



# Port of Olympia Assessment of Breakbulk Cargo Market Opportunities

## FINAL REPORT

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# Assessment of Breakbulk Cargo Market Opportunities

## 1 Overview

The Port of Olympia operates a 60-acre marine terminal in downtown Olympia. This terminal offers berths for three ships and is equipped to handle a variety of cargoes, primarily of the breakbulk type. Other assets at the terminal include on-dock rail, a Customs bonded warehouse, and a complete container yard.

During the past few years the marine terminal has seen healthy traffic levels. Imports of aluminum ingots and exports of military cargo boosted cargo volumes, and Weyerhaeuser announced that it would shift export operations from the Port of Tacoma to the Port of Olympia. However, cargo volumes have dropped recently due to the loss of both the aluminum and military business, and to a delay in the shift of Weyerhaeuser operations to Olympia. This has led to questions in the community as to whether or not the Port should continue to operate a marine terminal.

As part of an effort to help answer that question, the Port retained BST Associates to analyze the prospects for small ports such as Olympia to continue participating in cargo handling. To accomplish this BST combined an analysis of cargo movement data with a review of recent literature on smaller ports. The results of this analysis are presented below.

## 2 Trade Forecast for Washington Ports

Approximately every five years the Washington Public Ports Association (WPPA) and the Washington Statewide Department of Transportation (WSDOT) collaborate in the production of a forecast of trade moving through the ports in the state. These forecasts provide estimates of cargo growth for the major handling groups (e.g. containerized, dry bulk, breakbulk, etc) for the major port regions in the state (i.e., Puget Sound, Lower Columbia River). The most recent of these studies, from 2004, was used in this report to illustrate growth trends for the different cargo types, and to provide commodity information relevant to the Port of Olympia. This information is summarized below.

According to the most recent WPPA forecasts, total cargo volumes are expected to increase by nearly two-thirds between 2004 and 2025. Imports from foreign countries are expected to account for the largest share of this growth, and are expected to more than triple by 2025, accounting for more than 40 percent of all waterborne trade by 2025. Outbound shipments to both foreign and domestic destinations should also show very strong growth. Only domestic receipts are projected to decline, and this is due mainly to declining oil production in Alaska.

Overall, total Puget Sound cargo tonnage is projected to grow 2.2 percent per year during the forecast period, from 62.6 million metric tons to 104.4 million metric tons. Lower Columbia tonnage is projected to grow 2.1 percent annually, from 13.0 million metric tons to 20.9 million metric tons with deepening of the Columbia River navigation channel.

Key commodities and their projected growth include:

- Containers remain the fastest growing component of Washington waterborne trade, and growth opportunities remain positive.
- Grain exports are projected to grow more modestly, but will remain one of the key waterborne cargoes for Washington ports.
- Fully assembled autos are expected to exhibit slow but steady growth.

- Breakbulk cargo volumes are projected to grow slowly, due to containerization as well as to structural changes in the industries that produce breakbulk cargoes, such as the forest products and aluminum industries.
- Log exports have dropped sharply for more than a decade but are not projected to drop any further through the forecast period of 2025. Imports and domestic shipments of logs have also shown growth.
- Dry bulks have seen decreases in some stalwarts, such as alumina, but increases in other products, such as petroleum coke. Modest growth is projected to continue.
- Liquid bulks are expected to shift from domestic sources to foreign sources, for both crude oil and petroleum products, as Alaskan production tapers off.

## **2.1 Breakbulk**

During the 1980's and 1990's Puget Sound breakbulk traffic fell sharply due to containerization, to structural changes in key producers, and to cargo from Canada shifting to overland transport from Canada. Structural changes in the forest products and aluminum industries were especially hard on breakbulk exports. However, at the same time that exports of aluminum were falling, imports of aluminum were increasing. Forest products have also seen some inbound growth, although most of this was domestic product rather than foreign.

Total Puget Sound breakbulk trade is projected to grow from 598,000 metric tons in 2002 to 1.1 million tons in 2025. The majority of the growth will come from increasing imports of metal products, while most of the remainder will result from imports of forest products. Export breakbulks are projected to increase by just 44,000 metric tons over the forecast period. Although slower than the growth of containers, the projected increase of more than 550,000 metric tons shows that there will continue to be a need for breakbulk facilities on Puget Sound.

On the Columbia River breakbulk traffic is expected to grow 0.8 percent annually, with most of the growth due to imports (particularly forest products and metal products). Total Washington Lower Columbia River breakbulk traffic is projected to grow from 1.5 million metric tons in 2002 to 1.8 million metric tons in 2025, led by imports of metal and forest products.

