



KEEP OREGON TRADE MOVING

Helping Businesses Export
Goods to Buyers and Import
Products from Suppliers

International Trade and Logistics Initiative Steering Committee Report

BACKGROUND

International trade is a large and vital part of the Oregon economy, linked to the health of agricultural, forestry, manufacturing, and distribution industries. Oregon is the 14th most trade-dependent state based on export share of the state's 2014 Gross Domestic Product¹. Over \$20.1 billion of goods were exported from Oregon in 2015², and much of that export value was containerized. Oregon imported an estimated \$14.8 billion in foreign goods in 2015, most of that total also containerized³. In 2013, over 500,000 Oregon jobs were connected to trade and an estimated 5,920 Oregon companies exported products⁴. Oregon's economy depends on the ability of Oregon's businesses to move freight to markets and compete globally, bringing new dollars to the state of Oregon.

With the departure of Hanjin and Hapag-Lloyd container service at the Port of Portland's Terminal 6 in early 2015, thousands of Oregon businesses directly and indirectly experienced increasing challenges moving goods to and from global markets. While those using Terminal 6 have been impacted the most by service loss, shippers throughout the state that have benefited from lower costs resulting from the presence of this service will likely be impacted by that loss as well. Efforts to move Oregon and Pacific Northwest cargo through the Columbia/Snake River System and out from West Coast ports are hampered by escalating transportation costs for Oregon container shippers. Shippers are facing shortages of trucking services and equipment, loss of upriver barge container service, and growing congestion on highways and at other Ports. Dynamic changes in the international maritime industry are also impacting container services and transportation economics at all West Coast Ports.

CALL TO ACTION

In April 2015, Governor Brown launched the International Trade and Logistics Initiative—led by Business Oregon, Oregon Department of Agriculture (ODA), Oregon Department of Transportation (ODOT), and the Port of Portland—to identify interim shipping options to help Oregon small- and medium-sized businesses stay competitive in the global marketplace and support longer term recruitment of new container service to Terminal 6. Small- and medium-sized shippers have fewer resources to find predictable and cost effective access to markets and are highly vulnerable to cost and logistics impacts of vessel service changes. Oregon shippers have scrambled to find alternative means to move their goods by truck or rail north to the ports of Seattle and Tacoma or south to the Port of Oakland, California. Over 88 percent of these shippers are small businesses⁵.

¹ Oregon Department of Administrative Services, Office of Economic Analysis and the International Trade Administration, U.S. Department of Commerce, 2014

² U.S. Census Bureau, Foreign Trade Division, 2015

³ U.S. Census Bureau, Foreign Trade Division, 2015

⁴ Office of Trade and Economic Analysis, International Trade Administration, U.S. Department of Commerce, 2013

⁵ Office of Trade and Economic Analysis, International Trade Administration, U.S. Department of Commerce, 2013

In the short-term, most Oregon shippers have reportedly managed to maintain product markets and customer relationships by absorbing higher shipping costs and shipping delays, but many expressed concern about being able to sustain their position. Exporters of price-sensitive commodities such as scrap metal, hay, and wood pulp are particularly at risk.

Finding reliable freight logistics solutions is a time-sensitive issue for all shippers, but an acute one for agricultural exporters due to narrow cost margins, perishability of products and global competition. If agricultural producers do not make shipment and market windows, they risk losing markets and market share to competitors from other states or countries. Cost-competitive market access can make the difference between winning and losing contracts in the global marketplace due to narrow profit margins. Some two-thirds of Oregon’s farm, ranch, and fishery production is sold outside the state and approximately half of that goes to international markets⁶.

Increased transportation costs and uncertainty threaten markets for Oregon agriculture, forest products, manufacturing, and distribution industries, placing much of Oregon’s trade at risk with:

<p>INCREASED TRANSIT TIMES AND REDUCED RELIABILITY</p>	<p>INCREASED BUSINESS RISKS FOR TRANSPORTATION AND LOGISTICS PROVIDERS</p>	<p>LOSS OF MARKETS AND MARKET SHARE</p>	<p>POTENTIAL BUSINESS CLOSURE AND RELOCATION TO STATE WITH DIRECT SERVICE</p>
---	---	--	--

Ocean freight rates are generally negotiated on a yearly basis and these negotiations will begin in early 2016. All Oregon shippers, even those not moving products through Terminal 6, have benefitted from the competition between Portland and Puget Sound container services and the resulting rate equalization practices. Puget Sound carriers currently absorb a portion of the added transportation costs of moving Portland containerized cargo north to compete with Portland vessel calls. Without Terminal 6 service, there is little incentive for carriers to continue this “rate equalization” practice. Absent that competition, these benefits are also at risk.

Smaller shippers have had more difficulty coping with the loss of carrier service in Portland. They may import or export only a few containers annually, connecting to a very limited range of foreign ports and customers. Small shippers have less negotiating leverage, and when vessel, truck, or rail capacity is short they are more likely to suffer delays and business disruptions.

Current overcapacity in container shipping has led to depressed rates, and those savings have offset the higher inland transportation costs Oregon shippers are experiencing by using Puget Sound and Oakland ports instead of Portland Terminal 6. Oregon shippers cannot count on depressed carrier rates continuing indefinitely, but higher inland transportation costs will persist until Portland service is restored.

The Terminal 6 container crisis and the subsequent efforts by shippers to adapt further exposed deficiencies in the state’s international freight transportation system, underscoring the need for coordinated focus by public agencies and the state of Oregon as a whole to improve Oregon’s trade and logistics capabilities over the long term.



INITIATIVE APPROACH AND METHODOLOGY

The Trade and Logistics Initiative is a cross-agency collaboration by Business Oregon, ODA, ODOT, and the Port of Portland (Steering Committee) informed by the consultant work of two nationally recognized trade and transportation experts, Peter Friedmann from Lindsay Hart LLP and Daniel Smith from The Tioga Group. The Steering Committee established a multi-pronged approach to the initiative to better understand shipper challenges and recommend potential actions to improve containerized freight transport. This approach included the analysis of cargo flows and transportation cost impacts, engagement of the statewide shipper community, analysis and business case development of freight logistics concept, and recommendations on other actions that support Oregon international trade.

ECONOMIC ANALYSIS AND SHIPPER INTERVIEWS

The Tioga Group analyzed Oregon cargo movements, landside transportation costs, and the other impacts of service withdrawal on Oregon importers and exporters, with special attention to small- and medium-sized firms. Port Import-Export Reporting System (PIERS) customs data from the Journal of Commerce is a comprehensive source of containerized cargo in the Northwest. While PIERS data provides good macro information on origin and destination of containerized cargo, there are several data issues related to this source which has always made precise data calculation difficult. These include headquarter biases which show cargo in metropolitan locations where transportation is arranged rather than actual shipping and receiving points. Shipments arranged by third parties tend to show the third party name and address rather than the actual shippers' and receivers' name and address. There are also missing data and entry errors. To address this, The Tioga Group started with 2014 PIERS data, followed by an intensive analysis and allocation process to develop adjusted estimates of identifiable cargo moving through Terminal 6, and identifiable cargo moving to and from the Portland Terminal 6 cargo market. As part of this research, the Tioga Group completed 33 interviews with Oregon importers, exporters, truckers and other stakeholders. Additional information on the research can be found in Appendix 1 available at www.oregontradesolutions.com/report.

There were a few major findings and themes identified through this research:

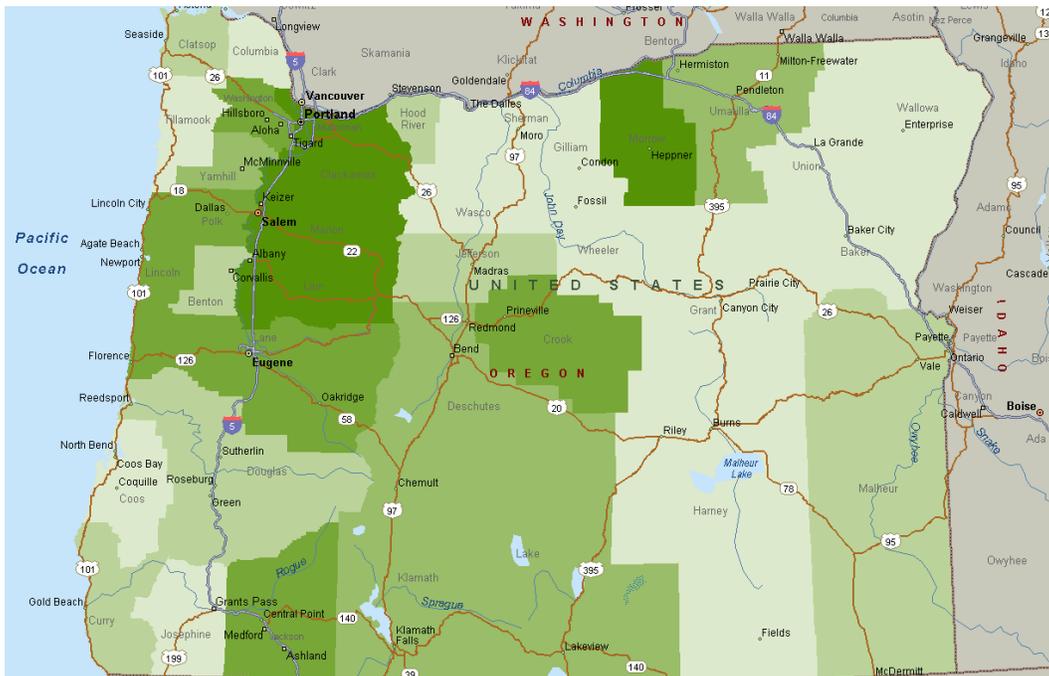
- Portland's Terminal 6 serves broad geographic and commodity markets in Oregon, Idaho, and Washington. The Columbia/Snake River System expands the Portland cargo market to include southern Washington and Idaho. Cargo from this larger catchment area is critical to recruiting and sustaining cargo service at Terminal 6. In 2014, Terminal 6 captured about 43 percent of the containerized cargo in its multi-state cargo market and 53 percent of the Oregon market (exports and imports), with the remaining cargo moving through Puget Sound ports by rail or truck⁷.



⁷ Oregon Trade and Logistics Research, adjusted 2014 PIERS containerized cargo allocation, The Tioga Group, February 2016

- The market share of the Port of Portland, home to the state’s only international container terminal, has been strongest in the Portland metro area, in the Willamette Valley, and along the Columbia River. Over 1,000 Oregon shippers shipped through Terminal 6 in 2014. Every county has a stake in the movement of international trade.
- Ten counties account for 97 percent of Oregon’s identifiable containerized trade imports through all West Coast ports, concentrated in the populous, urbanized areas of Multnomah and Clackamas counties. A different but overlapping set of 10 counties account for 95 percent of Oregon’s identifiable containerized trade exports. Exports are more heavily concentrated in the agricultural and forest products areas of Linn, Morrow, and Marion counties. Exporters and importers in eastern and southern Oregon are widely scattered, but include many smaller and medium-sized shippers that are the focus of this initiative.

Oregon 2014 Estimated Container Volumes by County⁸



Estimated 2014 Containers*

- 10,000 to 30,000
- 1,000 to 9,999
- 500 to 999
- 100 to 499
- 0 to 99

*Although there are a handful of counties that do not have any identifiable container volumes, based on data limitations, there likely are products that originate from or are destined for these counties.

- Oregon’s 2014 containerized exports through Terminal 6 were dominated by agricultural and forest products. Containerized imports were dominated by consumer and industrial goods, tires, and other products feeding regional and national distribution centers.

⁸ Oregon Trade and Logistics Research, identifiable container counts from adjusted PIERS data, The Tioga Group, February 2016

- The loss of Hanjin and Hapag-Lloyd service means that roughly 97 percent of the 2014 Terminal 6 volume must now be moved to and from the Puget Sound ports of Tacoma and Seattle. About three percent of this containerized trade still moves on Westwood Shipping Lines through Terminal 6.
- The companies interviewed pushed for restoration of service at Terminal 6. To date, most of those companies have not made changes that would preclude a return to Portland once weekly container service is restored. However, with carrier and shipper contract renegotiations in 2016, shippers will need to make long-term decisions.
- Most Oregon exporters and importers are using rail and truck to reach Seattle and Tacoma rather than changing their shipping patterns. A few have reduced shipments or diverted export products into domestic markets.
- Most shippers have reported increased transportation costs in the short term, typically from \$400 to \$450 per container. Some shippers, particularly those that have lost barge service from the Columbia River, have reported additional costs as high as \$800 per container.
- The cost impacts have been cushioned in the near-term by low ocean carrier “spot” rates, and low fuel prices.
- The annual increased trucking costs to Oregon shippers from the loss of Terminal 6 service is estimated to reach \$15.1 million in 2015 dollars⁹. This estimate reflects the additional underlying cost of truck drayage due to longer distances travelled and the loss of barge service. This additional underlying cost is incurred regardless of offsetting shipping rate policies.
- This estimate does not reflect the potential loss of rate equalization benefits and the resulting added business cost impacts to all Oregon shippers moving cargo through the ports of Seattle and Tacoma. Loss of rate equalization could substantially increase freight logistics costs for all Oregon shippers.
- Smaller shippers import or export fewer containers annually, connecting to a limited range of foreign ports and customers, and have less negotiating leverage as a result. When vessel, truck, or rail capacity is limited, they are more likely to suffer delays. Larger shippers may have already been using Seattle and Tacoma for some shipments, and are better able to negotiate favorable rates due to higher volumes and freight logistics expertise.



⁹ Oregon Trade and Logistics Research, The Tioga Group, February 2016.

SHIPPER AND STAKEHOLDER ENGAGEMENT

The Steering Committee traveled statewide to engage shippers and transportation providers across Oregon in identifying freight logistic challenges and potential near-term solutions as well as long-term improvements needed to the trade transportation system. Over 300 people participated in community shipper forums held in Portland, Redmond, Hermiston, Ontario, Albany, Medford, Grand Ronde, and Wilsonville. Oregon exporters and importers were the primary participants in the meetings facilitated by consultant Peter Friedmann. Others attending included: brokers, freight forwarders, railroad companies, barge and trucking companies, agency representatives, and elected officials. Steering Committee members also met one-on-one with shippers and multiple other stakeholders, including the Oregon Trucking Associations (OTA), Oregon Rail Users League (ORULE), Oregon Freight Advisory Committee (OFAC), Oregon Public Ports Association (OPPA), and state agency boards and commissions. The Steering Committee also organized Oregon shippers to testify before the House Interim Committee on Transportation and Economic Development and Senate Interim Committee on Business and Transportation. An informal Working Group of shippers, transportation providers, and freight forwarders provided input and industry expertise on interim solutions to address shipper challenges.

Collectively, the stakeholder engagement and analytical research generated a number of proposals to help Oregon shippers in the near-term, and catalyze long-term improvements to the state's transportation system. The transportation and business challenges that provide the foundation for these proposals and Steering Committee recommendations are summarized below as findings. Workshop summaries can be found in Appendix 2 available at www.oregontradesolutions.com/report.

Findings from Shipper and Stakeholder Engagement:

- Each region's transportation challenges and needs are different, and solutions must be tailored to those needs.
- Increased transportation costs and transit time impact Oregon shippers' competitiveness and put customer relationships and product markets at risk.
- Terminal 6 ocean container service into the Columbia River is critical for managing costs and maintaining competitiveness of Oregon businesses.
- Loss of Terminal 6 container barge service reduces cost-competitive access to markets for agricultural producers along the Columbia River.
- Roadway and port congestion is increasing with significant impacts on the port trucking industry. These impacts are compounded by truck driver, trailer and heavy-weight chassis shortages, as well as federal hours-of-service restrictions on truckers.
- There are imbalances of container availability that limit shipper access to markets.
- Increased access to rail via intermodal facilities is desired.
- Export disruption also impacts domestic businesses, highlighting the importance of a system-wide focus on the transportation network.

The loss of Terminal 6 container service exposed both the opportunity, and the need, to improve Oregon's capabilities to transport containerized cargo. Oregon shippers, while emphasizing the critical importance of restoring Terminal 6 container service, also testified to the ongoing need for system-wide improvements to freight transportation infrastructure and logistics.

The competitive position of businesses and industries that make up the local, regional and statewide economies depends upon not only the region's strategic location as a gateway to global markets, but an efficient, multi-modal transportation system. Oregon shippers' ability to remain competitive relies on their capacity to move goods, people and services efficiently via rail, truck and marine transportation through the Pacific Northwest.

Oregon's geographic location and past transportation system investments have helped secure access to global markets. A well-functioning transportation system allows businesses in the state to competitively serve a larger market area. The failure to invest in a highly efficient transportation system will impact freight mobility, job creation, and economic growth.

CONCEPTS AND BUSINESS CASES

Based on the stakeholder outreach and research, ideas to improve Oregon trade and logistics capabilities were identified for potential action or implementation. The Tioga Group assessed the feasibility of these concepts using the following criteria:

- Technical, economic, and operational feasibility,
- Identifiable benefits to Oregon shippers,
- Consistency with the long-term interests of Oregon shippers and the state as a whole,
- Consistency with resumption of weekly vessel service at Portland, and
- A well-defined and viable public agency role.

The analysis determined that only three of the concepts reviewed did not have a direct public agency role, would not address near-term problems, and/or did not appear to be feasible based on current industry conditions. These included:

- **Container Availability Information System** – A consolidated information source for container availability would be desirable, but does not appear feasible in the near-term due to ocean carrier policies, lack of cooperation, and anti-trust concerns.
- **Additional Rail Capacity** – Although some suggested that increased railroad capacity would be desirable, The Tioga Group did not find that railroad capacity shortfalls were causing current problems. It is rare for public agencies to have a role in railroad capacity decisions.
- **Other Oregon Deep-Draft Ports** – Other Oregon deep-draft ports do not have container terminals and do not handle containers on a regular basis. Near-term development of container terminals at other Oregon deep-draft ports is unlikely due to the high infrastructure cost and multi-year lead time. While Oregon deep-draft ports serve an important niche role in international trade, new container terminals would not address the near-term problems facing Oregon's container shippers.

The remaining concepts were viewed as providing both near-term assistance with current problems and long-term leadership to build a strong foundation for Oregon trade growth. Many fit within either a monitoring or policy framework and have been incorporated into the Steering Committee recommendations.

The Tioga Group identified six promising proposals for further analysis as business cases, including an overview of the concept, benefits to the freight system, a review of best practices, costs, a potential public agency role, timeframe, and next steps.

These business cases included:

1. Port trucker information system,
2. Truck driver training,
3. Satellite container yards,
4. Columbia River barge/rail service,
5. New rail intermodal yard, and
6. Portland cold storage and transload opportunities.

Additional information on all proposals is included in Appendix 3 available at: www.oregontradesolutions.com/report.

RECOMMENDATIONS

To help mitigate the significant transportation cost impacts already sustained by Oregon shippers and improve capacity to move products to and from global markets, the Governor's Trade and Logistics Steering Committee has identified several potential investment opportunities and actions. The recommendations below are intended to improve existing freight transportation system capacity and infrastructure or add capacity to enhance Oregon shippers' competitiveness in the global marketplace, including some actions that have already been initiated.

The Steering Committee recommendations are informed by extensive stakeholder engagement augmented by technical expertise. These recommendations are grouped into four sets of actions:



1 RESOLUTION OF TERMINAL 6 LABOR-MANAGEMENT ISSUES & RESTORATION OF WEEKLY CONTAINER SERVICE

- A. **Return of productive operations and weekly container and barge service to Terminal 6** is a priority for Oregon and Pacific Northwest shippers. Service restoration is essential to making significant Oregon freight movement improvements and addressing shipper transportation costs and reliability issues. It will also help remove the estimated 1,400 additional heavy trucks each week moving on Interstate 5 and Interstate 205 as a result of rerouting of cargo to Puget Sound ports¹⁰. The State should press for resolution of the labor-management issues at Terminal 6, collaborating with the International Longshore and Warehouse Union Local 8 (marine terminal workforce), International Brotherhood of Electrical Workers Local 48 (refrigerated container maintenance and repair workforce), ICTSI (Terminal 6 tenant/operator), the Pacific Maritime Association (employer of the ILWU), and the Port of Portland (Terminal 6 landlord). In addition, the State should support ICTSI and the Port of Portland's efforts to recruit carrier vessel service.

2 OPERATIONAL ENHANCEMENTS AND ACTIONS TO IMPROVE EXISTING LOGISTICS SYSTEM

Infrastructure

- A. **Existing Intermodal Container Facilities.** There are five intermodal container facilities (Northwest Container Service-Portland, Northwest Container Service-Boardman, Portland Terminal 6, the Union Pacific Brooklyn Yard, and the Burlington Northern Santa Fe Portland Yard) that provide access to global and domestic markets for Oregon shippers and receivers. Some of these container facilities have requested *ConnectOregon* VI funding to enhance operations at their facilities. The Legislature approved \$45 million in funding for *ConnectOregon* VI in 2015. *ConnectOregon* is administered by Oregon Department of Transportation and has an established process to review and approve projects. Existing technical review and regional committees for this program will recommend projects for funding to the Oregon Transportation Commission in August 2016. As part of that process, they will determine the value of projects to the freight system and their benefit to Oregon shippers.

¹⁰ Port of Portland, 2015

B. **Container Satellite Yard to Support Westwood Terminal 6 Service (Business Case).** The Port of Portland and ICTSI worked with Westwood Shipping Lines to restart their monthly service to Japan and Korea. Vital to this restart was securing a Rivergate area drop yard to store full containers near Terminal 6 for once a month loadings on Westwood. This action was deemed as having merit for pursuing early in the Trade and Logistics Initiative. The Port of Portland partnered with Portland Container Repair to create this drop yard to stage export containers off dock until just prior to a Westwood vessel call date. Those containers can then be trucked to Terminal 6 for the ICTSI's weekly gate opening.

C. **Port Trucker Information System (Business Case).** With rerouting of containers through Puget Sound ports and congestion at those ports and on Interstate 5, truckers moving Oregon products north have reported significant challenges staying within truck driver hours-of-service limits. This has exacerbated an already critical shortage of truck drivers nationally and in Oregon. Multiple stakeholders have recommended the creation of an information system to aggregate and make available in one location current information on:

- Traffic conditions on Interstate 5 and on terminal access roads.
- Terminal gate hours and procedures, and container drop off and pick up schedules.
- Vessel schedules and status, earliest receiving dates, and cutoffs.
- Turn times at Tacoma, Seattle, Portland, and Northwest Container Service terminals.

