Port Master Plan Report

for

Port of Longview

HDR Project Number 144429

June 14, 2011
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1: EXECUTIVE SUMMARY

The Port of Longview (Port) is a multipurpose deep draft port facility encompassing 478 acres and over one mile of waterfront. It is located at river mile (RM) 66 on the Columbia River. The marine terminal includes several berths handling bulk, breakbulk, and project cargoes to and from domestic barge and international ocean vessels. This document is a summary of a series of technical memorandums. The following chapters after this executive summary provide more detail of the findings, and at the end of the report the technical memorandums are cited.

1.1 The Approach

This effort was undertaken to assist the Port in preparing a Port Master Plan Report that will help identify new cargo opportunities, evaluate the best use of existing port facilities, and provide an analysis to support the rail system. It is important that the Port has the correct infrastructure to support projected growth in the Longview area, without diminishing service to existing Port customers.

The study addresses a number of very specific questions including the prioritization of future capital expenditures for industrial development and rail infrastructure improvements. Key questions addressed in this report are:

- What are the existing conditions of the Port that limit its ability to expand handling existing and new cargos and make the Port more attractive than other ports?
- What do the Port customers and service providers think of the Port services and offerings and how do they compare to the Port’s competitors?
- Are the current Port roadway entry points compatible with the recommended Port Master Plan Report alternatives?
- Are there industrial properties within the Port of Longview District with development potential that should be considered for acquisition?
- What is the best use of the existing Port warehouse complex?
- Can the existing and under-construction rail infrastructure in the Longview area support the anticipated growth without diminishing service to existing Port customers? Given different growth scenarios, what rail infrastructure improvements are recommended to provide a reliable rail service in the future?
- What is the recommended location of future Port staff offices and the public meeting room?
- What is the preferred Port terminal and facility layout, which considers the following:
  - New cargo opportunities, given available market and cargo forecasts.
  - The types of existing and prospective commodities available to the Port.
  - The Port’s competitive position.

1.2 The Process

The master planning process began with a review of all available public documents pertaining to the port and its terminal operations. The Port Master Plan Report is a future “road map” for proactive port development consistent with the Port’s mission. The Port’s mission is “to provide expansion and development of foreign and domestic trade, to encourage commercial and
industrial development, and to enhance waterfront recreational activities for the economic benefit of the citizens of the Port district”.

The overarching philosophy of the Port master plan effort centers on providing market-driven solutions to the port terminal and rail development alternatives for the Port’s riverfront lands and the potential opportunities for these lands. Once the market was established as summarized in Section 5, “Market Assessment of Existing and Prospective Commodities” the approach focused on potential development facilities and alternative layouts that effectively responded to the defined marketplace conditions while attempting to optimize Port economic development benefits and return on investment.

In every instance, a system-wide approach was used to analyze and evaluate the various real estate and port terminal development strategies.

1.3 Port Master Plan Report as a Business Planning Tool

The goal of the Port master planning effort is to provide direction for the ability to increase the operational efficiency and capacity of a port terminal or facility to enable it to handle anticipated business growth in the future.

The identification of the Port master plan alternatives was an initial starting point for the Port Leadership and Port Senior Management Team long-term decision-making process. Development of the Port master plan alternatives involved current and future operations analysis, terminal capacity analysis, and physical land use plan alternatives. These alternatives fully integrated terminals, roadways, rail, and other infrastructure elements into a set of recommendations.

The following maxims guided the master plan alternative preparation and development:

• The master plan represents a future port development policy statement of importance and intentionally embodies flexible guidelines, not rigid port development doctrine. As market demands change, the Port will need to adapt to these changes. Thus, future adjustments to the Port Master Plan Report recommendations are inevitable and a natural expression of a well-balanced strategic port planning process.
• The master plan, above all, must be a market driven “road map” for future terminal development at the Port utilizing long-term business risk principles to create a sustainable and durable port development and operational solution.
• For the master plan to be truly successful it must ensure that the adopted development plan meets current customer’s needs. These current port tenants and customers drive current port revenues. Only after current port customer needs are met should the Port pursue synergistic future development opportunities.
• Maximize the use of existing terminal capabilities first. The Port should first focus on and align current Port systems in management, operations, information technology, pricing, etc., in its existing facilities as is recommended in this report.
• Invest in new terminal facilities only after all other practical options have been successfully pursued and explored.

The Port master plan alternative preparation methodology included assessing the Port’s mission as currently conveyed to the HDR consultant team by the Port staff, documenting successes,
assessing weaknesses, identifying potential future business risks, suggesting new opportunities and proposing alternative development scenarios for future business opportunities.

1.4 Conclusions

1.4.1 Existing Conditions

The ability of the Port of Longview to be a niche Port requires it be flexible in handling different commodity types. The configuration and size of the existing rail, warehousing, storage, and waterside facilities support this flexibility as proven by the different cargoes handled at the Port.

The remaining developable property would lend itself to storage only. The size, configuration, and location are not suitable for new unit train facilities. The removal of some unused or underutilized facilities around Berth 4 could result in high value opportunities. However, the Port does, have two environmental constraints that restrict this ability and expansion opportunities. These constraints are due to existing environmental parameters, permits and EPA/DOE cleanup actions.

The Port’s wastewater treatment facilities cannot presently handle commodities containing heavy metal or anything classified as heavy metals. The Port’s water treatment facilities would need to be improved to allow for these alternate commodities.

1.4.2 Market Analysis and Customer Survey

More Frequent Contact for both Customers and Service Providers: The survey indicated that the Port should consider revising, or initiating, a regular process for customer contact. Regular formal or informal contact can lead to rich, valuable information that the Port can respond to on an ongoing basis. The Port’s Marketing Department is currently evaluating options to track customer and service provider contact. The use of Customer Management Software and video conferencing are possible tools that could assist the Marketing Department in tracking and the management of customer/service provider contact.

Value Added Services: Using the current strategic partnerships between the Port and its service providers would increase knowledge of the value added opportunities available to Port customers. The Port should increase its promotion of web site services and strategically partner with service providers to communicate with potential customers.

Labor Availability: The Port needs to continue to focus on labor availability. This is a major decision point as businesses choose shipping through competing cargo loading facilities.

1.4.3 Evaluation of the Port’s Competitive Position

The Port has made consistent improvements to its financial health and has been successful in generating additional revenue with existing assets, while at the same time improving its net profit margin. The Port also ranks favorably in comparison to other Pacific Northwest ports in terms of a number of key financial metrics, including revenue per ton and asset turnover rate. The Port should continue to build its financial strength through the careful selection of customers and investment opportunities. The strength gained from high revenue per ton will enable the Port to be well positioned financially to strategically grow its assets based on market demand.
1.4.4 Market Assessment of Existing and Prospective Commodities

Diversification with respect to the number of different commodities a port can process is a fundamental way to lessen risk. The Port has the land and facilities necessary to entertain opportunities for expansion of existing commodity trade or the advancement of new sources of revenue through trade in commodities not previously handled. Coal exports, automobile imports, and containerized agricultural products all provide opportunity for further diversification.

1.4.5 New Cargo Opportunities

Given the degree of uncertainty in commodity-specific forecasts, an Omni terminal concept that has the ability to efficiently handle multiple cargo types may be the most appropriate terminal development strategy. If this type of terminal configuration is chosen, the Port will have the flexibility to take advantage of opportunities as they arise. This approach will allow the Port to manage risks inherent in less flexible terminal arrangements.

1.4.6 Maritime and Intermodal Terminal Master Plan Approach, Port Planning Philosophy, and Port Planning Tools Deployed

The HDR consultant team recommends that the Port use the findings of this Report as a future “road map” for proactive port development that is consistent with the Port’s mission. It was determined that Alternative 1E is the preferred alternative based on its size, configuration, and marketability compared to the other alternatives.

As this master plan is based on market-driven solutions to the port terminal and rail development, it is recommended that the Port keep close track of its tonnage volumes to each commodity group as compared to the Maximum Practical Capacity (MPC) and Sustainable Practical Capacity (SPC) of each terminal.

In order to prepare for terminal expansion, the Port must determine the amount of time it will take for a terminal expansion to occur at the Port. It is recommended that a preliminary timeline for expansion of each terminal layout be developed, with an estimated schedule for the steps of project development including preliminary design to permitting through the date of initial operation. This information will be an important baseline for the Port to use in determining when the expansion cycle must commence. The current baseline forecast for each of the commodity groups shows a drop in volumes in 2011 and 2012 due to market activity in 2010 levels. If it turns out that a drop in volume does not occur as anticipated and the high forecast is met, then planning for expansion should commence immediately. Construction on the expansion must begin based on the schedule designated as soon as it is determined that the market for the cargo is stronger than the baseline forecast.

The expansion of any terminals must only be timed to effectively respond to the defined marketplace conditions while attempting to optimize Port economic development benefits and return on investment. All options to increase operational efficiency and productivity through tools such as reduction of terminal dwell times must be used before any physical expansion is commence.
1.4.7 Evaluation of Current and Future Industrial Markets for the Port’s Warehouse Complex

It is recommended that the Port secure a new port customer with a business model that is dependent on access to the marine terminal, requires covered storage, and can utilize the services of the International Longshore and Warehouseman Union (ILWU).

Absent a new Port use in the near- or mid-term, the warehouse complex would likely need to be sold to a private user. Based on available data, market rents, and industrial capitalization rate trends, it is estimated that if the warehouse complex were listed on the open market within the year, its value could range from $12.4 million to $13.9 million. The value of the 30-acre warehouse complex as currently improved is greater than its value as land. Based on sales and listings, as well as conversations with those active in the market, vacant industrial land prices currently range from $1.80 per square foot to $2.50 per square foot. The warehouse complex valued as land would be between $2.4 million and $3.3 million.

1.4.8 Rail Capacity of the Port’s Rail System

When EGT peak season operations are added and when or if Millennium Bulk Terminals start operations to the current Port and Longview Switching Company (LSC) rail customers, the delays and line occupancy index measured in the model are considered very acceptable by industry standard. When four daily roundtrip unit trains for the Port are added to this, delays and line occupancy index measured in the model are still considered acceptable by industry standards, but would result in some minor delays to non-unit train Port customers. These delays could be improved with the extension of the Industrial Rail Corridor (IRC) Siding to the LSC Yard and modifications are made to the LSC Yard track as recommended by BNSF and LSC. The proposed LSC and BNSF improvements will reduce delays on all trains and improve line occupancy index on critical links significantly.

Construction of the Longview Junction Bypass Track by BNSF will postpone the need for the second Cowlitz River Bridge. However a second bridge over the Cowlitz River will be required when eight additional daily round trip unit trains are added to the scenario described above.

1.4.9 Analysis of the Port’s Current Administration Building and Discussion of Future Options

It is recommended that the Port plan for a new Administration Building in the future. Land should be set aside for this new complex. For the short term, the current facility can be rearranged or expanded to accommodate both staff and Commissioner needs; although off-site meeting space may need to be utilized from time to time.

1.4.10 Alternate Port Entryways

All three alternate entryways are existing signalized intersections at SR 432 and provide a direct connection to the Port. The recommended alternatives are expected to make little if any changes to existing traffic volumes traveling into and out of the Port; therefore, no update would be necessary to the 2008 SR 432 Realignment Feasibility Study. Some improvement measures, such as the desire to separate rail and truck traffic in certain portions of the SR 432 corridor, may become a higher priority as rail traffic in and out of the Port increases in the future.
Because of the potential for future unit train operations, there is a possibility of internal access roads or entryways becoming blocked. The main port entryway to the west would not be affected; however, the alternate entry on the north side may need to be closed.

1.4.11 Developable Industrial Properties within the Port District

Five sites were identified with development potential, in addition to the TWP site for which the Port already has a development plan in place. It is believed that the recent purchase of the 275-acre Terra Firma site located at Barlow Point will allow the Port to develop both its terminal and industrial properties to meet the future demands and opportunities. It is anticipated the Port’s current inventory of developable land will meet its development needs for the foreseeable future. No additional property acquisition is recommended within the Port District.
2: EXISTING CONDITIONS

A one-day, on-site inspection of the existing marine and rail facilities was conducted. This inspection was supported by other information collected from the Port staff such as maps, figures, and the completed dry bulk and breakbulk terminal data questionnaires. A technical memorandum of “Existing Conditions” was prepared, which provided an overview of the existing facilities. This technical memo described which existing facilities were compatible with the Port’s requirement to support a variety of new market opportunities. It also identified constraints to the Port’s ability to offer service both now and in the future. The results of this effort were used as one of the elements in the master plan alternatives analysis development and selection of the preferred alternative. A summary of the current terminal area of the Port is described below.

The total terminal area is 478 acres. Potential storage expansion areas include:

- Fifteen acres of semi-improved space at the treated wood products (TWP) laydown yard.
- Four acres of unimproved space at the wind tower road entrance.
- One acre of unimproved space behind Berth 8.
- Four to five acres of space behind Berth 7 by removing both Gear Locker B and Warehouse 8.
- More than 40 acres of unimproved space inside the grain elevator loop.

The major commodities at the Port currently include:

- **Dry Bulk**
  - Calcined Coke
  - Soya Meal
  - Potash
  - Bentonite Clay
  - Salt
  - Green Coke
  - Iron Oxide Fines
  - Agricultural Products
  - Ammonium Sulfate

- **Breakbulk**
  - Wind Energy
  - Logs
  - General Products
  - Steel
  - Pulp and Paper Products
  - Barge/Containerized Cargo

The current depth at berth is 40 feet Columbia River Datum (CRD) with the limiting channel depth being 43 feet CRD. The total wharf length is 6,234 feet. The Port provided conditions
reports, which include berth lengths and pier loading capacity. This is summarized in Table 1, below.

**Table 1: Pier Loading Capacity**

<table>
<thead>
<tr>
<th>Berth</th>
<th>Length (feet)</th>
<th>Allowable Uniform Load (psf)</th>
<th>Allowable Wheel Load (k)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>800</td>
<td>350</td>
<td>13.0</td>
</tr>
<tr>
<td>2</td>
<td>850</td>
<td>750</td>
<td>55.0</td>
</tr>
<tr>
<td>2 Face, Track Area</td>
<td>720</td>
<td>750</td>
<td>No information</td>
</tr>
<tr>
<td>5</td>
<td>720</td>
<td>750</td>
<td>55.0</td>
</tr>
<tr>
<td>6</td>
<td>Berths 6 &amp; 7 have a continuous 1500’ terminal together</td>
<td>750</td>
<td>55.0</td>
</tr>
<tr>
<td>7</td>
<td>See note above</td>
<td>750</td>
<td>55.0</td>
</tr>
<tr>
<td>8</td>
<td>617</td>
<td>750</td>
<td>18.5</td>
</tr>
<tr>
<td>9</td>
<td>500</td>
<td>40</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 2 identifies the berths, the terminal operator for that berth, and which commodities each berth serves.