Breakbulk exports of lumber are not projected to climb back to the historically high levels of the late 1980s and early 1990s. Total Columbia River breakbulk exports of forest products are projected to rise by just 16,000 metric tons between 2002 and 2025, while exports from Puget Sound ports are projected to climb by only 5,000 metric tons. The Asian economic crisis that hit in late 1997 severely impacted exports of lumber. In the years since, U.S. lumber mills converted to shipping most of their output to domestic customers, and even though the Asian markets have seen their economies improve most of the lumber produced in the Pacific Northwest still goes to domestic customers.

Breakbulk pulp and paper exports were also hit hard by the economic problems in Asia, as well as by a shift to containers.

## **2.2 Neobulks**

Automobile imports are expected to grow 0.5 percent annually through 2025, increasing from 627,000 cars in 2002 to 710,000 cars in 2025. Automobile imports are currently handled in the Lower Columbia (Portland and Vancouver) and in Tacoma. However, both the load centers and the projected growth rates could be strongly affected by changes in the strategies of the automobile manufacturers.

Log exports are projected to remain at current levels, but imports and coastwise shipments and receipts are expected to see modest growth. Log exports declined throughout the Pacific Northwest between the early 1990's and the early 2000's. In 1990 Puget Sound, Washington Coast, and Columbia River ports exported a combined total of 2.6 billion board feet of logs, but by 2002 this had dropped to less than 0.6 billion board feet. Puget Sound/Washington Coastal ports saw volumes fall by nearly 87%. Washington Columbia River ports also experienced declines, but by slightly less than 50%. On the Oregon side of the Columbia River log exports disappeared entirely.

Environmental concerns are often blamed for the sharp drop in log exports, but other factors were at work as well, including the Asian financial crisis that substantially reduced U.S. exports to Asia. Even though this crisis has largely passed, exports to this region have not recovered. Contributing to the lack of recovery is increased competition for the Asian market from Russia, New Zealand, and South America, among other areas.

Log exports are not projected to recover during the forecast period: volumes exported from both Puget Sound ports and Columbia River ports are expected to remain flat through 2025. However, the expectation that exports will remain flat does not mean that there is no market opportunity for the Port of Olympia. Instead, as the Port of Tacoma converts more of its marine terminal space to containers there may be a need for the logs to be exported from elsewhere, and it has been proposed that the log exports shift to Olympia.

In addition to exporting to foreign markets, logs are also shipped by water from Puget Sound/Coast ports to mills in the Columbia River and in California. This trend is also expected to continue.

Log imports have experienced growing volumes in recent years due to reduced domestic log harvest. Puget Sound mills are especially dependent on Canadian timber, and Columbia River mills also use Canadian timber. As recently as 1997 imports of log were almost non-existent at Puget Sound ports, but by 2002 the volume had exploded, to 1.2 million metric tons.

Waterborne imports of logs are projected to continue growing, by an average of 0.4% per year, with higher growth earlier in the forecast period. Recently announced plans to increase timber harvesting on state-owned lands in Washington will limit imports somewhat, but if the new harvest levels are not implemented imports could rise at a faster rate.

### **2.3 Other Commodity Groups**

Other commodity groups handled on Puget Sound include containers, dry bulks, and liquid bulks. Liquid bulks and containers represent weak opportunities for the Port of Olympia, while dry bulks may represent a potential market niche.

Containers are considered a weak opportunity due the infrastructure required to serve the market. Container shipping requires large amounts of land for marine terminals and for intermodal rail yards, and deep shipping channels. The Port of Olympia does not have the waterfront land and near-waterfront land necessary for a state-of-the-art container terminal, and the shipping channel has insufficient depth for large container ships.

Liquid bulk movements in the region are primarily related to the oil refineries located near Anacortes and Ferndale. Commodities handled include crude oil moving inbound to the refineries and refined products moving outbound. These do not represent a potential market for Olympia.

The dry bulk trade in the region is dominated by grain and oilseed exports, which require

good rail connections and sufficient land for loops tracks. The Port has been upgrading the rail system that serves the port and is in the process of obtaining funding to complete the Intermodal Infrastructure Enhancement Project. Among other upgrades, this project includes the addition of an on-dock loop track. Completion of the rail projects will improve the Port's ability to handle rail-served cargo, including dry bulks.

### 3 Potential Cargo

In order to provide guidance to the Port of Olympia on the types of cargo that might be attracted to Olympia, BST Associates analyzed waterborne commerce data to identify trends in the volume non-containerized/non-bulk commodities imported and exported into and out of the U.S. The most recent year for which this data is available is 2005, and trends were analyzed for 2000 through 2005.