This project would assist trucking firms in planning load drop-off and pick-up at designated terminals and improve efficiency. Better information would help increase freight predictability, save trucker time and costs, and free up truckers for alternate runs for Oregon shippers. Comparable information systems are available through the ports of Tacoma and Oakland. State assistance to define the benefit of such a system, develop the requirements of the system, and determine funding needs is recommended. This project could link to existing databases and information systems, including the ODOT's TripCheck software that is currently available to the public, and accessed by the trucking community. Collaboration of ODOT, OTA, Washington Department of Transportation (WashDOT), the ports of Portland, Seattle and Tacoma, and Northwest Container Services would be key to the success of this project. Phasing of this project may make sense given the multiple system connections needed.



- D. **Truck Driver Training ([Business Case](#))**. Nationally and in Oregon, there is a persistent shortage of truck drivers needed to move international container cargo which is expected to worsen due to retirement and turnover. Recruiting and training new truck drivers would help take immediate steps toward addressing this long-term freight logistics challenge. Becoming a truck driver requires training and commercial licensing. Training can be obtained through a commercial truck driving school, a community college offering a truck driving program, or a trucking company that offers an in-house training program. Truck driver training would add capacity to the truck driver pool to serve Oregon importers and exporters, add jobs (particularly in rural Oregon), and create a new generation of well-trained truck drivers. It would also provide a career pathway for Oregon's workforce in the growing transportation logistics industry.

Since 2012, Oregon has had a Truck Driver Tuition Loan Program, administered through a partnership of the OTA and Worksystems, Inc. The program was funded by the Oregon Legislature with a U.S. Department of Labor grant to develop the Professional Truck Driver Certification curriculum. A central feature of the training program was an agreement by insurers to accept and cover drivers who have completed the curriculum in lieu of having two years of truck driving experience. This tuition loan program provides loans of up to \$3,000 for students attending truck driver training schools. The program is currently out of funds and requires recapitalization to make new loans. Recapitalization of the program would allow training of new truck drivers. Longer term, the state could consider expansion of the truck driver curriculum at other Oregon community colleges. Umpqua and Rogue Community College are the only two community colleges offering the Professional Truck Driver Certification curriculum currently.

- E. **Mid-Willamette Valley Container Reuse Pilot**. In the Mid-Willamette Valley, there may be an opportunity to establish a container reuse pilot program (sometimes referred to as "match-back") where empty import containers from regional import distribution facilities (e.g., Lowe's) could be reused for export loads from some Mid-Willamette Valley shippers. Such a reuse program would reduce the number of empty container truck movements and improve the efficiency and utilization of the local supply of containers for participating export shippers. By reducing truck trips, a reuse program could reduce congestion on Interstate 5 and feeder routes. The state supports current Port of Portland and private sector efforts to identify and carry out container reuse opportunities for exporters in the Valley. To be successful, a match-back program would need to address ocean carrier permissions, inspections, documentation, and Equipment Interchange Reports.

Regulatory

Stakeholder engagement identified a number of regulatory issues that could improve trucking operations. These proposals would benefit from further analysis and action, including:

- F. **Truck Driver Age Limits**. The national truck driver shortage is hitting Oregon shippers very hard. Trucking availability is limited and creating additional burden and expense for the trucking community, shippers and the public. The trucking/driver shortage is exacerbated by the requirement that a truck driver must be at least 21 years old, and insurance companies typically require two years of driving experience, essentially eliminating all 18-22 year olds from the industry. The issue of trucker age limits was raised by multiple stakeholders. In the 2015 federal Fixing America's Surface Transportation Act (FAST Act), Congress allowed drivers qualified through military service to drive a truck at age 18, but that step offers very limited relief. This is a federal issue which ODOT should continue track at the national level.
- G. **Weight Limit Exemptions in Rural Oregon**. The potential for weight limit exemptions within Oregon's highway freight system to support movement of agricultural products in rural Oregon is

dependent upon federal action due to federal funding requirements. Increases of legal weight limits may relieve truck shortages and more efficiently move freight to rail in critical agricultural areas. ODOT should work with shippers to determine where current system limitations (e.g., bridge/pavement restrictions or design constraints) exist and consult with federal authorities to determine options for allowing heavier vehicles within the existing permitting structure.

- H. **Truck Driver Hours-of-Service.** Shippers raised numerous concerns related to trucker hours-of-service and additional costs associated with hours-of-service. This is a federal issue that is continuously evolving. ODOT should continue to monitor federal regulations and work with industry leaders as necessary. Ongoing efforts by shipper logistics managers in reviewing distribution networks would reduce truck miles traveled and mitigate hours-of-service issues. Utilization of Oregon intermodal facilities would also assist with trucker hours-of-service issues by allowing operators to move shorter distances to these facilities.
- I. **Trucker Commercial Drivers' License Requirements.** Oregon currently accepts military experience for meeting licensing truck driver licensing requirements. Oregon should continue to work to enhance stakeholder awareness through outreach conducted by its Departments of Transportation, Department of Veterans Affairs, and Employment Department.

3

STRATEGIC INVESTMENTS IN FREIGHT LOGISTICS TO SUSTAIN SERVICES

- A. **New Intermodal Rail Yard Feasibility Study in the Mid-Willamette Valley ([Business Case](#)).** There has been interest among shippers, legislators, and other stakeholders in exploring the establishment of a new rail intermodal yard in the Willamette Valley to reduce transportation costs and truck congestion. Possible locations mentioned for such a facility include Albany, Springfield, Eugene, and Lebanon. Northwest Container Service was actively considering a Willamette Valley service as far back as 2005-08. Initial analysis of this concept was undertaken as part of the Trade and Logistics Initiative. The analysis provided case studies that offered valuable insight into historical issues associated with the creation of new intermodal yards. Additional analysis and discussion with key stakeholders is recommended. State funding could be used to conduct a feasibility study for a new intermodal terminal in the Mid-Willamette Valley. This analysis should include a robust business case and operations plan which identifies potential operators, the possible roles of Class I railroads, short lines, potential cargo volumes, import container opportunities, and financial support for the service from carriers and/or others.
- B. **New Metro Area Satellite Container Yards ([Business Case](#)).** Establishment of truck container drop yards in the Portland metro area for temporary storage of full and empty containers en route to the ports of Seattle and Tacoma could help improve the flow and predictability of freight transit, address truck driver hours-of-service issues, and improve the supply of empty containers for Oregon exporters. Drop yards located in the Portland area would allow Mid-Willamette Valley and Central Oregon shippers to drop loads for pick-up by a second truck driver for transit to the Puget Sound container terminals. Major concerns for Oregon truckers and shippers include congestion on Interstate 5 and wait times at the Port of Seattle, and the impact of both on federal hours-of-service limitations. Portland area drop yards could allow daily turns for Willamette Valley shippers. Drop yards would also enable containers to be moved at night when Interstate 5 is less congested. Currently, there is one Portland container drop yard operated by Portland Container Repair in Rivergate, providing a yard for loaded export containers for monthly Terminal 6 Westwood carrier calls. State assistance could help a private operator establish a second drop yard for Oregon exporters in the Portland area with close proximity to Interstate 5. Funding could assist with acquisition of property and infrastructure (e.g., gravel, fencing, administration building).

- C. **Return of Columbia River Container Barge Service to Terminal 6 ([Business Case](#))**. With the suspension of Hapag-Lloyd and Hanjin service at Terminal 6, container barge service on the Columbia River ceased because they could no longer connect to ocean-going vessels. The loss of barge service resulted in the closure of the Port of Lewiston container yard, impacting shippers in southern Washington, and Lewiston, Idaho that helped provide the cargo volumes to sustain Terminal 6 container service. These shippers have difficulty absorbing transportation cost increases, or securing containers and heavy-weight chassis to truck their products to market. The Port of Portland, Northwest Container Service, the ports of Morrow and Lewiston, Tidewater Barge Lines, carriers, and upriver shippers have been working to aggregate volumes that will allow empty container repositioning at Boardman by rail and a barge/rail shuttle from Lewiston/Boardman to Portland and Puget Sound ports. The barge/rail service was restarted in November 2015 with assistance from key stakeholders. This service is important in getting cargo back onto the barge feeder service along the Columbia River in an area hit hard by truck equipment availability and alternative transportation cost increases. The primary beneficiaries of this service are Idaho, southern Washington, and Eastern Oregon shippers of high volume commodities that rely on low cost barge/rail transport.
- D. **Boardman Rail Service Support**. Repositioning of empty ocean containers to the Boardman multi-modal logistics center at the Port of Morrow is needed to move containers loaded with upriver and Eastern Oregon goods by rail back to Portland and Puget Sound ports. To incent carriers to reposition empty containers in Boardman, state funding could be used to pay for partial empty container repositioning for Oregon exports only. This would help to take full advantage of the \$10 million investment from *ConnectOregon* funds and other sources in the Boardman transportation hub. Keeping containers on a barge/rail combination would preserve the opportunity for this cargo to flow through Terminal 6 in the long term, take trucks off the road, and help re-establish regular carrier service.
- E. **Portland Cold Storage and Transload Opportunities ([Business Case](#))**. Portland’s Terminal 6 container shipping market is a relatively small market compared to other West Coast ports. This is especially true for import cargo, which is the primary driver for container shipping lines when making Port call decisions. Portland has the smallest population of the West Coast port cities and offers relatively few “anchor” businesses with large import container volumes. In tandem with the resumption of Terminal 6 carrier service, the Port of Portland should continue its work to grow the Terminal 6 market by identifying the potential for pharmaceutical and cold storage imports and exports of food products and frozen poultry, beef and pork products from the Midwest. A broader cargo market would help anchor and improve cold storage and transload services in the Portland area, including rail service. Port business development staff has been engaged in promoting development of such services over the years. The Port of Portland should enlist the support of other public agencies, as needed, to support these efforts. Expansion and recruitment of cold storage and transload services would require regular TransPacific service through Terminal 6, but would be important to building the Portland container service market in the long term.



- A. **Governor’s Transportation Vision Panel Recommendations.** The Governor’s Transportation Vision Panel was created to provide a comprehensive look at Oregon’s transportation system and define a long-term vision and short-term action items for moving people and goods and how to pay for that system. Preliminary recommendations dovetail well with those of the Trade and Logistics Initiative Steering Committee and should be folded into the state’s transportation funding package. This includes:
- Bottleneck Elimination: Prioritize and invest in increasing capacity and throughput of existing roadway bottlenecks on corridors of statewide freight significance;
 - Freight Network Alternatives: Invest in enhancing the capacity and efficiency of rural highway corridors and rail infrastructure to create freight network alternatives that reduce congestion on constrained urban highways;
 - Intermodal Freight Facilities: Identify and invest in intermodal facilities and freight connectors that reduce freight demand on highways; and
 - Permanent *ConnectOregon* Fund: Consider creation of a permanent *ConnectOregon* fund that helps coordinate and support strategic investment in commercial, non-highway freight mobility projects.
- B. **Freight Bottlenecks.** Highway freight bottlenecks in Oregon limit shipping reliability and negatively impact shippers’ ability to get products to market while meeting driver hours-of-service requirements. Bottlenecks cost shippers money through loss of time from delays or travel along alternate indirect routes. Highway bottlenecks also impact local communities by creating increased traffic congestion on local roadways connecting to state and federal highways. Both the Oregon Freight Plan and the federal FAST Act stress the importance of identifying highway freight bottlenecks. ODOT should continue its efforts to identify and prioritize highway freight bottlenecks along key freight routes throughout the state. Current efforts to do so will be completed in fall 2016. Oregon decision makers should consider addressing critical highway freight bottlenecks as part of future transportation funding packages and options. In addition to highway freight bottlenecks, Oregon should investigate and invest in non-highway transportation infrastructure and programs in order to improve its multimodal freight transportation system.
- C. **Heavy-Weight Truck Routes.** ODOT and appropriate local jurisdictions should consider developing a process to designate high-use freight roadways as critical last mile intermodal connectors. This process could consider current and future access routes to facilities that improve the movement of containers. Current facilities such as Terminal 6, Portland Northwest Container Services in Portland and Boardman, the Union Pacific’s Portland intermodal terminal, and the Burlington Northern Santa Fe’s Portland intermodal terminal should be prioritized. Future routes that lead to potential container drop sites or other container movement and storage facilities should be identified and investigated for possible inclusion. Designation as significant container movement routes will help to ensure that appropriate minimum design standards are maintained to provide adequate container traffic access to international trade gateway facilities. This concept assumes that most will be last-mile connectors on local road networks and not state highways. Standards for state routes are currently identified as Reduction Review Routes under Oregon Revised Statutes. Identification and assessment of last-mile connectors is an action item recognized in the Oregon Freight Plan.
- D. **Investment in Oregon’s Multi-Modal Freight Transportation System.** International trade is critical to Oregon’s economic vitality, yet Oregon’s transportation system is not keeping pace with other West Coast states. Congestion in major markets is creating multiple hours of delay and impacting the state’s economy. Investing in the state’s transportation system has the potential to generate \$1.1 billion in

economic benefits¹¹. Oregon's transportation system lacks sufficient infrastructure to meet Oregon business market access needs. As shippers try to reach other international gateways, the constrained system increases cost and transit time. Due to constrained transportation funds, Oregon has few projects in the pipeline, limiting the state's ability to compete for funding in FAST Act. Oregon's neighboring states (California, Idaho, and Washington) are making significant investments in their transportation systems and ports. Washington State recently passed the equivalent of a 16-cent gas tax which will raise more than \$18 billion to invest in the state's transportation system. California Governor Jerry Brown recently proposed a state budget that includes \$36 billion over the next decade in multimodal transportation funding. Idaho passed legislation in 2015 increasing gas taxes by seven cents-per-gallon that is projected to generate \$95 million per year to invest in the state's roads and bridges. For Oregon to maintain its economic competitiveness in the West, it needs to invest in the state's multi-modal transportation system. This includes but is not limited to state highways, freight corridors, rail, and port infrastructure. Discussions related to a 2017 Transportation Funding Package should place priority focus on freight movement as a means of promoting economic development with particular emphasis on eliminating freight bottlenecks on the multi-modal system. Coordination of multi-modal freight system investments would improve the movement of international freight throughout the Pacific Northwest. Oregon relies on trade volumes from Idaho and southern Washington to create and maintain its gateway status. Improvements in Oregon's transportation system to capitalize on investments made in neighboring states would improve the efficiency of trade movement.

- E. **Monitoring of International Trade and Transportation System Performance.** While the work of the Trade and Logistics Initiative is nearing completion, there is a need for continued focus on the movement of Oregon marine cargo by rail or ship through the ports of Portland, Tacoma and Seattle, as well as ensuring implementation of recommendations included in the Governor's Trade and Logistics report. OFAC is a logical entity to assume this role as it also includes members of the Steering Committee. This monitoring work should include annual progress reporting on the implementation of the recommendations and monitoring of system performance. The potential system performance issues include: customs processing of Oregon shipments at Puget Sound ports; use of third-party logistics providers, cooperatives, and shipper associations for small shippers; existing rail intermodal linkages in Portland and to Puget Sound; chassis supply; and Terminal 6 service
- F. **Sustaining Stakeholder Engagement.** Stakeholder engagement is an indispensable part of ensuring an ongoing focus on the competitiveness and functionality of Oregon's trade and transportation system. In conjunction with OFAC's monitoring of implementation of recommendations from the Trade and Logistics Report, the state should convene an annual stakeholder forum to stay engaged with current trade and shipper issues. As part of the Port of Portland and state's efforts to recruit new Terminal 6 container service, it should engage a small group of larger shippers providing the base volumes needed to anchor this service.
- G. **Transportation/Shipper Support from Regional Solutions Teams.** Different geographic regions in Oregon have distinct freight logistics shipper needs. The Governor's office should call on the Regional Solutions Teams to identify local and regional shipper solutions that support international trade and economic development opportunities. The Regional Solutions Program approaches community and economic development by working at the local level to identify priorities, solve problems, and seize opportunities to get specific projects completed. Leveraging funding opportunities to address the highest regional priorities is necessary for long-term economic growth. The Mid-Willamette Valley Regional Solutions Team has already convened public and private parties interested in freight transportation investments.

¹¹ Economic Impacts of Cost of Congestion on the Portland-metro and Oregon Economy, 2014

- H. **International Trade Initiatives.** The state of Oregon supports international trade through a collaborative multi-agency effort. Business Oregon, ODA, the Port of Portland, and Travel Oregon engage in Governor’s and other outbound trade missions, inbound foreign buyer missions, and industry missions supporting international trade. The Oregon Legislature invests in international export promotion grant programs to assist small and medium-size companies with export sales efforts, leveraging significant federal funds. Export competitiveness is tied to their ability to deliver their products on time and at a competitive price. Export growth can also lead to increased foreign direct investment opportunities bringing new jobs and wages to the state. A continuation of these state investments is recommended given the importance of international trade to Oregon’s economy.
- I. **Ongoing International Trade Education and Research.** Trade education should be coordinated among agencies involved in trade and transportation, as well as international trade organizations. Research should include but not be limited to additional data collection to enhance the understanding of the container cargo market, and shipping community needs.



ACKNOWLEDGEMENTS

Steering Committee

Business Oregon: Karen Goddin, Marc Zolton, Dave Harlan
Port of Portland: Lise Glancy, Scott Drumm, Doug Smith
Oregon Department of Agriculture: Gary Roth, Terry Fasel
Oregon Department of Transportation: Chris Cummings

Agency Technical Advisers

Randy Fischer, Rob Smith, Greg Borossay, Susie Lahsene, Lindsay Eng, Julia Turner, Mike Meyers, Donna Greene, Ryan Frank, Nathan Buehler, Gregg DalPonte, Galen McGill, Chris Ward

Consultants

Dan Smith, The Tioga Group
Peter Friedmann and Abigail Struxness, Lindsay Hart, LLP and FBB Federal Relations

Photo Credits

Port of Portland

Working Group

Exporters

- Gary Acker and Larz Malony, Pacific Seafood
- Shelly Boshart Davis, BOSSCO Trading LLC and Boshart Trucking
- Lexi Crawford, Gold Dust Potato Processors
- Laura Daniels, Anderson Hay and Grain
- Stu Follen, SL Follen Company
- Gabino Gispert, Calbee North America
- Deanna Grade, ConAgra Foods Lamb Weston
- Marcine Kment, Zen-Noh Grain Corporation
- Audrey Koppe, Metro Metals Northwest
- Kit LaBelle, Hampton Affiliates
- ReNee Lopez, Hazelnut Growers of Oregon
- Paul Owen, Vanport International Inc.
- Hayden Swofford, Pacific Northwest Asia Shippers Association
- Howard Tauge, J.R. Simplot Company
- Karen Withers, Pennington Seed Inc.

Importers

- Don Cruickshank, Chemical Distributors, Inc.
- Linda Devoy, Epsom Portland Inc
- Kevin Koronko, Dr Martens AirWair USA LLC
- Jeanne Liu, Powin Corporation
- Mike Roelle, Glacier Tanks
- Craig Stevenson, Columbia Distributing/Young's Market NW
- Eric Wright, Furniture Connexion

Customs Brokers and Freight Forwarders

- Brenda Barnes, Geo S. Bush Co.
- Patti Iverson Summer, Global Trading Resources, Inc.
- Dale Wolfer, Allports Forwarding

Service Providers

- Gary Cardwell, Northwest Container Services
- Randy Carpenter, Pathfinder Dray and Dedicated Services
- Lisa Petersen, Independent Dispatch, Inc.
- Edward Sempek and Ken Norwood, Union Pacific
- Greg Zavanich, Tidewater Transportation & Terminals

Others

- Dave Doeringsfeld, Port of Lewiston
- Angie Harris, DSV Air & Sea Inc.
- Gary Neal, Port of Morrow

Companies Interviewed

AASOM

AOSOM

Authentic Models

Benson Industries

BOSSCO Trading LLC and Boshart Trucking

Bridgewell Resources

Calbee North America LLC

Columbia Grain International

Dinsdale Farm & Equipment Co.

Gilmour Pacific Trading

Glacier Tanks

Golden Valley Farms

Kanto Corporation

Mitchell Brothers

NNR Global Logistics

NORPAC Foods

Northwest Container Services

Northwest Hardwoods Inc.

Oregon Hay Products (2)

Oregon Tile and Marble

Planar Systems

Proactive Sports

Richards Housewares

S.L. Follen Co.

Schnitzer Steel Industries

Shelter Forest International

Sunrise Trading

The Furniture Connexion

Vanport International

Warn Industries

Williams Controls

Wish Pets



Trade and Logistics Report:



Research Analysis

February 2016



The Tioga Group, Inc.

The Tioga Group, Inc. ♦ 288 Rheem Blvd. ♦ Moraga, CA 94556 ♦ 925.631.0742

Table of Contents

I. BACKGROUND AND SCOPE	1
Background	1
Scope	2
II. OREGON EXPORT AND IMPORT MARKETS	4
Overview of Methodology	4
Oregon Containerized Commodities	5
Oregon County Market Analysis	7
III. SERVICE LOSS IMPACTS	13
Approach	13
Interviews	13
Key Interview Findings	16
Ocean Carrier Service and Cost Impacts	17
Port Terminal Service and Cost Impacts	19
Trucking Service and Cost Impacts	19
Rail Intermodal Service and Cost Impacts	21
Barge Service Impacts	22
Summary Impacts	23
Importer and Exporter Challenges	24

Table of Exhibits

Exhibit 1: Sample PIERS Records	5
Exhibit 2: 2014 Oregon Containerized Export Commodities	6
Exhibit 3: 2014 Oregon Containerized Import Commodities	7
Exhibit 4: 2014 Oregon Export Containers by Market Area	8
Exhibit 5: Port of Portland 2014 Container Exports by County	9
Exhibit 6: Port of Portland Export County Shares	10
Exhibit 7: 2014 Oregon Import Containers by Market Area	10
Exhibit 8: Port of Portland 2014 Container Imports by County	11
Exhibit 9: Port of Portland Import County Shares	12
Exhibit 10: Stakeholder Interviews	14
Exhibit 11: Interview Guide	15
Exhibit 12: Estimated Drayage Time and Cost Impacts	20
Exhibit 13: Representative Barge Costs	23
Exhibit 14: Summary Impacts Matrix	23

I. Background and Scope

Background

The Port of Portland has a long history of containerized shipping service from major international operators. Since 1974, the Port of Portland's Terminal 6 (T-6) has moved containerized cargo to and from world markets. In 2014, Portland Terminal 6 captured about 43% of the Portland Region containerized cargo marketⁱ and 53% of the Oregon containerized market (exports and imports). The remaining cargo moved by rail or truck through Puget Sound and Oakland ports. Eighty percent of Portland's container business was with key markets in China, Japan, and Korea. In recent years, there have been three container shipping lines calling at Portland: weekly Hanjin service to/from Asia, weekly Hapag-Lloyd service to/from Europe, and monthly Westwood service to Asia. Hanjin and Hapag-Lloyd discontinued their weekly Portland vessel calls in early 2015 with little advance notice, leaving Westwood calls as the only direct Portland container service.