**Table 2: Berth Operator and Commodity**

<table>
<thead>
<tr>
<th>Berth</th>
<th>Terminal Operator</th>
<th>Commodity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Port of Longview</td>
<td>Import – Salt</td>
</tr>
<tr>
<td>2</td>
<td>Kinder Morgan</td>
<td>Export – Agricultural Minerals</td>
</tr>
<tr>
<td>5</td>
<td>Port of Longview</td>
<td>Export – Calcined Coke</td>
</tr>
<tr>
<td>6</td>
<td>Port of Longview</td>
<td>Import, Export, Project Cargo</td>
</tr>
<tr>
<td>7</td>
<td>Port of Longview</td>
<td>Import, Export – Dry Bulk Commodities</td>
</tr>
<tr>
<td>8</td>
<td>Port of Longview</td>
<td>Import – Steel, Export Logs</td>
</tr>
<tr>
<td>9</td>
<td>EGT</td>
<td>Export – Agricultural</td>
</tr>
</tbody>
</table>

Table 3 and Table 4 describe the storage capabilities for each of the berths. Table 3 describes the dry bulk storage capabilities and Table 4 describes the breakbulk storage capabilities.

**Table 3: Dry Bulk Terminal Storage Characteristics**

<table>
<thead>
<tr>
<th>Berth</th>
<th>Type of Cargo</th>
<th>Import/Export</th>
<th>Open</th>
<th>Silo</th>
<th>Covered</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Salt</td>
<td>Import</td>
<td>WH 9: 23,000 metric tons max; TS1: balance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Agricultural and Minerals</td>
<td>Export</td>
<td>Direct from rail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Calcined Coke</td>
<td>Export</td>
<td>40,000 mt's capacity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Import/Export</td>
<td></td>
<td>TS6 and Warehouses 8, 10 &amp; 11–45,000 metric ton capacity</td>
<td>Covered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cargo Type</td>
<td>Open (Acres)</td>
<td>Covered Warehouse (sq.ft.)</td>
<td>Storage Capacity</td>
<td>Description of Storage</td>
<td>Cargo Density (tons/sq.ft.)</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------</td>
<td>----------------------------</td>
<td>------------------</td>
<td>---------------------------------------------------------------------</td>
<td>-----------------------------</td>
<td></td>
</tr>
<tr>
<td>Wind Energy</td>
<td>Approx. 75</td>
<td>600,000</td>
<td>1,500 tower sections</td>
<td>Open lay down yard-paved and/or gravel</td>
<td>7 Acres = 180 tower sections</td>
<td></td>
</tr>
<tr>
<td>Logs</td>
<td>2</td>
<td>N/A</td>
<td>1.0 MBF Prestage space</td>
<td>Paved area immediate to the berth apron</td>
<td>Varies month to month</td>
<td></td>
</tr>
<tr>
<td>General Products</td>
<td>Approx. 75</td>
<td>600,000</td>
<td>Varies</td>
<td>Open lay down yard-paved and/or gravel</td>
<td>Varies month to month</td>
<td></td>
</tr>
<tr>
<td>Steel</td>
<td>Approx. 75</td>
<td>600,000</td>
<td>Varies</td>
<td>Open lay down yard-paved and/or gravel</td>
<td>Varies month to month</td>
<td></td>
</tr>
<tr>
<td>All other</td>
<td>Approx. 75</td>
<td>600,000</td>
<td>Varies</td>
<td>Open lay down yard-paved and/or gravel</td>
<td>Varies month to month</td>
<td></td>
</tr>
</tbody>
</table>

The study determined that the Port has very little terminal storage space for the import and export of dry bulk commodities such as calcined coke, green coke, various ores, fertilizers, wood pellets, and other industrial products.

### 2.1 Local Longshoreman Labor Agreements

The working agreement between the Port and International Longshore and Warehouse Union (ILWU) Local 21 establishes that all cargo handling and equipment maintenance performed on Port property will be by ILWU labor. The agreement identifies categories of labor, qualifications, duties, rates by category by shift and by experience, as well as the minimum manning requirements for each operation at the Port. This agreement identifies working rules, minimum guarantees, and what constitutes overtime. The warehouse complex is located within ILWU jurisdiction for cargo handling work. Any use of these buildings for that work, either by the Port or a Port tenant, is subject to the Working Agreement between the Port and ILWU Local 21.

### 2.2 Environmental Constraints

The Port’s current air, stormwater and waste water permit stipulations, as well as the limited ability to process large volumes of waste and stormwater through the onsite water treatment facilities, restricts its ability to expand into developing markets. Additionally, the Port has two areas of in ground contamination which limits the types of uses allowed within those areas.

#### 2.2.1 Environmental Permit Parameters

**Air** – The Port currently has an air permit through the Southwest Clean Air Agency (SWCAA). This permit regulates the amount and type of emission discharged during cargo handling as well as regulates the type of equipment utilized for dust suppression. All new commodities or inquiries that are posed to the Port must go through an internal environmental air emissions review along with approval through SWCAA. This process is time consuming and is not responsive to the needs of a fast paced market place. Updates to the Port’s equipment and permit allowances will need to occur in order to accommodate emerging markets.
Stormwater – The Port has an Industrial Stormwater General Permit though the Department of Ecology. While the stormwater permit does not regulate the types of commodities the Port can handle, it does regulate the discharge of stormwater to water bodies of the state. The types of markets emerging will necessitate Port investment in additional indoor storage as well as outdoor storage and infrastructure that has the ability to contain and convey commodity laden stormwater to the on-site waste water facilities for treatment, processing and discharge to sanitary sewer.

Waste water – The Industrial Waste Water Permit is also issued by Department of Ecology. The Port has four permitted outfalls: two small treatment processes with limited use, and two larger treatment facilities that handle the majority of the Port’s waste water processing. However, all the facilities are limited in their capabilities to handle large volumes of process water and incidental stormwater due to the age of the facilities, limited equipment and technology, as well as inadequate storage capacities. Additionally, the waste water permit limits the Port to daily volume discharges. This discharge limit is already an issue as winter storm events push the Port’s discharge volume over the allotted limit. Future growth into new cargo types, and the waste streams that come with them, will require additional inside and outside storage areas equipped with new collection and conveyance systems. These expansions will then ultimately result in required upgrades to the Port’s waste water facilities as well as modification to the current waster water permit discharge limits.

2.2.2 EPA/DOE Cleanup Actions

The Port has two locations that are identified with in ground contamination. These sites have potential for limited development and activities in the future. However, prior to any use or reuse of these sites, analysis would need to be conducted to ensure those activities do not impact the cleanup design or increase the potential for contamination migration.

- The approximate 4-acre site is part of the larger area once owned by Long Bell Lumber and subsequently International Paper Company (IPCo). The overall mill site was once listed as an EPA/RCRA (resource conservation and recovery act) site. Under the EPA, the majority of the mill site, with the exception of the 4 acres, was cleaned and the RCRA investigation completed. EPA has passed the oversight on to the Department of Ecology. The site is listed on the MTCA (Model Toxic Cleanup Action) register. This area is still undergoing a cleanup action by IPCo and therefore, development activities and uses are currently, and will be, restricted. The bulk of the contamination is contained within a barrier wall and has an engineered cap. At this time, it is unclear as to what activities will be allowed in the future.

- The second area identified as contaminated is located under the rail tracks near and around Warehouse 9. There are three parties involved in a voluntary cleanup effort to monitor and maintain this site. Currently there are no planned efforts to remove the contamination as monitoring analysis, over the last 10 years, has demonstrated that the contamination is not migrating. Further, the site is fully developed and the rail infrastructure located within this area is crucial to the Port’s daily operations. That said, any future redevelopment plans would require an analysis of the impact the new development would pose to the contaminated area.

2.3 Conclusions

To stay competitive today and in the future, the Port will need to accommodate a variety of niche commodity markets. Therefore, it will need to update its industrial air, stormwater and waste
water permits to allow for added flexibility. Further, additional infrastructure improvements will be required such as the updating of cargo handling dust emission systems, construction of inside and outside storage areas that allow for containment and conveyance of stormwater, and expansion of its on-site waste water facilities.

New development within the areas listed or identified as having in ground contamination should be avoided. That said, if those sites are not avoidable, further analysis would be required to determine if the proposed development would impact the established cleanup design employed and/or promote contaminate migration.
An analysis of the current maritime freight market of the Port and competing ports in the Pacific Northwest was conducted through the use of an electronic survey instrument.

3.1 Survey Methodology
Port staff provided a list of current customers and vendors (service providers) it wanted contacted and included in the survey. This list included a broad cross section of the Port’s customers and service providers that have worked with the Port for a number of years.

The Port identified the following major competitor ports:

- Everett
- Tacoma
- Olympia
- Grays Harbor
- Vancouver, Washington
- Portland T2/T6 breakbulk and project cargos

Two electronic survey tools; one for customers and one for service providers were used to collect data. Below are results from surveys of 51 customers and 7 service providers. The amount of respondents typically numbered 17 for customers; 4 for service providers.

3.2 Customer Survey Responses
Following are some of the questions presented and the responses to the customer survey.

*What is your overall satisfaction with the Port of Longview’s services?*

![Pie chart showing satisfaction levels: Very Satisfied 47%, Satisfied 40%, Neutral 13%]

Customers are clearly satisfied with the Port. The Port should be very pleased that its strategic work with customers is achieving intended results.
How satisfied are you with the Port of Longview in the following areas?

This data represents customer attitudes on 13 attributes of the Port. Significantly, the data provides ideas on how to increase satisfaction for this important segment of Port customers. Interestingly, the analysis also shows how differently individual customers value different features (e.g., labor availability). The data also provides important hints for the Port on how to improve satisfaction with these customers. For example, the nearly equal distribution of results for rail access, road access, labor availability, and operations suggests that customer satisfaction could be improved with some focus in those areas.

Which other ports do you do business with? Please rate your satisfaction with these ports.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Very Satisfied</th>
<th>Satisfied</th>
<th>Neutral</th>
<th>Dissatisfied</th>
<th>Very Dissatisfied</th>
<th>Does Not Apply</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olympia</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Grays Harbor</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Everett</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Tacoma</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Vancouver, WA</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Kalama</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Portland, OR</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>
Because of the small number of customer respondents that chose to rate this question, it is difficult to infer conclusions. What cannot be determined is why so many of the customers answered with a “does not apply” rating. Does it mean they do not do business at that specific port, or do they not care about a satisfaction level because they work directly with a service provider and not the port directly? More research is needed on this question to provide the port with more insight into the answers to this question. The data does, however, suggest that a number of the respondents would agree that the ports are competitors to the Port. The Port of Vancouver, USA, is well regarded by these customers. Both the Ports of Olympia and Everett also received a high mark from one of the respondents. Only the Port of Portland, OR received a “dissatisfied” rating. Analyzing the responses with a weighted average does not provide any additional insight as it produces the same results due to the spread in each port’s ratings by this customer group.

*Rate your satisfaction with the Port of Longview’s staff regarding the following features:*

The customers’ responses to this question indicate an overwhelming satisfaction with the knowledge and competence of Port staff. The data does show, however, areas where customer satisfaction can be improved. For example, the split scores on willingness to help and professionalism suggest areas to on which to focus.
Are you aware of the value added services at the Port of Longview?

There is clearly an opportunity to educate customers on the value added services provided by the Port. Using the current strategic partnerships between the Port and its service providers would increase knowledge of the value added opportunities available to Port customers. Additionally, the Port’s web site should highlight these services and hard copy materials on these options should be readily available.

3.3 Service Provider Survey Responses
Following are some of the responses to the Service Provider survey.

What is your overall satisfaction with the Port of Longview’s services?

No commentary is necessary. The Port is obviously doing superb work partnering with its valued service providers. There is, however, opportunity to move this key group of service providers to a higher level of satisfaction.
How satisfied are you with the Port of Longview in the following areas?

In general, service providers are less satisfied with the Port than the long-term customers. The higher level of neutral responses suggests that certain attributes may not be as important to service providers as customers. Location is the highest ranked attribute with 100% “Satisfied” or above. The data, however, suggests the Port needs to put some focus on labor availability. Half of the service providers are not satisfied with the Port on this issue – with some dissatisfied. Availability of labor is a major decision point as businesses choose shipping through competing cargo loading facilities.
Rate your satisfaction with Port of Longview’s staff regarding the following features:

Staff knowledge/competence, professionalism and friendliness all received 100% satisfaction levels, with the majority of respondents very satisfied. The Port should be pleased with how its staff is viewed by these service providers. The data shows a few areas where work can be done to improve, but, significantly, there were no ratings of dissatisfaction.

Are you aware of the value added services at the Port of Longview?

The data shows that service providers are generally aware of the value added services that the Port offers. Similar to data from long term customers, a third of respondents are not aware of the
other services provided by the Port. Accordingly, increasing communications and partnering with service providers to convey information to customers and service providers can clearly add value.

The data shows, however, that the Port has opportunities to increase the satisfaction of both customers and service providers that responded to this survey. The data clearly demonstrates that the Port is in an enviable position with its long term customers and service providers. The Port’s strategic efforts to build long-term partnerships with customers and service providers are achieving its intended results.

3.4 Conclusions

It is recommended that the following areas be prioritized:

**More Frequent Contact for both Customers and Service Providers:** The Port should consider implementing a regular process for customer contact. While the responses indicate the Port staff provides a high quality of customer service, 47% of these customers reported infrequent contact with the Port. A regular customer contact process may be of benefit to both parties.

The service providers verified the Port staff reaches out to them, although a third of the respondents responded only “sometimes.” A suggestion would be to have a more formalized system of contact for the Port’s service providers.

Regular formal or informal contact can lead to rich, valuable information the Port can respond to on an ongoing basis. The use of Customer Management Software, and video conferencing are possible tools that could assist the Marketing Department in tracking and the management of customer/service provider contact.

**Value Added Services:** There is clearly an opportunity to educate customers on the value added services provided by the Port. Using the current strategic partnerships between the Port and its service providers would increase knowledge of the value added opportunities available to Port customers. Additionally, the Port’s web site should highlight these services and hard copy materials on these options should be readily available. The Port should increase its promotion of these services and strategically partner with the service providers to communicate with potential customers. Similar to data from long-term customers, a third of service providers that responded are not aware of the other services provided by the Port. Accordingly, increasing communications and partnering with service providers to convey information to customers and service providers can clearly add value.

**Labor Availability:** The data suggests the Port needs to continue its efforts to highlight labor availability impacts on existing and potential business. Many survey respondents are not satisfied with labor availability at the Port, and some are even dissatisfied. Availability of labor is a major consideration when shippers nominate a Port of Entry to handle its cargo.
4: EVALUATION OF THE PORT’S COMPETITIVE POSITION

The Port considers seven ports in the Northwest to be close competitors. These seven ports are as follows:

- Port of Olympia, WA
- Port of Grays Harbor, WA
- Port of Everett, WA
- Port of Tacoma, WA
- Port of Vancouver, WA
- Port of Kalama, WA
- Port of Portland, OR

As public information on infrastructure and operations from other ports is limited, this evaluation focuses on the financial performance of these seven competitive ports compared to the Port’s results, and assumes that financial performance reflects competitive position.