**Table 1** presents statistics for imports. This table illustrates a number of points of interest to the Port of Olympia in regard to non-containerized cargoes. One of these points is that non-containerized cargoes experienced very strong growth between 2000 and 2005. For example, wood and articles of wood grew at a compounded annual rate of 23.2% during this time, electrical machinery and equipment grew at 25.5%, and industrial machinery grew at 15.1% per year.

Another point illustrated by this table is that ports on the West Coast play an important role in cargoes that are non-containerized and not bulk. For example, the West Coast accounts for large shares of vehicle, electrical machinery, and wood products imports.

**Table 1: U.S. Non-Containerized Imports and West Coast Market Share  
(1,000 metric tons)**

HS	Description	2000	2001	2002	2003	2004	2005	CAGR
44	Wood And Articles Of Wood	3,130	3,800	4,660	5,230	6,240	8,890	23.2%
	<i>West Coast Share</i>	48%	51%	45%	42%	28%	32%	
73	Articles Of Iron Or Steel	3,020	3,170	2,780	2,610	3,190	4,310	7.4%
	<i>West Coast Share</i>	23%	19%	20%	19%	21%	17%	
84	Industrial Machinery	880	880	910	780	1,100	1,770	15.1%
	<i>West Coast Share</i>	23%	20%	18%	21%	26%	22%	
87	Vehicles ( other than railway) and parts	5,210	5,450	6,230	6,220	5,810	6,070	3.1%
	<i>West Coast Share</i>	47%	46%	45%	43%	46%	44%	
8	Fruit And Nuts	2,830	2,880	2,530	2,110	1,830	3,630	5.1%
	<i>West Coast Share</i>	21%	26%	27%	26%	28%	28%	
76	Aluminum And Articles Thereof	1,140	800	1,080	1,000	1,390	1,770	9.2%
	<i>West Coast Share</i>	1%	12%	9%	15%	11%	8%	
48	Paper And Paperboard	1,700	1,730	1,610	2,190	2,430	2,290	6.1%
	<i>West Coast Share</i>	22%	21%	18%	15%	13%	15%	
47	Pulp	1,050	1,380	1,180	1,170	1,110	1,550	8.0%
	<i>West Coast Share</i>	10%	7%	9%	1%	1%	2%	
85	Electrical Machinery And Equipment	140	190	230	200	310	450	25.5%
	<i>West Coast Share</i>	32%	31%	38%	42%	63%	51%	

Source: BST Associates, U.S. Department of Commerce data

**Table 2** presents similar trend data for non-containerized/non-bulk exports. As with imports, several of these commodity types have experienced very strong growth in recent years. For example, both steel and vegetables have seen growth rates higher than 20% per year, and several others have seen double-digit growth.

For some of these cargoes, i.e. steel and fruit, the West Coast is a major gateway, but for others East Coast and Gulf Coast handle the majority of exports

**Table 2: U.S. Non-Containerized Exports and West Coast Market Share  
(1,000 metric tons)**

HS	Description	2000	2001	2002	2003	2004	2005	CAGR
72	Iron And Steel	3,140	5,090	6,510	9,220	7,450	7,960	20.5%
	<i>West Coast Share</i>	58%	51%	43%	36%	45%	42%	
87	Vehicles ( other than railway) and parts	880	1,010	1,090	1,230	1,140	1,660	13.6%
	<i>West Coast Share</i>	13%	10%	8%	8%	4%	5%	
84	Industrial Machinery	750	790	720	670	820	1,230	10.2%
	<i>West Coast Share</i>	7%	7%	8%	7%	7%	7%	
73	Articles Of Iron Or Steel	220	280	430	270	310	480	16.8%
	<i>West Coast Share</i>	3%	3%	2%	4%	9%	6%	
39	Plastics And Articles Thereof	610	660	600	600	780	860	6.9%
	<i>West Coast Share</i>	12%	13%	13%	11%	9%	11%	
7	Vegetables, Edible Roots And Tubers	120	140	180	170	220	310	20.4%
	<i>West Coast Share</i>	19%	32%	16%	12%	19%	12%	
2	Meat And Edible Meat Offal	1,090	1,360	990	1,080	1,100	1,190	1.8%
	<i>West Coast Share</i>	4%	5%	7%	3%	3%	3%	
68	Articles Of Stone, Plaster, Cement	110	120	100	90	120	190	12.2%
	<i>West Coast Share</i>	7%	26%	34%	8%	15%	13%	
8	Fruit And Nuts	220	270	260	250	300	280	5.1%
	<i>West Coast Share</i>	64%	60%	63%	79%	65%	80%	

Source: BST Associates, U.S. Department of Commerce data

## 4 Modal Shares and Corridors

The capacity of the highways and rail lines that serve the ports is becoming constrained. Interstate 5 is especially critical, for ports on both Puget Sound and the Lower Columbia River. The increases in port-related truck traffic will compete for capacity on a highway that is already severely congested. Growing rail traffic generated by ports is facing competition from existing freight traffic as well as from increasing passenger service, for space on a rail system with limited capacity.

