

## Port of Astoria

# 2009 Economic Impact Study FINAL DRAFT REPORT

PREPARED FOR

**Port of Astoria**

PREPARED BY

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## Executive Summary

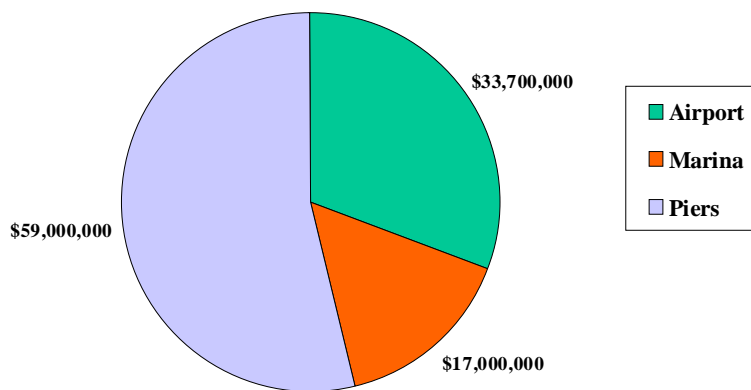
### Summary of Impacts

The Port of Astoria retained BST Associates to estimate the economic impact generated in calendar year 2009 by the Port and its tenants. The purpose of this study is to document how investments by the Port make an impact in Clatsop County and Oregon State.

#### *Direct Business Revenue*

The Port of Astoria owns an airport, two marinas, deep-water piers, and a variety of industrial properties. The users and tenants of these facilities generate significant economic activity in Clatsop County and the rest of Oregon. As shown in Figure 1, the Port and its tenants generated approximately \$110 million in direct business revenue in 2009 (i.e., sales of goods and services). The Port and its tenants at the piers and associated uplands owned by the Port Astoria generated \$59 million in revenue, \$34 million at the airport, and \$17 million at the marinas and boatyard.

**Figure 1 – Direct Business Revenues from the Port of Astoria & Tenants**



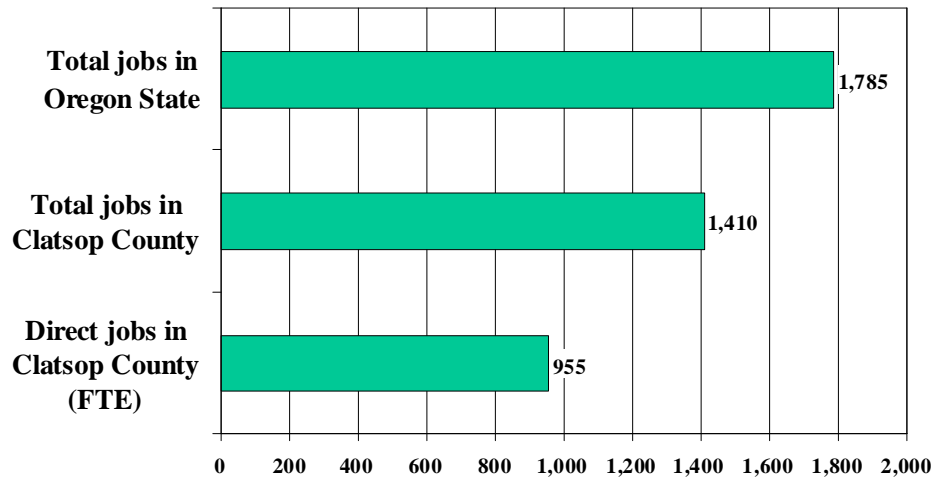
#### *Employment*

As shown in Figure 2, the Port of Astoria generated an estimated 955 full-time equivalent (FTE<sup>1</sup>) direct jobs in 2009 as a result of its own and its tenants' activity. Including direct, indirect and induced impacts, the Port and its tenants generated approximately 1,410 jobs in Clatsop County and 1,785 jobs in Oregon State in 2009.

The number of actual direct full-time jobs generated by the Port and its tenants in 2009 was approximately 850. Part-time jobs at Port tenants are primarily in the fish processing industry, and are highly seasonal. Depending on the time of year the number of part-time workers may vary from essentially none to more than 500.

<sup>1</sup> "Full-time equivalent", or "FTE", is a method used to compare employment figures. It is calculated by dividing the total number of hours worked by a standard work year, or 2,080 hours.

**Figure 2 – Jobs Generated by the Port of Astoria and its Tenants in 2009**



By line of business or activity center, the Port of Astoria and its tenants generated the following number of direct jobs in 2009:

- Astoria-Warrenton Regional Airport generated 340 jobs,
- Marinas, including the boatyard, generated 185 jobs,
- Piers (including lease property on the adjacent uplands) generated 410 full-time equivalent jobs. Of this total, approximately 260 were actual full-time jobs, and approximately 500 part time jobs (primarily in fish processing) generated an estimated equivalent of another 120 full-time jobs,
- Capital improvements and administration generated approximately 17 jobs.