4.1 Port of Longview Financial Strength

The method selected to evaluate the financial strength of the Port is Return on Equity (ROE). ROE is one of the most important indicators of an enterprise’s profitability and potential growth. Privately owned or publicly owned enterprises that boast a high ROE with little or no debt are able to grow cash reserves, allowing the owners of the enterprise to use the cash to make new investments in growth opportunities.

Table 5 provides ROE of the Port over time, along with the financial indicators that affect ROE performance.

<table>
<thead>
<tr>
<th>Financial Indicator</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>$10,453</td>
<td>$14,514</td>
<td>$18,307</td>
<td>$18,661</td>
<td>$23,487</td>
<td>$25,116</td>
</tr>
<tr>
<td>Revenue Growth</td>
<td></td>
<td>38.9%</td>
<td>26.1%</td>
<td>1.9%</td>
<td>25.9%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Net Profit Margin</td>
<td>-10.9%</td>
<td>-4.1%</td>
<td>9.4%</td>
<td>4.5%</td>
<td>9.7%</td>
<td>13.7%</td>
</tr>
<tr>
<td>Asset Turnover Rate</td>
<td>11.0%</td>
<td>15.6%</td>
<td>19.2%</td>
<td>18.9%</td>
<td>23.5%</td>
<td>22.5%</td>
</tr>
<tr>
<td>Equity Multiplier</td>
<td>1.57</td>
<td>1.53</td>
<td>1.50</td>
<td>1.54</td>
<td>1.49</td>
<td>1.55</td>
</tr>
<tr>
<td>Return on Equity</td>
<td>-1.9%</td>
<td>-1.0%</td>
<td>2.7%</td>
<td>1.3%</td>
<td>3.4%</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

Source: HDR calculations based on Washington State Auditor’s Office, Port of Longview audit reports 2004 - 2009

An examination of the data produces the following salient points:

- With the exception of one year (2007), the Port has consistently increased its ROE. Increased revenue (and net profit margin) has been the main driver to the improvement in ROE as its equity multiplier and net assets have remained relatively stable over time.
- Operating revenue increased significantly from $10.5 million in 2004 to $25.1 million in 2009. This translates to a compound annual growth rate of 19.2%.
Consistent with these improvements are changes in net profit margin, which increased from -11% to +14%.

Total assets have increased from $95.3 million in 2004 to $111.6 million in 2009. With revenue growth surpassing asset growth, the Port has managed to increase its asset turnover rate. Essentially, the Port is utilizing its assets more effectively over time by generating more revenue per dollar of assets.

Finally, a stable equity multiplier of approximately 1.5 suggests that debt and liability compose approximately 1/3 of the total asset base at the Port. This ratio has not changed significantly since 2004.

4.2 Comparative Results
An assessment of the Port’s competitive position among ports that are close competitors was made through a comparison of financial performance. Table 6 compares annual financial indicators, including revenue, net income, total and net assets, as well as the growth in these indicators over time.

- **Operating Revenue** is the total revenue a port receives each year from the sale of goods and services. This includes only the operating portion of revenue and, as such, excludes non-operating revenue such as levied taxes and grants.
- **Net Income** is defined as the difference between revenue (operating and non-operating) and expenses (operating and non-operating).
- **Total Assets** are economic resources owned by ports and used for generating income.
- **Net Assets** is the value of the ports assets after deducting all liabilities.

In addition, ROE and its various components were calculated following the DuPont Model\(^1\). ROE constitutes the product of three components: net profit margin, asset turnover, and the equity multiplier. By examining each input individually, the sources can be discovered of a port's ROE and compared to its competitors.

- **Net Profit Margin** is after-tax profit a port generated for each dollar of revenue and is defined as the ratio of net income to revenue. Generally, higher profit margins are preferred but firms may make a conscious decision to lower profit margins in order to drive higher volumes.
- **Asset Turnover** is the ratio of total revenue to total assets and represents how effectively a port converts its assets into sales.
- The **Equity Multiplier**, also known as **Financial Leverage**, is the ratio of total assets to net assets. The equity multiplier shows what portion of return on equity is the result of debt.
- In the end, ROE shows a port’s ability to generate profit from its net assets (equity).

In addition to the financial metrics outlined above, comparisons of revenue per ton and the proportion of revenue derived from levied taxes and grants are calculated. Last, a graphical representation of the trend in key metrics is provided.

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\(^1\) The DuPont system of financial analysis was created in 1919 by a finance executive at E.I. du Pont de Nemours and Co., of Wilmington, Delaware.
To provide comparisons among competing ports in the Pacific Northwest, this study adopts a scorecard approach. Generally, for each financial indicator, an annual average for 2004–2009 is calculated, along with the annual average growth rate of each. The magnitude of each is then ranked and the top two ports are highlighted. Table 6 provides this comparison.

Table 6: Financial/Operating Scorecard

<table>
<thead>
<tr>
<th>Financial Indicator</th>
<th>Longview</th>
<th>Portland</th>
<th>Vancouver</th>
<th>Olympia</th>
<th>Grays Harbour</th>
<th>Everett</th>
<th>Tacoma</th>
<th>Kalama*</th>
<th>Regional Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (SM)</td>
<td>Value</td>
<td>18.4</td>
<td>76.3</td>
<td>24.2</td>
<td>7.2</td>
<td>8.1</td>
<td>19.1</td>
<td>50.1</td>
<td>8.9</td>
</tr>
<tr>
<td>Net Income (SM)</td>
<td>Value</td>
<td>1.1</td>
<td>3.6</td>
<td>0.8</td>
<td>1.6</td>
<td>-1.0</td>
<td>4.9</td>
<td>5.5</td>
<td>4.7</td>
</tr>
<tr>
<td>Total Assets (SM)</td>
<td>Value</td>
<td>99.0</td>
<td>546.2</td>
<td>251.0</td>
<td>94.6</td>
<td>72.4</td>
<td>215.6</td>
<td>1705.5</td>
<td>81.8</td>
</tr>
<tr>
<td>Net Assets (SM)</td>
<td>Value</td>
<td>64.7</td>
<td>369.4</td>
<td>144.4</td>
<td>62.4</td>
<td>58.5</td>
<td>198.2</td>
<td>418.8</td>
<td>73.1</td>
</tr>
</tbody>
</table>


Notes:
- Financial indicators for the Port of Kalama are calculated over 2004 – 2008. No data was available for 2009.
- Tonnage information is obtained from port publications where available.
- Revenue is defined as operating revenue only.
- Grant amounts are only reported if identified separately from other non-operating revenue.

An examination of the data contained in Table 6 produces the following salient points:

**Large variations in annual operating revenue are common among the competing ports.** A change in annual operating revenue of 25% or more is not uncommon for a number of ports in the region. Changes in U.S. and world economic growth, U.S. grain exports and myriad other factors can significantly affect trade volumes and operating revenue.

**There is a correlation between size of port and revenue growth.** The larger ports (defined by operating revenue), have experienced limited operating revenue growth since 2004. The Ports of Tacoma and Portland have experienced compound annual growth rates of +0.5% and -1.2%
respectively. With the exception of the Port of Olympia, all other ports have operating revenue growth in excess of +10.0%. The Port leads all others in terms of operating revenue growth since 2004 at +19.2%.

**Comparatively large operating revenue does not necessarily translate into high net income.** While the Ports of Tacoma and Portland are by far the largest in terms of revenue, this is no guarantee that the level of net income (measured in both absolute and percentage terms) will also be significantly higher than other ports. Indeed, while the Port of Portland ranks second in terms of operating revenue, it ranks fifth in terms of net income. Ports that take in significantly less revenue (such as the Port of Vancouver, for instance) have managed to control expenses to the extent that net income is significantly higher in absolute terms. These ports also exhibit high net profit margins: the Port of Kalama has consistently had profit margins in excess of +50%.

**There is wide dispersion in the amount of ad valorem taxes generated as a percent of operating revenue.** Ad valorem taxes are received by all ports in the Pacific Northwest with the exception of the Port of Kalama.

**Taxes as a percent of operating revenue vary significantly among ports** with the Port of Longview at the lowest (7%) and the Port of Olympia with a ratio of over 55% annually. This shows that the Port is much less dependent on its district’s tax levy than any of the competing ports. This financial independence versus the strong dependence on a tax levy by the competing ports is a great strength of the Port.

The Port of Longview leads in generating revenue per ton of cargo handled. The Port leads other ports in generating revenue per ton. In addition, the Port has been successful in increasing revenue per ton since 2004.

The Port of Longview leads in utilizing its assets to generate revenue. The asset turnover rate is defined as the ratio of total revenue (operating and non-operating) to total assets. As of 2009, the Port currently ranks sixth in terms of total assets with only the Ports of Grays Harbor and Olympia having less. Of course, the magnitude of operating revenue a specific port can generate is dependent on the size of its asset base; however, there appears to be no direct correlation between asset size and how effectively a port utilizes those assets to generate revenue. The Ports of Longview and Portland rank number one and two respectively in asset turnover rate even though the Port of Portland is 5.3 times larger in terms of assets.

The Port of Longview has consistently made improvements in asset utilization. While the Port’s asset base has not increased significantly since 2004, revenue has outpaced asset growth. The Port has been successful in generating new revenue with existing assets.

With the exception of the Port of Tacoma, all competing Pacific Northwest ports have not seen significant changes in proportion of debt used to finance its assets. The equity multiplier (the ratio of total assets to net assets) is a measure of financial leverage – the extent to which individual ports rely on debt to finance assets. The Port of Longview has consistently maintained an equity multiplier of approximately 1.5. As of 2009, the Port ranks sixth with only the ports of Tacoma (2.2) and Vancouver (2.0) having higher values.

The Port of Longview has consistently increased its ROE since 2004. Return on equity is influenced by a number of factors, including profit margin, asset utilization, and the proportion of assets financed through debt. Taking all these factors into account, the Port has moved from a negative ROE in 2004 (-1.9%) to significantly positive in 2009 (4.8%). With the exception of one year (2007) the Port has consistently increased ROE. Increased revenue (and net profit margin) has been the main driver to the improvement in ROE as its equity multiplier and net
assets have remained relatively stable over time. Only the Port of Vancouver had a higher ROE in 2009 at 10.0%.

4.3 Conclusions

The Port has made consistent improvements to its financial health. The Port has been successful in generating additional revenue with existing assets, while at the same time improving its net profit margin. The Port also ranks favorably in comparison to other Pacific Northwest ports in terms of a number of key financial metrics, including revenue per ton and asset turnover rate. The Port should continue to build its financial strength through the careful selection of customers and investment opportunities. The strength gained from high revenue per ton will enable the Port to be well positioned financially to strategically grow its assets based on market demand.
5: MARKET ASSESSMENT OF EXISTING AND PROSPECTIVE COMMODITIES

Port volumes on the Pacific West Coast are decidedly dependent on not only economic conditions, but also on government policies related to specific sectors. For example, recent strong economic growth in Asian countries has helped spur export volumes for a number of commodities in Pacific Northwest ports. At the same time, domestic policies related to wind power generation has helped grow imports of wind energy components. However, other government policies may hinder trade – witness the law that prohibited the export of logs obtained from federal lands in the 1990s that pushed exports of unprocessed timber to historically low levels.

These are just a few examples of external risks that ports must manage when developing master plans. Table 7 provides historical volumes of Port tonnage by major category. As can be seen, there is a large degree of volatility within each commodity category; however, as certain volumes have declined, others have increased, resulting in relatively less volatility in overall tonnage.

Table 7: Port of Longview Tonnage (Short Tons)

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010 Jan-Sep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind Energy</td>
<td>9,415</td>
<td>11,064</td>
<td>17,329</td>
<td>47,085</td>
<td>82,401</td>
<td>79,004</td>
<td>99,727</td>
<td>31,119</td>
</tr>
<tr>
<td>Agricultural Products</td>
<td>495,641</td>
<td>142,301</td>
<td>94,770</td>
<td>—</td>
<td>—</td>
<td>13,586</td>
<td>281,669</td>
<td>615,904</td>
</tr>
<tr>
<td>Steel and Metal Products</td>
<td>46,054</td>
<td>56,438</td>
<td>54,464</td>
<td>95,201</td>
<td>89,102</td>
<td>70,186</td>
<td>23,284</td>
<td>19,027</td>
</tr>
<tr>
<td>Log</td>
<td>151,158</td>
<td>197,696</td>
<td>65,027</td>
<td>21,535</td>
<td>47,230</td>
<td>131,488</td>
<td>251,517</td>
<td>478,053</td>
</tr>
<tr>
<td>Bulk Minerals</td>
<td>68,392</td>
<td>254,302</td>
<td>494,607</td>
<td>241,149</td>
<td>98,246</td>
<td>233,380</td>
<td>72,725</td>
<td>98,775</td>
</tr>
<tr>
<td>Bulk Chemical</td>
<td>955,368</td>
<td>857,392</td>
<td>887,441</td>
<td>933,957</td>
<td>845,374</td>
<td>882,823</td>
<td>914,322</td>
<td>679,713</td>
</tr>
<tr>
<td>Other</td>
<td>56,067</td>
<td>66,393</td>
<td>138,149</td>
<td>197,677</td>
<td>96,733</td>
<td>54,959</td>
<td>2,951</td>
<td>429</td>
</tr>
<tr>
<td>Total</td>
<td>1,782,101</td>
<td>1,585,586</td>
<td>1,751,788</td>
<td>1,536,604</td>
<td>1,259,086</td>
<td>1,465,426</td>
<td>1,646,195</td>
<td>1,923,020</td>
</tr>
</tbody>
</table>

Source: Port of Longview Cargo Statistics

Diversification with respect to the number of different commodities a port can process is a fundamental way to lessen this risk. The Port has the land and facilities required to entertain opportunities for expansion of existing commodity trade or the advancement of new sources of revenue through trade in commodities not previously handled.

The objective for this task is two-fold. First, an understanding of the growth potential (or lack thereof) for existing commodities currently processed at the Port is required. Second, a market assessment of the select commodities that may hold promise for future Port development is undertaken.

A series of market assessments and tonnage forecasts were performed for commodities currently processed at the Port. For those commodities currently processed, the following were examined: wind energy, agricultural products, steel and metals, log, bulk mineral, and bulk chemical. For
those commodities not currently shipped through the Port, the following were researched: coal, identity preserved agricultural products and automobiles.

For each commodity type, publically available sources were used to analyze the market. Generally, each assessment provided detail on the following:

- Port historical volumes;
- Historical volumes/market shares for other Pacific Northwest ports;
- Recent/future competing port activities related to the commodity in question;
- Third party forecasts of the commodities’ growth potential; and
- A forecast of Port volumes under base, low and high scenarios.