The statewide port forecast estimated that 29 percent of port-related cargo moved by rail and 29 percent by truck. Forty percent of the remaining tonnage was delivered directly to processing facilities (primarily oil refineries, cement plants, and wallboard plants), and 2 percent moved by barge or raft. As cargo volumes grow on Puget Sound rail is expected to handle an increasing share. In 2025 the modal split is estimated be 37 percent rail, 30 percent truck, 1 percent by barge/raft, and 32 percent to a processing facility.

Containers moving by rail through Puget Sound ports are expected to increase 4.5 percent per year through the study period, while container movements by truck are expected to grow 2.7 percent annually. Grain and other dry bulk cargoes move predominately by rail, while rail's share of breakbulk tonnage (e.g. steel coils) and neobulk (e.g. automobiles) should also increase during the period.

## 5 Other Ports in Market Region

The Port of Olympia is one of many ports in Puget Sound, the Columbia River, and the Washington Coast. Historically, most of these ports were developed to serve the forest products industry, and forest products accounted for most of the cargo at many ports. However, the

downturn in forest products exports impacted most of these ports, and they have reacted to the changing market in different ways.

In addition to the loss of forest products exports, many ports are also facing the issue of gentrification. Waterfront lands historically dedicated to the movement of cargo are now being eyed for condominiums, office space, and other non-industrial uses. Olympia is not alone in facing this challenge.

The following section provides an overview of other ports in the region and their cargo handling activities.

### **5.1 Bellingham**

The Bellingham Shipping Terminal has experienced a decline in cargo traffic as a result of closure of the GP Pulp Mill and reduced exports by Intalco. However, the opportunities for attracting gateway cargoes (pulp and steel, among others) from BC and Puget Sound ports appear favorable. The Port is currently evaluating infrastructure improvements to meet the needs of shippers and has developed a marketing plan.

The Port and its tenants are also pursuing short sea shipping opportunities. For example, Bellingham Cold Storage is planning for barge calls by Alaskan barge carriers to deliver products to fish processors, and aggregates producers currently operate near the shipping terminal.

Gentrification is headed for the Bellingham waterfront as well. Planning is currently underway to convert a portion of the GP property into a recreational marina, and plans for creating a mixed-used development along a portion of the waterfront have been developed.

### **5.2 Port of Anacortes**

As recently as 1996 the Port of Anacortes handled nine million board feet of log exports as well as residual material from the nearby petroleum refiners. Now, however, the port handles very little cargo. Dakota Creek Industries builds large boats on the waterfront and is one of the largest employers in the area. Seafood processors are also located on the waterfront and handle some waterborne movements of fish.

### **5.3 Port Angeles**

The Port of Port Angeles Marine Terminal complex consists of a 60-acre site (similar to Olympia), with 1,750 feet of berth space with a water depth of up to 40 feet. The terminal is served by both rail and truck, although the rail line serving the port is only connected to the mainline rail system in the state via rail-barge.

Port Angeles still handles logs, but now the majority of the movements are Canadian logs inbound, or logs from the Olympic Peninsula destined for mills on the other side of Puget Sound or further down the coast.

### **5.4 Everett**

The Port of Everett has several deep-water shipping facilities including South Terminal, Pacific Terminal and Hewitt Avenue Terminal.

The South Terminal is a two-berth facility with berth space of approximately 1,425 feet. It is used to receive and ship general cargo and logs as well as for moorage of vessels. The South Terminal's berth provides between 39 and 40 feet of water depth, and offers 30 acres of paved open storage space, a 22,000 square foot warehouse, and access to the BNSF railroad.

The Pacific Terminal Wharf offers a berth of 600 feet, water depth of 40 feet, and 8 acres of paved open storage area. This facility is used to ship and receive general cargo (conventional and containerized) in both foreign and domestic trades.

The Hewitt Avenue Terminal consists of Pier 1 Pier 3, and the Hewitt Wharf located in between these two piers. Rail access by BNSF is also provided at this terminal. This terminal includes a 36,000 square foot chill facility, 13 acres of paved open storage, and a 55,000-ton dome.