With the withdrawal of these services, Oregon importers and exporters that had been using the Hanjin and Hapag-Lloyd services had to scramble to find alternatives. In most cases, the alternatives were to use the same or comparable carrier services at the Ports of Tacoma or Seattle, at the additional cost of truck or rail transportation to the Puget Sound ports. The long-standing Tidewater Barge container service on the Columbia-Snake river system no longer had an ocean-going connection at Portland, and customers that had relied on the barge option likewise had to truck containers to and from Puget Sound.

The timing was highly adverse to the interests of Oregon shippers because the Portland service withdrawals coincided with serious port congestion and delays at Tacoma and Seattle. These circumstances led to increased trucking costs and widespread service shortfalls. These conditions continued well into the spring of 2015.

Containerized trade is a large and vital part of the Oregon economy, linked to the health of agricultural, forestry, manufacturing, and distribution sectors. Efficient trade movement has a few basic elements:

- Capacity – the physical capability for facilities and vehicles to move goods where and when needed. Capacity is often taken for granted, but inefficiency and delay can reduce the ability of carriers to meet customer requirements.
- Service – different containerized commodities have differing needs for speed, frequency, special handling, etc.
- Reliability – modern supply chains operate with a minimum of inventory, so shipments must arrive and depart on schedule.
- Cost – shippers are always seeking to minimize transportation cost, especially exporters of highly price-sensitive agricultural commodities and forest products.

ⁱ Oregon, Idaho and Washington

The loss of direct weekly Portland vessel calls had the potential to impact the capacity, service, reliability, and cost factors faced by Oregon shippers, particularly the small- and medium-sized enterprises (SMEs) at greatest risk. Oregon shippers, the Port of Portland, and the State of Oregon are faced with two basic issues:

- What are the short-term and long-term impacts on Oregon shippers and Oregon trade?
- What can be done to assist Oregon shippers in coping with the near-term impacts, and to attract and retain new Portland vessel calls?

While the Port of Portland works to secure regular container service at T-6, it is important to the health of Oregon's economy for the State to work with SME shippers to identify interim logistics solutions, inventory specific local infrastructure challenges that may detract from Oregon's long term competitiveness, and build a foundation of knowledge and relationships between the State and SMEs to support Oregon's global trade resilience in the face of future challenges.

Scope

In April 2015, Oregon Governor Kate Brown initiated an International Trade and Logistics Initiative (T&L) – led by Business Oregon, Oregon Department of Agriculture, Oregon Department of Transportation, and the Port of Portland – to address the immediate needs of Oregon small- and medium-sized exporters and importers (SME shippers) impacted by the departure of transpacific container service at the Port of Portland, and the need to develop a sustainable strategy to support the ability of Oregon shippers to stay competitive in the global marketplace.

This project is Phase 1 of a three tiered strategy intended to ensure that SMEs stay competitive in the global marketplace, facilitate international trade in the state, and support longer term recruitment of new container service to the Port of Portland's T-6 for the benefit of all shippers. The three components of this T&L initiative include: trade research, regional shipper workshops, and freight logistics project business case development.

This research effort focused on:

- The impacts of service withdrawal on Oregon importers and exporters, with special attention to small- and medium-sized firms.
- Opportunities to assist Oregon shippers with trade and logistics solutions in the near term and prepare for new container services in the long term.

The study used trade data provided by the Port of Portland and interviews with a wide range of stakeholders to address both questions and includes the following components:

- An assessment of shipping cost impacts without direct T-6 vessel calls based on interviews.
- A description of any changes in routings or supply chain practices.

- Identification of opportunities and challenges, and recommendations for assisting affected Oregon shippers and supporting the state's overall goal of returning weekly vessel service to Portland.

II. Oregon Export and Import Markets

Overview of Methodology

The Port of Portland serves specific geographic and commodity markets in Oregon and southern Washington, with additional customers on the Columbia-Snake River system. A critical first step in the study was to document the extent and nature of the relevant export and import markets. To do so, Tioga relied heavily on 2014 Port Import-Export Reporting Service (PIERS) data from the Journal of Commerce. These data typically have shortfalls stemming from their source in U.S. Customs declarations:

- **Headquarters/paperwork bias** – records tend to show locations where transportation is arranged and managed rather than actual shipping and receiving points.
- **Third-party data loss** – shipments arranged by third parties tend to show the third party name and address rather than shipper or receiver data.
- **Incorrect data** – many records have foreign vs. domestic points shown (e.g., Madrid, OR), city-state mismatches (e.g., Portland, CA), incorrect entries (e.g., street name in city field, and variations on shipper names).
- **Missing data** – many records lack names, origin, or destination data.
- **Commodity inconsistency or generality** – commodity data varies between records or is generalized (e.g., “Misc. Manufactures” or “General merchandise”)

Customs declarations or their electronic equivalents usually give the U.S. export origin or import destination as the point at which paperwork will be processed and any fees paid. Goods may be shipped directly by the exporter or importer or through a third party such as a broker or forwarder. Third parties do not typically provide information on actual origins and destinations. These practices lead to the so-called “headquarters bias” in PIERS data – the tendency of shipment records to reflect corporate headquarters and broker office locations rather than actual production or distribution points where the cargo is handled. Exhibit 1 provides examples. Carotrans, CEVA Freight, DB Schenker, and Panalpina are well-know third parties, and the cities listed are office locations rather than actual shipping points. Ocean Beauty Seafoods is a fish processing and shipping firm in Seattle, WA so Seattle is the actual origin of the canned salmon shipments. Oceanic Container Line, on the other hand, is a shipping agency located in Staten Island, NY, and there is no indication in the records of where the “general merchandise” shown actually originated.

Exhibit 1: Sample PIERS Records

Name	City	State	HSCode	Commodity
CAROTRANS INTERNATIONAL	CONCORD	CA	120929	GRASS SEED
CEVA FREIGHT	EDISON	NJ	200410	FROZ FRENCH FRIES
CONAGRA	KENNEWICK	WA	200410	FROZEN POTATOES
DB SCHENKER	SEATTLE	WA	007985	GENERAL MERCHANDISE
OCEAN BEAUTY SEAFOODS	SEATTLE	WA	160411	CANNED SALMON
OCEANIC CONTAINER LINE	STATEN ISLAND	NY	007985	GENERAL MERCHANDISE
OEC FREIGHT COMPANIES	ROSEDALE	NY	440710	PONDEROSA PINE KILN DRIED
OREGON HAY PRODUCTS	BOARDMAN	OR	121490	TIMOTHY HORSE HAY
PANALPINA	KENT	WA	720610	STEEL INGOTS
SEA HORSE CONTAINER LINES	PORTLAND	OR	850790	BATTERY SEPARATOR

These concerns were addressed in the interviews and through additional data analysis with the goal of minimizing the effect of the PIERS headquarters bias on study findings. Tioga used a pro-ration method to allocate movements with unknown origin/destination points according to the pattern of known shipments. This process corrects for most of the headquarters bias, but again, minor inconsistencies may remain.

Data from Customs declarations also show inconsistencies in commodity description and classification. An export load of plastic battery cell separators, for example, may be described as plastics, electrical equipment, miscellaneous manufactured products, or general merchandise. Tioga adjusted descriptions where possible, but some inconsistencies inevitably remain.

The trade data provided in this report, therefore, should be interpreted as *estimates of identifiable container flows*, rather than precise figures. These data are consistent with the study goal of identifying Oregon trade patterns and impacts, and reflect the best available picture of relevant containerized trade in 2014

Oregon Containerized Commodities

The major containerized Oregon export commodities reflect major state products:

- Hay, straw, and animal feed products;
- Grass and agricultural seeds of all kinds;
- Forest products, including wood pulp, paper and cardboard, and lumber and plywood;
- Vegetables, fruits, nuts, and prepared foods and beverages; and
- Metal scrap, a “product” of regional population and industry.

The Port of Portland’s market share has been strongest in the Portland metro area, in the Willamette Valley, and along the Columbia River. Over 1,000 Oregon shippers shipped through T-6 in 2014ⁱⁱ. Every county has a stake in the movement of the international trade. T-6 is Oregon’s only international container terminal.

ⁱⁱ Port of Portland

Exhibit 2: 2014 Oregon Containerized Export Commodities

Export Commodity Group	Est. Oregon Containers	Est. T-6 Containers	Oregon Export Share	Cumulative Export Share	T-6 Share
Hay, Straw, Seeds	23,326	8,878	40%	40%	38%
Wood Pulp	5,496	4,984	9%	49%	91%
Wood Products	5,402	2,494	9%	58%	46%
Vegetables	4,283	631	7%	66%	15%
Paper & Cardboard	3,051	41	5%	71%	1%
Prepared Foodstuffs	2,643	35	5%	75%	1%
Aluminium and articles	2,462	858	4%	80%	35%
Seafood	2,069	83	4%	83%	4%
Prepared Foodstuffs	1,693	546	3%	86%	32%
Other base metals, metal scrap	1,527	508	3%	89%	33%
Plastics	1,279	601	2%	91%	47%
Iron and steel	645	108	1%	92%	17%
Copper and articles thereof	489	203	1%	93%	42%
Mineral Products	394	363	1%	93%	92%
Machinery and mechanical appliances	385	141	1%	94%	37%
Fodder, food byproducts	359	186	1%	95%	52%
All Other	3,121	1,478	5%	100%	47%
Oregon Total	58,623	22,139	100%	100%	38%

In exports (Exhibit 2), Oregon accounts for 100% of many categories, especially those such as hay, wood products, and wood pulp where transportation is a large part of total delivered cost and must be minimized. With greater transportation cost sensitivity, exporters are more likely to be impacted by the need to use Tacoma or Seattle instead of Portland. For imports, the higher cargo values often justify longer inland trips.

Import commodities (Exhibit 3) are more varied, reflecting Portland’s role as an inbound gateway and distribution center for Oregon, the Pacific Northwest, and the nation. The largest categories are:

- Furniture and Bedding, a high-volume commodity group for the West Coast as a whole.
- Rubber and Plastics, including consumer goods but specifically imported tires from Korea and other Asian sources.
- A wide range of consumer and industrial goods.

Many commodity classifications show substantial volumes in both directions, yet the actual commodities may differ. In Wood Products, for example, the main exports may be plywood produced in Oregon, while the main imports are hardwood laminates from Asia.

Exhibit 3: 2014 Oregon Containerized Import Commodities

Import Commodity Group	Est. Market Containers	Est. T-6 Containers	Oregon Export Share	Cumulative Export Share	T-6 Share
Furniture; bedding	7,221	5,674	14%	14%	79%
Wood Products	6,176	2,811	12%	25%	46%
Rubber	4,138	3,724	8%	33%	90%
Articles of iron or steel	3,443	2,646	7%	40%	77%
Machinery and mechanical appliances	2,589	2,069	5%	45%	80%
Toys, games and sports	2,372	1,983	5%	49%	84%
Plastics	2,319	1,672	4%	54%	72%
Glass and glassware	2,008	1,423	4%	58%	71%
Vehicles & Transport Equip	1,901	1,641	4%	61%	86%
Machinery & Electrical	1,752	1,279	3%	65%	73%
Footware & Misc Apparel	1,640	1,058	3%	68%	64%
Paper & Cardboard	1,119	739	2%	70%	66%
Leather Products	907	591	2%	72%	65%
Hay, Straw, Seeds	836	436	2%	73%	52%
Ceramic products	753	571	1%	75%	76%
Prepared Foodstuffs	726	106	1%	76%	15%
Chemical Products	718	426	1%	77%	59%
Beverages, spirits and vinegar	677	532	1%	79%	79%
Apparel	588	523	1%	80%	89%
Miscellaneous articles of base metal	576	351	1%	81%	61%
Miscellaneous Cargo	513	430	1%	82%	84%
Iron and steel	502	372	1%	83%	74%
Other made up textile articles	433	303	1%	84%	70%
Coffee, Tea	414	414	1%	84%	100%
Animal Or Vegetable Fats And Oils	396	256	1%	85%	65%
Wood Pulp	386	183	1%	86%	47%
Optical, photographic, medical instrument	385	254	1%	87%	66%
Chemical Products	384	234	1%	87%	61%
Aluminium and articles	373	243	1%	88%	65%
Fruit & Nuts	367	262	1%	89%	71%
Tools, implements	350	269	1%	89%	77%
Miscellaneous Manufactured Articles	338	177	1%	90%	52%
Articles of stone, plaster, cement	320	193	1%	91%	60%
Prepared Foodstuffs	282	263	1%	91%	93%
Soaps, waxes	269	244	1%	92%	91%
Fertilizers	259	27	0%	92%	10%
Prepared Foodstuffs	253	144	0%	93%	57%
Rail Vehicles & Transport Equip	249	174	0%	93%	70%
Seafood	231	11	0%	94%	5%
Textiles	225	120	0%	94%	54%
Manufactures of straw	224	151	0%	94%	67%
Headgear and parts thereof	213	63	0%	95%	29%
All Other	2,741	1,892	5%	100%	69%
Oregon Total	52,567	36,934	100%	100%	70%

Oregon County Market Analysis

For the county market analysis, Tioga took multiple steps to adjust inconsistent PIERS commodity descriptions, locate actual shipping points where known, and allocate trade with unknown shipping points according to the known geographic pattern.

Exports

Exhibit 4 shows 2014 containerized Oregon exports, grouped into major market areas. About 89% of the Oregon containerized exports through the Port of Portland’s T-6 came from Portland and the Willamette Valley, with the reminder from Central, Eastern, and Southern Oregon. The Port

of Portland’s market share of containerized exports was 38% overall, and highest in the Middle Willamette market.

Exhibit 4: 2014 Oregon Export Containers by Market Area

Market	T-6 Exports	Other Port Exports	Total Exports	Share of T-6 Exports	T-6 Market Share
Portland - North Willamette	4,294	9,763	14,057	19%	31%
Middle Willamette	15,502	13,803	29,305	70%	53%
Southern Oregon	338	832	1,170	2%	29%
Central Oregon	1,573	11,113	12,686	7%	12%
Eastern Oregon	431	973	1,404	2%	31%
Oregon Total	22,139	36,484	58,623	100%	38%

Exhibit 5 shows total and Port of Portland container counts and shares for exports by Oregon county. The export sources are dispersed in agricultural and forest production areas.

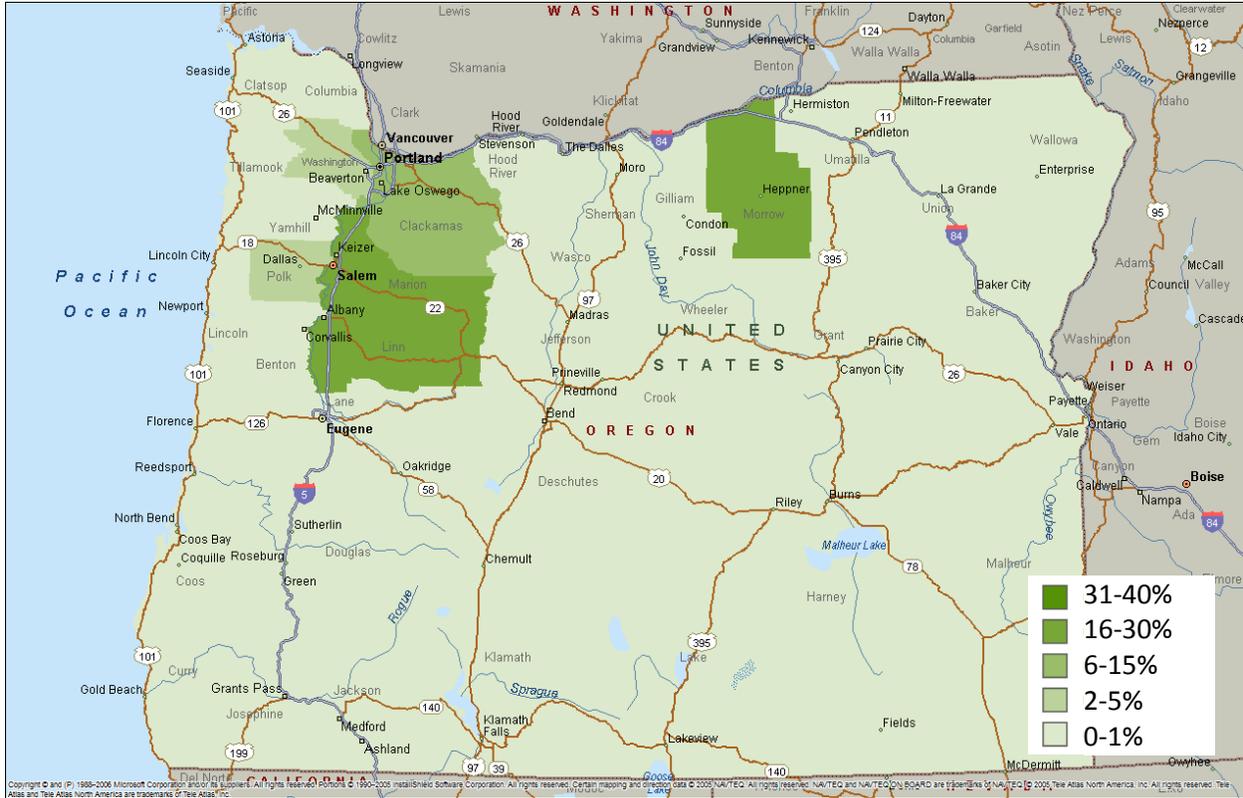
Exhibit 5: Port of Portland 2014 Container Exports by County

County	Est. Market Exports	Est. T-6 Exports	Oregon Share	Cumulative Oregon Share	T-6 Share of County Exports
Linn	13,629	8,588	23%	23%	63%
Morrow	12,614	1,504	22%	45%	12%
Marion	10,105	2,768	17%	62%	27%
Multnomah	6,615	2,385	11%	73%	36%
Clackamas	5,088	1,541	9%	82%	30%
Polk	3,279	3,041	6%	88%	93%
Washington	1,562	286	3%	90%	18%
Lincoln	1,121	24	2%	92%	2%
Lane	1,073	1,053	2%	94%	98%
Klamath	646	19	1%	95%	3%
Lake	635	10	1%	96%	2%
Yamhill	535	49	1%	97%	9%
Malheur	400	374	1%	98%	93%
Umatilla	364	42	1%	98%	11%
Jackson	266	81	0%	99%	31%
Clatsop	258	32	0%	99%	13%
Curry	129	129	0%	99%	100%
Douglas	115	97	0%	100%	84%
Benton	98	27	0%	100%	28%
Hood River	35	34	0%	100%	96%
Jefferson	30	30	0%	100%	100%
Coos	13	11	0%	100%	90%
Wasco	6	4	0%	100%	72%
Grant	5	5	0%	100%	100%
Deschutes	1	1	0%	100%	100%
Crook			0%	100%	
Josephine			0%	100%	
Columbia			0%	100%	
Baker			0%	100%	
Tillamook			0%	100%	
Union			0%	100%	
Harney			0%	100%	
Gilliam			0%	100%	
Sherman			0%	100%	
Wallowa			0%	100%	
Wheeler			0%	100%	
Oregon Total	58,623	22,139	100%	100%	38%

Linn, Morrow, Marion and Multnomah counties together account for an estimated 73% of the exports. Linn County’s prominence is due to Cascade Pulp, the major exporter in Halsey, as well as major hay, seed, and fruit and nut exporters in Tangent, Albany, and Eugene. Portland, in Multnomah County, is home to many manufacturers, processors, and export shippers.

The map in Exhibit 6 shows the geographic pattern of export sources. The Port is connected to these areas by the Interstate 5 (I-5) corridor through the Willamette Valley, and by the Columbia River (and parallel I-84 and I-82) accessing production areas in all three states.

Exhibit 6: Port of Portland Export County Shares



Imports

Exhibit 7 displays the overall pattern of Oregon containerized imports. By far the largest portion is destined for the major Portland-North Willamette population and distribution center, accounting for 75% of Oregon’s total. Overall, the Port of Portland handled about 70% of Oregon’s containerized imports in 2014, with the strongest market shares in the Portland-North Willamette and Central Oregon markets.

Exhibit 7: 2014 Oregon Import Containers by Market Area

Market	T-6 Imports	Other Port Imports	Total Imports	Share of T-6 Imports	T-6 Market Share
Portland - North Willamette	27,532	10,509	38,041	75%	72%
Middle Willamette	4,398	3,309	7,707	12%	57%
Southern Oregon	577	674	1,251	2%	46%
Central Oregon	4,199	1,007	5,205	11%	81%
Eastern Oregon	228	135	363	1%	63%
Oregon Total	36,934	15,633	52,567	100%	70%

Exhibit 8 shows the detailed results of Tioga’s import allocation process. As expected, the Portland/Vancouver metropolitan area including Multnomah, Clackamas, and Washington Counties accounts for most of the imports – 72% of the state total. Those counties have the largest

populations and also the main concentration of importers and import distribution centers. These major import distribution centers include:

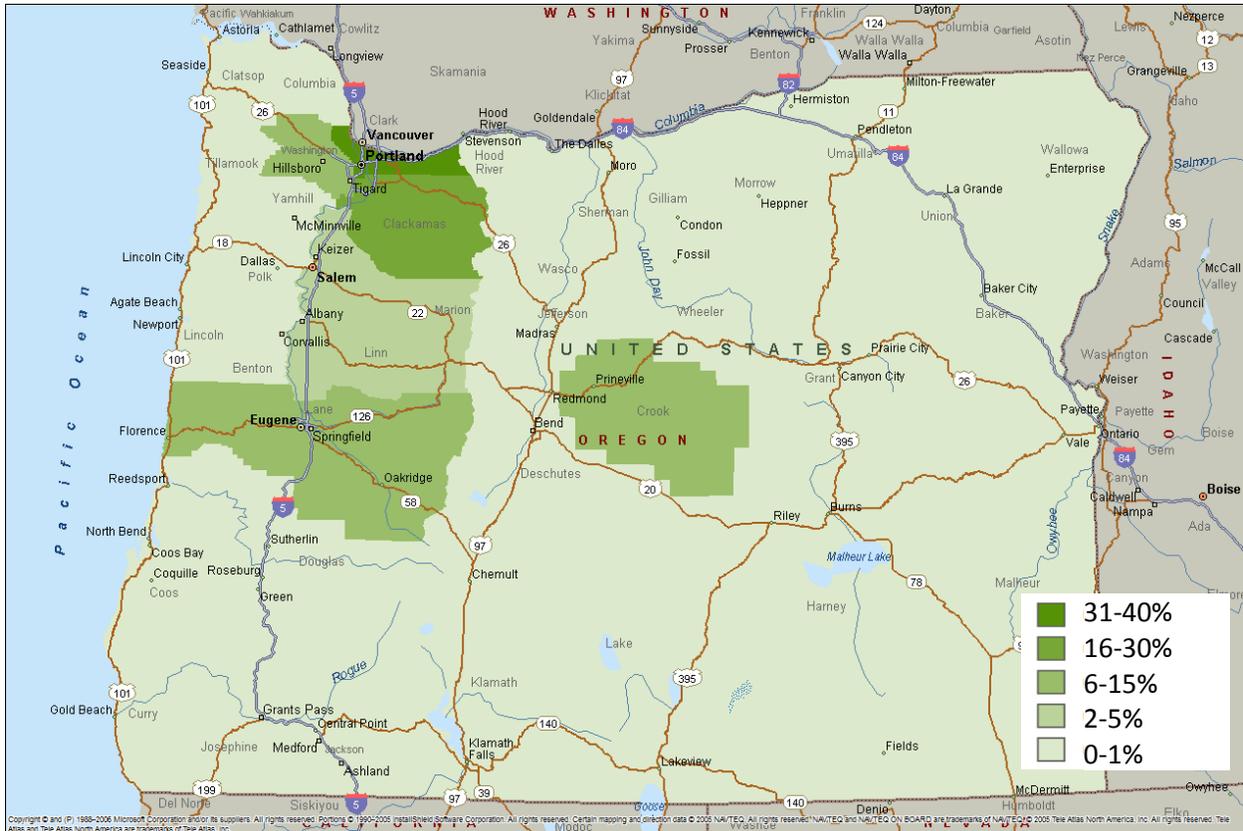
- Fred Meyer, Clackamas, Clackamas county
- Dr. Martens, Portland, Multnomah County

The geographic pattern shown in Exhibit 9 reinforces this import concentration in the urban areas, as the Eugene (Lane County) area is also prominent. The substantial import volume in Crook County is due to the Les Schwab tire distribution center in Prineville.