It is important to note the critical link between the marinas and piers. Although the impacts for these two lines of business were estimated separately they are inextricably tied, with the fishing fleet that uses the marinas and boatyard depending on the processors at the piers, and the processors, boat repair operations, and other firms at the piers depending on the commercial and recreational fleets for much of their business.

In addition to the direct jobs generated by the Port and its tenants in 2009, tenants at the recently-acquired North-Tongue Point property provide another source of Port-related jobs that are not reflected in this analysis. Currently, North Tongue Point supports 25 full-time jobs plus 65 part-time fish-processing jobs, and the Port is actively marketing the property to attract additional employment.

The impacts of log exports have also not been included, since they started in late 2010. Each call by a log ship generates approximately 25 jobs directly, primarily at the dock. In addition, log exports help to retain or expand logging-related employment, including loggers, scalers, truck drivers, and others. Retaining these jobs is especially important in the current economy, to mitigate that the impact the declining housing market has had on lumber production.

Including all Port jobs, the Port of Astoria accounted for approximately 5.8% of the total covered jobs<sup>2</sup> in Clatsop County. This result is comparable to the economic impacts of ports such as Tacoma and Olympia (e.g., these ports accounted for approximately 5% of covered employment in their jurisdictions).

**Income**

According to the Oregon Labor Market Information System, there were 16,555 covered employees in Clatsop County in 2009.

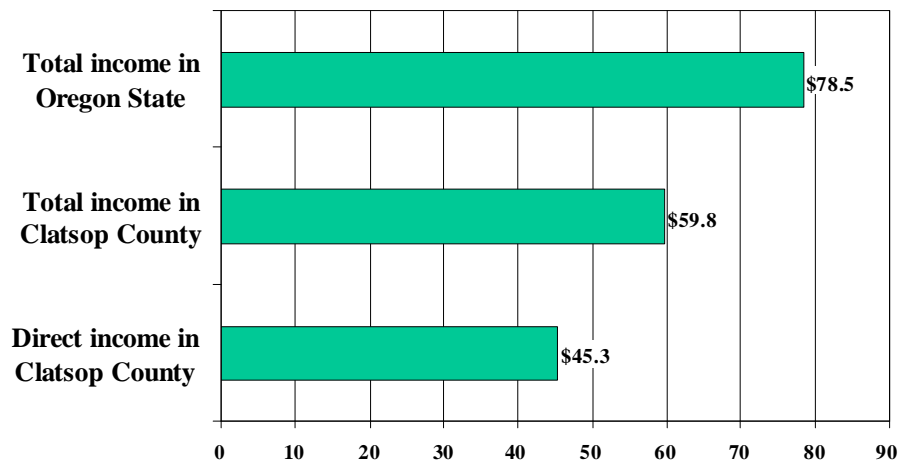
The Port and its tenants generated direct income at Port facilities of \$45.3 million in 2009 (i.e., wages, salaries and benefits for employees). These jobs were relatively high paying, averaging \$46,600 per year per full-time equivalent (FTE) worker. This average wage per FTE at the Port is 50% higher than the county-wide average of \$30,900.

Wages at many of the industries supported by the Port of Astoria are higher than the county average, and often by a wide margin. Examples include:

- Fishing, et al. - \$47,400
- Wholesale trade - \$47,000
- Waste management - \$40,000
- Wood product manufacturing - \$43,000
- Support activities for transportation - \$46,700
- Transportation equipment manufacturing - \$32,500

Including direct, indirect and induced impacts, the Port and its tenants generated \$59.8 million in income in Clatsop County and \$78.5 million in Oregon State in 2009.

**Figure 3 - Income Generated by the Port of Astoria And its Tenants in 2009 (\$ millions)**



<sup>2</sup> Covered jobs are jobs covered by the State of Oregon Employment Department.

*Taxes*

According to the Oregon Legislative Revenue Office, Oregon State residents paid approximately 9.0% of their personal income in state and local taxes. Applying this tax rate to total income<sup>3</sup> implies that the Port and its tenants generated state and local taxes of \$4.1 million in 2009.

In 2009 the Port collected slightly more than \$1.01 million in property taxes. Therefore, for every tax dollar collected by the Port, an additional \$4.00 (\$3.10 net of property tax) was generated in direct and indirect income by the Port and its private industry partners.

In terms of jobs created, for every \$1,062 collected in taxes by the Port, one full-time equivalent job in Clatsop County was retained or created by the Port and its private industry partners.

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<sup>3</sup> Including direct, indirect and induced effects.

