major news outlets reported in 1981 as the race to capture coal export demand heated up among west coast ports (Kienlen 1981). By 1982, Pacific Coal Corporation broke ground on a coal loading facility at Port of Portland's Terminal 5 projected to export around 15 million tons of coal each year (Kienlen 1982).

It was not to be. By 1983, construction halted on the coal terminal as Asian customers looked to cheaper Australian coal supplies, and global economic trends cooled demand for U.S. coal. Even though the project didn't happen, by the time it was scrapped, the Port's lease revenues on the facility exceeded its development costs by \$125,000 (Journal of Commerce 1986; personal communication, Port of Portland staff).

With an empty terminal and declining demand for domestic coal, the Port expanded its search for how to best utilize the facility. It found a tenant for its Terminal 5 bulk facility with a brighter future. In 1995, Canpotex Ltd., announced it was considering the Port of Portland to ship potash mined from Saskatchewan to points west (Read 1995). When Canpotex's Portland facility officially came online in 1997 under a 30-year lease with the Port, the company had invested in a 100,000-ton-capacity potash storage facility that was the largest free-standing wooden structure in the Western U.S (Quigley 1997; Ota 1997).



Bulk Exports: A Port of Portland Strength

In addition to potash, Portland is a leading exporter of wheat, and soda ash (Coia 2012). It's been able to maintain its strength in the bulk market because of its strong rail and barge connections.

During the 1990s, through the investments in the potash facility at Terminal 5, the Port of Portland experienced a 20-fold increase in mineral bulk exports, growing its share of the west coast market from 5 percent to nearly 30 percent by 1998 (Quigley 1997). Today, the Port of Portland leads the nation in potash and soda ash exports. Portland is the largest mineral bulk export gateway on the U.S. West Coast.

In its search for an ideal facility to ship potash, Canpotex considered many ports on the west coast of the U.S. and Canada. It decided on Portland because of these advantages:

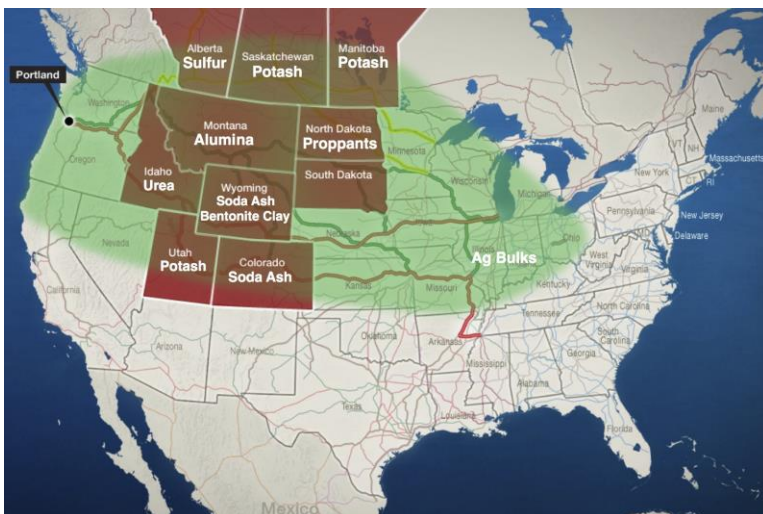
- Available equipment and vacant terminal suited for bulk transport.
- Rail service connections from mine to dock, served by two Class I railroad carriers, and capacity to increase rail traffic on existing tracks (Ota 1997).

Before selecting Portland, Canpotex moved most of its potash headed to Asian markets through Vancouver, B.C. Adding a second terminal in Portland allowed Canpotex greater freedom, flexibility, and reliability to deliver potash overseas at lower cost.