Exhibit 8: Port of Portland 2014 Container Imports by County

County	Est. Market Imports	Est. T-6 Imports	Oregon Share	Cumulative Oregon Share	T-6 Share of County Imports
Multnomah	18,577	10,786	35%	35%	58%
Clackamas	13,868	12,713	26%	62%	92%
Washington	5,221	3,781	10%	72%	72%
Lane	4,900	2,909	9%	81%	59%
Crook	3,731	3,532	7%	88%	95%
Linn	1,296	719	2%	91%	55%
Marion	1,157	521	2%	93%	45%
Jackson	943	376	2%	95%	40%
Deschutes	612	289	1%	96%	47%
Jefferson	423	9	1%	97%	2%
Umatilla	348	227	1%	97%	65%
Morrow	304	293	1%	98%	96%
Yamhill	227	156	0%	98%	69%
Benton	219	140	0%	99%	64%
Douglas	187	139	0%	99%	75%
Lincoln	116	105	0%	99%	90%
Hood River	115	55	0%	99%	48%
Clatsop	88	66	0%	100%	76%
Josephine	67	41	0%	100%	60%
Columbia	58	28	0%	100%	49%
Klamath	44	17	0%	100%	40%
Wasco	21	21	0%	100%	99%
Polk	19	6	0%	100%	29%
Coos	10	2	0%	100%	25%
Malheur	7	0	0%	100%	1%
Baker	6	0	0%	100%	0%
Tillamook	2	2	0%	100%	96%
Union	1	0	0%	100%	0%
Curry	1	1	0%	100%	100%
Grant	1	1	0%	100%	100%
Harney	0	0	0%	100%	1%
Lake			0%	100%	
Gilliam			0%	100%	
Sherman			0%	100%	
Wallowa			0%	100%	
Wheeler			0%	100%	
Oregon Total	52,567	36,934	100%	100%	70%

Exhibit 9: Port of Portland Import County Shares



III. Service Loss Impacts

Approach

Tioga used multiple avenues to identify the impacts of container service loss to Oregon importers and exporters.

- Extensive structured interviews with importers, exporters, brokers, and trucking firms.
- Attendance at the July 24, 2015 workshop, and input from other workshops.
- Development of a drayage trucking cost model.
- On-line and literature research into carrier services and industry shipping needs.

Interviews

Tioga obtained lists of exporters and importers from the PIERS trade data. Tioga contacted 52 stakeholders representing both importers and exporters, a diversity of commodities, shipper volumes, and geographic locations including 24 exporters, 25 importers, and 3 carriers. Tioga targeted large shippers to understand the circumstances behind the largest volume movements, and a cross-section of small- and medium-sized shippers to understand the different impacts and challenges they face. Firms were also chosen to include a reasonably broad variety of businesses.

Tioga completed 33 importer/exporter and carrier interviews. The list of stakeholders contacted is shown in Exhibit 10 below.

Exhibit 10: Stakeholder Interviews

Company	City	Complete ?	Company	City	Complete ?
Importers			Exporters		
AASOM	LAKE OSWEGO	Y	ANDERSON HAY AND GRAIN	AURORA	
AG SPECIALTIES, INC.	TIGARD		BRIDGEWELL RESOURCES	TIGARD	Y
AOSOM	LAKE OSWEGO	Y	CALBEE NORTH AMERICA LLC	BOARDMAN	Y
AUTHENTIC MODELS	EUGENE	Y	CASCADE PACIFIC FLOOR DISTRIBUTORS	PORTLAND	
BENSON INDUSTRIES	PORTLAND	Y	COLUMBIA GRAIN INTERNATIONAL	PORTLAND	Y
BRIGHT WOOD CORPORATION	MADRAS		DINSDALE FARM & EQUIPMENT CO	SILVER LAKE	Y
BURLEY DESIGN	EUGENE		EL TORO EXPORT	EL CENTRO	
CUI, INC.	BEAVERTON		GILMOUR PACIFIC TRADING	ALBANY	Y
DR. MARTENS AIRWARE, USA	PORTLAND		GOLD DUST POTATO/WALKER BROS	MALIN	
GLACIER TANKS	VANCOUVER	Y	GOLDEN VALLEY FARMS	BROOKS	Y
GUNDERSON	PORTLAND		KETTLE FOODS	PORTLAND	
KANTO CORPORATION	PORTLAND	Y	METRO METALS NORTHWEST	PORTLAND	
KARCHER NORTH AMERICA	DENVER		NNR GLOBAL LOGISTICS	PORTLAND	Y
OREGON TILE AND MARBLE	PORTLAND	Y	NORPAC FOODS	PORTLAND	Y
PLANAR SYSTEMS	BEAVERTON	Y	NORTHWEST HARDWOODS INC	PORTLAND	Y
PROACTIVE SPORTS	CANBY	Y	OREGON HAY PRODUCTS	BEAVERTON	Y
RICHARDS HOUSEWARES	PORTLAND	Y	OREGON HAY PRODUCTS	BOARDMAN	Y
SHELTER FOREST INTERNATIONAL	PORTLAND	Y	PACIFIC SEAFOOD OREGON	PORTLAND	
SOLARWORLD INDUSTRIES AMERICA	HILLSBORO		S. L. FOLLEN CO	PORTLAND	Y
THE FURNITURE CONNEXION	PORTLAND	Y	SCHNITZER STEEL INDUSTRIES	PORTLAND	Y
TRAEGER PELLET GRILLS	WILSONVILLE		SUNRISE TRADING	DALLAS	Y
WARN INDUSTRIES	CLACKAMAS	Y	TILLING TIMBER (USA)	PORTLAND	
WILLIAMS CONTROLS	PORTLAND	Y	VANPORT INTERNATIONAL	BORING	Y
WISH PETS	BEAVERTON	Y	WILLAMETTE VALLEY COMPANY	EUGENE	
WOOD BROKERAGE INTERNATIONAL	LAKE OSWEGO				
Carriers					
BOSHART TRUCKING	TANGENT	Y			
MITCHELL BROS TRUCKING	VANCOVER	Y			
NORTHWEST CONTAINER SERVICES	PORTLAND	Y			

All interviews used a survey guide (Exhibit 11) to direct the interview topics. In addition to, and at times as an alternative to telephone interviews, some parties received copies of the survey guide via email. Parties either responded via email, or used the guides they received to obtain the desired information prior to the telephone interview.

Exhibit 11: Interview Guide

**Business Oregon
Oregon Shipper Study Survey Guide**

This survey guide is intended for telephone contacts with Oregon importers, exporters, and third parties affected by the loss of Port of Portland container service.

The Tioga Group is working with Business Oregon and the Port of Portland to determine how Oregon importers, exporters, and 3PLs have been affected by the loss of regular container service at Portland, and what steps might be taken to help affected parties cope.

Name _____ Company _____ Location _____ Phone _____

1. Was your company importing/exporting containerized cargo through the Port of Portland prior to the loss of service? Yes _____ (continue) No _____ (verify and end survey)
2. How would you describe your company? (i.e. importer, exporter, broker, third party, etc.) _____
3. Roughly how many containers were you moving through Portland per month/year before service was discontinued? _____. Was the movement seasonal? _____.
4. About how long had you been shipping through Portland? _____.
5. What was the actual location where you were shipping/receiving the containers? (e.g. city or address) _____.
6. How were the containers moved to/from the Port? (e.g. truck, barge/truck, rail) _____.
7. Primary commodities imported/exported/handled (description, to be coded later) _____, _____, _____.
8. What is your company doing now instead? (i.e. trucking to Tacoma, moved location, not exporting, etc.) _____
9. How has that affected your company? (i.e. paying more for trucking, lower reliability, loss of export market) _____
_____ (Depending on answer)
 - a. Can you give me a rough estimate of the extra cost per container? _____
 - b. About what has that cost your company in sales or lost business in a year? _____
 - c. What did it cost you to make that change? _____
10. Do you have plans to do something different in the long run? _____

What will that entail? (cost, disruption, loss of business) _____
11. Is there an option you would rather have instead? (e.g. transloading, rail move, barge to Tacoma) _____
12. How has the loss of service affected your customers or suppliers? (i.e. they are having to pay more, they are buying or selling less, etc.) _____
13. Do you know of other companies that have been particularly affected? (i.e. who else should we be contacting?) _____
14. Overall comments on the impact of Port of Portland service losses? (i.e. is there anything else we should know?) _____

Thank you for your time. If you have additional thoughts, please contact me at:

Key Interview Findings

Preference for Portland Service

Every importer and exporter interviewed would resume shipping through Portland if regular container service resumed. None have made long-term plans that would preclude their future use of container service from Portland. The volume of relatively lower valued shipments originating in Oregon in particular, such as hay and lumber, gives an inherent advantage to shipping directly via Portland. Interviewees uniformly stated that any strategy for dealing with the current situation is subject to change if and when regular scheduled container service returns to Portland.

Importer and Exporter Strategies

The most common replacement for direct Portland service has been service through Tacoma and Seattle, WA. Shippers are using multiple strategies to get their goods to or from Tacoma/Seattle, but most seem to be using truck or rail in the same way they were using them in Portland. Most of the importers still shipped their goods from Seattle/Tacoma to their Oregon facilities before sending them elsewhere, so the distribution and processing jobs are staying in Oregon so far. Similarly, most of the exporters gather the goods at Oregon locations and then send them to Seattle/Tacoma, rather than having parties ship directly to Seattle/Tacoma. If direct Portland calls are not resumed, however, there may be more permanent re-routing.

The larger shippers have generally been able to cope with the loss of Hanjin and Hapag-Lloyd services. Large shippers typically split their trade between Portland and the Puget Sound Ports of Seattle and Tacoma (now known collectively as the Northwest Seaport Alliance or NWSA). Such shippers had trucking or rail capability to access Seattle and Tacoma in place long before the T-6 service loss. Larger shippers are also better able to negotiate favorable rates.

The smaller shippers have had more difficulty finding alternate transportation options, and their circumstances differ. Smaller shippers may import or export only a few containers annually, connecting to a very limited range of foreign ports and customers. When vessel, truck, or rail capacity is short, they are more likely to suffer shortfalls or delays.

“Smaller” container shippers shown in the data may be small firms for which a few annual containers is a large portion of their business. Such firms likely experienced significant adverse impacts. Other “small” shippers may be large firms for which containerized shipments are a small part of their total activity. Firms of that type would not have been markedly affected.

The importance of cost increases and other impacts also depends on the commodity.

- A 25-ton export load of grass hay valued at about \$150 per ton would be worth roughly \$3,750, and an additional trucking cost of \$450 could raise the delivered price by 12%.
- A container load of 1,000 radial tires may have retail value of \$100,000 or more, and an extra \$450 trucking cost would raise the delivered price by 0.5%.

This relationship is at the core of the serious concerns expressed by exporters of price-sensitive agricultural products.

Both exporters and importers reported losing some business because of the increased difficulty. The increased costs were a contributor to lost business, but a loss of timely shipments was a much bigger one. The congestion at Tacoma and Seattle during November 2014-February 2015 and lingering into April 2015 appears to have accounted for much of the reliability problem. Workshop participants indicated that some of this impact may have extended into the summer of 2015.

Other Impacts

Interviewees made many comments to the effect that the 2014-15 labor difficulties in the West Coast ports generally, and not just the issues at Portland, caused difficulty for Oregon firms.

A few importers mentioned delays in clearing U.S. Customs in Tacoma/Seattle that they did not experience in Portland, largely because of familiarity of the Portland customs agents with the Oregon importer's business. Tioga's understanding is the problems were due in part to congestion and staffing at Seattle/Tacoma, and in part to lack of familiarity by Puget Sound Customs with some former Portland cargos.

Ocean Carrier Service and Cost Impacts

Overall ocean carrier service and cost impacts from the lost of direct Portland vessel calls have been minimal:

- Pre-2015 Portland services also called at either Seattle or Tacoma, and the same or equivalent services are still available.
- TransPacific rate levels were depressed in early 2015 and remain so in early 2016, so many shippers were paying less than before.

The most serious ocean carrier service issues experienced by Oregon customers actually began in late 2014 and were attributable to port congestion and vessel delays concurrent with West Coast longshore labor issues. The resulting service issues affected the entire U.S. West Coast port system before gradually abating in the spring of 2015.

Reliability of container shipping remains an issue for Oregon customers independent of direct Portland calls. The reliability of vessel schedules remains low across the industry. While this issue is outside the influence of state public agencies, it remains a factor in the ability of Oregon exporters to compete in the global market and the ability of Oregon importers to serve their customers.

Ocean Carrier Services

Schedule convenience and service to and from specific foreign ports were significant factors in importer and exporter use of the Port of Portland. As of 2014, Hanjin (and the COSCO, "K" Line, Yang Ming, Hanjin, Evergreen "CKYHE" alliance) reportedly accounted for about 80% of Portland's container cargo. Hapag-Lloyd (APL, Hapag-Lloyd, Hyundai, MOL, NYK, OOCL – "G-6" Alliance) accounted for about 17% of Portland's container cargo, and Westwood for about 3%.

Hanjin. The service Hanjin and the CKYHE alliance offered at Portland also made West Coast calls at Seattle, WA, Vancouver and Prince Rupert, B.C., and served Busan, the major Korean port, and Shanghai and Ningbo in China. Interview results indicate that service to Korea was a major factor for Oregon agricultural exporters, particularly hay shippers. With the withdrawal of Hanjin at T-6, former Portland customers could use the same service at Seattle’s Terminal 46.

Hapag-Lloyd. Prior to the early 2015 withdrawal, Hapag-Lloyd and Hamburg Süd offered the MedPac service linking West Coast, Mexican, and South American ports with ports in the Mediterranean. Hapag-Lloyd dropped the Portland call, so customers had to use Seattle instead.

Westwood. Westwood Shipping’s current fleet consists of four “ConBulk” vessels that can carry break bulk cargo as well as containers. Westwood provides a monthly export service at Portland’s T-6, serving Japanese ports and Busan, Korea. From Portland, Westwood provides a 20-day sailing time to Yokohama, Japan and a 25-day sailing time to Busan, Korea. The longer and less-frequent sailings offered by Westwood are more suitable for low-cost, durable exports moving from producers to distributors than for higher value imports to distributors or retailers.

Ocean Carrier Rates

Ocean carrier rates for Oregon shippers may have been affected by the Portland service withdrawal in complex ways, and there may be more significant impacts to come.

The high level of competition for TransPacific Pacific Northwest-Asia services tends to keep rates low for Oregon importers and especially for Oregon exporters. The presence of carriers with direct calls at Portland led other competing carriers to “equalize” rates so customers could use either direct or indirect services interchangeably. Many ocean carriers with direct calls at Tacoma or Seattle also offer Portland rates that include Northwest Container Rail Services (NWCS) transportation between Portland and Puget Sound. Based on Tioga’s interviews and the experience of Port staff, the Portland/Puget Sound rate differentials reportedly range from \$350 to \$450 per container, with the extra cost representing the NWCS linkage.

Based on the experience of Port staff and Tioga’s interviews, it appears that the additional ocean carrier rate for Portland service was \$350 to \$450 per container over the Tacoma rate. This range overlaps with the additional charge for using NWCS from Portland to Tacoma and Seattle, as would be expected since the rail option was in competition with the direct calls.

Tioga learned in interviews that in early 2015 the underlying rate differences were obscured by strong ocean carrier price cutting. Overcapacity in the Asia-Pacific Northwest trades led to what some shippers described as a “price war”. For the first part of 2015, many Oregon shippers were paying less in total than they paid in 2014, regardless of their port choice. One important result of this volatile pricing period is that ocean carrier cost impacts in early 2015 are not a complete or comprehensive guide to long-term effects.

Without competing direct Portland calls, other carriers are likely to be less aggressive in pricing their combination ocean/NWCS options through Puget Sound. It is possible that carriers will discontinue their equalization policies now that there are no longer any major direct Portland services. If so, Tacoma and Seattle carriers could try to recapture the full cost of the NWCS option rather than, as appears likely, offering an implicit discount to compete with direct calls.

Port Terminal Service and Cost Impacts

Interviews suggest that as of late 2015 Oregon shippers are obtaining comparable or better service at Tacoma and Seattle than was previously experienced at Portland's T-6. Importers, exporters, and truckers contacted by Tioga indicate that T-6 often had long truck turn times, notably for refrigerated containers. There are no objective data available, however, and it is no longer possible to verify T-6 turn time problems.

Immediately after withdrawal of services at Portland truckers were experiencing very long waits and turn times at Tacoma and Seattle terminals. There were anecdotal reports of waits as long as four hours to reach terminal gates, although once again there are no objective data. These long turn times, however, could be attributable to the West Coast port congestion that paralleled International Longshore and Warehouse Union (ILWU) contract negotiations from November 2014 through February 2015. The backlog of cargo prolonged the congestion and long turn times into March and even April of 2015. By mid-2015, truckers contacted by Tioga were reporting shorter "normal" waits and turn times at Seattle and Tacoma terminals.

Trucking Service and Cost Impacts

The time consumed by truckers at marine terminals reduces the number and length of trips a driver can make in a working day, thus reducing the effective capacity of drayage firms. The loss of capacity became a hindrance to Oregon shippers during the recent port congestion. The additional distance trucks must travel to serve Tacoma or Seattle instead of Portland likewise reduces effective capacity.

Driver Shortage. Oregon, like most states, has a persistent truck driver shortage. Trucking companies interviewed for this study report difficulty recruiting and retaining both employee and owner-operator drivers despite increasing compensation and paying signing bonuses. Even the longest, best known truckload carriers typically experience 100% annual driver turnover. In other words, the average driver stays with the firm only about a year.

The driver shortage has multiple causes:

- Much of the trucking labor force has historically consisted of military veterans, rural residents, and immigrants. These labor pools have shrunk, and many candidates now have more attractive opportunities.
- The existing trucking labor force is aging and retiring, or shifting to other occupations.
- Port drayage, in particular, is a stressful and demanding occupation. A significant number of drivers left port drayage during the 2014-2015 West Coast congestion.

The entry barriers to port drayage have risen. Drivers must now have Transportation Worker Identification Credentials (TWICs) issued by the Transportation Security Administration. Owner-operators could formerly enter the business with a used diesel tractor for \$20,000 to \$40,000. A new 2010 or later "clean" diesel tractor costs \$100,000 to \$120,000.

The shortage has adversely affected the ability of the drayage industry to serve Oregon customers. The problem is being compounded by the additional time required for drivers to reach Tacoma or

Seattle. With substantially longer times required for each move, drivers with hours of service limits can move fewer containers.

Exhibit 12 provides estimates of the additional round-trip miles, hours, and costs of drayage to Tacoma instead of Portland from the County Seat of each Oregon County. For points such as Clackamas or Halsey south of Portland, or other points accessed via Interstate 5, the round trip difference is basically double the distance between Portland and Tacoma, or about 270 miles, plus an allowance for tractor-only (“bobtail”) positioning moves. For points east of Portland, the difference depends on geography and highway network distances.