A brief summary for each commodity is provided below.

### 5.1 Wind Energy

- Wind power development has historically been dependent on the availability of federal- and state-sponsored programs designed to encourage this development. Future capacity increases (at least in the short term) are dependent on the renewal of existing programs or the introduction of new ones. Uncertainty in this area results in unpredictable annual capacity increases as investors take advantage of programs that may soon expire.
- Forecasts of wind power development in the short term generally reflect a small but increasing trend.
- Forecasts of wind power development in the longer term are quite indeterminate for a number of reasons:
  - Uncertainty in the availability of federal or state incentives.
  - Investment in transmission infrastructure is required to access remote wind resources.
  - Longer term research and development is required to improve technology and lower the cost of offshore wind power.
- Domestic production of wind components has increased dramatically since 2005, outpacing growth in imported components. Assuming continued wind energy market growth, it can be expected that both domestic and foreign-based firms will take advantage of domestic manufacturing opportunities to reduce transportation costs. Continuation of the manufacturing tax credit may also be a key driver to domestic expansion.

### 5.2 Agricultural Products

- The export market for agricultural products in the Columbia River ports has exhibited stable growth over the last 5 years.
- This market is very competitive globally and locally. Portland and Vancouver, Washington currently possess the largest local market share.
- The Port is currently a very small player in this market but has experienced significant gains in 2010 in the soybean market due to unique market conditions.
- The future outlook for exports is one of stable, ongoing growth for agricultural products and a growing market opportunity in Asia.
The Port is well positioned for the future with a new Export Grain Terminal (EGT) expected to be operational for the fall 2011 harvest. It will increase annual handling capacity by 8 million tons.

5.3 Steel and Metal Products

- Steel manufacturing occurs at numerous ports in the Pacific Northwest. Many Pacific Northwest ports, such as Portland and Tacoma, also have steel recycling facilities.
- Steel manufacturing facilities are planned at the Port and the Port of Vancouver. Skyline Steel plans to start production in early 2011. Incentives are in place if Skyline generates ship calls to the Port.
- The economic recession of late 2008 and 2009 depressed steel and scrap metal trade throughout the world. Pacific Northwest port volumes declined proportionately. Volumes in 2010 are expected to rebound somewhat.
- Scrap metal as an input into steel production is important, with approximately 40% of world steel production using the Electric Arc Furnace (EAF) process. The U.S. is the world leading exporter of scrap metal.
- Longer term growth in this market is expected to rebound to historical averages.

5.4 Raw Log Exports

- Many ports reallocated land previously used for log exports after a drop in shipments several years ago; their re-entry into the market may be costly and slow. Although by 2007 there were no log yards on Port property, the Port did not exit this business and has shown it can quickly ramp up to meet demand (as seen by 2010 volumes relative to 2009). Growth of this commodity’s trade in the future could be more stable and positive than the historical rates, unless restrictive regulations are enacted.
- In response to increased demand from China, other competing ports (such as the Ports of Olympia, Grays Harbor, and Astoria) have recently entered, re-entered, or expanded its raw log export facilities.
- Raw log exports hit historical highs in 2010. This is mainly due to proposed export tariffs from Russia, a high level of demand from China, and an inability of other log export nations to meet demand.
- Many customers require logs to be debarked. There are two reasons for this request: first, elimination of extra weight and volume of the barked logs is desirable; second, it prevents insect and fungus transfer. China, for example, requires debarking or in-hold fumigation prior to arrival. Debarking facilities on or close to port facilities is a competitive advantage.
- The Port’s location on the Columbia River, access to private timber supplies, and its established log export customer relationships can be leveraged into future opportunities.

5.5 Bulk Minerals

- The Port handles a minor amount of bulk minerals, as compared to the Port of Portland. The Port of Portland has major facilities to handle large quantities of potash and soda ash through its agreements with Canpotex and ANSAC. These two commodities make up the vast majority of bulk mineral shipments through Pacific West Coast ports.
• Given the relative concentration of mining operations for potash (Saskatchewan) and soda ash (Wyoming) in western North America, along with demand growth in Asia (principally potash demand), west coast ports are positioned well in terms of lowest cost transportation to principal markets.

• There are plans for future potash mine site development and expansions. Canpotex forecasts its members to increase production capacity from 22 million tons to 30 million tons in 2014\(^2\). BHP Billiton is actively pursuing development of its proposed Jansen mine with a planned operating capacity of 8 million tons per year.\(^3\)

• A new proposed facility at Cherry Point, Washington is a potential competitive threat to the Port’s growth in this market.

• There is currently excess export capacity at both the Port of Portland and Neptune terminals in Vancouver, BC. In addition, Canpotex has proposed constructing a new potash export terminal on Ridley Island in the port of Prince Rupert, BC, with a capacity of 13 million tons at full build-out. BHP Billiton has reached a preliminary agreement with the Port of Vancouver, Washington regarding the location of a potash export facility. This facility would serve BHP’s proposed Jansen mine in Saskatchewan.

5.6 Bulk Chemical

• Bulk chemical is a major commodity group handled at the Port; it accounts for over 50% of the total throughput.

• There has been stable growth of shipments of bulk chemicals at the Port during the last 8 years.

• Calcined coke export is the major activity at the Port, continuously reaching over 800,000 tons per year.

• BP’s Cherry Point refinery provides a large and steady export demand of calcined coke through the Port.

• The outlook of bulk chemicals at the Port indicates a moderate and constant growth over the next 20 years; the growth rate is largely constrained by the current production capacity at the Cherry Point refinery.

5.7 Coal

• Non-OECD coal demand is expected to increase by some 2.5% annually over the next 30 years.

• U.S. coal exports have significantly increased in 2010. While much of this increase may be a result of poor economic conditions in 2009, it appears that the North American transportation cost disadvantage when shipping coal to Asia may be less important than in the past.

• Historically, price differentials between metallurgical and thermal coal have precluded the latter from significant export. Technological improvements related to reducing moisture

\(^2\) “Growing Relationships”, (Sept 2010), Canpotex Limited,
\(^3\) See the Major Project Management Office for additional detail found at: [http://www.mpmo-bgpp.gc.ca/project-projet/index-eng.php](http://www.mpmo-bgpp.gc.ca/project-projet/index-eng.php)
content in lower-grade coal may provide opportunities for increasing the thermal value of Powder River Basin coal.

- Current port capacity is at a premium. The Westshore, Canada terminal, the major port competitor to any future west coast development, has some additional available capacity. A review of existing Westshore customers indicates near-term expansion plans for many coal mines in southeast BC.

- There are plans for new site development enabling coal exports in Washington state. SSA Marine (Cherry Point) and Millennium Bulk Terminals (Longview) have both publically announced plans.

- Any new facility development that is unable to accommodate Capesize vessels is at a competitive disadvantage.

5.8 Containerized Agricultural Products

- Identity-preserved shipments provide several benefits to importers and exporters alike, namely: brand preservation, market access, return container revenue, reduced inventory, and order flexibility.

- The worldwide volume of containerized shipping has increased considerably in the past decade and is expected to continue to do so, despite setbacks resulting from the recent global economic downturn.

- Asian countries – particularly China – are expected to be the greatest importers of containerized cargo. They are also expected to account for an increasingly large share of American soybean exports.

- Soybean identity-preserved exports are particularly attractive, as soybean demand abroad is high and expected to grow; prices are expected to remain elevated; and the exports allow American firms to fill containers that may otherwise be sent back empty.

5.9 Automobiles

- Historically, there has been a strong market for auto imports in the U.S. Pacific Northwest imports have averaged growth of about 1% per year in the last 5 years.

- Future projections of an increase in auto imports moving through the Pacific Northwest are between 4-5% per year, indicating this market is a potential opportunity.

- Several other ports that directly compete with Longview in the Pacific Northwest (Portland, Vancouver, Tacoma, and Grays Harbor) already import a significant number of autos. These ports may have a competitive advantage due to its positioning in the automobile market.

- Other west coast ports also handle auto imports, chiefly Long Beach, Los Angeles, Hueneme, and San Diego. These ports currently compete with Pacific Northwest ports for autos destined for non-West Coast markets, such as the Midwest or Upper East Coast.

5.10 Conclusions

Diversification with respect to the number of different commodities a port can process is a fundamental way to lessen risk. The Port has the land and facilities necessary to entertain opportunities for expansion of existing commodity trade or the advancement of new sources of
revenue through trade-in commodities not previously handled. Coal exports, automobile imports, and containerized agricultural products all provide opportunity for further diversification.
6: NEW CARGO OPPORTUNITIES

Current and future cargo-handling opportunities for the Port are based on market assessment findings for the following commodities identified previously as existing and prospective commodities:

- Wind Energy Components
- Agriculture Products
- Steel
- Log
- Bulk Minerals
- Coal
- Containerized Agricultural Products
- Automobiles

Future income growth at the Port is highly dependent on the utilization of existing assets. Asset utilization is, in turn, dependent on current and potential future trade opportunities. In assessing each specific cargo-handling opportunity relative to another, both market growth and current (and potential) market share should be considered. While each opportunity should be considered on its own merit, a broad comparison of the potential market growth and current Port market share provides decision makers with useful information as to which opportunities to pursue.

A comparison of the Port’s current market share and the expected average annual market growth rate for each commodity produces a commodity opportunity grid (Figure 1). This grid is further segmented into four quadrants:

- Low market growth, low market share
- Low market growth, high market share
- High market growth, low market share
- High market growth, high market share.

The placement of these quadrants is determined through an examination of the scatter plot itself. As Figure 1 shows, a 25% market share for the Port (among competing Pacific Northwest ports) was used as the basis to separate low and high market share commodities. This delineation was relatively straightforward, as the Port currently has market share dominance in two commodities: log and wind energy components. The Port’s market share of other commodities under consideration are generally less than 5% and, in some cases (such as coal), the Port is not currently handling the commodity.

Partitioning market growth into low and high segments is more awkward given the relatively concentrated market growth of certain commodities. Many commodities are expected to grow an average of 1% – 2% annually, including containerized agricultural products, bulk mineral and coal. Given the uncertainty inherent in these forecasts, it was decided to separate high and low growth commodities on the basis of those volumes expected to grow by greater than/less than 1% respectively.
Based on this delineation, two commodities fell into the low market growth category: agricultural products and raw logs. The Port is well positioned to increase volumes in both these product categories.

While the Port currently captures a small share of the bulk agricultural product market, the newly developed EGT will provide the Port with ample capacity to grow. It is expected the Port can capture over 25% of the market by 2030, assuming no significant expansion occurs at other competing ports.

The Port currently captures over a 60% share in the raw log export market. While the growth in raw log exports hit historical highs in 2010, it is expected that market growth rates will stabilize as uncertainty regarding proposed overseas export tariffs is resolved. Furthermore, the Port has shown that it can ramp up quickly to accommodate large increases in exports, as witnessed by a tripling of exports in 2010.

The Port has only one commodity (wind energy) in the high market share/high growth quadrant. As explained more fully elsewhere, future growth of wind energy component volumes is dependent on a number of factors, including the availability of federal- and state-sponsored programs designed to encourage this domestic development. It is also anticipated that both domestic and foreign-based firms will take advantage of domestic manufacturing opportunities in order to reduce transportation costs. Continuation of the manufacturing tax credit may also be a key driver to domestic expansion. Both of these factors will impact the level of domestic manufacturing of wind components, which may further limit imports. Regardless of this uncertainty, the Port has been successful in attracting wind energy component volumes and appears to be well-equipped to build on this success should further opportunities appear.

The largest potential for future growth lies in the low market share, high market growth quadrant. A number of commodities appear here, including automobile Roll-on, Roll-off (RO/RO), steel, coal, bulk mineral, and containerized agricultural products. As mentioned above,
forecasts of market growth for each of these commodities is somewhat uncertain and, in many cases, the high and low market growth scenarios for a specific commodity overlap those of other commodities.

6.1 Conclusions

Given the degree of uncertainty in commodity-specific forecasts, a terminal concept that has the ability to efficiently handle multiple cargo types may be the most appropriate terminal development strategy. If this type of terminal configuration is chosen, the Port will have the flexibility to take advantage of opportunities as they arise. This approach will allow the Port to manage risks inherent in less flexible terminal arrangements.
7: ALTERNATIVE ANALYSIS AND PREFERRED PLAN

The master planning process began with a review of all available public documents pertaining to the port and its terminal operations. The master plan is a future “road map” for proactive port development consistent with the Port’s mission.

The overarching philosophy of the master plan development centers on providing market-driven solutions to the port terminal and rail development alternatives for the Port’s river front lands and the potential opportunities for these lands. Once the market was established as summarized in Section 5, the approach to the master plan focused on potential development facilities and alternative layouts that effectively responded to the defined marketplace conditions while attempting to optimize Port economic development benefits and return on investment.

In every instance, a system-wide approach was used to analyze and evaluate the various real estate and port terminal development strategies.

7.1 Port Master Plan as a Business Planning Tool

The goal of the Port master planning effort is to provide direction for the ability to increase the operational efficiency and capacity of a port terminal or facility to enable it to handle anticipated business growth in the future.

The identification of the Port master plan alternatives was an initial starting point for the Port Leadership and Port Senior Management Team long-term decision-making process.

Development of the Port master plan alternatives involved current and future operations analysis, terminal capacity analysis, and physical land use plan alternatives. These alternatives fully integrated terminals, roadways, rail, and other infrastructure elements into a set of recommendations.

The following maxims guided the master plan alternative preparation and development:

- The master plan represents a future port development policy statement of importance and intentionally embodies flexible guidelines, not rigid port development doctrine. As market demands change, the Port will need to adapt to these changes. Thus, future adjustments to the Port Master Plan Report recommendations are inevitable and a natural expression of a well-balanced strategic port planning process.

- The master plan, above all, must be a market driven “road map” for future terminal development at the Port utilizing long-term business risk principles to create a sustainable and durable port development and operational solution.

- For the master plan to be truly successful it must ensure that the adopted development plan meets current customer’s needs. These current port tenants and customers drive current port revenues. Only after current port customer needs are met should the Port pursue synergistic future development opportunities.

- Maximize the use of existing terminal capabilities first. The Port should first focus on and align current Port systems in management, operations, information technology, pricing, etc., in its existing facilities as is recommended in this report.

- Invest in new terminal facilities only after all other practical options have been successfully pursued and explored.
The Port master plan alternative preparation methodology included assessing the Port’s mission as currently conveyed to the HDR consultant team by the Port staff, documenting successes, assessing weaknesses, identifying potential future business risks, suggesting new opportunities and proposing alternative development scenarios for future business opportunities.

### 7.2 Recognizing Terminal Constraints for the Port Master Plan Alternatives

At the heart of the port master planning process, is the breakdown of the terminals into terminal capacity components. This is followed by the determination of throughput capacities for each identified component. This way, design refinements can be tested and balanced for efficient throughput cargo flow.