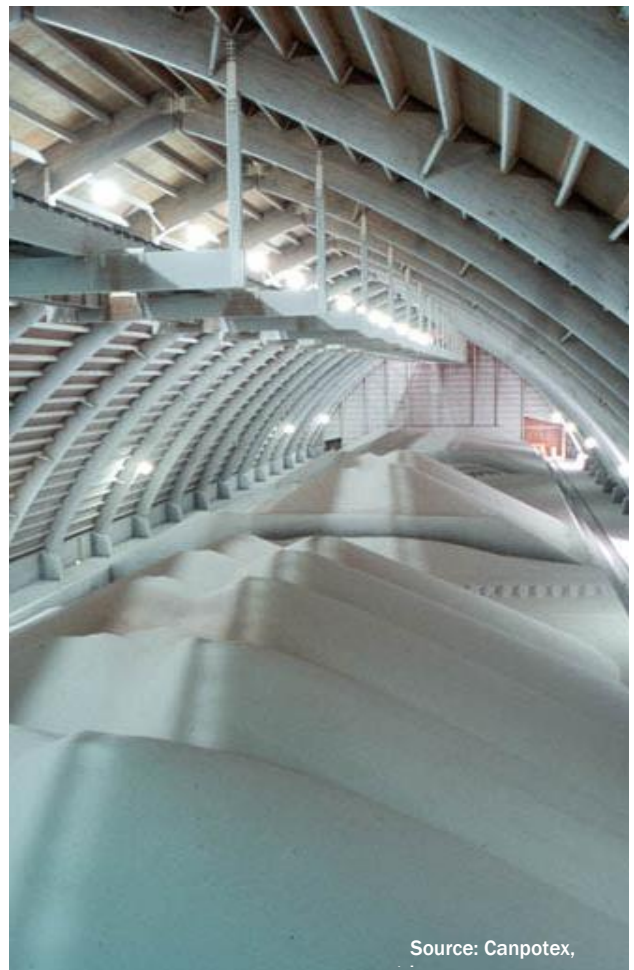
In 2005, Canpotex expanded the facility at the Port of Portland, nearly doubling the wooden storage facility and building a new rail loop. The expansion increased potash exports through Terminal 5 from 2.5 to 3.5 million tons per year. It attributed its expansion to growing demand for potash from global markets (Pacific Builder & Engineer 2005; personal communication with Port of Portland staff).

Canpotex continues to solidify its commitment to exporting potash through the Port of Portland. By 2013, it had invested over \$80 million at Terminal 5, and regularly employed up to 80 people. Plans are now in development to make new investments at the site (Siemers 2013a, 2013b). This announcement further solidifies Canpotex's commitment to Portland.

Figure 14. Bulk Origins and Destinations



Source: Port of Portland



Source: Canpotex,

6 The Portland Shipyard Story

Timeline of the Portland Shipyard

1903 *Port of Portland builds first dry dock*

1942 *Kaiser-operated, Navy-owned shipyard on Swan Island builds Liberty and Victory ships for the war*

1948 *Port of Portland acquires Swan Island shipyard from Kaiser*

1963 *Port of Portland dedicates Dry Dock 3, the largest floating dry dock on the West Coast*

1976 *Voters approve financing for Dry Dock 4, which became the largest floating dry dock in the Western Hemisphere*

1981 *Federal ship construction subsidies are abolished; shipyards across the country close*

1990 *Employment peaks at 3,470; shipyard handles 80 percent of all tanker repair on West Coast*

1995 *Cascade General becomes sole shipyard contractor*

2000 *Port of Portland sells shipyard to Cascade*

2001 *Cascade sells Dry Dock 4 to Bahamian company*

2006 *Vigor Industrial and Oregon Iron Works begin constructing barges at shipyard*

2013 *Vigor announces plans to bring the largest floating dry dock in the U.S. to Portland Harbor*

(The Oregonian 1999 and 2001)

The Portland Shipyard's birth came during World War II, when Henry Kaiser and the U.S. Navy developed a shipyard on Swan Island. There, thousands of workers built ships and tankers for the war effort. After the war, the facility went idle, and in 1953, the Port of Portland purchased the Portland Shipyard from Kaiser (Vigor Industrial 2013a).

Over the next decades, the Port of Portland invested in dry docks and other infrastructure, which several private ship repair companies contracted to support their operations. In 1975 the Port decided to invest in improvements that would make the Portland Shipyard a world-class facility, capable of handling Alaska oil tankers and liquefied natural gas carriers. Voters approved a \$84 million bond to purchase the largest floating dry dock in the western hemisphere. The Port completed the improvements in 1979, and planned for operating expenses to cover the bonded debt (Kinsey Hill 1999).

Throughout the 1980s, the shipyard's employment fluctuated between 400 and 2,000 workers, as the ship-building business became unpredictable. The oil crisis diminished global demand for ship repair and competition from Asia undercut international demand for U.S. shipyards. Although employment peaked at almost 3,500 in 1990, by the mid-1990s, all but one of the contracting ship-building companies ceased operations at the Port (Manning 1994; The Oregonian 2001).

The Port of Portland sensed times had changed. They commissioned a consulting firm to provide recommendations on how to adapt. The resulting report revealed that the shipyard's operating model was outmoded. The evolving dynamics of the industry and government cutbacks made multiple contractors competing for the same business at Portland Shipyard untenable in the long-run. The report recommended selling the facility or leasing it to one proven contractor (Read 1994).