Exhibit 12: Estimated Drayage Time and Cost Impacts

County	County Seat	Est. 2014 T-6 Containers	Est. 2015 Truck Share*	Est. Trucked CTRs	Miles to T-6	Miles to Port of Tacoma	Additional One-Way Miles	Allowance for bobtail moves	Additional Truck Miles per CTR	Est. Additional Drayage Cost per Container	Est. Annual Additional Drayage Cost
Baker	Baker City	0	100%	0	311	381	70	10%	147	\$ 257	\$ 7
Benton	Corvallis	167	50%	83	94	228	134	10%	281	\$ 492	\$ 41,054
Clackamas	Oregon City	14,254	50%	7,127	29	164	135	10%	284	\$ 496	\$ 3,535,954
Clatsop	Astoria	98	100%	98	95	156	61	10%	128	\$ 224	\$ 22,073
Columbia	Saint Helens	28	100%	28	29	126	97	10%	204	\$ 356	\$ 10,158
Coos	Coquille	14	50%	7	247	384	137	10%	288	\$ 503	\$ 3,505
Crook	Prineville	3,532	50%	1,766	152	289	137	10%	288	\$ 503	\$ 889,177
Curry	Gold Beach	130	50%	65	309	446	137	10%	288	\$ 503	\$ 32,757
Deschutes	Bend	290	50%	145	186	303	117	10%	246	\$ 430	\$ 62,393
Douglas	Roseburg	237	50%	118	189	326	137	10%	288	\$ 503	\$ 59,599
Gilliam	Condon	-	50%	-	159	293	134	10%	281	\$ 492	\$ -
Grant	Canyon City	6	50%	3	281	405	124	10%	260	\$ 456	\$ 1,388
Harney	Burns	0	50%	0	294	428	134	10%	281	\$ 492	\$ 0
Hood River	Hood River	88	50%	44	87	222	135	10%	284	\$ 496	\$ 21,941
Jackson	Medford	457	50%	229	284	422	138	10%	290	\$ 507	\$ 115,899
Jefferson	Madras	39	50%	19	124	258	134	10%	281	\$ 492	\$ 9,548
Josephine	Grants Pass	41	50%	20	255	393	138	10%	290	\$ 507	\$ 10,300
Klamath	Klamath Falls	36	50%	18	291	427	136	10%	286	\$ 500	\$ 9,079
Lake	Lakeview	10	50%	5	361	475	114	10%	239	\$ 419	\$ 2,078
Lane	Eugene	3,962	50%	1,981	121	258	137	10%	288	\$ 503	\$ 997,528
Lincoln	Newport	128	50%	64	123	277	154	10%	323	\$ 566	\$ 36,315
Linn	Albany	9,308	50%	4,654	81	217	136	10%	286	\$ 500	\$ 2,326,099
Malheur	Vale	374	100%	374	397	469	72	10%	151	\$ 265	\$ 99,007
Marion	Salem	3,289	50%	1,644	57	195	138	10%	290	\$ 507	\$ 834,029
Morrow	Heppner	1,797	100%	1,797	225	301	76	10%	160	\$ 279	\$ 502,045
Multnomah	Portland	13,172	50%	6,586	0	146	146	10%	307	\$ 537	\$ 3,533,800
Polk	Dallas	3,047	50%	1,523	67	209	142	10%	298	\$ 522	\$ 795,044
Sherman	Moro	-	50%	-	126	261	135	10%	284	\$ 496	\$ -
Tillamook	Tillamook	2	50%	1	72	218	146	10%	307	\$ 537	\$ 573
Umatilla	Pendleton	269	100%	269	216	286	70	10%	147	\$ 257	\$ 69,257
Union	La Grande	0	100%	0	264	336	72	10%	151	\$ 265	\$ 0
Wallowa	Enterprise	-	100%	-	329	406	77	10%	162	\$ 283	\$ -
Wasco	The Dalles	25	50%	12	88	223	135	10%	284	\$ 496	\$ 6,129
Washington	Hillsboro	4,067	50%	2,033	20	164	144	10%	302	\$ 529	\$ 1,076,149
Wheeler	Fossil	-	50%	-	178	313	135	10%	284	\$ 496	\$ -
Yamhill	McMinnville	205	50%	103	48	186	138	10%	290	\$ 507	\$ 52,056
Total		59,073		30,820							\$ 15,154,943

* Counties with less than a 100-mile T-6/Tacoma difference were assumed to be 100% truck

Overall, Tioga estimated that the additional annual cost of trucking to Oregon shippers and receivers would be about \$15.1 million.

The round trip takes an additional 4 to 6 hours. In some cases, the Tacoma trip may require more than one driver working day, necessitating an overnight trip. Drivers may in practice work around the federal Hours of Service (HOS) rules by under-reporting time (e.g., reporting 15 hours for a trip that actually took 17 hours). Drivers may also log terminal queue time as non-driving time,

even though they are moving every few minutes. These practices, however, will be curtailed as electric on-board recorders (EOBRs) replace paper logs in the next few years.

The time differences are most significant at points such as Halsey, where a driver may have been able to make two round trips to Portland, or Clackamas, where a driver may have been able to make three round trips. In both cases, multiple Portland round trips would be replaced by a single Tacoma round trip. The cost difference may be higher than shown because the Tacoma trip will likely use up the driver's entire working day. Those shippers would also need multiple trucks and drivers to do the work formerly done by one.

While interviews typically reported a net increase in overall costs of \$400 to \$450 per container, the largest trucking cost differences are mostly for points south and east of Portland, at around \$450 to \$550 per container. Tioga verified the rough accuracy of this estimate in contacts with drayage truckers. Some customers may have faced an even larger cost difference during the port congestion, when wait time fees of \$60 to \$75 per hour were added.

The \$450 to \$550 additional cost can probably be considered an upper limit on the added transportation cost. As noted elsewhere, the typical added ocean carrier cost for Portland service via the NWCS rail shuttle is \$350 to \$450. Customers will use the rail service whenever the added trucking cost is higher. Customers would face the maximum \$450 to \$550 trucking cost difference when:

- NWCS did not have sufficient capacity (as in early 2015).
- NWCS does not serve the specific Tacoma terminal needed on a day when the customer is facing an outgoing vessel cutoff or a last free day on an import container.
- The move requires a marine container type not available at Portland.
- The customer's geographic location or other circumstance eliminates the rail option.

Customers who operate their own trucks or who have balanced import/export traffic may be able to access Tacoma terminals at lower costs.

The additional drayage cost, where applicable, would be offset in the short-term by the \$350 to \$450 lower ocean rates at Tacoma. For some customers, the impacts would effectively cancel out.

Rail Intermodal Service and Cost Impacts

Northwest Container Services (NWCS) operates rail intermodal container service between a terminal in Portland south of T-6 and the Ports of Tacoma and Seattle. NWCS provides railcar loading/unloading at its Portland terminal. Union Pacific (UP) moves NWCS cars between Portland and Tacoma or Seattle. At Tacoma, UP interchanges blocks of NWCS cars with Tacoma Rail, and Tacoma Rail moves the cars to and from Tacoma intermodal yards. At Seattle, UP moves the cars to and from the NWCS terminal, and containers are drayed to and from Seattle terminals.

The NWCS Portland terminal covers about 87 acres and has capacity for about 8,000 containers. In early 2015, this facility was overburdened due to withdrawal of vessel calls at Portland without

advance notice, a build-up of empty containers being repositioned to the West Coast, and port congestion that reduced NWCS railcar productivity. The terminal is no longer congested as of September 2015, and NWCS had added lift equipment to increase its throughput capabilities.

NWCS also operates rail service between Boardman out of the Port of Morrow and Portland. This service connects with the new barge service launched in fall 2015 between Boardman and the upper Columbia River ports.

Critically for Oregon importers and exporters, the NWCS Portland terminal also functions as a marine container depot and equipment supply point. This arrangement allows Oregon customers to pick up and return empty containers at NWCS Portland as if it were a marine terminal. Use of NWCS Portland as an empty container supply point also allows NWCS to avoid routine repositioning of empty containers by rail. NWCS primarily moves loaded containers in both directions between Portland and the Puget Sound ports.

NWCS does not ordinarily charge importers or exporters directly for its services. NWCS services are included in ocean carrier rates for containers originating or terminating at Portland instead of at Tacoma or Seattle. The difference between a Portland rate and a Tacoma or Seattle rate for the same cargo and ocean trip is the effective NWCS cost to the customer.

The Portland/Tacoma-Seattle rate differential differs by carrier, foreign port, and commodity. Confidential contract ratemaking allows for negotiated rates and differentials that are not publicly available. Rate differentials and implicit NWCS costs reported in interviews and by Port of Portland staff range from a low of around \$300 for low-valued exports such as scrap metal or hay cubes, to a high of around \$600 for high-value import merchandise.

Barge Service Impacts

Tidewater Barge Lines, based in Vancouver, WA, operates barges on the Columbia-Snake River System. Tidewater's core business has been moving petroleum products, grain, solid waste, paper products, and special cargoes in a fleet of bulk barges. Tidewater offered container service between Portland and Boardman, OR; Pasco, WA; and Lewiston, ID by carrying containers on barge decks. Containers were drayed between Tidewater's Vancouver terminal and T-6 to connect with ocean carrier services.

The barge container service between Vancouver and the Columbia River ports was very economical compared to trucking, and was well suited to lower-valued commodities such as grain, paper products, or animal feeds that did not require expedited handling. Besides lowering shipping costs, the barge service took truck trips off the highways and reduced environmental impacts.

Representative round-trip (empty/load) barge costs between Columbia River ports and T-6, including river port handling charges, are shown in Exhibit 13. The Boardman rate of \$434 for a 20-foot container typically used for export pulses (e.g., lentils) contrasts favorably with Tioga's estimated trucking cost of \$666 for the same Portland trip (Exhibit 12). At Portland, the exporter would have paid about \$300 extra for direct vessel service there, making the Portland barge cost about \$734 over the actual ocean transport cost. Trucking to Tacoma is estimated to cost about \$997. (Boardman customers have reported trucking costs of around \$1,000, suggesting that the

estimate is reasonably close.) The Boardman exporter would be incurring about \$263 per container in additional transport cost for trucking versus barging commodities.

Exhibit 13: Representative Barge Costs

Port	Container		
	20 ft Dry	40 ft Dry	20/40ft Refrig.
Boardman, OR	\$ 434	\$ 505	\$ 665
Umatilla, OR	\$ 434	\$ 543	\$ 853
Pasco, WA	\$ 434	\$ 543	\$ 853
Lewiston, ID	\$ 517	\$ 685	na

The barge service is still available in the sense that the barges are operating and could carry containers, but the connecting ocean carrier services to Portland were discontinued. As the market analysis in Section I suggests, customers in the more distant Pasco and Lewiston markets that must now truck containers to Tacoma or Seattle have been most severely affected by the loss of the container barge service.

Summary Impacts

The preceding analysis illustrates the complexity of the service and cost impacts, the effect of offsetting influences, the variability of movement-specific negotiated outcomes, and the tendency of volatile industry conditions to obscure the impacts of service loss.

The matrix in Exhibit 14 attempts to summarize the range of outcomes in the basic dimensions of cargo movement. Impacts by category are discussed in greater detail below.

Exhibit 14: Summary Impacts Matrix

Impact Category	Implications
Capacity	Significant impact on port trucking industry exacerbated by driver shortage, potential capacity shortages for Oregon shippers in peak periods.
Service	Primary service issue will be movement to and from ports in peak periods due to trucking capacity and marine terminals congestion.
Reliability	Primary reliability issue may also be in port-customer trips, although vessel reliability continues to be an industry problem,
Cost	Up to \$15.1 million annual trucking cost increase for Oregon shippers

Capacity. Oregon shippers have experienced no significant change in ocean carrier capacity since they are commonly using the same services at Tacoma or Seattle instead of at Portland. NWCS rail capacity was overwhelmed in early 2015, but by mid-2015 NWCS investment and reduced demand have created adequate capacity for near-term growth. The need for longer truck trips to

Tacoma and Seattle has reduced the effective capacity of the port trucking industry. This reduction is being compounded by the persistent driver shortage.

Service. Depending on the ocean carrier and foreign port combination, Oregon shippers may have experienced minor service changes. The vessel services that made direct calls at Portland also called at Tacoma or Seattle. Marine terminal services at Tacoma and Seattle reportedly are comparable to the former T-6 services. NWCS service is basically unchanged. Oregon shippers do, however, have to ship earlier for the same outbound voyage to allow for the rail or truck move to Puget Sound.

Reliability. Reliability was extremely poor when the direct Portland services were withdrawn in early 2015, largely due to the concurrent West Coast port congestion. As the interviews revealed, Oregon customers were more seriously affected by service lapses, delayed shipments, and missed opportunities than by cost increases.

The increased complexity of truck or rail/truck movement to and from the Puget Sound ports and traffic congestion in the Interstate 5 corridor will tend to reduce long-term reliability. The difference is unlikely to be large once use of the Puget Sound ports becomes routine – which it already is for many shippers that have been using both Puget Sound and Portland all along.

Cost. Despite a host of countervailing cost influences, there is likely to be an overall upward cost trend. The loss of a competitive direct call for service to Japan, Korea, and China will likely result in upward price pressure for service at Puget Sound. The cost of moving boxes to and from Puget Sound will likely exceed any savings from Puget Sound rates. The loss of the Columbia-Snake barge option will result in higher landside costs for those shippers.

Tioga estimated the annual additional trucking cost at \$15.1 million. This total, would be offset by lower ocean carrier rates at Tacoma or Seattle, but still represents additional trucking activity and expense that was previously unnecessary.

More precise estimates might be formulated in later study efforts by working with shipper records to compare cost experience in mid-2014, prior to the West Coast port congestion, with cost experience in late 2015, after the congestion and cost-cutting periods.

Importer and Exporter Challenges

It is clear from the market analysis, interview results, and impact analysis that the challenges facing Oregon customers vary with location, commodity, shipping pattern, and size.

The loss of direct Portland calls is likely to pose its greatest challenges to Willamette Valley exporters of low-value, low-margin agricultural and forest products, and other small and medium-sized shippers unable to negotiate favorable ocean and drayage rates. Such shippers face the highest additional costs to use Puget Sound ports and the most price competition in the global market place. Exports account for a significant part of annual production in these market segments.

At the other extreme may be Oregon importers of high-value consumer goods such as electronics. Their cargo provides higher ocean carrier margins and will encourage rate competition and the consumer market is more likely to allow the importer to pass on any cost increase.

Some Oregon shippers lost foreign trade opportunities in early 2015, but these adverse impacts were largely due to the overall West Coast congestion rather than to the loss of direct Portland calls. Portland was served by the same labor union and vessels as other West Coast ports and would not have been immune to congestion and delay.

The long-term challenge facing Oregon shippers is to locate and use the most effective and efficient combination of ocean carrier service, port, truck service, and rail service for each shipment. A key success factor will be establishing repeatable shipment patterns and sustainable carrier relationships.

Oregon Trade and Logistics Initiative

Stakeholder Engagement Report

December 2015

Peter Friedmann and Abigail Struxness
Lindsay, Hart LLP and FBB Federal Relations

Key Takeaways from Oregon Trade & Logistics Initiative Workshops

As part of the Governor's Trade and Logistics Initiative launched in April 2015, eight stakeholder sessions were held across the state to engage shippers and transportation providers in identifying freight logistic challenges, potential solutions, and long-term improvements needed to the trade transportation system. Over 300 attended Oregon forums in Portland, Redmond, Hermiston, Ontario, Albany, Medford, Grand Ronde and Wilsonville during the summer and fall of 2015. Oregon exporters and importers were the primary participants in these workshops. Others attending included: brokers, freight forwarders, railroads, barge companies, trucking companies, agency representatives, and elected officials.

The stakeholder sessions underscored that each region's transportation challenges and needs are different, and solutions must be tailored to those needs. There were several themes that were consistent across Oregon:

- Increased transportation costs and transit time impact Oregon shippers' competitiveness and put customer relationships and product markets at risk.
- Terminal 6 ocean container services at the Port of Portland are critical for managing costs and maintaining competitiveness of Oregon businesses.
- Loss of the Terminal 6 container barge service reduces cost-competitive access to markets for agricultural producers along the Columbia River.
- Roadway and port congestion is increasing with significant impacts on the port trucking industry.
- These impacts are compounded by truck driver, trailer and heavy-weight chassis shortages, as well as federal Hours of Service restrictions on truckers.
- There are imbalances of container availability that limit shipper access to markets.
- Increased access to rail is desired.
- Export disruption also impacts domestic businesses, highlighting the importance of a system-wide focus on the transportation network.

This outreach informed the Trade and Logistics' Steering Committee and consultant team in developing and analyzing specific transportation actions that could improve Oregon competitiveness. Following are summaries of each of the stakeholder workshops and the transportation and logistics issues raised by participants.

Statewide Forums

Portland Kick-Off Session

The kick-off session provided an opportunity to understand the diversity of Oregon interests that are impacted by loss of container service into the Columbia River. Both exporters and importers participated: wine importers, furniture distributors, manufacturer lumber products exporters, and seed and hay exporters. Virtually every sector of the Oregon economy is concerned about unsustainable additional costs for transportation, and loss of competitive standing vis-à-vis producers or vendors of similar products elsewhere.

The session was introduced by the directors of four state agencies partnering on the Trade and Logistics' Initiative: Sean Robbins, Director of the Oregon Business Development Department; Curtis Robinhold, Deputy Executive Director of the Port of Portland; Katy Coba, Director of the

Oregon Department of Agriculture; and Matthew Garrett, Director of the Oregon Department of Transportation. An overview of the changing dynamics of international ocean transportation, domestic trucking, and port productivity, as they impact Pacific Northwest exporters and importers, and an update by the Port of Portland on efforts to restore weekly container service at Terminal 6 followed. The balance of the session focused on interim "work-arounds" or alternative means by which Oregon exporters and importers can most affordably and efficiently transport goods to and from the Puget Sound gateway ports.

The challenges and solutions set forth at the Portland kick-off session were echoed in various forms, in the subsequent workshop discussions around the state. All exporters are grappling with the increasing price of the dollar, the truck driver shortage and cost of regulatory limitations on driving hours, and the ongoing congestion and delay at the terminals at the Puget Sound ports. Ideas for "work-arounds" floated at the initial forum were embraced, where applicable, at subsequent regional discussions. They included trucking efficiency enhancements to allow trucks to move cargo up Interstate 5 to and from Puget Sound ports during less congested night hours, providing terminal and road data to truckers to help plan routes, reducing trucking distance by establishing inland truck-to rail load points, and increased barge utilization. Stakeholders reinforced that while "work-arounds" are essential in the interim for shippers, the preferred solution is reinstatement of weekly vessel calls at the Port of Portland's Terminal 6.

Redmond

The Redmond forum demonstrated that even in geographically distant rural areas of the state, a diversity of Oregon's vital economic interests require access to global markets. Specifically, without container service at Terminal 6, Central Oregon shippers must overcome the significant distance and expense to truck cargo up to the ports of Seattle and Tacoma, and to retrieve empty containers from those terminals. Dependence on trucking and the lack of rail service for Central Oregon area makes Central Oregon shippers particularly sensitive to factors that impact trucking costs.

Availability of adequate and affordable transport services, both for domestic and international distribution or sourcing, remains a fundamental challenge and concern. These include grappling with the national truck driver shortage and truck driver Hours of Service limitations.

Hermiston

The Hermiston meeting provided the large volume agriculture export sector in Eastern Oregon, onion growers and seed producers, a forum to describe the scope of their production challenges and needs, particularly for competitive access to global markets. Due to the distance from gateway ports at Portland or Puget Sound, and the West-bound rail service, accessing gateway export ports via the Columbia River system is vital.

Trucking (or barge service for Idaho exports from Lewiston, Idaho) to Boardman and from there by rail to Portland or Puget Sound is currently the most viable option. The suspension of the container barge service all the way to Portland (following the departure of weekly liner carriers) is forcing many of these shippers to employ hundreds of trucks to carry cargo to Puget Sound ports, with additional transportation costs and environmental impacts on the Columbia Gorge, raising questions about how long trucking will be viable for eastern Oregon and Idaho exporters.

Ontario

Participants at the Ontario session, primarily onion growers, were impressed by the participation and the discussion which included Oregon Senator Betsy Johnson and Representative Cliff Bentz. While this area does export fresh onions into international markets such as Korea, China and Japan, discussion focused on challenges associated with the domestic distribution of onions to the East Coast and Midwest population centers by rail, including the lengthy duration of East-bound rail transport, and the unique handling requirements for fresh onions.

Albany

Participants at this session expressed concern over being dramatically impacted by the recent loss of the Portland Terminal 6 container service, and highlighted a need for affordable international transportation to Asian markets. The region is a hub for Oregon's hay, straw and seed commodities - high-volume, comparatively lower margin cargoes that demand a cost effective means of access to foreign markets.

In lieu of Terminal 6 service, shippers from this area either truck their products to Northwest Container Service's facility at Portland for loading on rail to Puget Sound, or truck all the way to the ports of Seattle and Tacoma. Federal restrictions on truck driver Hours of Service is a significant concern. There is strong interest in finding a way to load these heavy-weight products onto rail destined for Puget Sound ports, closer to the origins of the Willamette Valley and Southern Oregon cargo, in addition to re-establishing larger volume container service into Portland's Terminal 6.

Load matching (aka "street turns") have been explored in the Willamette Valley to eliminate "dead-heading," essentially cutting the cost of trucking in half. The challenge is matching import containers on "regular" chassis, with Oregon's typically heavy agriculture and forest product export cargo requiring containers on "heavy-weight tri-axle" chassis.

Another option of interest is to establish truck-to-rail transload facilities in the Mid-Willamette Valley functioning like an "inland port," and avoiding long truck hauls to Seattle/Tacoma ports, which often exceed the allowable hours for truckers under the Federal Hours of Service regulations.

Medford

Attendees at this session were shippers representing high volume exports and focused on products originating in or destined to southern Oregon.

Potatoes are a major Oregon high-volume export, facing extreme international sourcing competition, and requiring handling in ways that are more demanding than other Oregon exports such as forage, pulp, and lumber.

The discussions provided insight into the transportation needs of Oregon's rural manufacturing base, which requires both imports and exports. Participants were equally eager for restoration of container liner service at Terminal 6 on the Columbia River, or development of some alternative other than trucking to Puget Sound ports. The more distant the location of the importer/exporter from Portland, the stronger the interest in establishing a truck-to-rail load point in the Mid-Willamette Valley.

Grand Ronde

The Oregon Coast Economic Summit in August 2015 provided an opportunity for a Trade and Logistics panel comprised of representatives from the Governor's office, the Port of Portland, Business Oregon, the Department of Agriculture and consultant Peter Friedmann to discuss with Coastal Caucus legislators and Oregon coastal communities the challenges Oregon shippers face with the loss of Terminal 6 service.

Representative David Gomberg moderated the panel discussion that highlighted why global trade matters to Oregon, the long term impacts of global marine industry trends toward larger vessels and repositioning of cargo movements through the Panama Canal, the significance of lost container service on agricultural producers' market share and customer relationships, as well as efforts to recruit new container service to Terminal 6 by the Port of Portland.

Wilsonville

The final forum, held in November 2015, provided an opportunity to summarize feedback from all of the regional sessions, the results of the research and business case analysis, and to solicit input on the preliminary conclusions and recommendations. It served to align stakeholders (exporters, importers and transportation providers) and Trade and Logistics' Initiative agencies following the other regional discussions.

The foundation of this listening session was the presentation by the Trade and Logistics' consultants, Dan Smith from The Tioga Group and Peter Friedman from Lindsay Hart, on the initial findings regarding shipper preferences and potential short and long term solutions to improve Oregon's freight mobility. This session was a means to gain more stakeholder input and validation of the conclusions and recommendations that were being developed into the final report of the Governor's Trade and Logistics' Initiative.