Using this proven capacity modeling approached more fully described in the next section, the HDR consultant team balanced terminal operational components so that the terminal components were appropriately sized. Recognizing constraints on the Port (e.g., vessel size, navigation limitations, turning basin needs, limited land, and reliance on a limited set of commodities and uses as examples) is as important as proposing new development opportunities.

### 7.3 Marine and Intermodal Terminal Throughput Capacity Modeling Approach

This planning effort uses the concepts for the Port terminal capacity modeling and throughput analysis as described in the 1986 publication: “Improving Productivity in U.S. Marine Container Terminals” produced by the National Research Council and published by the National Academy Press. This publication was prepared under the guidance of the U.S. Maritime Administration (MARAD) and describes the basic methodology for assessing wharf, storage, and gate productivity. Today this conceptual approach, pioneered by John Vickerman, is used to model marine and intermodal terminal throughput and operational analysis and has generally been adopted by many Public Port Authorities throughout North America.

### 7.4 Modular Grid Overlay System Tool – Future Terminal Equipment Flexibility

Developed by John Vickerman and David VanDeveer for Vickerman-Zachary-Miller Inc. in the late 1980s, the Modular Grid Overlay System (MGOS) port planning tool is a methodology for detailed comprehensive equipment and infrastructure planning for marine and intermodal terminals that permits a variety of terminal operating equipment scenarios to be deployed in the future without infrastructure impacts and the need to reconfigure the terminal for future equipment needs.

The Vickerman & Associates MGOS terminal planning
approach was used for the master plan alternatives analysis on a conceptual planning basis. A more rigorous MGOS detailed analysis are highly recommended when more detailed preliminary engineering design activities are authorized for the final design of terminal projects.

This methodology helped determine conceptually the correct geometry for a base terminal layout or base module for all terminal hard assets (buildings, light standards, fire hydrants, electrical substations, radiological portal monitors, refrigerated receptacle plugs, etc.) on a terminal that will permit future deployment of the various operating equipment scenarios by the Port without having to modify or change any terminal infrastructure.

7.5 Terminal Capacity Analysis and Market Driven Needs Assessment

The HDR consultant team utilized the Vickerman & Associates Marine & Intermodal Terminal capacity analysis model to determine the Maximum Practical Capacity (MPC) for the cargo types envisioned in each master plan alternative. This model is used to calculate the practical throughput capability for both existing and future marine terminals described in this plan. There are individual computer models for each cargo type: container, breakbulk, Neo bulk, dry bulk, liquid bulk.

Each capacity model calculates an estimate of the MPC for each cargo operating type. The MPC is the high end of a realistic operating scenario. MPC represents the peak of a realistic operating scenario and sustained operation at this level for a significant period of time is generally unreasonable and typically unsafe. Past experience has shown that a more reasonable estimate of a sustainable practical capacity is approximately 75% of the MPC and is referred to as the Sustainable Practical Capacity (SPC). For ease in alternative comparison, only MPC estimates were used in the terminal capacity analysis.

Using the model, the HDR consultant team balanced all terminal components so that none of the components was undersized (causing a “bottleneck”) or oversized (causing a waste of capital expenditure). The final throughput capacity analysis was performed based on the port terminal inventory and operational analysis questionnaires.

7.6 Market-Driven Needs Assessment and Future Port Terminal Market Demand Requirements

Building on the findings and recommendations in previous sections such as in Section 4 (Evaluation of the Port’s Competitive Position), Section 5 (Market Analysis of Existing and Prospective Commodities) and Section 6 (New Cargo Opportunities) the HDR consultant team consolidated the Port market forecast into two general port handling cargo type areas: dry bulk terminal operations and neo bulk/project/breakbulk terminal operations to better align the cargo forecasted demand with the organization and operational management approach currently used at the Port. Below is a discussion of the results of the capacity analysis for each of two cargo types.

7.6.1 Dry Bulk Cargo Market Port Capacity Model Analysis Summary

This analysis summary highlighted terminal storage capacity as the primary Port capacity limitation. The following is an excerpt from the dry bulk port capacity analysis, illustrating the primary and secondary limiting components of the capacity model.
Dry Bulk Terminal Capacity Model Results

<table>
<thead>
<tr>
<th>SUMMARY TERMINAL CAPABILITY ESTIMATES - ANNUAL TONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throughput Capability By Terminal Component (Tons/Yr)</td>
</tr>
<tr>
<td>Component 1: Vessel and Berth Activities</td>
</tr>
<tr>
<td>Component 2: Vessel To Apron Transfer</td>
</tr>
<tr>
<td>Component 3: Apron To Storage Transfer</td>
</tr>
<tr>
<td>Component 4: Storage</td>
</tr>
<tr>
<td>Component 5: Inland Transfer - POL Rail - No Truck</td>
</tr>
<tr>
<td>Component 6: Gate Processing - POL Rail - No Truck</td>
</tr>
<tr>
<td>Maximum Practical Capacity (MPC) Estimate</td>
</tr>
<tr>
<td>2009 Actual POL Dry Bulk Cargo Throughput Percentage</td>
</tr>
</tbody>
</table>

Maximum Sustainable Capacity (SPC) = 75% MPC  SPC =

- 1,473,640  1,624,393

2009 Actual POL Bulk Throughput Percentage

- 59.00%  53.52%

Primary Limiting Component - MPC = 2.17 million st; SPC =1.62 million st
Secondary Limiting Component - MPC = 2.33 million st; SPC =1.75 million st

Figure 2: Dry Bulk Terminal Capacity Model Results

For dry bulk, the MPC for the facility is calculated to be 2,165,858 annual short tons\(^4\) because the MPC is limited by the storage component having the lowest MPC of the six components tested. The gate processing component is the second limiting component for dry bulk. In the next two sections the cargo forecast is compared to the MPC and the SPC of the limiting components.

The results shown above indicate that dry bulk capacity at the Port will be limited by the MPC and SPC of two components: storage area component (limiting component) and gate processing area (next limiting port capacity component).

7.6.2 **Dry Bulk Cargo Market Forecast Versus MPC and SPC Capacity**

The market demand area illustrated in green on Figure 3 and Figure 4 is the reasonably expected future port capacity needed for dry bulk cargoes at the Port over the next 20 year port planning horizon for the high market forecast. This graphic defines the cargo forecasted demand requirement as “above” the current Port SPC capacity criteria line as limited by the storage area (the primary limiting component) and by the gate complex (the secondary limiting component).

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\(^4\) Short tons are used in the United States as a cargo measurement equalling 2,000 pounds. A metric ton is equal to 1,000 kilograms, or 2,204.6 pounds.
Expansion of the storage area is required to meet the 20 year capacity requirements as indicated by the market demand forecast. In Figure 4 below, the secondary limiting component (the gate complex) is also compared to the 20 year forecast and it is determined that the capacity of the terminal is also limited by this component.

As these two figures indicate, both terminal storage and gate capacity will need to be increased in order for the Port to meet the projected demand over the next 20 years. The improvements to
these two components can be done in phases and not all of the required 20 year capacity needs to be built immediately.

7.6.3 Neo Bulk/Project/Breakbulk Market Port Capacity Model Analysis Summary

The following is an excerpt from the neo bulk/project/breakbulk port capacity analysis illustrating the primary and secondary limiting components of the capacity model. The primary limiting component is gate processing, limited to 499,200 short tons annually.

**Neo Bulk/Project/Breakbulk Terminal Capacity Model Results**

<table>
<thead>
<tr>
<th>Component Summary</th>
<th>Short Tons</th>
<th>Metric Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 1: Berth and Apron Activities</td>
<td>1,978,456</td>
<td>1,798,597</td>
</tr>
<tr>
<td>Component 2: Ship To Apron Transfer</td>
<td>1,118,258</td>
<td>1,018,598</td>
</tr>
<tr>
<td>Component 3: Apron To Storage Transfer</td>
<td>981,903</td>
<td>901,730</td>
</tr>
<tr>
<td>Component 4: Storage</td>
<td>845,200</td>
<td>753,159</td>
</tr>
<tr>
<td>Component 5: Inland Transfer</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Component 6: Gate Processing</td>
<td>499,200</td>
<td>453,818</td>
</tr>
</tbody>
</table>

No Break Bulk by Rail

<table>
<thead>
<tr>
<th>Terminal Summary</th>
<th>Acres/Short Tons</th>
<th>Metric Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Storage Acres</td>
<td>75.0</td>
<td>NA</td>
</tr>
<tr>
<td>Throughput Capability per Storage Acre</td>
<td>6,659</td>
<td>NA</td>
</tr>
<tr>
<td>Total Terminal Acres</td>
<td>75</td>
<td>NA</td>
</tr>
<tr>
<td>Throughput Capability per Terminal Acres</td>
<td>6,656</td>
<td>NA</td>
</tr>
</tbody>
</table>

Maximum Practical Capacity (MPC) Estimate

Maximum Sustainable Capacity (SPC) = 75% MPC * SPC =

Table of Limiting Factors

Primary Limiting Component MPC = 499,200st; SPC = 374,400st

Secondary Limiting Component MPC =826,200 st; SPC = 619,650st

Figure 5: Neo Bulk/Project/Breakbulk Terminal Capacity Model Results
The following depicts storage capacity as the secondary limiting port capacity component analysis expressed in metric and short ton port capacities.

**Neo Bulk/Project/Breakbulk Terminal Capacity Model Result**

**Secondary Limiting Component**

<table>
<thead>
<tr>
<th>Storage Capacity Category</th>
<th>Short Tons</th>
<th>Metric Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum Practical Capacity (MPC) Estimate</strong> MPC =</td>
<td>826,200</td>
<td>751,091</td>
</tr>
<tr>
<td>2009 Actual POL Breakbulk Cargo Throughput Percentage of MPC</td>
<td>41.45%</td>
<td>45.59%</td>
</tr>
<tr>
<td><strong>Maximum Sustainable Capacity (SPC) = 75% MPC * SPC =</strong></td>
<td>619,650</td>
<td>563,318</td>
</tr>
<tr>
<td>2009 Actual POL Breakbulk Cargo Throughput Percentage of SPC</td>
<td>55.26%</td>
<td>60.79%</td>
</tr>
</tbody>
</table>

**Secondary Limiting Component: MPC = 826,000 short tons; SPC = 619,560 short tons**

Figure 6: Neo Bulk/Project/Breakbulk Terminal Capacity Model Result-Secondary Limiting Component
7.6.4 Neo Bulk/Project/Breakbulk Market Forecast versus MPC and SPC Capacity Criteria

Because the gate processing component capacity can be easily increased through truck lane expansion, the secondary component, terminal storage, is taken as the chief limitation for neo bulk/project/breakbulk terminal capacity. Figure 7 below shows the high forecast (green line) and the base forecast (blue line) both exceeding the maximum sustainable capacity (SPC) of 619,650 short tons of the current facility.

![Neo-Bulk, Breakbulk, Project Cargo Forecast](image)

**Figure 7: Neo Bulk, Breakbulk, Project Cargo Forecast – Secondary Limiting Component**
The graphic in Figure 8 defines the cargo forecasted demand requirement “above” the current Port SPC capacity criteria line. This market demand area illustrated in green is the reasonably expected future port capacity need for neo bulk/project/breakbulk cargoes at the Port over the next 20-year port planning horizon for the high market forecast. It should be noted that even the baseline market forecast will require a capacity increase if the Port is to meet anticipated market demands for this cargo type. Thus, the alternative terminal designs must have enough capacity to meet this anticipated cargo demand.

7.7 Terminal Module Development

Based on analysis of facilities for both physical and operational characteristics and the application of appropriate world standards, idealized port and rail terminal modules were deployed as tools to assist with the creation of master plan development alternatives. These idealized modules identify footprints for each terminal type that can be used as a basis for the master plan alternative scenarios.

As described earlier, an estimated throughput capacity for dry bulk and neo bulk/project/breakbulk cargoes have been determined. By using this idealized methodology together with the completed market needs assessment, long-term land needs can be accurately portrayed in the alternative master plan layouts. Different modules were used to estimate acreage and infrastructure needs for the alternatives considered. Each module included idealized infrastructure and various development requirements such as berth configuration, utility
requirements, traffic projections, etc. The Omni Terminal Module was considered most favorable to the Port.

7.7.1 Omni Terminal Module

The Omni terminal module developed by Vickerman & Associates is a terminal designed to accommodate a combination of cargoes. The module shown here has a two berth length of 1,600 feet and totals 50 acres.

![Figure 9: Omni Terminal Module](image)

It includes multiple components typical of Omni cargo facilities such as:

- Unit train capacity for handling dry bulks.
- Two berths totaling 1,600 feet in length.
- Thirty acres of paved open storage.
- Transit shed or warehouse that is 120,000 square feet.
- Terminal truck gate and administrative building.
- Ten-acre dry bulk module.
- Annual throughput that will vary depending on cargo type.

Quantifying the added capacity for this concept is dependent upon the combination of the facilities in use. It can be assumed a concept such as this can increase the existing capacity from...
10% to 30% for the current configuration and use. It should be noted here that the hallmark that has made the Port so successful in the past is the ability of the Port Management Team to proactively manage the marine terminal operation in a highly flexible approach, permitting maximum use of port assets and maximizing terminal productivity. This philosophy should serve the Port well into the future.

### 7.8 Omni (Multipurpose) Terminal Concept

Because of the uncertainty and magnitude of the maritime market and potential cargoes available to the Port over the planning horizon of the next 20 years, a multipurpose, multicargo flexible terminal strategy was adopted as the flexible basis for the unique design of the Omni Terminal Concept.

This Omni Terminal strategy permits the Port site to take advantage of a wider array of market potential than would be afforded by the construction of a single focused operational facility.

![Figure 10: Hypothetical Omni Port Multipurpose Operational and Market Concept](image)

This proposed concept of the Omni Terminal specifically targets the following cargo types:

- Dry and refrigerated agricultural container cargo
- Breakbulk cargo operations
- Dry bulk cargo operations
- Various forms of neo bulk cargoes such as project cargo operations, including logs, structural steel, metal fabrications, and wind energy products

Additional cargo operations that may potentially be accommodated at the Port include:

- Roll-on/Roll-off (RO/RO) cargo
- Potential automobile and truck units generally shipped by pure car and truck carriers (PCTC).
The Omni Terminal Module is a multiple berth Panamax vessel configured terminal. This two
berth marine terminal would utilize the up and downstream existing wharf structures as a staging
area for barge and smaller vessel lay berthing and staging for a proposed new wharf quay. The
new wharf quay would be a continuous structure tied directly to the land with multiple access
ramps or preferably with solid fill backlands.

The Omni Terminal backland’s open storage and pavement area would be designed to handle
truck-loading that would meet highway criteria (HS20-44 AASHTO). These design criteria
would be used over the entire backlands storage area to ensure maximum flexibility for the
potential marine cargoes.