## Technical Report

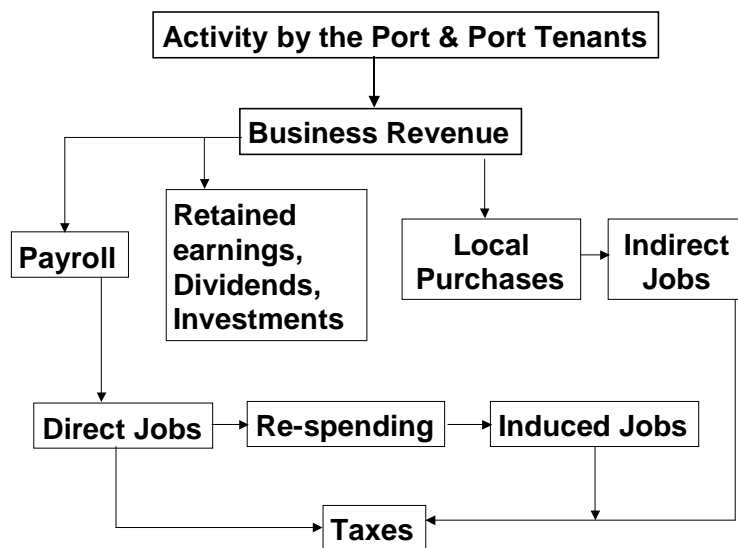
The Port of Astoria retained BST Associates to estimate the economic impact generated by the Port and its tenants operating at the airport, marinas and piers during calendar year 2009.

This chapter provides a summary of the methodology and results of the Port of Astoria Economic Impact Study.

### Methodology

The flow of economic activities is illustrated in Figure 4. Economic activity generated by the Port and its tenants creates business revenues, which in turn, creates spending on payrolls for people working directly for these firms, retained earnings/dividends/investments and local purchases of supplies, materials, and outside labor. The local purchases by firms create indirect jobs. Payroll for direct employees creates additional expenditures, which creates induced jobs. Finally, income associated with direct, indirect and induced activity generates state and local taxes.

Figure 4 – Flow of Impacts



The process for estimating economic impacts included a survey/interview process and review of secondary data to identify direct impacts. These direct impacts were then used as inputs to the IMPLAN model for Clatsop County and Oregon State to estimate total impacts.

#### Survey Process

The initial step of the economic impact study was to document the direct impacts of the Port of Astoria by line of business.

With significant assistance from Port staff, tenants and users of each of the Port’s lines of businesses were identified and contacted. Surveys were mailed to each of the ports tenants, which were followed by a second mailing approximately one month later. Follow-up telephone interviews were also used to collect additional information. Tenants were assured that no

individual information would be released, and that data from the individual surveys would be aggregated to preserve anonymity.

BST Associates also utilized port records (expenditures by line of business, capital budgets and other available records) as well as data from Dun & Bradstreet, Manta, company websites, and other sources in order to further identify the direct impacts from construction and operations, including:

- Employment,
- Employee income,
- Business revenue, and
- Taxes.

### ***Estimation of Total Impacts***

Based upon the direct impacts, BST Associates estimated the indirect and induced impacts using the IMPLAN model<sup>4</sup>, which estimates the indirect and induced impacts. Indirect impacts refer to expenditures by the user/tenant on outside goods and services. Induced impacts refer to purchases based on the employment earnings from direct and indirect economic activities. As wages are paid out, workers' families spend their income on a wide array of goods and services, much of which are supplied by the local economy.

Total impacts incorporate the sum of direct, indirect, and induced impacts. It is important to note that these effects are limited for any region because of spending "leakages" at each round of inter-industry and household purchases. That is, the goods and services required at each stage are partly purchased from outside the study area, thus reducing the total supplies provided locally. The IMPLAN model is designed to calculate the multiplier effects of the designated regions, in this case define as Clatsop County and Oregon State.

## **Findings**

This section summarizes the findings of the economic impact study.

### ***Airport***

Astoria-Warrenton Regional Airport is a popular general aviation facility offering hangars, flight instruction, aviation fuels, aircraft maintenance, terminal facilities, and industrial space. In addition, Astoria Regional is home to U.S. Coast Guard Sector Columbia River, and serves as the base for aviation operations of the Columbia Bar Pilots.

The airport is also the home to a number of firms aviation-related firms such as Twiss Air, Seaside Helicopters, manufacturing firms Lektro, Inc. and Overbay House Works, and other firms such as United Parcel Service, Western Oregon Waste, and Hertz Rental.

Astoria Regional Airport serves both private and commercial aircraft, providing passenger and cargo transportation, emergency services, search and rescue operations, disaster response and recreational activities. According to FAA statistics, the airport handles approximately 39,000 operations per year. Of this total, approximately 14,000 are military (primarily Coast Guard), 11,500 are local GA (general aviation), 11,500 transient GA, and 1,600 are air taxi.