Stakeholder Outreach Sessions

Workshop	Date	Total Participants	Oregon Business Sectors	Government Agencies	Service Providers
Portland Kick Off	July 24, 2015; 9am-12pm Sheraton Portland Airport Hotel	122	Furniture, home goods, manufacturing components, metals, paper products, potatoes, seafood, seed, nuts, wine	Business Oregon, City of Portland, Department of Commerce, Economic development organizations, Office of Congresswoman Bonamici, Office of Senator Cantwell, Office of the Governor, Oregon Department of Agriculture, Oregon Department of Transportation, Oregon State Legislature	Barge/transload facilities, freight forwarders, ICTSI (terminal operator), Port of Portland, Railroad Lines, trucking, Westwood Shipping Lines; Press: Portland Tribune and Oregonian
Redmond	July 28, 2015; 4:30- 6:00 pm Redmond Technology Education Center, Central Oregon Community College	27	Automobiles, organic packaged foods, seed	Business Oregon, Economic development organizations, Lake County Government, Oregon Department of Agriculture, Oregon Department of Transportation	Economic development associations, freight forwarding, logistics and strategy groups Port of Portland, trucking,
Hermiston	July 29, 2015; 6:30-8:00 pm Hermiston Conference Center	25	Mint, onions, seed	Business Oregon, City of Hermiston, Hermiston Chamber of Commerce, Oregon Department of Agriculture, Oregon Department of Transportation	Freight forwarding, ICTSI (terminal operator), Lewiston, Morrow, Ports of Portland, telecommunications, trucking, warehousing
Ontario	August 10, 2015; 6:30-8pm Treasure Valley Community College	35	Fruits and vegetables, paper products, onions	Business Oregon, Economic development organizations, Idaho Department of Agriculture, Oregon Department of Agriculture, Oregon Department of	Freight forwarding, NW Container, Port of Portland, Westwood Shipping Lines Press

				Transportation, Oregon State University, Representative Cliff Bentz, Senator Betsy Johnson	
Albany	August 11, 2015; 6:30-8pm Linn County Fair and Expo Center	63	Hay and forage, industrial components, paper products, onions, seed, wine	Business Oregon, City of Albany, Economic development organizations, Office of Representative Caddy McKeown, Oregon Department of Agriculture, Oregon Department of Transportation, Port of Newport, Representative Andy Olson	Barge/transload, freight forwarding, ICTSI (terminal operator), NW Container, Port of Portland, railroad interests, trucking, Westwood Shipping Lines
Medford	August 12, 2015; 4:30-6pm Inn at the Commons, Medford OR	16	Industrial film production, potatoes	Business Oregon, City of Ashland, Office of Senator Merkley, Oregon Department of Agriculture, Port of Coos Bay	Freight forwarder, ocean carrier, Port of Portland, Press
Wilsonville Wrap Up	November 13, 2015; 8:45-11:30 am Holiday Inn-Portland South	71	Food and beverage distribution, hay and forage, industrial components, military manufacturing, paper products, seed, wine	Business Oregon, City of Albany, Economic development organizations, METRO, Office of Senator Lee Beyer, Office of the Governor, Oregon Department of Agriculture, Oregon Department of Transportation	Freight forwarding, ICTSI (terminal operator), NW Container, Port of Portland, railroad interests, trucking, warehousing, Westwood Shipping Lines

Transportation and Logistics Issues

I. Macro Challenges

- Increasing price of the dollar impacts all Oregon exports. Agricultural goods, the largest volume Oregon export, generally with low profit margins, face fierce foreign price competition. Transport costs to get agriculture products to the gateway ports are a large competitiveness factor.
- Trend towards larger vessels that exceed the depth of the Columbia River.
- Global repositioning of cargo due to trade agreements will move production to Southeast Asia and more cargo moving through Suez Canal to U.S. East Coast which is where greater population and distribution centers are located. Containers will accumulate on the East Coast. Fewer West Coast calls mean fewer containers available for Pacific Northwest exports.
- Alliances among carriers which constrain individual carriers from independently serving smaller niche markets like Portland Terminal 6.
- A lack of large volume container vessel service at the Port of Portland's Terminal 6 and the resulting suspension of container barge service, means that shippers are now generally depending upon the Puget Sound ports (Northwest Seaport Alliance), a challenge made more difficult by the national trucking shortage.
- Lack of Portland weekly container service resulting in dependence on truck and rail to/from Puget Sound. Continued congestion and delay at Seattle/Tacoma jeopardizes the ability of shippers to deliver to customers by promised deadlines.
- Seattle, Tacoma, and Oakland ports have not fully recovered from the West Coast port disruption which accompanied the International Labor Workers Union (ILWU)-Pacific Maritime Association longshore labor contract negotiation on the West Coast. This means delays and long wait times at alternate ports.
- Domestic container supply disruption when ships quit calling in Portland. Previously, domestic companies had agreements with steamship lines to move containers into the area. Moving containers cross country into Portland became a strategic disadvantage with the loss of service.
- Direct ocean carrier service in the Columbia River is critical in order for carriers that only call on Puget Sound ports to 'equalize' freight rates to Portland destinations/origins. Without competition from carriers serving the Columbia River, the Puget Sound-only carriers have no incentive to offer the same rates for Portland origin/destination as are offered for Seattle/Tacoma origins/destinations.
- A balance of imports and exports is key to return of Terminal 6 container service.

II. TRUCKING:

A. Trucking Challenges

- Driver shortages, high turnover of drivers, regulatory constraints on truck and driver utilization, including Hours of Service rules. (Redmond, Hermiston, Ontario, Albany)
- The national truck driver shortage is hitting Oregon shippers very hard. Trucking availability is limited and expensive. The trucking/driver shortage is exacerbated by the requirement that a truck driver be at least 23 years old, eliminating all 18 –22 year olds from the industry. (Redmond, Medford, Albany, Hermiston, Ontario)
- No national heavy-weight truck framework. No heavy trucks/chassis are allowed in California, impacting those seeking to access Oakland. Oregon truck weight limits are the same as Washington and Idaho, higher than California. This allows Oregon cargo to move on ‘heavy’ tri-axle chassis all the way to Puget Sound; but prevents Oregon ‘heavy cargo’ from moving to Oakland or other California ports. This limits options for shippers in Klamath Falls, Medford, etc. (Ontario, Redmond, Albany, Hermiston, Medford)
- Increased costs of trucking goods have inflationary effect on cost of living, economy. (Portland)
- Lack of chassis availability (especially super chassis or heavy-weight). (Redmond)
- Delays in the supply chain, waiting for containers to unload in Seattle/Tacoma and move to Portland. (Portland)
- Drivers are paid by the mile. They can’t afford to sit at port gates for hours waiting to get in due to trucker Hours of Service limitations. It de-incentivizes drayage trucking as a profession. (Redmond)
- Eastern Oregon onion growers are limited in ability to deliver to domestic customers, and access Puget Sound ports in order to sell into the foreign markets by the lack of truck capacity serving eastern Oregon. Trucks that would ordinarily be available to take the onions west to the ports are currently in demand to run up and down Interstate 5 shuttling Oregon cargo to and from Seattle/Tacoma. (Ontario)
- It is virtually impossible to do a truck turn from Hermiston area to Puget Sound in one shift. (Hermiston)
- It is virtually impossible to do a truck turn from Hermiston area to Puget Sound in one shift. (Hermiston)

B. Trucking “Work-Arounds”

- Drop-pick program where customers receive containers in the middle of the night, which they can load in the morning and deliver to the port. (Portland, Albany)
- Remote Drop-off Yards (Peel Off Yards aka Off-Dock Container Yards allow for full container staging and efficient delivery to export terminals. Relieves congestion at the terminals. Los Angeles implemented this model in 2002; Oakland exploring this. (Portland).
- Load matching (aka “Street Turns”) offers the most immediate, cost effective means of reducing trucking costs. Instead of a truck picking up a loaded container, then delivering it

and returning to the port 'empty', the truck delivers, and then goes to another shipper to pick up a load going to the port. This eliminates 'dead-heading', more efficiently uses scarce trucking capacity, and can cut the cost of trucking in half. Trucking 'street turns' are most feasible and commonly used in urban locations where there are many shippers in close proximity, but is being explored in the rural areas, where there are larger importers (e.g., WalMart, Lowes). In many instances, but not all, it is not possible to match import containers on 'regular' chassis, with Oregon's typically heavy agriculture and forest products export cargo requiring containers on "heavy-weight tri axle" chassis. Efforts to make this work are underway. (Portland, Albany, Medford, Redmond, Hermiston)

- Assuring heavy-weight chassis for the export (agriculture and forest products) loads heading northbound to Puget Sound, when the import (southbound) cargo is on the regular chassis. (Portland)

III. RAIL:

A. Rail Challenges

- Rail service going west to the Puget Sound ports would benefit eastern Oregon and Washington shippers. (Redmond, Ontario)
- An increase in rail service by Union Pacific (UP) to eastern U.S. customers would benefit Oregon onion growers requiring shorter transit times. (Ontario)

B. Rail "Work-Arounds"

- The Federal Congressional Delegation and our State elected officials should persuade UP and Burlington Northern Santa Fe (BNSF) to provide the service that Oregon shippers require, including the services described in the "Integrated Solutions" section. (Albany, Ontario, Medford)
- Oregon has an extensive network of short-line railroad services, as well as both Western Class One railroads, which collectively cover most all parts of the state. Bottom line, the physical component for an Oregon rail network already exists. (Albany, Medford)
- The 'common wisdom' and current practice is to bring Oregon export cargo north to Puget Sound ports, by truck or rail due to transit times. But it is worth considering the benefits of moving the southern Oregon shippers southbound to Oakland or Los Angeles/Long Beach, which have more ocean carrier options, a lack of export cargo to balance the inbound volumes, and lower West-bound rates than Puget Sound. (Medford)

IV. BARGE:

A. Barge Challenges

- Without adequate international container vessel service at Portland's Terminal 6, barge service for containers has been suspended. (Portland)

- No existing barge can transit the upper Columbia-Snake system through the locks and continue out the mouth of the Columbia and up to Puget Sound ports or down to Oakland due to the U.S. Jones Act (regulating maritime commerce in U.S. waters and between U.S. ports). Proposals to design and build such barges have emerged in the past, but none have moved beyond the concept stage. As a result any cargo moving by barge will have to be offloaded at some point in order to access Puget Sound ports, either by rail or truck. (Hermiston)
- The alternative to barging is a dramatic increase in trucking to Puget Sound ports, which creates detrimental environmental impacts. (Hermiston)

B. Barge “Work-Arounds”

- Ramping up barge service on the Columbia/Snake River system. (Hermiston)
- An efficient means of serving Idaho cargo that has traditionally used the barge service from Lewiston to Portland’s Terminal 6, is to barge down the Columbia River to Boardman, then to load on rail which could travel to Portland (and can be off-loaded to be loaded onto a ship – currently the Westwood ship), or continue on by rail to Puget Sound ports. (Hermiston)
- West Coast barge service originating at Seattle/Tacoma, with port stops all the way down the West Coast including Portland, Newport, and Los Angeles/Long Beach for loading on international container vessels. This requires a Jones Act compliant barge service. Barge service would need to compete with trucking on a cost basis. (Hermiston)

V. INTEGRATED SOLUTIONS:

A. Restore Columbia River Container Service

- The shipper community continues to support Port of Portland recruitment of new carriers at Terminal 6. Need 5 to 7 importers to anchor a new service.
- Resolution of labor-management issues and demonstration of dependable and efficient vessel loadings (e.g., Westwood, new service). (Portland, Redmond, Ontario, Albany)

B. Rail Load Centers

- Major ports around the country have established inland load points, or “inland ports”: Norfolk, Savannah for example, with similar being pursued for Los Angeles/Long Beach, Oakland. These were established with the full cooperation and support of the Class One railroads which bring the cargo into the ports via “on dock” rail. (Portland, Albany, Medford, Hermiston)
- Inland load points (or Container Yards) currently exist in Portland and Boardman (both operated by Northwest Container Services), allowing cargo to be trucked to/from those points and loaded on rail (or, in the case of imports unloaded from rail). As the rail goes directly ‘on dock’, there is no need for trucking at the Tacoma/Seattle end of the rail connection. These services currently provide an essential means for Oregon exports and imports to access gateway ports in Puget Sound. (Portland, Hermiston)

- There is interest in the need for an inland rail load point somewhere in the Willamette Valley, to provide a means to load Oregon exports onto rail, closer to the origins of those exports. This will allow heavy agricultural and forest products to be loaded on rail, and avoid long truck hauls to Seattle/Tacoma, which often exceed the allowable hours for truckers under the Federal Hours of Service regulations. (Albany, Hermiston, Medford, Ontario, Redmond)
- ConnectOregon funds could be used to expand the two existing truck-to-rail transload facilities in Boardman and Portland, and to establishing the same in the mid-Willamette Valley. (Albany, Medford)
- The inland rail load points in Boardman and Portland, operated by Northwest Container Services, would benefit from more rail capacity from the UP. They could handle much more cargo, and provide an alternative to trucking to Puget Sound, if UP would provide additional trains at both locations. (Hermiston, Albany, Portland)

C. Truck Transfer Centers

- Load center that can accommodate barge, truck and rail, at the Port of Morrow, in Boardman, with rail service direct to the Puget Sound ports (already provided by Northwest Container Services). (Hermiston)
- An alternative to rail inland load points, necessary to reduce the long haul trucking to Puget Sound, are inland truck points. Such an arrangement has been established in Eastern Washington, and is utilized by Clearwater and others in Lewiston, Idaho. Trucks shuttle containers from the Lewiston to the inland point, drop off the container and chassis, pick up an empty container/chassis and return to Lewiston. This is a much shorter haul than all the way to Tacoma or Seattle and back, and avoids, at least for this first leg from Lewiston to the inland truck location, waiting at the congested terminals in Puget Sound. Then a truck picks up the container/chassis at Quincy, Washington and heads to the terminals at the ports of Tacoma/Seattle, enters gates, drops loaded container, picks up an empty container/chassis, and heads back to the Quincy yard. (Hermiston)
- Truck shuttle is more efficient than a single long-haul from Lewiston to Puget Sound, which cannot be accomplished economically— Federal Hours of Service rules do not allow a driver to drive the number of hours required for such a long round trip from Idaho to Puget Sound and back. This arrangement can be considered by Oregon exporters in Eastern Washington, depending upon their distance from Quincy, Washington. The rail load option in Boardman is more feasible/efficient/affordable. (Ontario)
- While efforts to develop a rail load point in the Willamette Valley are underway, such a trucking load point might serve Oregon importers and exporters in Southern Oregon and the South Coast. (Hermiston, Medford)
- Shippers from Idaho currently shuttle exports by truck to load center in eastern Washington. Then other trucks shuttle from that load center to the Puget Sound ports. (Hermiston)

D. Miscellaneous “Work-Arounds”

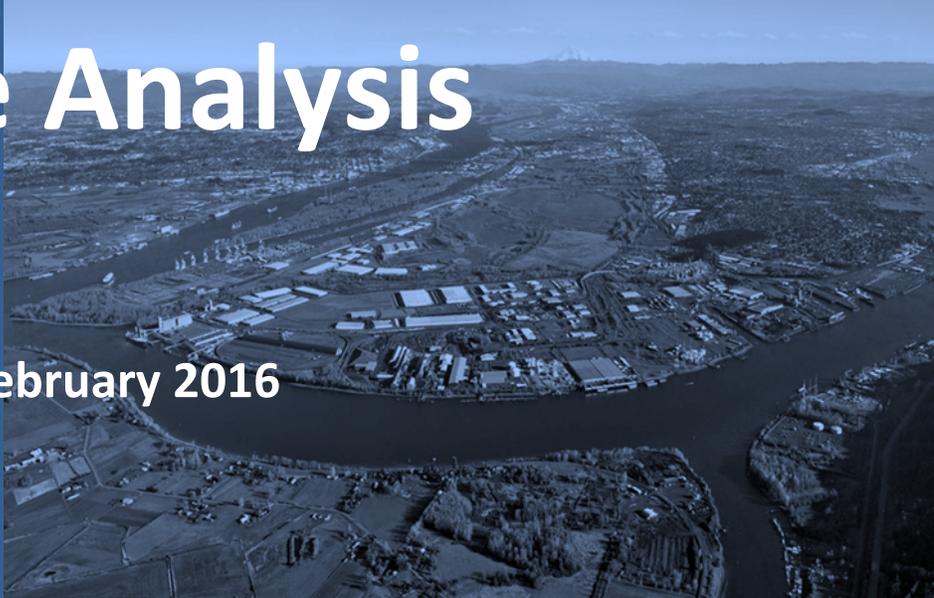
- Break-bulk shipping out of Longview and Vancouver, Washington are being used by a couple of Oregon exporters as a stop-gap alternative to container shipping, when trucking

capacity to haul to Puget Sound ports is not available. However, this option is limited, as many foreign customers only want to receive commodities in containers, and break-bulk is considerably more expensive than container transport. (Albany)

- Customers located in California and elsewhere taking delivery direct from carrier via Los Angeles/ Long Beach, rather than via the Portland area warehouse. (Medford)
- Coordination of accurate information between port, carriers, terminals, state Departments of Transportation, and truckers (clearinghouse of container availability, terminal congestion/flow, hours of operation. (Portland)



Trade and Logistics Report: Concepts and Business Case Analysis



February 2016



The Tioga Group, Inc.

The Tioga Group, Inc. ♦ 288 Rheem Blvd. ♦ Moraga, CA 94556 ♦ 925.631.0742

Table of Contents

I. INTRODUCTION	3
Overview	3
II. POTENTIAL TRADE AND LOGISTICS PROPOSALS	4
Approach	4
a. Facilitating Customs Processing at Tacoma and Seattle	5
b. Facilitating the Use of 3PLs, Cooperatives, and Shipper Associations for Small Shippers	5
c. Monitoring Rail Intermodal Services	7
d. Monitoring Chassis Supply	7
e. Monitoring Westwood Vessel Staging Effectiveness	8
f. Facilitating T-6 Labor/Management Issue Resolution	8
g. Container Re-Use Program	8
h. Monitoring Barge Service Capability	10
i. Sustaining Stakeholder Engagement	10
j. Policy and Regulatory Changes	10
k. Trade and Transportation Education	11
OTHER TRADE AND LOGISTICS PROPOSALS	11
1. Port Trucker Information System	15
2. Truck Driver Training	20
3. Satellite Container Yards	23
4. New Rail Intermodal Services and Yards	30
5. Columbia River Barge/Rail Service	41
6. Portland Transloading, Cold Storage and Logistics Services	44

Table of Exhibits

Exhibit 1: 3PL Firms, Port of Portland Website	6
Exhibit 2: Port of Portland Terminal 6	13
Exhibit 3: Sample Port of Tacoma Webpage Posting	17
Exhibit 4: Port-Area Container Facilities	27
Exhibit 5: Port of Portland Rivergate Properties	28
Exhibit 6: Port of Portland T-6 Intermodal Terminal	31
Exhibit 7: NWCS Portland Intermodal Terminal	31
Exhibit 8: NWCS Boardman Intermodal Terminal	32
Exhibit 9: Estimated 2014 Identifiable Container Volumes – Oregon Markets	34
Exhibit 10: NWCS Lift Equipment	36
Exhibit 11: NWCS Double-Stack Car	36
Exhibit 12: Typical Small Intermodal Terminal Features	38

I. Introduction

Overview

Containerized trade is a large and vital part of the Oregon economy, linked to the health of agricultural, forestry, manufacturing, and distribution sectors. The Port of Portland has a long history of containerized shipping service from major international operators. Hanjin and Hapag-Lloyd discontinued their weekly Portland vessel calls in early 2015, however, with little advance notice.

Suspension of direct weekly container service at the Port of Portland's Terminal 6, international changes in the maritime industry, and other freight transportation issues pose a series of challenges to Oregon shippers, to public agencies charged with trade and economic development, and to the State of Oregon as a whole. The impacts identified by The Tioga Group place much of Oregon's trade at risk with:

- Uncertainty for Oregon exporters and importers, including agriculture, manufacturing, and distribution companies;
- Increased transit times and reduced reliability;
- Increased logistics costs;
- Loss of markets and market share;
- Increased business risks for transportation and logistics providers; and
- Potential relocation of businesses to other states that offer direct container service.

While shippers may absorb near term cost increases, multiple years of uncertainty and cost increases threaten long-term markets and business viability. Finding interim freight logistics solutions is a time sensitive issue due to the perishability of products and global competition. If Oregon businesses cannot access key markets at competitive prices, they risk losing market and market share to other countries with competing products.

What can Oregon public agencies do to help the state's shippers cope with the loss of weekly Portland service, to strengthen the Port's ability to attract and retain service, and to improve Oregon's long-term trade and logistics capabilities?

These questions were posed to the Trade and Logistic Steering Committee, The Tioga Group, and the shipping community at public forums. This report addresses these questions and identifies potential freight proposals for action and/or implementation by the state, as well as recommendations on other measures that can support Oregon international trade.

II. Potential Trade and Logistics Proposals

Approach

Over 20 potential freight logistics proposals were identified through trade research, interviews and statewide forums. The Tioga Group reviewed all suggestions for high-level feasibility using evaluation criteria identified by the Steering Committee:

- Technical, economic, and operational feasibility;
- Identifiable benefits to Oregon shippers;
- Consistency with the long-term interests of shippers and the state as a whole.
- Consistency with resumption of weekly vessel service at Portland; and
- A well-defined and viable public agency role.

Many trade and logistics proposals fit within the current scope of agency activities or represent opportunities for the private sector; three of the proposals did not have a direct public agency role, would not address near-term problems, or did not appear feasible based on current industry conditions.

Business Cases

The Tioga Group identified six of the more promising suggestions for development of detailed business cases for possible action. These are discussed in detail in Section III of this report.

- Port trucker information system - A trucker information system would provide truck drivers accessing Portland and Puget Sound ports with information needed to more efficiently plan trips around highway, terminal access road, and terminal gates congestion and vessel schedules;
- Truck driver training – Expansion of the truck driver pool would help address the shortage of truck drivers in Oregon needed to move international container cargo;
- Satellite container yards - Satellite depot/drop lot/dray-off yards would provide storage areas for empty containers and chassis for use by other shippers as well as staging of export containers;
- New rail intermodal services and yard – Assessment of the feasibility and requirements of new intermodal rail services and yard in the Willamette Valley would help determine if this is an option for reducing shipper transportation costs and taking trucks off the highway;
- Columbia River container barge and rail service – Return of the Columbia River Barge/Rail service would help shippers in eastern Washington, Oregon and Idaho move containerized agricultural products cost-effectively to markets in Asia, and address the shortage of truck drivers and chassis availability east of the Cascades; and

- Portland transloading, cold storage, and logistics services – Expansion and anchoring of transloading and logistics services in the Portland area could help provide a balance of imports and exports needed to secure new container service

RECOMMENDED FREIGHT LOGISTICS PROPOSALS

In addition to the six business cases, the following additional measures have been suggested to provide assistance to Oregon shippers in coping with the loss of weekly container vessel service at Portland, and also provide long-term benefits.

a. Facilitating Customs Processing at Tacoma and Seattle

The Port of Portland is part of the Customs and Border Protection (CBP) Columbia-Snake River District, while the Ports of Seattle and Tacoma are in CBP's Seattle District. Some shippers reported delays with CBP processing at Seattle or Tacoma. These delays were attributed to unfamiliarity with former Terminal 6 (T-6) importers and import goods, and a shortfall in CBP staffing compounded by the West Coast port congestion in 2014-15. It is possible that this problem will disappear over time as CBP staff in Seattle and Tacoma gain experience with importers that formerly shipped via Portland and the commodities they handle.