In a play for long-term viability, Port decided to lease the operations of the shipyard to a sole contractor, Cascade General, which had been a long-standing contractor at the facility. Just two years later, the Port sold the facility to Cascade General. At the time of sale, the Portland Shipyard was the last publicly-owned commercial shipyard in the nation. Between 1995 and 1998, when the Port committed to the sale, Cascade General employed between 650 and 1,200 workers (Kinsey Hill 1998).

Although controversial to many Portlanders, the sale finally cleared in 2000. Less than a year later, however, one of Cascade General's underwriters declared bankruptcy and the company lost at least one large contract. Cascade General was on the brink of bankruptcy itself. In an attempt to stay afloat, it sold the Portland

Shipyard's centerpiece, Dry Dock 4, to a Bahamian company to pay off its debts (Manning 2001).

Cascade General weathered the storm. Today, operating under the name Vigor Industrial, it continues repairing ships at the shipyard on Swan Island. All kinds of ships make their way for repairs to the Swan Island dry docks: cruise ships, military supply vessels, and merchant cargo ships. Vigor is expanding its business in new ways as well. It assembled and will launch the first commercial wave energy generator later this year. In 2006, for the first time in decades, ship construction returned to Swan Island as Vigor partnered with Oregon Iron Works to form U.S. Barge (Kish 2007). And Vigor will soon take ownership of the largest dry dock in the United States. It's larger than the one they sold to keep the business afloat, and will allow the company to service a new generation of the U.S. Navy's Military Sealift Command ships and other post-Panamax cargo and cruise ships (Vigor Industrial 2013b).

Since taking over ownership of the Portland Shipyard, Vigor has purchased and invested in shipyard facilities across the west coast, becoming the leading provider of shipbuilding, ship repair, and other industrial services in the Pacific Northwest and Alaska (Vigor Industrial 2013a). But they remain centered at the roots of West Coast shipbuilding, in Portland Harbor.



Depletion of Future Dry Dock In Portland's Swan Island shipyard.
(Source: Vigor Industrial)

7 Conclusions

The data and stories presented in the previous pages demonstrate that Portland Harbor continues to contribute to Portland's economy, even as local and global economic trends shift. The three stories (Auto-Transport, Potash, and Portland Shipyard) illustrate the Port of Portland's response to some of these shifting patterns, acting and reacting to global market forces and the needs of local users.

- In the auto sector, the Port seized on the opportunity to become a leading auto-import gateway, making investments to maintain its comparative advantage over ports in Washington and California. It's developing strategies and relationships to grow a nascent auto export business as well.
- After experiencing the downside of global market shifts for domestic coal, the Port responded by looking to markets for other bulk goods. Portland is now the largest Potash exporter in the United States.
- By independently assessing the local and global challenges of the ship-repair industry in the 1990s, the Port made difficult decisions that would ultimately position the Portland Shipyard for long-term success. In selling the last remaining publicly-owned shipyard in the country, the Port provided an opportunity for a private business to take risks it needed to take to survive and thrive in the rapidly changing, global ship-repair sector.

Through these, and other examples, the Port of Portland enhances Portland's regional economy. The connections the Port facilitates across the globe allow local businesses to explore new market opportunities more efficiently. The Port's ongoing efforts includes continued investment in marine operations, finding opportunities to maximize revenues, and securing business opportunities that benefit manufacturers, shippers and the local economy alike.

References

- Brookings Institution. 2012. *Greater Portland Export Plan, Metro Export Initiative*. Brookings-Rockefeller Project on State and Metropolitan Innovation.
- City of Portland. 2013. *Adopted Budget, City of Portland, Fiscal Year 2013-14, Volume One: Citywide Summaries and Bureau Budgets*. Retrieved July 31, 2013, from <http://www.portlandoregon.gov/cbo/article/456883>
- Coia, A. 2012. "The Strength of Bulk: Bulk and Breakbulk Ports are Optimizing their Abilities to Meet the Demands for Volumes of Various Commodities." *World Trade* 25 (3): 36-40.
- Jasinski, S.M. 2013. *Mineral Commodity Summaries*. U.S. Geological Survey. January. Pp. 122-123. Retrieved July 17, 2013, from <http://minerals.usgs.gov/minerals/pubs/commodity/potash/mcs-2013-potas.pdf>
- Journal of Commerce. 1986. "Portland Feud Heats up Case Over Unfinished Coal Unit Likely to Resume." September 23. Pg. 12A.
- Kienlen, T.W. 1981. "West Coast Ports Jockey to Set Up Facilities to Load Coal for Pacific." *Christian Science Monitor*. February 19. Pg. 10.
- Kienlen, T.W. 1982. "Oregon Girds to Ship US Coal to Pacific Rim." *Christian Science Monitor*. April 8. Pg. 10.
- Kinsey Hill, G. 1999. "Port Pulls Out of Economic Quagmire." *The Oregonian*. February 28. Pg. B01.
- Kinsey Hill, G. 1998. "Critics Urge Port to Reject Shipyard Deal." *The Oregonian*. December 11. Pg. C01.
- Kish, M. 2007. "New Company Gets a Barge Out of It." *Portland Business Journal*. August 27.
- Lang, D. 1995. "Unsung Potash a Key Fertilizer Ingredient." *Journal of Commerce*. August 31. Pg. 2C.
- Manning, J. 2001. "Cascade Sells Dry Dock 4 to Bahamian Company." *The Oregonian*. May 26. Pg. C01.
- Manning, J. 1994. "Port Board Ponders Island Role." *The Oregonian*. December 22. Pg. B01.
- Martin Associates. 2012. *The Local and Regional Economic Impacts of the Portland Harbor, 2011*. Port of Portland. February 20.
- Martin Associates. 2007. *The Local and Regional Economic Impacts of the Portland Harbor*. Port of Portland. January 31.