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<sup>4</sup> Please see appendix for additional information on the Implan model.

The primary runway is 5,800 feet long, and the instrument landing system makes the facility usable in most weather conditions. The location of the airport makes it the most important aviation facility on the north coast of Oregon and south coast of Washington.

The Airport Industrial Park is a 45 acre property that is centrally located in Clatsop County offering easy access to north county and south county markets.

**Figure 5 – Aerial View of Astoria-Warrenton Regional Airport**



Source: Best Impressions Picture Company

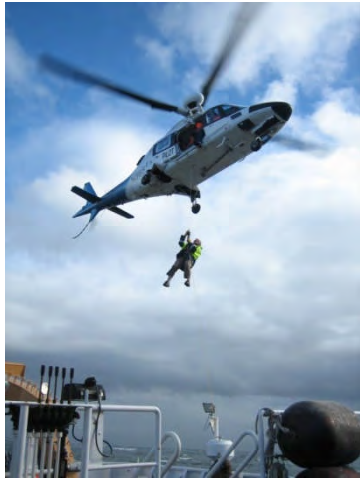
The airport is a necessity to a number of employers based there, including:

- Lektro Inc., whose potential customers fly in to view the company's aircraft tugs,
- The Columbia River Bar Pilots, who fly out of the airport by helicopter to or from 75% of the ships that they guide into and out of the Columbia River,
- The US Coast Guard Sector Columbia River, whose operations at the airport cover the entire Oregon Coast, as well as most of Idaho, and a large part of Washington,
- Twiss Air, which provides mechanical services to aircraft from the region, as well as offering flight training and scenic flights,
- Seaside Helicopters, which keeps its sightseeing helicopter at the airport when not conducting flights at Seaside,
- Seaport Airlines provided commuter service to Portland (at the time of this survey),
- Hertz Rentals offers vehicles for rent,
- The airport is also used regularly by the military in conjunction with activities at nearby Camp Rilea.

The airport also provides space to a number of non-aviation businesses such as:

- Overbay House Works, which creates custom millwork at their airport facility, and markets the product throughout the region,
- Western Oregon Waste, which provides solid waste service to most of Clatsop County from their airport facility,

- Precision Heating & Indoor Air Quality, Inc., provides HVAC services throughout all of Clatsop County and south Pacific County.
- Direct Impacts
  - Jobs – 340 jobs
  - Income - \$20.6 million
  - Business revenue - \$29.8 million
- Total Impacts in Clatsop County
  - Jobs – 540 jobs
  - Income - \$27.4 million
- Total Impacts in Oregon State
  - Jobs – 710 jobs
  - Income - \$33.2 million



Source: NOAA



Source: Lektro



Source: Western Oregon Waste

## *Marinas*

The Port of Astoria operates two marinas that play a critical role in Clatsop County’s economy. The West Basin, located near the west end of town, is generally used by recreational boats, while the East Basin is used to moor commercial and recreational vessels. In addition, the East Basin has a boat launch that is extremely busy during fishing seasons. The marina line of business also includes the boatyard, which is located at Pier 3, near the West Basin.

The East Basin has a total of 82 slips, while the West Basin has space for 400 vessels, including space on linear docks and side-ties.

The East Basin features a central dock that is large enough for vehicles to drive alongside vessels, facilitating the loading of supplies and equipment on fishing vessels. The East Basin is also the location of the Port’s boat ramp, which is very popular with recreational fishermen and fishing guides. The West Basin has a fuel dock that sells gasoline and diesel fuel.

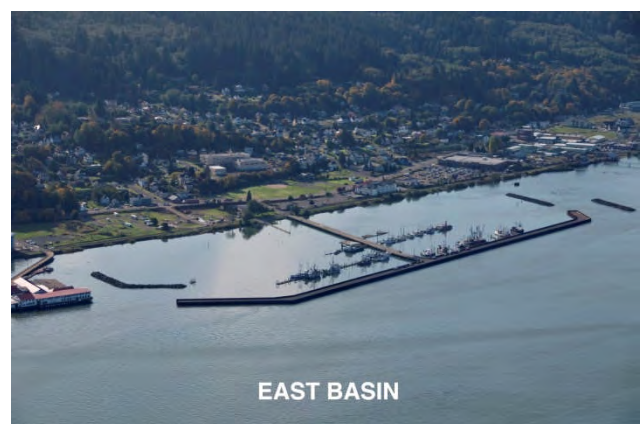
The Port’s boat yard is located on Pier 3, near the West Basin. The yard opened in 2005, and has proven to be popular with both recreational and commercial boaters. The yard, which features a Marine Travellift for moving boats into and out of the water, provides space for vessel owners to work on their own boats, or to have professional services performed.