CBP staffing shortfalls are a recurrent concern at many U.S. ports. In some instances, growing cargo volumes, new trade patterns, and workload peaking due to megaship arrivals may have overburdened CBP staff resources. Stakeholders have also noted longstanding inconsistency between CBP Districts. Attaining consistency is beyond the Trade and Logistics Initiative scope, but there may be an advantage in addressing specific differences that cause importers to avoid Portland.

b. Facilitating the Use of 3PLs, Cooperatives, and Shipper Associations for Small Shippers

The kind of challenges facing small Oregon shippers have long been addressed by using third parties or forming shipper associations and cooperatives to move smaller cargo volumes efficiently and cost effectively. Third-party logistics firms (3PLs) include freight forwarders, customs brokers, consolidators, transloaders, and firms that combine many of these functions. These firms offer expertise in identifying efficient options and minimizing cost. Many of the 3PLs serving Oregon customers are shown in Exhibit 1.

Exhibit 1: 3PL Firms, Port of Portland Website

A.C. Wilson Co., LLC	International Freight Systems
Allports Forwarding, Inc.	James J. Boyle and Co.
AzTex Global Delivery Solutions LLC	Kamino International Transport
BFS International LLC	Kintetsu World Express
Brownstone International	Kuehne & Nagel, Inc.
C.H. Robinson Worldwide Inc.	L.D. Tonsager & Sons, Inc.
CDS Global Logistics, Inc.	Lynden International
CEVA	Mid-America Overseas, Inc.
Chipman Relocations	MTI Worldwide Logistics/Portland Branch
Coppersmith	Nippon Express USA, Inc.
DHL Danzas - Air and Ocean	NNR Global Logistics
Double River Forwarding, LLC	OEC Group
Dragon America Logistics, Inc.	OIA Global Logistics
DSV Air and Ocean	Pathfinder Logistics, Inc.
Exel Global Logistics	Pilot Freight Services
Expeditors International	Schenker International
Fedex Trade Networks	T.I.C. Agencies, Inc.
Gallagher Transport Int'l., Inc.	TLR/Total Logistics Resource, Inc.
Geo. S. Bush and Co., Inc.	UPS Supply Chain Solutions
Global Trading Resources, Inc.	W.J. Byrnes & Company
IJS Global Inc.	Wymore Transfer Co.
Independent Dispatch, Inc.	Yusen Air & Sea Service USA., Inc.

Cooperatives and producers' associations are common in the agricultural sector (e.g., Hazelnut Growers of Oregon or Oregon Cherry Growers), and some arrange and manage transportation of members' shipments (Sunkist is a well-known example).

Shippers associations are often set up for the explicit purpose of pooling member cargo to obtain better rates and services than small- and medium-sized businesses (SMEs) can obtain individually. Existing shipper associations include:

- Columbia River Shippers Association – located in Portland (www.crsa-oregon-tripod.com)
- Food Shippers Association of North America – based in Renton, WA (www.fsana.org)
- Pacific Northwest Asia Shippers Association – operated out of Puget Sound and mostly focused on forest products
- Pacific Northwest Association of Rail Shippers – based in West Linn, (www.pnrailshippers.com)
- Columbia Gorge Fruit Growers – based in Hood River (www.cgfg.org)
- Idaho-Oregon Fruit and Vegetable Association – based in McCall, ID (www.id-orfv.org)

c. Monitoring Rail Intermodal Services

Northwest Container Services (NWCS) provides rail intermodal service between its Portland terminal and the ports of Tacoma and Seattle. NWCS provides an efficient alternative to trucking for Oregon shippers using the Puget Sound ports for imports or exports.

Prior to the 2014-15, West Coast port congestion and loss of T-6 service, NWCS served Oregon shippers that chose to ship via Tacoma or Seattle to access additional foreign ports, use particular ocean carriers, ship on different schedules, or take advantage of other shipping options not available or less efficient at Portland. While weekly Portland service is suspended, NWCS also serves shippers who use the Puget Sound ports as a second choice. Currently, NWCS handles about 50% of export traffic. These needs and shipper preferences will remain even after direct weekly service resumes at Portland. Oregon shippers benefit from having additional options, from competition between Portland and Puget Sound services, and from competition between NWCS and truckers.

The combination of Portland container service withdrawal, West Coast port congestion, and an influx of westbound empties congested NWCS service and terminals in early 2015, leading to service shortfalls. With a return to more normal conditions and NWCS investment in terminal handling capacity, the system is now providing adequate service with reserve capacity.

The long-term importance of rail intermodal service to Oregon customers suggests that responsible public entities should continue to monitor system performance as part of the state's overall trade and logistics capabilities.

d. Monitoring Chassis Supply

Chassis supply has become a nationwide issue in recent years. Ocean carriers have ceased to provide container chassis as part of their service or rates, and have sold their fleets to pool operators such as TRAC Intermodal, DCLI, or Flexi-van. Instead of obtaining an ocean carrier chassis at the marine terminal, truckers must now locate a pool chassis (at the terminal or nearby) or purchase/lease their own chassis.

At issue are both the number of chassis available and the need to match each container with an eligible chassis. Many Oregon shippers of heavy commodities rely on the use of tri-axle or "super" chassis to move their loads safely and legally. Tri-axle chassis are considerably more expensive than ordinary dual-axle chassis, and tend to be in short supply in peak agricultural shipping seasons. The longer times and distances required to move containers to Seattle or Tacoma have effectively reduced the carrying capacity of the tri-axle chassis fleet, exacerbating the periodic shortages.

While this situation will likely take years to resolve across the container shipping industry, Oregon shippers have reported specific near-term problems relating to chassis supply and logistics. Chassis supply bears monitoring as an essential part of state trade capabilities.

e. Monitoring Westwood Vessel Staging Effectiveness

Multiple monthly Westwood vessels have been handled at T-6 since cessation of Hanjin and Hapag-Lloyd services. These vessels have handled only export loads through January 2016. These vessels have been handled by:

- Staging export containers at off-terminal facilities, e.g., Portland Container Repair, and.
- Positioning the export containers at T-6 immediately prior to vessel arrival.

This procedure accommodates once weekly gate openings at T-6 container yard to prepare for monthly Westwood vessel calls. Westwood reportedly would like to increase vessel frequency and to handle imports as well as exports. Identifying importers for this service will be key to expansion of this service. It is in the interest of Oregon shippers for this service to continue and the potential expansion to go forward.

The ICTSI and the Port should continue their efforts to grow the Westwood operations at Portland T-6 as part of the Trade and Logistics Initiative, including outreach to potential both importers and exporters.

f. Facilitating T-6 Labor/Management Issue Resolution

The ongoing labor/management dispute at T-6 and the adversarial relationship between ICTSI, the T-6 terminal tenant/operator, and the International Longshore and Warehouse Union (ILWU) Local 8, T-6 marine terminal workforce, are major barriers to resumption of direct vessel calls at Portland.

In 2011, the Port of Portland entered into a 25-year contract with ICTSI, a private terminal operator, to manage T-6. ICTSI is the fourth largest container terminal operator in the world. Although the Port previously operated T-6 directly, most U.S. container ports function as “landlords”, with actual terminal operations managed by independent stevedores such as ICTSI. Since the Port itself does not operate T-6, the Port does not have a direct relationship with the ILWU related to container operations.

Due to its critical importance to Oregon shippers, the state of Oregon should explore all options for addressing the T-6 labor/management issues. This will require collaboration with ICTSI, ILWU, IBEW (refrigerated container maintenance and repair workforce), the Pacific Maritime Association (employer of the ILWU), and the Port.

g. Container Re-Use Program

“Street turns” or a similar term, “Match-Back” are instances where an empty import container is used for an export load without first being returned to a terminal or depot. Container re-use programs are highly advantageous when they can be arranged, especially if they avoid long or time-consuming trips to the port. There are several types of street turns:

- **Trucker Customer Base.** Most street turns consist of a trucker re-using a container from an import customer for an export customer within the trucker’s own customer base.
- **Street Interchange.** Direct equipment interchange between two truckers with different customers is difficult and rare.
- **Same-Customer Reuse.** Some customers that are both importers and exporters can re-use their import containers for export loads, but the situation is uncommon.
- **Container Depot Reuse.** In some ports, most “street turns” actually consist of return to a depot and re-use by a second trucker or transloader.

The potential for street turns, however, is very limited for multiple reasons:

- Container types and specifications must be compatible with import and export loads. Hay or wood pulp, for example, cannot be loaded in food-grade containers. Heavy exports such as pulses need heavy-duty 20-foot containers, while import consumer goods usually arrive in high-cube 40-foot containers.
- The import container must belong to the export ocean carrier. Despite physical interchangeability, ocean carriers do not accept each other’s containers.
- The import carrier must approve re-use and allow sufficient free time. In peak season, carriers often want their import containers back as soon as possible for additional import loads.
- Import and export timing must match despite seasonality of both.
- Import and export locations must be close enough to be feasible and advantageous despite the lack of import destinations in major export production areas.

Match Back Systems is a commercial provider of load-matching “street turn” software. The latest version, Matchwerks 2.0, was released in July 2015. The software-as-a-service (SaaS) offering is designed to assist steamship lines, truckers, and customers to find empty containers for export and export use opportunities for empty import containers without returning to port terminals. The Match Back software approach was introduced in 2013, and has yet to be widely adopted based on The Tioga Group’s knowledge.

Truckers and shippers already have incentives to seek street turns and re-use containers whenever possible. There is relatively little that a public agency can do directly to increase the frequency of street turns. Previous efforts at establishing “virtual container yards” at major ports such as New York-New Jersey and Los Angeles were disappointing. To the extent that increased container depot capacity or additional depot locations can facilitate re-use, the satellite yard concept may be more productive.

Public agencies might, however, encourage private sector participants to seek re-use opportunities by facilitating communications between importers and exports or by supporting pilot or start-up efforts by private sector organizations to do so.

h. Monitoring Barge Service Capability

Tidewater Barge container service between Boardman, Pasco, Lewiston, and Portland was a significant factor in sustaining direct vessel calls at T-6. The economics of barge service attracted import and particularly export cargo to Portland that might otherwise have been trucked to and from Tacoma and Seattle. The containers were moved on the decks of Tidewater barges that were carrying bulk or break-bulk commodities such as grain or fuel. The barge capacity still exists because Tidewater continues to operate barge service for the bulk and break-bulk cargo.

To support container-on-barge service, Tidewater or its customers need to maintain terminals and handling equipment suitable for containers. A long period without container business could render these capabilities surplus. Divestment by Tidewater or deferred maintenance could create barriers to easy resumption of container-on-barge service. Monitoring of container barge capability in the Columbia River should continue.

i. Sustaining Stakeholder Engagement

Stakeholder engagement can take many forms, as demonstrated by the statewide shippers' workshops, working groups and advisory committees created for the Trade and Logistics Initiative to date. Stakeholder engagement has multiple benefits:

- Keeping public agencies and decision-makers in touch with current Oregon transportation issues.
- Forging ongoing communications links between public and private sectors.
- Identifying common problems and potential proposals.
- Connecting private sector shippers, carriers, and 3PLs.

Ongoing stakeholder engagement will be a critical factor in the ability of public agencies to monitor industry performance, identify shortfalls, and gauge progress toward the state's transportation objectives. These efforts should be continued.

Efforts to attract new container service to T-6 would likewise benefit from the involvement of influential stakeholders, specifically the beneficial cargo owners (BCOs), brokers, and third parties that control containerized imports and exports. The strongest case for new Portland vessel calls would involve:

- Importers and exporters willing to shift business from other carriers.
- Importers and exporters with new trade flows to offer.
- Importers and exporters willing to pay direct Portland rates and commit volumes that would justify direct Portland calls.

j. Policy and Regulatory Changes

There may be state or local policies, rules, regulations, or procedures that restrict Oregon shippers from using efficient practices or adapting to new requirements. As noted in the stakeholder forums, for example, Federal rules effectively require port drayage truck drivers to be at least 21 years old. Insurers and company rules normally require new drivers to have at least two years of

truck driving experience, making 23 the effective minimum age and eliminating 18-22 year olds from the driver pool.

Trade and industry associations have typically served as representatives of their members in identifying restrictive rules or laws and suggesting changes. Individual importers, exporters, truckers, and other stakeholders could also provide input on these issues through Trade and Logistics Initiative stakeholder engagement. State agencies should support these efforts as appropriate.

One particular issue raised in the shippers meetings is the use of *ConnectOregon* funds. Some stakeholders advocated using funds to support freight infrastructure and operations, and customer needs. Previous freight projects funded in part by *ConnectOregon* and its predecessor programs include Class I and short-line rail improvements, T-6 cranes and wharf improvements, improvements to other Oregon ports, and private rail intermodal facilities.

k. Trade and Transportation Education

Education about the importance of trade and transportation to the Oregon economy and the nature of challenges faced by Oregon shippers is envisioned as an integral part of the Trade and Logistics Initiative. Education for public officials, stakeholders, and the general public is complementary to ongoing stakeholder engagement efforts. While the Steering Committee, Oregon Trucking Associations, Oregon Freight Advisory Committee, Oregon Rail Users League, and other organizations each have education and communications functions, stakeholder forum participants perceived a deficiency in trade and transportation awareness among elected officials and government policymakers.

OTHER TRADE AND LOGISTICS PROPOSALS

The Tioga Group determined that some of the proposals reviewed did not have a direct public agency role, would not address near-term problems, or did not appear to be feasible based on current industry conditions.

a. Container Availability Information System

Stakeholders have expressed frustration over periodic shortages of specific container types in peak demand periods and the difficulty of compiling information from multiple sources. There have been suggestions for a “clearinghouse” for container availability information.

A consolidated information source for container availability information does not appear feasible in the near term. Each ocean carrier controls its own container supply and they do not exchange either the information or the container themselves. In all cases, customers must contact the carrier involved to locate empty containers for export loads.

b. Additional Rail Service Capacity

Stakeholders have expressed concern over rail capacity, but it is not clear that any rail capacity shortage is adversely affecting Oregon shippers. Additional rail service capacity could be relevant in two applications: additional capacity for NWCS service between Portland and Puget Sound

ports, or additional capacity for new service from new rail intermodal facilities. Public agency influence over rail capacity or use of that capacity, however, is very limited. Freight railroads generally have excellent access to capital and a long record of providing the capacity they need for profitable traffic. Railroads are reluctant to provide capacity for low-volume, low-margin business, even if they have reserve capacity available. Any new rail intermodal service would require separate negotiations with either Union Pacific or Burlington Northern Santa Fe, as appropriate.

c. Other Oregon Deep-Draft Ports

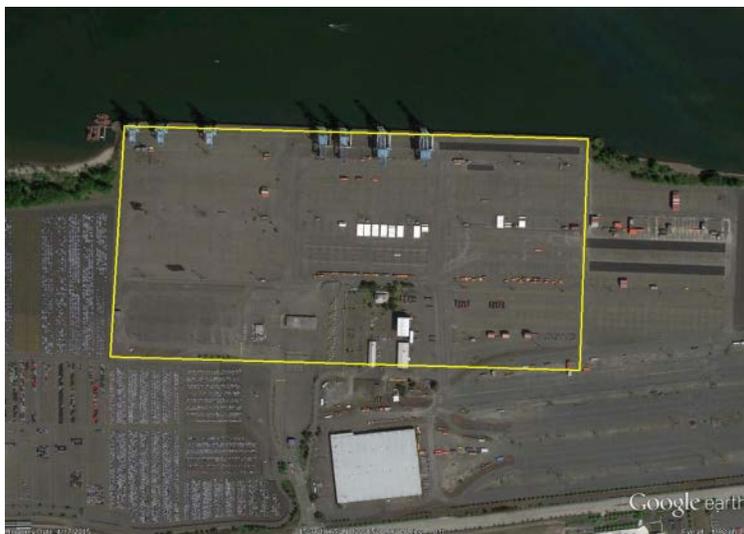
Stakeholders have asked whether other Oregon deep-draft ports could support container services to supplement or replace the services suspended at the Port of Portland. The Tioga Group determined the basic requirements of a container port and then reviewed the status and plans of four other Oregon deep-draft ports.

Container Terminal Requirements. Modern container terminals capable of serving the large vessels in TransPacific trades have a few basic requirements.

- **Water depth.** The largest vessels now in use may require 50-foot deep channels and berths. Depths of 40-45 feet are minimums for handling smaller vessels. The Columbia River navigation channel was deepened to 43 feet in 2007.
- **Terminal size.** Modern container terminals are generally 100+ acres, with older 50-100 acre legacy terminals considered small and vulnerable to congestion. The newest terminals being built are typically 300+ acres.
- **Berth length.** Modern vessels require berths of 1,000-1,500 linear feet. Most terminals have at least two berths.
- **Container cranes.** Container ships are served by at least two cranes each and as many as five. The shoreside cranes cost roughly \$10 million each.
- **Container handling equipment.** The container yard requires multiple lift machines at \$500,000–\$2 million each, as well as yard tractors and chassis.
- **Truck access.** The high truck volumes moving in and out of container terminals, especially when vessels are at berth, require road and highway connections capable of handling both the volume and the weight.
- **Rail access.** Fully competitive marine container terminals require rail access, either on-dock (as at T-6 and many Puget Sound terminals) or near-dock (as at Oakland). Efficient mainline connections are also required to handle intermodal trains with clearances for double-stack rail cars.

Port of Portland Terminal 6. Portland's T-6 is a multi-use facility covering over 400 acres. The primary container yard area (Exhibit 2) covers about 90 acres. With the adjacent on-dock rail yard and other areas, the container portion of T-6 totals roughly 200 acres.

Exhibit 2: Port of Portland Terminal 6



T-6 has three berths served by seven cranes. Water depth is 43 feet at two berths and 40 feet at the third. The Port has estimated T-6 capacity at roughly 700,000 annual twenty-foot equivalent units (TEU), equivalent to about 400,000 annual containers. The Port's 2014 volume was about 25% of that capacity.

Port of Coos Bay. The Port of Coos Bay has four privately owned ocean cargo terminals, two handling wood chip exports and two handling log exports. Although Coos Bay was reportedly considered as a site for a new container terminal at one time, container service is not part of the Port of Coos Bay's near-term strategy. A Canadian firm, Veresen, is currently seeking to develop a liquefied natural gas (LNG) export terminal at Jordan Cove in Coos Bay. The Port of Coos Bay is also pursuing a U.S. Army Corps of Engineers project to deepen the harbor channel from 37 to 45 feet.

Coos Bay is linked to the Southern Willamette Valley by Highways 38 and 42, which are not major truck routes. Coos Bay is about 110 miles from Eugene and 175 miles from Salem. Trucking to Coos Bay from the upper Willamette Valley might be less efficient than trucking to Tacoma. The Coos Bay Rail Link is a former Southern Pacific branch line connecting the Port with the Union Pacific main line in Eugene. The Port of Coos Bay acquired the Coos Bay Rail Link in 2010.

Port of Newport. The Port of Newport is in the process of upgrading its cargo facilities. The current Newport International Terminal is a multi-use cargo and commercial fishing facility. The Newport entrance channel is dredged to 40 feet, although berth depth at the International Terminal at present is 25-34 feet. The Port of Newport is developing a 9-acre facility for agricultural exports and inbound waste paper from Southern California by barge. The overall project cost is estimated at \$6.5 million and the Port recently received a \$2 million U.S. Department of Transportation, Transportation Investment Generating Economic Recovery (TIGER) grant to support the project. The Port intends to lease the barge terminal to a private operator. Newport's 2013 Strategic Business Plan identifies market opportunities for the new terminal in forest products, commercial fishing, and waste paper. The plan focuses on barge and short-sea shipping and does not discuss containerized trade.

Newport is connected to the Willamette Valley by Highway 20, which is not a heavy-duty truck route. Newport is about 90 miles from Salem. There is no rail service to Newport.

Port of Astoria. The Port of Astoria is on the Columbia River west of Portland, and currently handles cruise ships and export logs. Astoria’s 7-acre Pier 1 has two berths of 1,000 feet and 1,100 feet, with 38-40 feet of water depth. Astoria’s 2010 Strategic Plan focuses on managing existing infrastructure, maintaining deep-draft terminal capabilities, and developing available property into a “self-supporting marine industrial facility”. Cargo growth opportunities focus on forest products.

The Port of Astoria has good road connections, but rail freight service was discontinued over the former Portland & Western branch line after a landslide in the mid-1990s.

Port of St. Helens. The Port of St. Helens is actually nine different locations in Columbia County covering 2,400 acres. The St. Helens deep-draft terminal is Port Westward, a 1,700 acre site northeast of Clatskanie accessed by local roads and a Portland & Western rail spur. The existing dock is 1,200 feet and has 60+ feet of water alongside.

The Port of St. Helens Strategic Plan views Port Westward as a prime industrial and marine development site capable of supporting “energy and bulk commodities and trans-shipping facilities including rail and barge-to-ship transfers”. The Strategic Plan does not discuss containerized trade.

Container service capabilities. The other Oregon deep-draft ports do not have the capability to handle significant volumes of containerized trade and would not be able to develop that capability in the near future.

- Developing a container terminal at one of these ports would involve large-scale fill, dredging, serious environmental issues, and investments likely to exceed \$100 million.
- These ports are pursuing strategic business plans that target other kinds of shipping facilities and other commodities.
- Development of a new container terminal at one of these ports would likely take at least 7-10 years, if possible at all.

It is highly unlikely that major containerized ocean carriers would call at one of the other Oregon deep-draft ports. There is no current shortage of container terminal capacity for Oregon trade. T-6 at Portland has been operating well below capacity in recent years. The Ports of Seattle and Tacoma have reserve capacity at present and are expanding for future growth.

Where other Oregon deep-draft ports may be able to help Oregon shippers is in the bulk and semi-bulk trades on which their business plans are focused. Oregon forest and agricultural shippers need bulk and semi-bulk terminals for commodities and volumes that are not suited to containers. However, there have been instances reported in which Oregon exporters have temporarily shifted some commodities from containerized to bulk services.

III. Business Cases

Purpose

The Tioga Group developed preliminary business cases for six proposed freight logistics projects with:

- 1) a clear need and benefit to Oregon shippers
- 2) a well-defined and viable public agency role
- 3) technical, economic and operational feasibility, and
- 4) costs and next steps.

1. Port Trucker Information System

Overview

The Port Trucker Information System proposal responds to concerns raised in public forums and interviews over the difficulties experienced by Oregon truckers serving Puget Sound ports. Trucking firms and their drivers pursue efficiency but can be frustrated by congestion, delays, detours, and stoppages on port approach routes and port-area roads. Few ports enjoy an exclusive port road network; most share surface streets and highways with their host cities. When the highways become congested, as does Interstate 5 near Tacoma, the terms on which port drivers must share the network can be extremely constrained. Issues include:

- Turn times at Tacoma and Seattle terminals.
- Terminal gate hours and procedures.
- Vessel schedules and status, earliest receiving dates, and cutoffs.
- Traffic conditions on I-5 and on terminal access roads.