7.8.1 Omni Terminal Circulation Access Requirements
In considering layouts for a given marine terminal, it is important to maximize efficiencies and
create an appropriate balance among the various terminal elements. The following are the critical
areas of functional adjacencies that are required in designing a terminal:

- Ship-to-wharf apron transfer.
- Wharf-apron-area-to-storage area circulation.
- Storage area layout efficiency, balanced with generous space for traffic circulation.
- Storage-to-gate transfer.
- Gate location and adequate queuing capacity.
- Efficient transfer to nearby or on-dock intermodal yard areas.
- Flexibility for possible ancillary functions such as CFS, M & R, and wash-down areas.

The speed and effectiveness that cargo moves through these critical areas determines the
operational efficiency of the terminal and ultimately, the cargo throughput capacity of the
facility.

7.9 Terminal Plan and Preferred Alternative Selection
Based on the cumulative results of all the analysis and master planning process evaluations, the
HDR consultant team developed a series of schematic terminal layouts to achieve the required
additional port capacity identified in the earlier sections. These alternatives were reviewed and
ranked by Port Staff.

Initially, two alternatives within Alternative One were preference by staff: 1A and 1C. After
more consideration, Port staff asked the HDR consultant team to draw two additional options: 1E
and 1F.

Both the new alternatives were discussed in detail by staff and it was determined that Alternative
1E was the preferred alternative based on its size, configuration, and marketability. Details of
the other alternatives can be seen in the technical memo entitled “Alternative Analysis and
Preferred Port Master Plan” cited at the end of this report.
It must be noted that this alternative will require the removal of Berth 4 and the existing grain silos. No improvements will be made on the 2.5 acres of the IP contaminated area. This will provide a 34-acre footprint for the Omni Terminal with a 992 foot Berth\(^5\) and 1,700 feet of rail in an adjacent transfer facility. The design provides free movement from berth to warehouse to rail as determined by customer need or preference. This configuration will add the flexibility that the Port needs as it prepares for the future.

### 7.9.1 Conclusion

The success of the Port will be its ability to remain flexible in the ability to handle different types of commodities. Limiting flexibility currently is environmental issues discussed elsewhere in this report and the need for additional covered storage capacity within the terminal. This is required because existing storage facilities for import and export dry bulk commodities, such as calcined/green coke, various ores, fertilizers, wood/agri pellets, and other industrial products are either dedicated or at capacity. Use of the Port’s existing warehouse complex to store dry bulk commodities poses challenges due to location, logistical and economic constraints. The omni-terminal configuration chosen will provide the Port flexibility by utilizing existing marine terminal space and adding modern cargo handling infrastructure. During the planning phase, the Port will have the opportunity to investigate options for additional storage for dry bulk commodities. This may include the demolition of the existing warehouse to the north of Berth 7. Another option may be to place movable covered storage on the terminal such as a “Rubb”

\(^5\) The length was arrived as follows: Berth 4 Length is calculated from Marker 1500 to Marker 2128 and then added to Berth 4/5 Slip Opening of 364.4 ft resulting in 992.4 ft.
building or other such products that provide retractable storage structures. Other options need to be evaluated such as adding a water containment mechanism around the perimeter of Transit Shed 6. This improvement would allow for storage of dry bulk commodities in this underutilized building. It is the HDR consultant team’s observation that unless more covered storage capacity is developed for dry bulk commodities, the Port will have limited choices for managing potential shipments of these commodities. If storage capacity is not increased, the Port will reduce its flexibility, which is the basis of its marketing and growth strategies.

7.10 Recommendations

Because of the uncertainty of the market and potential cargoes available to the Port over the planning horizon of the next 20 years, a multipurpose, multicargo flexible terminal strategy is recommended as the basis for the unique design of the Omni Terminal. This Omni Terminal strategy permits the Port to take advantage of a wider array of market potential than would be afforded by the construction of a single-focused operational facility. Military and Defense Logistics Agency cargoes are a potential for the Omni Terminal.

It was determined that Alternative 1E is the preferred alternative based on its size, configuration, and marketability compared to the other alternatives.

As this master plan is based on market-driven solutions to the port terminal and rail development, it is recommended that the Port keep close track of its tonnage volumes to each commodity group as compared to the Maximum Practical Capacity (MPC) and Sustainable Practical Capacity (SPC) of each terminal.

The first step the Port must determine is the amount of time it will take for a terminal expansion to occur at the Port. A preliminary time line for expansion of each terminal layout must be developed. This time line must include an estimated schedule for all steps of project development from preliminary design to permitting through the date of initial operation can commence. This information will be an important baseline for the Port to use in determining when the expansion cycle must commence.

Second, the current baseline forecast for each of the commodity groups shows a drop in volumes in 2011 and 2012 due to market activity in 2010 levels, which the forecast team believes may not be sustainable over the next few years. If it turns out that a drop in volume does not occur as anticipated and the high forecast is met, then planning for expansion must commence immediately. It will be mandatory to not let the volume exceed the MPC before the project is complete. Note that the dip in the forecast for neo bulk/breakbulk and project cargo is due to the HDR consultant team’s belief that these cargos will drop off in 2011. This cargo type was unusually strong in 2010 because log exports were driven higher mainly by an embargo of Russian raw log exports to China, and strong wind power projects were driven by the expected elimination of the tax incentives for wind energy production in 2012.

Third, construction on the expansion must begin based on the schedule designated in the first step as soon as it is determined that the market for the cargo is stronger than the baseline forecast. If the timing of construction is delayed and MPC is reached, then operation efficiency will drop and the Port and its customers could experience delays.

The expansion of any terminals must only be timed to effectively respond to the defined marketplace conditions while attempting to optimize Port economic development benefits and return on investment. All options to increase operational efficiency and productivity through
tools such as reduction of terminal dwell times must be used before any physical expansion is to commence.
8: EVALUATION OF CURRENT AND FUTURE INDUSTRIAL MARKETS FOR THE PORT’S WAREHOUSE COMPLEX

The Port has a large portfolio of underutilized industrial buildings on its property. In this section, the HDR consultant team has:

- Evaluated the existing and projected market demand for these assets.
- Developed a master plan for its long-term management.

The Port’s objective is to understand how to optimize its real estate assets, with a specific focus on the warehouse complex, in order to meet its mission and achieve its near-, mid-, and long-term goals. To accomplish this objective, the following were considered:

- Regional industrial market real estate fundamentals.
- Reviewed, improved, and vacant industrial transaction data.
- Employment trends and growth estimates as they relate to Cowlitz County and Southwest Washington industrial markets.

There is currently approximately 1.13 million square feet of covered storage on Port property. Of this total, 614,675 square feet of warehouse space is located in a portion of the property known as the warehouse complex. The warehouse complex is located on approximately 30 acres on the northwest portion of the Port property and has been underutilized for many years. The only building that has been consistently utilized is the 62,800 square foot structure known as Warehouse 20, Sections C, D, and E. This warehouse has been used by the Port millwrights. Excluding Warehouse 20, Sections C, D, E, and four structures that are past their useful life, the Port has 444,740 square feet of marketable warehouse space in the warehouse complex that would be competitive in the marketplace. This is based on its location relative to the Port Marine Terminal Facilities, access to I-5, rail connection to the BNSF Railway (BNSF) main lines, and large building footprints with high clear heights that offer flexible uses. Review and analysis of the available information is shown below.

- There is at least 920,000 square feet of available space in southwest Washington. Southwest Washington comprises Cowlitz County, Clark County, and Lewis County. Of this estimated total, 168,160 square feet in 12 listings is located in the Port District, and the City of Longview has 128,500 square feet of available space in eight listings. The average contiguous square footage of warehouse space available in Longview is roughly 12,000 square feet and the two largest listings adjoin the Port’s warehouse complex to the north and are 21,600 and 48,000 square feet. The rest of the available Longview space is 13,600 square feet or less. There is no space available that is the size of the Port’s 308,300 square foot warehouse 18 in Cowlitz County; Clark County to the south has two spaces that exceed 160,000 contiguous square feet and Lewis County to the north has one space over 170,000. Should the Port actively seek a lessee for the warehouse complex industrial space, it would do so in a competitive market with relatively thin demand.

- Based on employment growth estimates, the supply of industrial space significantly outstrips demand. Using data from the Washington State Employment Security Department, it is estimated that demand for new warehouse space through 2018 is between 350,000 and 450,000 square feet. Cross referencing this finding with the current available space in the
county that is noted in the above finding, demand for new construction industrial space will not be needed for several years unless it is on a build-to-suit basis. This excess supply exists before factoring in the warehouse complex, which is not currently listed on the open market. This indicates that for the warehouse complex to be competitive in the open market, it will likely target a user that is dependent on the multimodal capabilities of the Port property.

- The warehouse complex is located within the International Longshore and Warehousemen Union’s (ILWU) Port jurisdiction. Section XI of the Working Agreement, between the Port and the ILWU, reserves traditional cargo handling work and maintenance or repair work to Port-owned equipment for union workers. The Port should continue to seek maritime business which could potentially utilize the warehouse complex to perform value added services, or to supplement covered storage for specialty cargo.

In summary, the warehouse complex is a unique industrial asset in the southwest Washington marketplace based on its size, clear heights, and docking configuration as well as its location to the Port, rail, and I-5. However, there are two significant factors affecting the Port’s ability to generate value from the warehouse complex: First, current market fundamentals for industrial property in this market are weak as both existing product that is vacant struggles to find tenants and the pipeline of proposed warehouse distribution projects along I-5 are not finding any owner/operators develop these projects. This factor illustrates the oversupply of existing product and highlights the general lack of demand that many owners and brokers are experiencing as they seek tenants and/or buyers. Second, the Port’s warehouse complex is within ILWU jurisdiction. Creative options for use of this space should be explored further, in order to utilize the workforce in its core competency.

8.1 Conclusions

It is recommended that the Port’s optimal long-term strategy to make economic use of the warehouse complex include the following:

- Secure business that is dependent on access to the marine terminal or is a specialty/niche market that requires a large amount of covered storage or working space. A storage, repair, or pressing facility in support of existing business is a positive synergy.

- Absent a new Port use in the near- or mid-term, the warehouse complex would likely need to be sold to a private user. Based on available data, market rents, and industrial capitalization rate trends, it is estimated that if the warehouse complex were listed on the open market within the year, its value could range from $12.4 million to $13.9 million. The value of the 30-acre warehouse complex as currently improved is greater than its value as land. Based on sales and listings, as well as conversations with those active in the market, vacant industrial land prices currently range from $1.80 per square foot to $2.50 per square foot. The warehouse complex valued as land would be between $2.4 million and $3.3 million.
9: RAIL CAPACITY OF THE PORT’S RAIL SYSTEM

This section evaluates the operational and infrastructure capacity of the rail system at the Port and between the Port and BNSF main line, (defined as the Longview area) for its ability to accommodate anticipated and future rail growth. The analysis measures capacity against the potential future rail traffic types that could utilize the Port.

The analysis was done within the context of the Port’s current development planning and traffic forecasts for all rail traffic as well as new cargo scenarios such as Millennium Bulk Terminals bringing in coal or bulk material unit trains at the Port. The evaluation used the 2008 State Route 432 Realignment Feasibility Study by David Evans and Associates, Inc. as a basis. The analysis included a reassessment of the recommendations set forth in the 2008 Feasibility Study in light of the Millennium Bulk Terminals development and proposed construction of the BNSF Longview Junction Bypass Project.

The map of the Port Rail Network is depicted in Figure 12. A key assumption in the base case is that the Longview bypass track is built and in operation. This track allows for trains to meet and pass going or coming from east of the Cowlitz River Bridge. Previously, trains headed west of the Cowlitz River Bridge had to either traverse an 8,500-foot single track between the BNSF and the bridge or enter into the Longview Junction Yard.

Figure 12: Port Rail Network Map
The analysis considered four scenarios.

1. The “base case” addressed forecasted demand from existing rail-served customers and the planned Export Grain Terminal (EGT) development with existing track infrastructure.
2. The “new cargo scenario” included the forecasted demand based on the Millennium Bulk Terminals development planned volumes with existing track infrastructure.
3. The “new cargo scenario plus Port of Longview unit trains” included the new cargo scenario plus four roundtrip unit bulk materials trains per day at the Port with existing track infrastructure.
4. The “new cargo scenario plus Port of Longview unit trains” included the new cargo scenario plus four roundtrip unit bulk materials trains per day at the Port with existing track infrastructure including an extension of the Industrial Rail Corridor (IRC) Siding track.

9.1 Modeling Assumptions

Following are the assumptions made for the simulation of the rail network:

- All trains enter the model on a single track east of the single track rail bridge over the Cowlitz River.
- Switching activities at Longview Switching Company (LSC) Yard, Longview Jct. Yard, and Longview Fibre are not simulated explicitly. An adjustment of track availability will be made in the Line Occupancy Index calculation to account for this switching activity.
- Track segments are not allowed to have more than 1 train on them at a time.
- There are three types of trains:
  - Grain (peak season, 20 round trip trains per week)
  - Coal (planned, eight round trip trains per week)
  - Other destination trains (both arrivals and intra-port movements)
  - Port unit bulk commodity trains (planned, four round trip trains per day)
- Unit trains will be given highest priority in all situations.
- Unit trains travel at 10 mph; all others at 5 mph. Speeds include a calculated factor for acceleration and deceleration.
- Longview Junction Bypass track east of Cowlitz River Bridge to BNSF main line is already constructed.
- A universal crossover exists at the west end of the IRC and IRC Siding tracks to allow EGT and Port of Longview trains to access either the IRC or IRC Siding tracks. The track configuration is such that EGT and Port of Longview trains can arrive and/or depart simultaneously.
- Base case train schedules encompass the SR432 Study plus 20 round trip EGT grain unit trains per week (six round trip EGT trains on peak day).
- New cargo scenario train schedules encompass the base case plus eight round trip coal unit trains to Millennium Bulk Terminals per week.
- Port of Longview unit bulk materials trains – new cargo scenario trains plus four 8,500 foot trains arriving every six hours and departing every four to five hours.
Assumptions made to simulate the EGT operation are:

- After entry into the Grain Loop, there are four arrival tracks.
- Tracks are not considered free until the train finishes unloading all of its grain.
- Four tracks merge down to two when entering the unload site.

### 9.2 Train Files

Train schedules and sizes are based on information developed in the 2008 SR432 Realignment and Feasibility Study by David Evans and Associates and provided by the Cowlitz-Wahkiakum Council of Governments. Additional trains were added to reflect the predicted EGT train volumes during the peak season and predicted Millennium Bulk Terminal coal operations when opened. The train schedule can be found in Appendix B of the Rail Capacity of the Port’s Rail System Technical Memorandum cited at the end of this Report.