The economic impacts associated with the marina are generated by:

- Commercial fishing vessels, both local and transient,
- Recreational power boats and sailboats, both local and transient,
- Activities at the boatyard,
- Port marina personnel.

According to Port records, permanent tenants at the marinas include more than 50 commercial fishing vessels and more than 200 recreational vessels. Without even leaving the dock each of these vessels requires a certain investment each year in maintenance and upgrades, and much of this is purchased from local providers. Operating the vessels also requires fuel, food and drink for passengers and crew, fishing gear, and other equipment, much of which is purchased locally.

**Figure 6 – West Basin and East Basin**



Source: Best Impressions Picture Company

Port records also indicate that in 2009 transient commercial vessels spent a total of approximately 1,650 nights at the Astoria marinas, while transient recreational vessels spent

5,100 nights. Demand for transient moorage is seasonal: most of the recreational demand is in July, August and September, while commercial transient moorage begins to ramp up in May, and peaks between August and October.

In addition to the transient vessels that moored in the marinas, a large number of boats use the Port's launch ramp, especially recreational fishing boats and fishing guide boats. However, figures for usage of the launch ramp are not available.

The marinas are also a critical piece of the local fishing industry. Clatsop County accounts for two-thirds of commercial fish landings in Oregon, a huge increase over the county's one-third share during the early 1980's.

BST Associates estimates that the marina generated the following economic activity in 2009:

- Direct Impacts
  - Jobs – 185 jobs
  - Income - \$7.5 million
  - Business revenue - \$15.9 million
- Total Impacts in Clatsop County
  - Jobs – 234 jobs
  - Income - \$9.0 million
- Total Impacts in Oregon State
  - Jobs – 240 jobs
  - Income - \$11.1 million

### *Piers*

The Port of Astoria owns three deep-water piers at the west end of Astoria, as well as a substantial amount of upland property adjacent to the piers. A variety of job-creating enterprises have moved to these properties or expanded existing operations, including several fish processing plants, a boatyard, a marine supply wholesale and retail business, boat repair business, and others. As the Oregon commercial fishing industry has increasingly concentrated in Clatsop County, this action by the Port of Astoria has been critical to one of the key industries in both Clatsop County and in Oregon State.

The Port has also retained the ability to handle large ships, and recent years have seen a variety of ships moored there, including cruise ships, research vessels, cable ships, Coast Guard and other military vessels, dredge support vessels, vessels in for repair, and others. These vessels boost the local economy through shoreside spending by passengers and crew, and provide work to the local longshore force and to local businesses.

In addition, in late 2010 the Port of Astoria hosted the first log export ship in many years. Because this report focuses on the economic impact that was generated during calendar year 2009, the impact of log export operations are not included in the economic impact estimates.

Figure 7 – Port of Astoria Piers 1, 2 & 3 and Uplands



Source: Best Impressions Picture Company

The economic impacts associated with Piers are generated through the activities of:

- Businesses located on Port property
  - Abhe & Svoboda
  - Astoria Granite Works
  - Astoria Pacific Seafoods
  - Astoria Tax Consulting
  - Bergerson Construction
  - Bornstein Seafoods
  - Bridgewater Bistro
  - Charter Communications
  - Columbia Community Mental Health
  - Columbia Concrete Pumping
  - Columbia Distributing
  - Columbia Pacific Marine Works
  - Columbia River Fishermen's Protective Union
  - Da Yang Seafoods
  - Englund Marine & Industrial Supply
  - J.M. Browning Logging and Trucking
  - John Carlson, CPA
  - Journey's End Espresso
  - Marine Spill Response Corp.
  - Northwest Wild Products
  - Oregon DOT
  - Oregon State Police
  - P&L Johnson Mechanical
  - Ray Raihala Insurance
  - Red Lion Hotels
  - Tiki Charters
  - Total Fisherman
  - Walter E. Nelson
  - Westerlund Log Handlers
  - World Class Charters
  - Westbay Seafoods
- Port of Astoria staff
- Deep-draft vessel passengers and crew
- Longshore labor

BST Associates estimates that the Piers generated the following economic activity in 2009:

- Direct Impacts
  - Jobs – 410 jobs
  - Income - \$16.4 million
  - Business revenue - \$157.3 million
- Total Impacts in Clatsop County
  - Jobs – 611 jobs
  - Income - \$22.2 million
- Total Impacts in Oregon State
  - Jobs – 810 jobs
  - Income - \$32.9 million

### ***Capital Projects and Administration***

In 2009 the Port of Astoria undertook approximately \$1.0 million in capital improvements. The largest shares of these funds were used for renovations to piers and replacement of the roof at Lektro. Smaller projects included hangar, taxi lane, and terminal improvements at the airport, electrical work at Pier 1, and improvements to the Chinook Building.