Merina & Company, LLP. 2012. *Port of Astoria, Clatsop County, Oregon Financial Statements (With Supplemental Information) For the Years Ended June 30, 2011 and 2010*.

Multnomah County. 2013. *2012 Property Tax Statement Guide*. Retrieved June 28, 2013, from https://web.multco.us/sites/default/files/assessment-taxation/documents/tax_form_2013_final.pdf

Northwest Construction. 2008. "Construction Completed on Bulked-Up Potash Facility." March 1.

Ota, A.K. 1997. "Loading up on Minerals." *The Oregonian*. March 25. Pg. C01.

The Oregonian. 2001. "Portland Shipyard Chronology." April 15. Pg. D02.

The Oregonian. 1999. "Portland Shipyard: Through the Years." February 28. Pg. B03.

Pacific Builder & Engineer. 2005. "Export Facility at Port to Expand." December 5. Pg. 14.

Pauly Rogers and Co., PC. 2012. *Oregon International Port of Coos Bay, Coos County, Oregon, Financial Report For the Year Ended June 30, 2012*.

Peterson, B. 1985. "Oregon is a Port in the Storm of Protectionism." *The Washington Post*. April 8. Pg. A26.

Port of Bellingham, Finance Division. 2012. *Comprehensive Annual Financial Report for the Fiscal Year Ended December 31, 2011*.

Port of Portland. 2013. *Strategic Plan and Budget*. Retrieved July 31, 2013, from <http://www.portofportland.com/StrategicPlanBudget.aspx>

Port of Portland. 2012a. *Report on Audit of Financial Statements and Supplementary Information For the Year Ended June 30, 2012*. Retrieved July 17, 2013, from http://www.portofportland.com/PDFPOP/Audit_POP_Annual2012.pdf

Port of Portland. 2012b. "The Road to Green." *Portside*. Spring.

Port of Seattle. 2013. *Comprehensive Annual Financial Report for the Year Ended December 31, 2012*.

Port of Tacoma. 2012. *Annual Report, 2012*.

Quigley, L. 2007. "Portland Takes Potash from Canada." *Traffic World*. August 25. Pg. 48.

Read, R. 1995. "There's Money in Potash, Port Says." *The Oregonian*. March 7. Pg. B12.

Read, R. 1994. "Adviser: Sell Portland Shipyard." *The Oregonian*. December 18. Pg. A1.

Siemers, E. 2013a. "Canpotex Planning New Potash Storage Facility at Port of Portland." *Portland Business Journal*. February 20.

Siemers, E. 2013b. "Potash project could create jobs." *Portland Business Journal*. February 22.

The Trade Partnership. 2010. *International Trade: A Driver of Output and Employment in Oregon and Portland/Vancouver*. Portland Business Alliance. December.

U.S. Bureau of Labor Statistics. 2013. *2012 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates, Portland-Vancouver-Hillsboro, OR-WA*. Retrieved June 28, 2013, from http://www.bls.gov/oes/current/oes_38900.htm

Vigor Industrial. 2013a.

Vigor Industrial. 2013b. *Vigor Signs Deal for Largest Floating Drydock in the United States*. Retrieved July 17, 2013, from http://vigorindustrial.com/news-press/vigor_signs_deal_for_largest_floating_drydock_in_the_united_states

Washington State Auditor's Office. 2012. *Financial Statements and Federal Single Audit Report, Port of Anacortes, Skagit County*. January 1, 2011 through December 31, 2011. Report No. 1008269. September 17.

Washington State Auditor's Office. 2013. *Financial Statements and Federal Single Audit Report, Port of Vancouver, Clark County*. January 1, 2012 through December 31, 2012. Report No. 1009918. June 10.