In addition to the port-owned facilities, the Kimberly-Clark paper mill is able to receive chemicals and woodchips at its docks.

### **5.5 Seattle**

The Seattle harbor has both public and private marine terminals. For the most part the deep-water terminals on Elliott Bay are owned by the Port of Seattle and are used for handling containers, although a small amount of non-containerized cargo also moves through the port's facilities. Port of Seattle facilities on Elliott Bay also accommodate cruise ships, factory trawlers and grain.

Most of the privately-owned facilities are located on the Duwamish Waterway and handle shallow-draft vessels. The Duwamish Waterway is very well used by tug & barge companies, marine construction firms, boat repair and building firms, marinas, and bulk cement and gypsum, among other related facilities.

Lake Washington and Lake Union also have private marine facilities, but gentrification is pushing most of these uses out of the lakes. The Lake Washington Ship Canal offers a 30 foot deep channel from the locks past Union Bay into Lake Washington. The Ship Canal has been the center of the Seattle fishing fleet with numerous public and private moorage places, ship repair facilities, and coastal freighter and barge activity.

### **5.6 Tacoma**

Tacoma has also become a major player in the container business, with two new facilities in the planning stages, but is still the load center for substantial volumes of bulk, breakbulk and neo-bulk items. The Port of Tacoma has looked to shift some of its non-containerized cargoes to other nearby ports, such as Olympia, and the two new container facilities will take hundreds of acres of waterfront land, increasing pressure on non-containerized cargoes to find other ports.

Changing land uses at other ports, especially at Tacoma, represents an opportunity for the Port of Olympia. The Port of Olympia has already seen this with Weyerhaeuser's plan to shift log exports from Tacoma to Olympia. The plan for the two new container facilities was announced well after the Weyerhaeuser plans to move to Olympia, so there may be additional cargoes at Tacoma that will need to move to another port.

### **5.7 Longview**

Longview has two major owners of marine terminals, the Port of Longview and Weyerhaeuser. In addition, the former aluminum smelter downriver from Weyerhaeuser has been purchased by investors looking to convert it into a shipping terminal for handling bulks and other cargo types.

The Weyerhaeuser facilities handle a variety of products, including logs, manufactured forest products, and newsprint. Two of the most important commodities handled at the Port's facilities are steel and wind turbines. The port has become known in recent years for its

expertise in handling wind turbines, and this has become an important line of business.

In addition to the existing terminal users several new industries could increase cargo volumes at the port, including a new ethanol plant, potential new grain facility, and a potential new lumber mill.

### **5.8 Kalama**

The Port of Kalama primarily handles dry bulks, with two major grain export elevators. However, the Steelscape rolling mill at the port also generates large movements of steel coils, and the Port is looking for additional cargoes.

### **5.9 Vancouver**

The Port handles a broad range of cargoes, including general, breakbulk, project and direct transfer cargoes, containers, automobiles, forest products, steel and aluminum products, liquid bulks, and a number of dry bulk commodities such as bauxite, mineral ores, concentrates, fertilizers, sands, clays, grains and other bulk agricultural commodities.

### **5.10 Grays Harbor**

The Port of Grays Harbor has four marine terminals that offer on-dock rail with loop tracks that can handle unit trains, indoor storage, and bulk loading of agricultural products. The port also has barge facilities for handling wood chips.

The newest addition to the Grays Harbor waterfront is a bio-diesel plant recently completed for Imperium Renewables. The company chose the Grays Harbor site because it provides deepwater marine access and rail service, and the firm may use the marine terminal to import raw materials to the plant

## **6 Conclusion**

Washington ports involved in the breakbulk cargo market experienced realignment during the 1980's and 1990's as the forest products industry declined and other traditional breakbulk cargoes were converted into containerized form. However, this realignment appears to be near the end, and market opportunities do exist for the non-containerized ports.

The most recent forecast completed for the WPPA and WSDOT projects that the market for non-containerized exports and imports will grow slowly over the next two decades. This means that there will continue to be a need for ports to provide facilities to handle these cargoes.

Furthermore, competition for other uses of waterfront land continues to put pressure on breakbulk facilities. For example, gentrification in Seattle is pushing maritime industry out of Lake Union and Lake Washington, and even threatens the container terminals closest to downtown. In both Tacoma and Seattle the need for terminal space for containers pushes non-containerized uses out. Even in smaller ports such as Bellingham, Everett, Anacortes, and Olympia residential and commercial uses put pressure on port commissions to examine alternate uses of valuable waterfront property.

Those ports that resist the pressure to change the use of waterfront land will have the opportunity to compete for a cargo market that is expected to continue to grow.