The Port also has approximately 20 employees, of which all but 4.5 are allocated to the specific lines of business.

The spending on capital projects and the non-allocated administration jobs generated the following economic activity in 2007:

- Direct Impacts
  - Jobs – 17 jobs
  - Income Jobs – \$0.8 million
- Total Impacts in Clatsop County
  - Jobs – 23 jobs
  - Income Jobs – \$1.1 million

### **Other Port Initiatives**

As discussed, this report has focused on the economic impact in 2009 of the Port of Astoria and its tenants. However, the Port has been involved in a number of other projects since that time that positively impact the economy of Clatsop County. These initiatives include:

- Re-entry into log exports
- Acquisition of North Tongue Point
- Renewal of Skipanon Peninsula lease

#### **Log Exports**

The Port of Astoria was approached in 2010 by a log exporter interested in leasing property at the Port's piers for exporting logs. In November of 2010 Astoria saw its first log ship in 14 years, and since then a number of other ships have docked to take on logs.

These log ships produce jobs at the piers as well as throughout Clatsop County. It is estimated that two ships per month support approximately 25 direct jobs at the docks, including longshore labor, security, and others. In addition, exports directly support a variety of other jobs, including loggers, scalers, truckers, yard sorters, tugboat crews, ship pilots, and others.

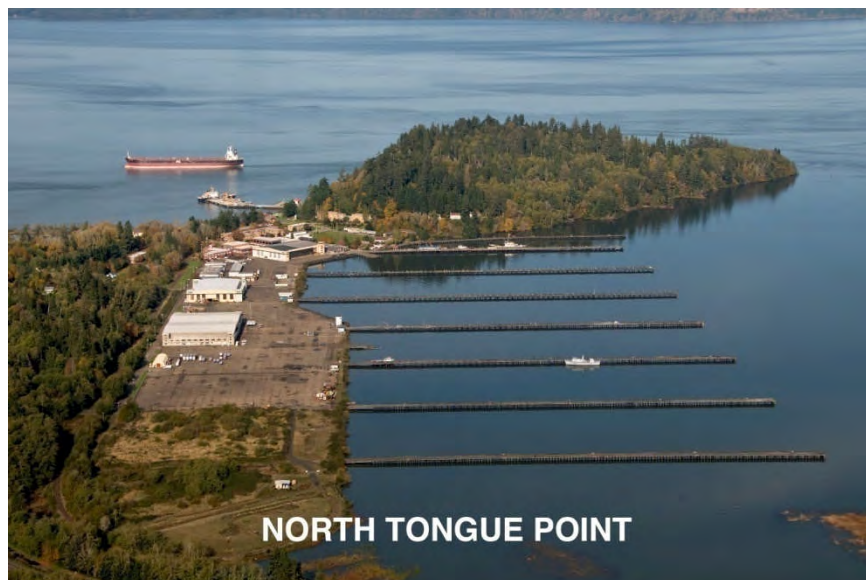
Support for these logging-related jobs is especially important in the current economic climate. The drop in construction of new houses has led to dramatically reduced demand from domestic lumber mills, which in turn has impacted logging. Exporting logs from Astoria helps to retain (or expand) these jobs.

### North Tongue Point

The Port of Astoria assumed control of the North Tongue Point property late in 2009. Because it was acquired late in the year, the economic impacts of operations are not included in this analysis. However, a number of firms are leasing space North Tongue Point, and these firms contribute to the economic impact of the Port.

Direct employment at North Tongue Point in 2009 was estimated at approximately 25 full-time jobs, with additional part-time employment during fish processing season.

**Figure 8 – North Tongue Point**



Source: Best Impressions Picture Company

The Port is actively marketing this property and has signed leases with a variety of business types, including boat building, fish processing, small boat demolition, vessel moorage, and other uses. Current tenants include:

- Astorgas
- Bach Corporation
- Budget Trucks
- Chinook Ventures
- City Transfer
- Clean Rivers Cooperative
- Deals Only
- Del Mar Seafoods
- J&H Boatworks
- J.E. McAmis, Inc.
- NRC Environmental Services
- Pacific Expedition Yachts
- USS High Point
- West-East Demolition and Trading

### Skipanon Peninsula

The Skipanon Peninsula property is an undeveloped 200 acre industrial site across Youngs Bay from Astoria, adjacent to the City of Warrenton. This property is currently in the planning stages for a proposed liquefied natural gas import facility.

To date, a substantial amount of money has been spent on designing and permitting the project, some of which has been spent in Clatsop County. The economic impact from this spending has been grouped with that of other property tenants for this report.