### 9.3 IRC Siding Extension Description

The BNSF and LSC have proposed to extend the IRC Siding to the east connecting to the LSC Yard Lead. The project would include a crossover between the southerly two tracks going toward the Cowlitz River Bridge and extension of the northerly LSC storage track. These improvements would allow EGT trains to progress up to the Cowlitz River Bridge while LSC delivers cars to the Port. This configuration would also allow LSC to switch the LSC Yard, while arriving or departing a train from Millennium Bulk Terminals.
9.4 Rail Simulation Parameters

The study team developed the following set of parameters to evaluate each simulation model run.

9.4.1 EGT Statistics

- The model measured the following delay statistics for the EGT facility:
  - Average occupancy percentage for each inbound track and unloader.
  - Average wait times per train.
  - Average wait time for each inbound track due to availability of the unloader or empty track.
  - Average total time for an EGT train to arrive, unload, and depart.

9.4.2 Rail Corridor Statistics

The model measured the following delay statistics for the entire rail corridor:

- *Practical Line Occupancy Index.* The Line Occupancy Index (LOI) is a track utilization measurement. The measurement is calculated by dividing the minutes per day the track is occupied by the total minutes per day. Industry standards regarding capacity utilization are classified as follows:
  - Green – LOI less than 40% = Below practical capacity
  - Yellow – LOI 40% to 60% = Approaching practical capacity
  - Red – LOI greater than 60% = Exceeds practical capacity

- *Average Delay* for each location in the Port model (coal exit, LSC Yard, Port, Longview Jct. Yard, EGT)

9.5 EGT Facility Modeling Results

The EGT facility was modeled to confirm adequacy of track capacity during the seasonal peak times. The average occupancy percentage (utilization) of the four inbound loaded tracks was 22%. There was always a track available to receive an inbound train. The two Unloaders were occupied 28% of the time. In the model, a loaded train could not start to be unloaded until an Unloader was available and an empty track was open. The average time a loaded train waited for an Unloader to be available was six minutes. The average time a loaded train waited for an empty track to be open was 21 minutes. The two empty tracks were occupied 50% of the time. Once unloaded and ready to depart, an empty EGT train virtually had no wait time to exit onto either the IRC or IRC Siding track. At a minimum, the empty train could travel to the east end of the IRC Siding to wait for a clear path over the IRC Lead, LSC Lead and Cowlitz River Bridge. The goal of a BNSF shuttle grain train is to arrive, unload, and depart a train in less than 15 hours. For the EGT trains simulated during the peak season the average total processing time for each scenario modeled is depicted below. The additional four daily round trip unit bulk materials trains into the Port causes the total EGT train time to increase by approximately 12 minutes. The proposed IRC Siding extension would reduce the total EGT train time by four minutes. For each scenario, the total processing time of approximately 8 hours 30 minutes is well below the BNSF goal of 15 hours.
9.6 Rail Corridor Modeling Results

9.6.1 Line Occupancy Index

The LOI was measured for the rail segments which make up the simulation:

- LSC Lead
- IRC Lead
- IRC Siding
- IRC Track
- EGT Loaded Tracks
- EGT Empty Tracks
For all four scenarios the LOI for the rail segments were below practical capacity. Only after introducing the additional four daily round trip unit bulk materials trains into the Port of Longview did the LOI for the IRC segment approach practical capacity. The proposed IRC Siding extension caused the LOI for the IRC segment to drop below 30%.

9.6.2 Average Delay Statistics

The average delay was measured for location in the Port model:

- Coal Exit - Empty Coal trains entering LSC lead to depart over Cowlitz River Bridge
- LSC Yard – Non-unit trains moving from LSC Yard to either the Port of Longview or Longview Jct.
- Port– Non-unit trains moving east from Port of Longview
- Port Unit Train – Unit trains moving from the Port of Longview
- EGT Load – Loaded EGT trains moving west to the Port.
- EGT Empty – Empty EGT train
Figure 16: Port Rail System Delay Statistics

For all four scenarios the average delay was measured for a variety of train types at critical locations in the model. As these are “simulation modeling” delays it is commonly assumed that delays less than 30 minutes can be reduced or eliminated by human intervention. The purpose of measuring these delays is to compare alternative operating scenarios or infrastructure to see which are better or worse.

The introduction of eight Millennium Bulk Terminals coal trains per week caused the average delay of non-unit trains moving from LSC Yard to either the Port or Longview LSC Yard to increase from approximately 11 minutes to 28 minutes. The increase in delay can be attributed to the priority placed on unit trains over non-unit trains. In reality, the LSC Yardmaster would look ahead and plan these type movements around unit trains.

The introduction of the additional four daily round trip unit bulk materials trains into the Port increased the delay for non-unit trains moving east from the Port, non-unit trains moving west from Longview Jct, and loaded EGT trains moving west to the Port. The increase in delay for the non-unit trains can be attributed to the priority placed on unit trains over non-unit trains. As described previously, the LSC Yardmaster would look ahead and plan these type movements around unit trains. The increase in delay for loaded grain trains destined for EGT from seven minutes to 17 minutes is due to the additional use of the single track IRC Lead segment and the fact that model requires a clear route for rail segments between the Cowlitz River Bridge and EGT for inbound trains. As depicted below, the LOI for the IRC Lead segment increases with the introduction of the four daily Port unit trains and decreases with the IRC Siding extension project.
Only after introducing the additional four daily round trip unit bulk materials trains into the Port did the LOI for the IRC segment approach practical capacity. The recommended IRC Siding extension caused the LOI for the IRC segment to drop below 30% and improved almost all delay measurements and segment LOI’s.

9.6.3 Cowlitz River Bridge Improvements

The IRC Siding extension addresses the delays to all trains in the Port network. The next critical rail parameter to test is when the line occupancy index of the track over the Cowlitz River bridge exceeds practical capacity and becomes unacceptable. This was done by incrementally adding unit trains to the network destined to the Port’s new property.

- Four round trip unit trains per day was added to the “new cargo scenario plus Port of Longview unit trains with the IRC Siding extension” resulting in the LOI over Cowlitz River Bridge increasing to 34%
- Eight round trip unit trains per day was added to the “new cargo scenario plus Port of Longview unit trains with the IRC Siding extension” resulting in the LOI over Cowlitz River Bridge increasing to 43%

The map of the Port Rail Network provided by the Port of Longview as shown in Figure 12 of the Rail Capacity of the Port’s Rail System Technical Memorandum cited at the end of this Report.
9.7 Conclusions

- Construction of the Longview Junction Bypass Track will postpone the need for the second Cowlitz River Bridge.
- EGT has rail capacity to handle the planned volumes.
- When EGT is in operation, the line will be below practical capacity, and there will be acceptable level of delays to other Port rail customers.
- When EGT is in operation and when or if Millennium Bulk Terminals starts operations, the line will be below practical capacity and there will be minor delays to other Port rail customers.
- When EGT is in operation and when Millennium Bulk Terminals starts operations, and a new bulk materials train locates at the Port, the line will be below practical capacity and there will be some minor delays to non-unit train Port rail customers. However, if the IRC Siding is extended to the LSC Yard and modifications are made to the LSC Yard track as identified and recommended by BNSF and LSC, these additional delays will be removed.
- The universal crossover which exists at the west end of the IRC and IRC Siding tracks is adequate to allow EGT and all Port of Longview trains to access either the IRC or IRC Siding tracks. For the new cargo scenario plus Port of Longview unit trains it is not necessary to construct an additional right-hand crossover between the Port south lead and EGT inbound lead.
- The Port of Longview rail network, with the extension of the IRC Siding has capacity for its existing rail customers, Longview Switching Company’s existing customers, the peak season EGT unit grain trains, four new Port daily round trip bulk materials unit trains, eight weekly round trip Millennium Bulk Materials unit trains. When eight additional daily round trip unit trains are added a second bridge over the Cowlitz River would need to be constructed.
10: ANALYSIS OF PORT’S CURRENT ADMINISTRATION BUILDING AND DISCUSSION OF FUTURE OPTIONS

The HDR team performed an evaluation of alternate locations for future Port staff offices and public meeting room. The type, size, and location of these offices depends on a number of factors, including staff size and growth projections, functional requirements for Port staff, commissioners and the public, budget and available space/real estate, and the desired image of the Port to customers and constituents. The team investigated these issues and has identified alternative office and public meeting space options. The work of the team was broken into the following four evaluation steps: space needs, off-site meeting options, determination of most feasible solution, and funding options. This chapter summarizes the steps and presents the team’s recommendations for the Port’s Administration Building.

10.1 Space Needs

The HDR consultant team met with Port staff to evaluate their current and projected office/meeting space needs and desires. This meeting included interviews with senior staff to gather information on the Port’s projected growth in number of employees, functional and location requirements of the staff, and public meeting space requirements. At this meeting, the team tried to gain an understanding of the Commissioner’s stance on image as well as the public’s perception of the Port investing in a new administration building.

The consultant team analyzed the space needs of the Port’s administrative staff and public meeting room. The team determined that the current number of square feet in the administrative building is adequate for both current and future needs, although a reconfiguration could greatly enhance the current functionality of the building.

10.1.1 Key Findings

- The Port’s administrative staff level has remained fairly constant over the last 10 years. In general, new staff members have only been hired as retirements occurred. It is anticipated this trend will continue into the near future. Due to the nature of duties of the administrative staff, it is estimated there will not be more than a 15-20% growth in staff over the next 10 to 20 years.
- Based on the current and future staffing levels, a 10,800 square foot building is adequate for the administrative staff.
- Although the size of the building is adequate, the configuration presents some challenges to the current employees. For example, the current office layout causes some departments to be...
tightly confined, while others are spacious. The team found that each departmental area could be reconfigured to provide better work flows and individual comfort.

- The work flow between many departments relative to their placement in the building is adequate. For example, the Communication Director is located across the hall from the Executive Director.

- The positioning of the public meeting room and the Executive Director’s office is convenient, but the current configuration of the rooms is less than desirable. An accordion door separates the two spaces. For the majority of the workday, this configuration is acceptable; however, when a Commission meeting draws more than 25-30 attendees, the configuration is inadequate. As an alternative, the Commission has scheduled larger meetings at the Conference Center. The challenge remains when a large group of the public appears unannounced; the room is inadequate to handle such a crowd. See additional comments on the public meeting room below.

- Noise was stated as a concern/problem in certain areas of the building. In certain quadrants of the building, the noise is due to the configurations of the workspaces. In other areas, it is the surfaces of the interior walls and floor that cause the noise to travel.

- A large, comfortable conference room is available on the second floor of the building. It is positioned in the northwest corner, allowing expansive views of the river and the working waterfront to the north of the building. This room has all the appropriate amenities for a conference room serving a port the size of Longview. The expansive conference table sits 16-20 and has additional side seating.

10.1.2 Options/Alternatives Evaluated

Given the Port’s space needs, the team formulated and evaluated space options and alternatives. The following three options were considered in detail.

**Remain in the Current Office Space with the Possibility of an Addition or Renovation**

Based on staffing level projections, the office requirements are estimated to be in the range of 7,000 to 10,000 square feet, which the present building can easily accommodate if staff work spaces are reconfigured. To meet Commission and public space needs, an alternative is to build additional meeting space. There are two options for configuring this additional space before a new administration complex is built in the future:

- An addition could be built either next to the current building (toward the river) or by adding a third story. The two alternatives will be comparable in cost, as both will require a new roof. Thus, there would not be any savings from adding a third floor to the current building. Estimates for current construction costs per square foot range from $135- $168 for a single story office building to $141- $161 per square foot for a multistory office building. A new 15,000 square foot, three story building is estimated to cost between $2,025,000 and $2,520,000.

- Another option would be to bring in a temporary building and place it next to the current administrative building. This solution would add meeting space and give the Port flexibility in the future by not committing to a fixed building. Temporary buildings can be leased for $300-$600 per month.
Relocate to Different Existing Structure(s)

The White House

In April 2004, the White House was leased to the Longview Fibre Company. Since the inception of the lease, the Port has modernized the house, installing new phone and computer networking lines, replacing floor coverings, performing general interior maintenance, and painting the exterior. The Port plans to preserve all of the original structure and wood paneling due to its historical significance.

Longview Fibre is the first tenant to occupy the building since the Port purchased it from International Paper Company (IPCo) in 1998. The lease agreement terms are for five years, with two 5-year renewal options. With the two 5-year renewals the lease will expire in April 2019.

Due to the configuration of the building, it is not conducive to house the Port’s administrative staff without tremendous renovation. The house is broken up into multiple smaller work areas that would not encourage productivity within a workgroup such as the Port’s administrative and operational staff.

A Built-out Section of a Warehouse or Other Building

An alternate approach to renovating the existing structure is to either renovate an unused section of a warehouse or to place a temporary building next to the Port administration building until the Port has the resources to build a larger administrative complex.

Build a New Permanent Administration Complex

This option is the most costly of all evaluated, although it may be the best alternative in the future as funding becomes available for the design and construction of a new complex that can be the showcase of the community and the Port.

10.2 Off-Site Meeting Options Evaluation

Although the Commission could meet in other public buildings in Longview, the current alternatives meet the Port’s needs at this point in time. It is the team’s belief that the commission and administrative staff should utilize Port assets when looking at future configurations for either group.

10.3 Determination of Most Feasible Solution

The team evaluated the pros and cons of each option and prepared a construction cost estimate on a per square foot basis that can be used to determine the best solution given the Port’s needs, time frame, and budget.

10.4 Funding Options

In most cases, the Port will have to fund new construction from its revenues, as well as grant funds, if it chooses to enhance its building with community interpretive or high-performance (LEED) characteristics.
As encouragement, Washington State and Cowlitz County provide a wide range of business incentives for new and expanding industrial growth; some of these programs could apply to a new building if the Port designs it to meet the criteria required for these incentives. It might necessitate the development of a public-private partnership to ensure that all incentives and benefits are received.

Tax incentive programs, industrial revenue bonds, and job training programs are just a few of the incentives available. Washington State has no corporate income, unitary waters edge, or inventory taxes. The state does not collect a personal income or capital gains tax. Thus, developments of these kinds that house multiple-use facilities are ideal as the Port looks to expand its revenue base into the future.

10.5 Recommendation on the Administration Building and Public Meeting Space

It is recommended that in the short term the Port reconfigure its current building to meet the identified public meeting room needs. The team believes this is the most cost-effective solution at this time. This solution may also be the most acceptable option available to the Commission, staff, and the public. It is further recommended that land near the current administration building be reserved for future replacement or expansion of the current administration building. This new administration building would be a capstone for the Port and could be designed (depending on resource availability) to not only provide community meeting space but also to house other Port tenants’ administrative offices. This is especially true for ports that have visibility to its working waterfront, much like that of the Port. Ultimately, before siting a new administrative building, the Port must evaluate its available land options for the highest and best use.

The property between the current administration building and the river, where transit shed 1 is located, could be an ideal place for this multiuse office complex. This decision cannot be made in isolation, however; the placement of a new administration complex must be evaluated against other revenue-producing options for the site. All Port properties must be maximized in terms of revenue produced, as well as how the facility will fit into the Port’s master plan.