### South County Impacts

The Port of Astoria is a countywide port district, encompassing all of Clatsop County. While the facilities owned by the Port are located in the northern portion of Clatsop County, the activities of the Port and its tenants produce positive economic impacts throughout the county.

The high wages generated by the Port and its tenants generate positive economic impacts throughout Clatsop County. Specific examples of how the impacts of the port and its tenants are spread throughout the county are presented below.

As part of this analysis, an attempt was made to quantify the impact of the Port and its tenants on the south county area. Surveyed firms were asked to provide information on how many of their employees lived in the south county area. For the purpose of this study, south county included everything from Gearhart south.

According to the survey, 22 employees of port tenants were documented as living in the south county area, with direct income of \$985,000. With indirect and induced income included, the total income impact of port tenants is \$1.2 million in the south county area.

This estimate is conservative, for several reasons. The first of these is that few of the responding firms were able to tell how many of their employees live in the south county area, and only those employees reported as living in south county were included. The actual number of employees in the south county is likely much higher. The second reason is related to the definition of south county. By including everything from Gearhart south, a large portion of the county is included in south county.

Cruise ship calls provide direct benefits to the south county area. A share of the passengers took shore excursions to Seaside and Cannon Beach, and in 2009 their estimated spending was \$135,000.

The Port of Astoria also purchases goods and services from vendors in the south county area. In 2009, the amount the Port spent in south county was estimated to be \$135,000.

In summary, the Port's impacts in south county in 2009 included:

- 22 direct jobs
- Direct income of \$985,000
- Cruise passenger spending of \$135,000
- Port expenditures of \$135,000

The Port of Astoria collects property taxes to support its operations. This regular port tax rate has remained unchanged for several years at \$0.1286 per \$1,000 of assessed value. In addition, a levy of \$0.0869 per \$1,000 is currently being used to pay bond debt. The Port's share of tax for

a property valued at \$500,000 would currently be approximately \$110, including \$63 for the regular port levy and \$47 for bond repayment.

The total regular tax collection for the Port is approximately \$610,000, with bond levy of \$450,000. According to data from the Clatsop County assessor, the south county area (Gearhart south) accounts for 59% of the total assessed value of the county. Estimated Port tax collections from south county are \$360,000 for the regular levy and \$270,000 for bond repayment, or a total of \$630,000.

The estimated income impact of \$1.2 million in south county is nearly twice the amount of taxes collected there.

The following sections provide additional narrative information on the positive economic impact that the Port and its tenants have on the south county area.

### Airport

At the Warrenton-Astoria Regional Airport, the majority of based aircraft (approximately two-thirds) are owned by residents of north Clatsop County. Residents of south Clatsop County have the option of basing aircraft at Seaside Municipal Airport or at Warrenton-Astoria. The completion of hangars at Seaside in 2007 made Seaside Municipal a more attractive place to base aircraft, leaving just one south county resident with an aircraft at Warrenton-Astoria.

In addition to Clatsop County residents, however, Warrenton-Astoria attracts nearly one out of three hangar tenants from outside of Clatsop County. Several of these are from across the river in Pacific or Wahkiakum County (Washington), but an even larger number are from more distant locations in Oregon, Washington, California, Alaska, and other areas. These non-local owners boost the Clatsop County economy by spending money on food, lodging, and other visitor-related goods and services.

The Warrenton-Astoria Regional Airport is also an important employment center for Clatsop County. The jobs located at the airport are filled by workers from south county as well as north county, and the businesses located at the airport serve markets throughout the county and beyond. Examples include:

- A number of employees at Lektro Inc. live in the south county area, and Lektro sells to markets throughout the world, drawing money into the Clatsop County economy,
- The workforce at Overbay House Works includes members from the south county, and south county is a key market for the firm's products,
- Seaside Helicopters operates a sightseeing business in Seaside, but bases their helicopter at Warrenton-Astoria
- Western Oregon Waste provides solid waste service to south and north Clatsop County, and a large share of the firm's workforce is from the south county area,
- The Coast Guard base provides services along the entire coastline of Clatsop County.

### Piers

The Port of Astoria has numerous tenants at Piers 1-3 and the adjacent uplands whose operations benefit south Clatsop County. Examples of this include:

- Many passengers from cruise ships that call at the Port's piers take excursions to Seaside and Cannon Beach, where they spend money at shops and restaurants,

- A substantial share of Astoria Granite’s business is generated in the south county,
- The Walter E. Nelson Company also does a large share of its business in the south county area, and a quarter of its workforce reside there,
- The Oregon State Police and Oregon Department of Transportation both provide service to the south county area, and
- Columbia Distributing delivers alcoholic and non-alcoholic beverages throughout the county.

**Figure 9 – Newspaper Clipping Showing Cruise Passengers Waiting for Shuttle to Seaside/Cannon Beach**



Source: Oregonian, May 15, 2009

### Marinas

The marinas operated by the Port of Astoria serve residents of the south county area. A number of south county residents are permanent tenants at the marinas, and the boats owned by these include several commercial fishing vessels, recreational power boats, and nearly ten percent of the sailboats.

The Port’s marinas also provide transient moorage to boaters, and records show that residents of Cannon Beach, Seaside, and Gearhart are users of transient moorage at the marinas.

The marinas are also a critical part of the tourism infrastructure of Clatsop County. For tourist-related business in south county such as hotels and restaurants, the fishing opportunities at the Astoria marinas provide another activity to attract visitors to the county.

## Appendix

### Description of Implan Model

Minnesota IMPLAN Group, Inc. or MIG, Inc was founded in 1993 by Scott Lindall and Doug Olson as an outgrowth of their work at the University of Minnesota starting in 1984. This developmental work closely involved the U.S. Forest Service's Land Management Planning Unit in Fort Collins, and Dr. Wilbur Maki at the University of Minnesota.

In 1993, Scott and Doug entered into a technology transfer agreement with the University of Minnesota that allowed them to form the company. At first, MIG, Inc. focused on database development and provided data that could be used in the Forest Service version of the software. In 1995 MIG, Inc. took on the task of writing a new version of the IMPLAN software from scratch. This new version extended the previous Forest Service version by creating an entirely new modeling system that included creating Social Accounting Matrices (SAMs) – an extension of input-output accounts, and resulting SAM multipliers. Version 2 became available in May of 1999.

Input-output accounting describes commodity flows from producers to intermediate and final consumers. The total industry purchases of commodities, services, employment compensation, value added, and imports are equal to the value of the commodities produced.

Purchases for final use (final demand) drive the model. Industries produce goods and services for final demand and purchase goods and services from other producers. These other producers, in turn, purchase goods and services. This buying of goods and services (indirect purchases) continues until leakages from the region (imports and value added) stop the cycle.

These indirect and induced effects (the effects of household spending) can be mathematically derived. The derivation is called the Leontief inverse. The resulting sets of multipliers describe the change of output for each and every regional industry caused by a one dollar change in final demand for any given industry.

Creating regional input-output models require a tremendous amount of data. The costs of surveying industries within each region to derive a list of commodity purchases (production functions) are prohibitive.

IMPLAN was developed as a cost-effective means to develop regional input-output models. The IMPLAN accounts closely follow the accounting conventions used in the "Input-Output Study of the U.S. Economy" by the Bureau of Economic Analysis (1980) and the rectangular format recommended by the United Nations.

The IMPLAN system was designed to serve three functions: 1) data retrieval, 2) data reduction and model development, and 3) impact analysis. Comprehensive and detailed data coverage of the entire U.S. by county, and the ability to incorporate user-supplied data at each stage of the model building process, provides a high degree of flexibility both in terms of geographic coverage and model formulation.

The IMPLAN database, created by MIG, Inc., consists of two major parts: 1) a national-level technology matrix and 2) estimates of sectorial activity for final demand, final payments, industry output and employment for each county in the U.S. along with state and national totals. New databases are developed annually by MIG, Inc.

IMPLAN easily allows the user to do the following:

- Develop his/her own multiplier tables;
- Develop a complete set of SAM (Social Accounting Matrix) accounts;
- Change any component of the system, production functions, trade flows, or database;
- Generate type I, II, or any true SAM multiplier internalizing household, government, and/or investment activities
- Create custom impact analysis by entering final demand changes;
- Obtain any report in the system to examine the model's assumptions and calculations.

There are two components to the IMPLAN system, the software and databases. The databases provide all information to create regional IMPLAN models. The software performs the calculations and provides an interface for the user to make final demand changes.

#### IMPLAN SOFTWARE

MIG developed the current version of IMPLAN Professional® version 2.0 in 1999. It is a Windows based software package that performs the calculations necessary to create the predictive model. The software reads the database, creates the complete set of social accounting matrices (SAM), the I/O accounts, and derives the predictive multipliers. The software also enables the user to make changes to the data, the trade flows, or technology. It also enables the user to make final demand changes which results in the impact assessment.

There are more than 1,500 users of the Implan model, including:

- Federal Government (Agricultural Statistics Service, Animal & Plant Health Inspection Service, Appalachian Regional Commission, Argonne National Laboratory, Army Corp of Engineers, Bureau of Economic Analysis, Bureau of Land Management, Bureau of Reclamation, Economic Research Services, Environmental Protection Agency and Federal Reserve Bank, among others)
- State Government (Several departments in Oregon State including Department of Forestry and Oregon Economic Development Department)
- Colleges and universities (Oregon State University), as well as others in the private sector.