The four options discussed to address the inadequacy of the public meeting room are compared in Table 8, below. The green highlighting indicates the team’s recommended solution for the next few years. When resources become available, an addition or a new building should be considered as a long-term solution.

When solely evaluating out-of-pocket costs, the most cost-effective option is to use off-site space for commission meetings, as has been done from time to time in the past; but when a fully-loaded cost evaluation is performed to include the following list of costs; the off-site option is not as cost-effective as finding an on-site alternative.

Other costs to consider in the cost evaluation of options:

- Staff time
- Security
- Information availability
- Technical support
- Costs of the setup/cleanup
- Transportation of staff and materials to the offsite location.
Table 8: Comparison of Public Room Options

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<th>Options</th>
<th>Cost</th>
<th>Convenience</th>
<th>Public Acceptance</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expand current public room</td>
<td>Less than $50,000</td>
<td>High</td>
<td>High</td>
<td>Within 6 months</td>
</tr>
<tr>
<td>Use off site meeting space</td>
<td>On a per-use basis</td>
<td>Low</td>
<td>Neutral</td>
<td>Immediate</td>
</tr>
<tr>
<td>Add additional space to current building</td>
<td>Less than $1 million</td>
<td>Medium</td>
<td>Unknown</td>
<td>2 – 3 years</td>
</tr>
<tr>
<td>Construct new building</td>
<td>$2 - $3 million</td>
<td>High</td>
<td>Unknown</td>
<td>10 years or longer</td>
</tr>
</tbody>
</table>

The recommendation is to expand the current space to make it more user and public friendly. This will encourage citizens to visit their public port on a more regular basis, while providing the Commission and staff the convenience and cost savings of an on-site meeting room.

The team also recommends that the Port consider reconfiguring its current office layout within the building by standardizing the workspaces with newer module desks. This will allow for better utilization of the current building footage for current staffing levels. This reconfiguration will also provide expansion area when additional future Port staff is needed without having to expand the building or acquire additional office space for many years to come.

To maintain a favorable relationship with the community, the Port must continue good environmental stewardship and reduce its electrical and water usage as much as possible. For the administration building, this should include simple implementable measures such as:

- Replacing light bulbs (as they burn out) with compact fluorescent bulbs or LED bulbs as appropriate.
- Installing motion detectors in less-used rooms to ensure lights are turned off when the room is not in use.
- Turning off office machines at night, as well as turning off surge protectors to ensure that no machines are using energy while in the off position.
- Checking the thermostat setting on the heating and cooling units.
- Sealing the buildings air leaks when identified.
- Reviewing water usage of current landscaping designs.

The Port should be very proud of all the work that is accomplished by its staff and Commission in the current office building and strive to find economical ways to improve the efficiency of the current building.

10.6 Conclusions

It is recommended that the Port plan for a new Administration Building in the future. Land should be set aside for this new complex. For the short term, the current facility can be rearranged or expanded to accommodate both staff and Commissioner needs; although off-site meeting space may need to be utilized from time to time.
11: ALTERNATE PORT ENTRYWAYS

The purpose of this report is to document the site visit and evaluation of alternate Port of Longview (Port) entryways for both truck and employee access based on the recommended alternatives developed as part of the master plan update for the Port. When the alternatives analysis was completed for the master plan update, the recommended alternatives did not require making any changes to the existing Port entryways or the way the entryways will be used. Potential alternate Port entryways along State Route (SR) 432 were to be considered at the intersections of Columbia Boulevard, International Way, and Fibre Way.

11.1 Field Investigation

11.1.1 Site Visit and Observations

On Friday, October 15, 2010, the HDR consultant team conducted a one day on-site inspection of the alternative Port entryways and surrounding roadway network. The field investigation included observations of the existing and alternate entryway intersections at SR 432 and their associated internal connections to the Port facilities.

All three alternate entryways are existing signalized intersections at SR 432 and provide a direct connection to the Port. Columbia Boulevard and International Way have existing at-grade rail crossings at the northern edge of the Port. International Way provides a direct route into the Port and is currently being used to transport large windmill components from the Port to destinations east of I-5. Columbia Boulevard has two existing 90-degree bends in the roadway that could impact the movement of large loads to and from the Port. Fibre Way is elevated above the existing rail line and has a downgrade as it approaches the signalized intersection with Terminal Way. Entry into the Port would require a 90-degree right turn onto Terminal Way.

Observations along SR 432 indicate access control issues near the intersections of Columbia Boulevard, International Way, and Fibre Way. Driveways on the north side of SR 432 are often located too close to the intersections, including one driveway near International Way that was directly adjacent to the stop bar.

11.2 Traffic Volume Impact Assessment

11.2.1 Evaluation of Traffic Impacts

The recommended alternative does not modify the existing Port entryway, since it has been determined that the majority of the projected Port volumes will be in and out by rail and by ship. The recommended alternative is expected to make little if any changes to existing traffic volumes traveling into and out of the Port. Given that the vehicle and truck traffic in and out of the Port is expected to remain unchanged, an update to the 2008 SR 432 Realignment Feasibility Study by David Evans and Associates, Inc., prepared for WSDOT and the Cowlitz-Wahkiakum Council of Governments, is not warranted.

With little to no additional truck traffic traveling into and out of the Port in the recommended alternative, planned growth not attributed to the Port and outlined in the feasibility study is considered appropriate and future year intersection level-of-service (LOS) along SR 432 should remain unchanged from what has been reported. The primary purpose of the 2008 State Route
432 Realignment Feasibility Study, to assess the need for improvements and determine the relative feasibility of those improvements, is still valid. Some improvement measures, such as the desire to separate rail and truck traffic in certain portions of the SR 432 corridor, may become a higher priority as rail traffic in and out of the Port increases in the future.

11.3 Evaluation of Oversize Movements

11.3.1 AutoTURN Assessment of Large Load Movements
The Port of Longview has several customers (including those serving the wind energy market) and industrial tenants that require larger truck turning movements. These larger truck configurations are needed to handle many of these components, which add to the complexity of moving loads from the Port to I-5 and other destinations. Because the recommended alternative is not proposing a new location for the Port entryway or diverting loads from its current entryways, AutoTURN was not used to determine if these new access points could accommodate larger truck configurations safely and efficiently.

11.4 Conclusions
All three alternate entryways are existing signalized intersections at SR 432 and provide a direct connection to the Port. The recommended alternatives are expected to make little if any changes to existing traffic volumes traveling into and out of the Port; therefore, no update would be necessary to the 2008 SR 432 Realignment Feasibility Study. Some improvement measures, such as the desire to separate rail and truck traffic in certain portions of the SR 432 corridor, may become a higher priority as rail traffic in and out of the Port increases in the future.

Because of the potential for future unit train operations, there is a possibility of internal access roads or entryways becoming blocked. The main port entryway to the west would not be affected; however, the alternate entry on the north side may need to be closed.
12: DEVELOPABLE INDUSTRIAL PROPERTIES WITHIN THE PORT DISTRICT

The identification of developable industrial properties within the Port district was done using GIS resources, other available project data, and past market knowledge to identify a representative sampling of industrial sites available for development by the Port within district boundaries. The team identified developable industrial properties within the Port’s district boundaries and made recommendations regarding potential future acquisitions.

A two-step GIS sampling process was followed to identify sample groups of potential development properties.

12.1 Step One Criteria
- Industrial commercial or unzoned properties within the Port District
- Less than 1 mile from I-5
- Within ½ mile of a main rail line
- Within ½ mile of the Columbia or Cowlitz Rivers
- Combined acreage (adjacent properties of the same owner) of at least 10 acres
- An individual parcel or potential assemblage under common ownership of 10 acres or more

This GIS research resulted in identification of 222 additional parcels for step one and those parcels were further filtered through use of the step two filters shown below. This step plus two sites identified under the industrial warehouse evaluation task resulted in a total of 22 potential sites identified through GIS research.

12.2 Step Two Criteria
The Step Two Criteria are designed to help identify potential risks and opportunities to the Port for development of the potential properties at a base level. Those risks included the ability to acquire the property at fair market value (which is assumed to be true for all identified properties), that properties are free of environmental concerns, and that those sites with improvements are ready for short-term development and vacant land would take more financial commitment and a longer development period. In addition, it was assumed that any development would need to be compatible with the Cowlitz County Comprehensive plan and that those properties adjacent to water would need to comply with the Shoreline Master Plan. A more detailed due diligence analysis, risk assessment, and opportunity analysis by the Port would be needed to determine the true viability of the recommended sites.

Those properties identified through the real estate team’s research were grouped using the following real estate development and risk criteria to help determine the optimal sites for future development from two GIS sampling groups and other research.

- Properties that currently have site improvements
- Properties that are vacant land
- Properties with zoning that supports educational opportunities
- Properties not containing or adjacent to a property containing a Department of Ecology (DOE) facility
The results of that step two screening were the following recommended sites that are illustrated in Table 9 below.

Table 9: Potential Development Sites

<table>
<thead>
<tr>
<th>GIS No.1</th>
<th>Taxpayer</th>
<th>Zoning</th>
<th>Vacant Land</th>
<th>Site Improvements</th>
<th>DOE Site</th>
<th>Educational Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 and 22</td>
<td>Arntzen - Columbia Realty</td>
<td>Unzoned</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>11</td>
<td>Longview Booming</td>
<td>Heavy Manufacturing</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>13</td>
<td>Terra Firma2</td>
<td>Heavy Manufacturing</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>14</td>
<td>Wasser-Winters</td>
<td>Heavy Manufacturing</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>16</td>
<td>James River II Inc.</td>
<td>Unzoned</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

1 See Figure 8 through Figure 12 for details of site layout.
2 Note the Terra Firma site was purchased by the Port during the research and writing of this Plan.

Potential development sites with sufficient available site improvements (to accommodate short term development) were unable to be identified. Two unzoned sites were selected even with the uncertainty of the variance development issue because of high development potential in other criteria.

Research with Cowlitz County via available public data and direct discussion with staff found no prohibition against using any of the identified sites for educational purposes. A preliminary review of DOE facilities was performed and the available public data indicated none of the recommended sites contained or were adjacent to a DOE site. It is recommended the Port perform a more thorough and complete environmental study before purchasing any of the recommended sites.

Access to water and rail is available for all of the recommended sites. With the exception of the Terra Firma site, all sites are within 1 mile of an I-5 interchange. The Terra Firma site was included as a representation of downriver sites with development potential, even though it has already been purchased by the Port. The Wasser-Winters site also includes the two Segale parcels but does not include the 0.46 acre Wasser-Winters Inc. site that is not adjacent to the main assemblage.

The Arntzen-Columbia site consists of two properties, each under different ownership and although adjacent to water, from a development standpoint it offers no waterway use for marine cargoes. The site could be viewed as either independent small site developments or a larger development requiring assemblage. The Arntzen-Columbia site has been included as a representative site for other, similar development properties should the Port wish to expand its distribution-related capacity near I-5 but off the Columbia. The James River site represents both the potential of a small parcel development on its own, or as the possibility of assemblage with the Wasser-Winters site for a larger development.

In addition to the new sites identified in this Plan, the Port has ownership of the recently purchased Terra Firma site and the old International Paper Company (IPC) treated wood products area (generally referred to as the TWP site). The Terra Firma site is a 275 acre site located at Barlow Point, which was recently purchased by the Port as the only bidder on a foreclosure sale (see Figure 18). This site increases the Port’s current land holdings of 478 acres by 57% and will allow for much more flexibility in the Port’s future industrial development. The Port is still in the process of formulating a development plan for the Terra Firma property.
Figure 18: Potential Development Sites #7 and 22 – Arntzen
Figure 19: Potential Development Site #11 – Longview Booming Co.
Figure 20: Potential Development Site #13 – Terra Firma
Figure 21: Potential Development Site #14 – Wasser Winters
Figure 22: Potential Development Site #16 – James River II Inc.
Table 10: Summary Table

<table>
<thead>
<tr>
<th>GIS No.</th>
<th>Taxpayer</th>
<th>Zoning</th>
<th>Vacant Land</th>
<th>Site Improvements</th>
<th>DOE Site</th>
<th>Educational Opportunities</th>
<th>Acres</th>
<th>Distance to I-5</th>
<th>Distance to Main Rail Line</th>
<th>Distance to Columbia/ Cowlitz River</th>
<th>No. of Parcels</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 and 22</td>
<td>Amtzen - Columbia Realty</td>
<td>Unzoned</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>68.95</td>
<td>300 feet</td>
<td>Intersects</td>
<td>Adjacent Cowlitz</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Longview Booming</td>
<td>Heavy Manufacturing</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>69.33</td>
<td>4,000 feet</td>
<td>Intersects</td>
<td>Adjacent Columbia</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Terra Firma*</td>
<td>Heavy Manufacturing</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>275</td>
<td>5.4 miles</td>
<td>2 miles</td>
<td>Adjacent Columbia</td>
<td>9</td>
</tr>
<tr>
<td>14</td>
<td>Wasser-Winters</td>
<td>Heavy Manufacturing</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>687</td>
<td>Adjacent</td>
<td>Intersects</td>
<td>Adjacent Columbia</td>
<td>12</td>
</tr>
<tr>
<td>16</td>
<td>James River II Inc.</td>
<td>Unzoned</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>30.25</td>
<td>400 feet</td>
<td>Intersects</td>
<td>Adjacent Columbia</td>
<td>1</td>
</tr>
</tbody>
</table>
12.3 Conclusions

Through this process, five sites were identified with development potential in addition to the TWP site for which the Port already has a development plan in place. It is believed that the recent purchase of the 275-acre Terra Firma site located at Barlow Point will allow the Port to develop both its terminal and industrial properties to meet the future demands and opportunities. The remaining sites summarized in Table 10 represent properties with future development potential for the Port or other development partners. It is anticipated the Port’s current inventory of developable land will meet its development needs for the foreseeable future. No additional property acquisition is required within the Port District.
13: LIST OF TECHNICAL MEMORANDUMS

The following is a list of technical memorandums that support the Port Master Plan Report. Memorandums can be found in a separate binder with the Port of Longview.

Existing Conditions – February 22, 2011
Analysis of Port’s Current Maritime Market – October 27, 2010
Review of Available Studies – December 6, 2010
Market Assessment of Existing and Prospective Commodities – November 19, 2010
Evaluation of the Port’s Competitive Position – January 5, 2011
New Cargo Opportunities – January 27, 2011
Alternatives Analysis and Preferred Port Master Plan – December 31, 2010
Evaluation of Current and Future Industrial Markets for the Port’s Warehouse – October 29, 2010
Rail Infrastructure Modeling – February 9, 2010
Rail Capacity of the Port’s Rail System - February 22, 2011
Analysis of the Current Administration Building and Discussion of Future Options – December 10, 2010
Alternate Port Entryways – February 22, 2011
Industrial Properties within the Port of Longview District with Development Potential – November 1, 2011