Stakeholders suggested the creation of an information system (a “clearinghouse”) to aggregate and make available current information on these and related topics. There are a number of precedents for efforts of this kind in the form of trucker information systems at many U.S. ports. The Tioga group recently completed a study on the topic available from the Asia Pacific Gateway Skills Table at: <http://apgst.ca/projects/pdfs/APG-Real-Time-Study-2016.pdf>.

Benefits

The immediate beneficiaries of better information for port truckers would be truck drivers and trucking firms. At an average operating cost of about \$28 per hour plus \$.95 per mile, the savings due to efficiency can be substantial. Time savings are particularly important because reducing the time required for each trip frees up limited driver hours for additional trips.

The secondary beneficiaries would be Oregon importers and exporters that rely on trucking – which is virtually all importers and exporters. At a minimum, Oregon shippers use trucks between their location and the NWCS terminal in Portland. At a maximum, Oregon shippers use trucks to move containers hundreds of miles to the ports of Tacoma and Seattle.

The Tioga Group identified five types of information that could be provided in port communications systems for motor carriers:

- Traffic conditions on port-area roads.
- Traffic conditions on local/regional routes to/from the port terminals.
- Traffic incident alerts on either port-area roads or approaches.
- Planned closures, repairs, or restrictions on either port-area roads or approaches.
- Port terminal conditions, incidents, or alerts.

Reliable, timely information regarding current or expected traffic conditions can be a useful tool for drayage firms seeking efficiency. Such information will let trucking companies and their drivers make better decisions on:

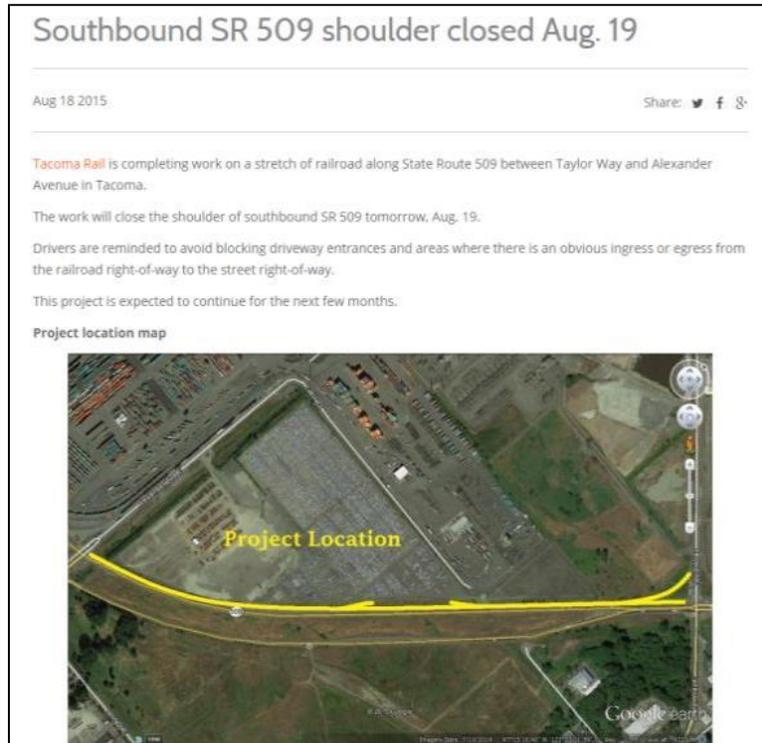
- When to go to which port terminal, and for what purpose.
- What route to use in each direction.
- How to combine trip legs in the most efficient multi-stop trip.
- How much time to allow.

Comparable Port Trucker Information Systems

As a result of research for the Asia Pacific Gateway Skills Table in Vancouver, The Tioga Group has established that several U.S. ports have trucker information systems of various kinds. The Northwest Seaport Alliance system is a relevant, and one with which an Oregon system might be coordinated. The Northwest Seaport Alliance (NWSA) was recently formed by merging functions of the ports of Seattle and Tacoma. The Port of Tacoma has taken the lead in traffic information communications. The majority of Port of Tacoma communications relate to the roadways within the port complex. Terminal operators handle specific communications regarding traffic levels and incidents on their facilities. Other port communications cover changes in port schedules and occasionally highway incident or accident information outside the port complex. The Port of Tacoma communications project was motivated by confusion and congestion that resulted when changes in the terminal operations brought a large number of new, unfamiliar drivers into the port, likely including drivers that formerly served Portland. Of particular concern are occasions when railroad operations block port roads, sometimes for extended periods. An immediate Port of Tacoma goal is to gain and communicate advance notice of upcoming rail crossing conflicts. The Port would also like to be able to create a variable message sign system that would communicate these matters as well as current queue times at marine terminals.

The Port of Tacoma messages are tweeted, emailed, and texted to a list of 1,200 subscribers. An example is provided in Exhibit 3. The Port of Tacoma uses GovDelivery (www.govdelivery.com), a communications platform designed for public agencies.

Exhibit 3: Sample Port of Tacoma Webpage Posting



<https://www.nwseaportalliance.com/operations/trucks>

The Port of Tacoma website also provides terminal information, updated twice weekly, at <https://www.nwseaportalliance.com/operations/terminal-updates>.

Operations staff monitors traffic advisories of the Washington Department of Transportation (WADOT) as well, and repeat those postings as warranted. Determining the frequency and content of driver communications is one of several job duties assigned to an individual in the Port of Tacoma operations department.

Port Truck Information System Options

In planning a port traffic communications system, a key question to be addressed is how recipients will use the information. Information on lane closures due to accidents may lead truckers to delay trips or take alternate routes, or allow more time until the lanes are reopened. Information on a month-long port-area road construction project, in contrast, may lead truckers to change operating plans for the duration.

Most communication methods used in port traffic alert systems have little or no incremental cost. With the exception of website posts, these are all “push” options that do not require recipients to look for messages.

- Twitter is free and accessible to anyone with a smartphone, but is limited in message length and complexity.
- Short Message Service (SMS) texting is free, and can accommodate complex messages, links, and graphics, and is accessible to anyone with a smartphone.

- Email is free and can be received via smartphone, tablet, or computer. Email can accommodate the most complex messages, including pre-formatted reports.
- Website postings are low cost, but may require involvement of staff with technical knowledge and system access. Website postings, however, are not a “push” option, and require users to check the website.
- eModal provides a third-party portal for email messages, relieving the sender of the need to manage email lists. eModal requires both the sender and receiver to sign up (for free).

The effectiveness of Twitter, SMS texting, and email depends on how well the message is crafted and on how completely the system covers the stakeholder audience. SMS texting and emails both require the recipient to provide contact information, but that process can be easily managed on-line, via text, or via email.

Costs

There are a few basic cost factors in port truck information systems. Most of the port systems in use make extensive use of existing resources. For example:

- The Port of Tacoma system monitors Washington State Department of Transportation bulletins.
- The Oakland system uses existing sources for vessel information, and webcams originally installed for security use.

It appears possible to initiate a system with little or no capital investment in data collection.

Port staff time required to operate the communications system varies with the scope of the system and the effort required to collect the information. Generally speaking, the staff time commitment is in collecting and monitoring traffic information, and is often less than one full-time equivalent (FTE).

The costs of communicating via Twitter, SMS text, or email are essentially zero, as is the cost of posting messages on an existing port website. Some email management and distribution systems (e.g., GovDelivery, Constant Contact) have additional costs, but are not likely needed for traffic communications alone.

Potential Public Agency Role

The Oregon Department of Transportation (ODOT), Port of Portland, or another sponsoring agency could follow the example of other U.S. ports by assembling information from the Puget Sound ports, ODOT, WaDOT, and other sources and disseminating it to truckers and other interested parties.

Port traffic communications systems are scalable and highly adaptable to circumstances. The wide range of systems in place and the commonality of their basic elements suggests that the public agency could easily start with a modest, low-cost system and expand as dictated by needs and resources. It is clearly feasible for ODOT or the Port of Portland to start a traffic alert or information system with readily available, real-time information from other organizations. The

Port of Oakland is particularly proactive in supplementing typical information sources with daily staff observations and vessel data to produce a daily status report for motor carriers and real-time updates as required.

On a small scale, a Twitter-based or SMS text system could be started by any port staff member with a smartphone and access to existing traffic information sources. The Tioga Group has also identified blogs and Yahoo! groups that are used to exchange traffic and terminal observations between drivers, an even less formal arrangement. Once a message has been composed, it is relatively easy to send versions simultaneously via email, SMS text, and Twitter. There is virtually no incremental cost beyond staff time.

Next Steps

A port trucker information system should be part of the Trade and Logistics Initiative. The financial commitment can be relatively small; there is a well-defined public role, useful precedents and best practices are available; and the implementation time can be very short. The low cost and level of effort to start a modest traffic information system for port truckers also means that it can be scaled back or discontinued with minimal repercussions if not successful.

The immediate need for Oregon truckers is for information on the drayage move to and from Tacoma and Seattle. The information required has multiple available sources:

- Traffic conditions in Portland (sources: ODOT Trip Check, KOIN.com Interactive Traffic Map, Oregon Live.com Road Report)
- Traffic conditions on Interstate 5 (sources: ODOT Trip Check, WaDOT Traffic Advisories, WaDOT Traffic Cameras)
- Traffic conditions in Tacoma (sources: WaDOT Tacoma Traffic Cameras, WaDOT Tacoma Traffic Tweets, MyNorthwest.com traffic maps and alerts)
- Port of Tacoma road and terminal conditions (sources: NWSA Tweets, terminal websites, terminal webcams, NWSA website posts)
- Traffic conditions in Seattle (sources: WaDOT Seattle traffic cameras, MyNorthwest.com traffic maps and alerts, WaDOT Seattle Traffic Tweets, Seattle.gov Traffic website)
- Port of Seattle road and terminal conditions (sources: Seattle.gov Traffic website, terminal websites, terminal webcams)

Oregon truckers and their customers could also benefit from information regarding the monthly Westwood calls at T-6, and from information on the status of NWCS terminal and rail services. When weekly vessel calls return to Portland, the system can add information on T-6 terminal conditions and vessel status.

A port trucker information system could be established by ODOT, the Port of Portland, or a private organization such as the Oregon Trucking Associations. Costs would consist primarily of staff time, estimated at about 0.5 full time equivalents at the outset.

2. Truck Driver Training

Overview

The Oregon trucking industry, specifically the port drayage sector, is handicapped by a persistent driver shortage. The Oregon situation is part of a nationwide problem that is projected to worsen in the coming years. An October 2015 report by the American Trucking Associations (ATA) predicted a worsening national truck driver shortage. Annual turnover at large firms remains near 100%. The industry is losing qualified drivers through retirement. The median age for over-the-road drivers is 49.

The longer distances and times required to serve Tacoma and Seattle ports while weekly vessel calls are suspended at Portland greatly reduce driver productivity and compound the driver shortage impact on Oregon shippers. Reducing that shortage by training additional truck drivers would benefit Oregon shippers by adding critical capacity to the trucking industry.

A second aspect of training is driver familiarity with port container terminals. Picking up or delivering a container to a marine terminal is a complex multi-step process in a potentially hazardous environment. Terminals have strict safety rules and procedural steps, and they vary between terminals. New drivers often encounter delay due to unfamiliarity. This barrier can be largely overcome by proactive terminal-specific briefings and familiarity trips.

Benefits

Efforts to expand the truck driver labor pool by training new drivers would have multiple benefits:

- Adding capacity to serve Oregon exporters and importers.
- Adding jobs, particularly in rural areas.
- Creating a new generation of well-trained truck drivers.

The benefits of a large Oregon truck driver labor pool will flow to Oregon trucking companies and their customers. There is no guarantee that new drivers will enter the port drayage sector, but that sector recruits from the same overall pool of eligible drivers. Even if drivers do not gravitate to port drayage, Oregon shippers will benefit from greater overall truck industry capacity.

There will be specific benefits to Oregon shippers from increased driver familiarization with port container terminals. As documented in multiple studies, a large portion of port terminal delays is attributable to “trouble tickets” caused, in turn, by processing and documentation failures. Reducing these problems will reduce delays and improve reliability.

Requirements

Driver Training. Companies need trained, accident-free, and drug-free applicants with Commercial Driver’s Licenses (CDLs). Becoming a commercial truck driver requires training and licensing. Training can be obtained through a commercial truck driving school, a community college offering a truck driving program, or a trucking company that offers an in-house training program. The training typically consists of hands-on skills, safety instruction, and rules instruction

to enable the student to pass the Department of Motor Vehicles (DMV) tests for a Commercial Driver's License.

Costs of training programs are reportedly \$3,000-\$10,000 at private truck driving schools and \$2,000-\$5,000 at community colleges. Oregon DMV CDL and skills testing fees can total \$100-\$150, depending on which combination of tests is required.

The Tioga Group located several private truck driving schools in Oregon and two community college programs. Many of the larger trucking firms run their own driver schools – an unrealistic option for the small trucking firms that usually provide port drayage.

Driver Age. Federal rules effectively require port drayage truck drivers to be at least 21 years old. Drivers 18-20 years old can operate trucks within state boundaries, but cannot drive in interstate trips. International trade, specifically marine container movements, is regarded for this purpose as inherently interstate, preventing younger drivers from hauling international containers.

Insurers and company rules normally require new drivers to have at least two years of truck driving experience (presumably in smaller or non-commercial trucks), making 23 the effective minimum age. These rules and practices prevent a large cohort of young high school and community college graduates from driving commercial trucks. Once these potential candidates have found other jobs, they are less likely to ever become truck drivers.

Terminal Familiarity. The Port of Tacoma provides some driver information on the Northwest Seaport Alliance website, including an “onboard list” of terminal requirements and a downloadable Facilities Guide. While useful, these are not substitutes for working knowledge.

Existing Efforts and Status

There is an Oregon Truck Driver Tuition Loan Program administered by a partnership of the Oregon Trucking Associations (OTA) and Worksystems, Inc. The program is funded through a \$386,000 revolving loan fund authorized by the Oregon State Legislature. Worksystems, Inc. charges a loan fee of \$50, the only administrative expense. The loan fund and administrative costs are repaid by borrowers. There is no recurring cost to Oregon taxpayers.

The program originated with a \$1.2 million U.S. Department of Labor grant used to develop a driver training curriculum at Clackamas Community College. The Professional Truck Driver Certification (PTDC) curriculum was created in association with OTA, trucking firms, and insurers. A key feature of the program was an agreement by insurers to accept and cover drivers who had completed the curriculum in lieu of having two years of truck driving experience. OTA continues to cooperate with Clackamas Community College in “train the driver” programs to certify teachers.

Students attending a school using the PTDC program can borrow up to \$3,000 at 10% interest rates. There are limitations, however. There can only be two loans given per training course at each school site.

The loan program began processing applications in December 2012. To date, the program has received 187 loan application totaling \$440,500 against a loan fund total of \$386,000. The program has funded 168 loans. Six loans have been repaid and 117 are active, for a total of 123 applicants

that are presumably now driving trucks (about 67% of those that applied received a loan). The program's current 117 loans average of \$2,600 each. That is an average of about 46 new drivers annually – a very small part of the gap to be closed.

As of August 2015, the tuition loan fund is currently oversubscribed, and with a balance of under \$50,000, cannot make any new loans. The loans repay an average of \$84 per month, and some are delinquent, so repayment to the loan fund averages \$6,000–\$10,000 per month. At that rate, the fund will not be able to make new loans for several months. Worksystems, Inc. anticipated processing applications again in January 2016.

Tuition and fees at community colleges typically total \$3,800-\$3,900, and the average loan covers about 67% of community college tuition. Private trucking school fees are higher. The cost of community college could decline under Oregon Senate Bill 81, the “Oregon Promise”, signed by Governor Brown in July 2015. That program is meant to offset tuition not covered by any other state/federal grants.

The driver shortage is industry-wide, and most graduates of the program initially take jobs with major long-haul motor carriers that can offer signing bonuses and will sometimes repay the tuition loan. The long hours and time away from home leads to the high turnover. Port drayage firms often recruit former long-haul drivers that prefer to remain local.

Legislation to allow states to lower the age for a commercial, interstate license to 18 years old was introduced in Congress in 2015. The measure would have allowed contiguous states that join together in "compacts" to drop the age threshold to 18 for interstate trips. Under the proposal, states and the U.S. Department of Transportation would also be allowed to impose other restrictions. These provisions were dropped from the federal Fixing America's Surface Transportation (FAST) Act passed in late 2015. The State may wish to see these efforts restarted with a view towards easing the persistent truck driver shortage.

The Western States Transportation Alliance (WSTA) has proposed a state-authorized “pathway” for 18-20 year-olds to enter the truck driving workforce. Features include:

- Specific training for CDL qualification,
- Distance and mentoring options for younger drivers, and
- Tracking of young driver performance.

Potential Public Agency Role

A jobs training and placement program to expand the number of Oregon truck drivers could take multiple forms:

- An expanded Truck Driver Tuition Loan Program.
- Expanded community college programs and outreach efforts, building on the “Oregon Promise” program.
- Reduced Department of Motor Vehicle fees for Commercial Driver's License (CDL) tests and upgrades.

- Joint training and recruitment efforts with the OTA, the Port of Portland, or selected trucking companies.
- Selective support for relaxed age restrictions.
- Increased training and familiarization opportunities for Puget Sound marine terminals.

Next Steps

An expanded truck driver training and recruitment program would be a logical component of the Trade and Logistics Initiative, with a well-defined public agency role. There is an existing tuition loan program that is contributing to the solution, but is under-funded. Recapitalizing the revolving fund would be a one-time expenditure that would add to the pool of trained truck drivers indefinitely.

The simplest approach would be to expand the current driver training loan program by increasing the revolving loan fund. The loans take 36 months to repay, and a new loan cannot be made until enough payments have been made to replenish the revolving fund after about 30 months. Each \$2,600 in the fund will generate a new loan, and a new trained driver, every 30 months. To train 100 new drivers each year, the existing \$386,000 fund would need to be increased to roughly \$839,000 – an addition of \$453,000.

Developing truck driver training programs at other community colleges may also be feasible, but would have a longer lead time. There may also be a potential role for Business Oregon in assisting the port trucking industry with recruitment and retention.

Potential risks include low driver retention after training or migration to other trucking sectors. Like most job training programs, a truck driver training program will increase the pool of variable drivers, but the drayage sector must still attract them to port trucking.

The Puget Sound ports could be approached by the Port of Portland, ODOT, Business Oregon, or the OTA to organize training and briefings for Oregon drayage drivers. The actual training would be conducted by individual terminal operators.

3. Satellite Container Yards

Overview

A number of workshop participants and other stakeholders see an opportunity and need to establish container yards or depots to serve Oregon importers and exporters outside the Port of Portland itself. These “satellite” yards could include storage and supply depots for empty containers; trucker drop lots for staging containers on chassis; “dray-off” yards for interchanging containers between over-the road and locally drivers; or “inland ports” that function as extensions of marine terminals. The two major issues in satellite depot/drop lot/dray-off projects are:

- Function – should the facility offer empty container supply and returns, loaded container handling, equipment interchange, or some combination?

- Location – should the facility be located in Portland, elsewhere in Oregon, or near the Ports of Tacoma or Seattle?

Benefits

These “satellite yards” could address several goals:

- Facilitating relay operations to mitigate hours of service (HOS) limitations on long truck moves;
- Enabling “dray-off” operations to separate long-haul highway moves from local port terminal trips;
- Improving the supply of empty containers for Oregon exporters;
- Improving the supply of standard and heavy duty chassis for Oregon truckers and customers; and
- Facilitating reuse of empty import containers for export loads.

Requirements

Empty Container Supply and Return. As a rule, empty import containers are returned to the marine terminal where the import load was picked up. Empty export containers are obtained from the terminal where the export load will be delivered. This practice has been modified where vessel sharing agreements (VSAs) lead ocean carriers to spread their activity over multiple terminals. Empty sourcing and return processes then become complex, and result in higher trucking costs and longer trucker turn times.

Most container ports have empty container depots nearby. These depots are usually operated by independent firms and their primary purpose is off-terminal storage of empty containers.

The ability of truckers to obtain and return empty containers at an off-terminal depot of any kind depends on ocean carrier authorization. Where port terminals remain the default supply and return points (as at Portland, Seattle, and Tacoma), explicit authorization is needed to obtain or return an empty at an off-terminal depot. Ocean carriers usually only give such permission when the terminal itself is short on container supply or storage space, or when the ocean carrier is obtaining (“on-hiring”) or returning (“off-hiring”) a leased container at the depot.

Wheeled versus Stacked Container Yards. “Wheeled” container yards or drop lots at which containers remain on chassis do not require lift equipment or lift equipment operators. These lots can have simple gravel surfaces and may not even be fenced if loaded containers are not parked there. There may or may not be regular personnel on site, and there may be no need for structures, or electrical power.

Stacked container yards at which containers are separated from their chassis require more infrastructure and operations expense.

- Stacked empty container storage requires a paved surface to properly support the containers and bear the weight.

- Stacking requires lift equipment. Empties can be handled with heavy-duty fork lifts, reach-stackers, or side-loaders. Capital costs range from \$500,000 to \$1 million, and provisions must be made for fuel and maintenance (typically by mobile contractors).
- Stacked operations would typically require a staff of a least 3-4: a lift operator, a ground man, a clerk, and possibly a supervisor.
- A stacked operation would require fencing, an office structure, electric power, water, and sewer.
- If the stacked operation is also to serve as a chassis supply/return point, provisions will also be required for chassis inspection and maintenance (also typically by a mobile contractor).

These requirements overlap with those of rail intermodal facilities. Northwest Container Services (NWCS) in Portland takes advantage of this dual capability to offer deport services at its rail terminal.

Trucker Drop Lots. Trucker drop lots are basically parking lots for trucker convenience. Some large port truckers have their own yards for this purpose; others use vacant lots or street parking. Truckers can use drop lots to:

- Stage import loads for delivery to the customer in a particular time window or in a particular order.
- Stage export loads for delivery to the terminal at a particular time.
- Hold empty import containers for a convenient return trip or for possible re-use by export customers.
- Hold a supply of empty containers for export customers.

A company yard or drop lot enables the trucking firm to de-couple the trips to customers from the trips to port terminals. The trucker can pull import loads from the port on one day and deliver them to the customer the next day, or the reverse for exports. This capability is particularly useful in cases where importers and exporters are long distances from the port, as in parts of Oregon. A trucker that pulls an export load from the shipper in mid-afternoon, for example, may not be able to deliver that load to the port terminal within normal gate hours in the same day.

Drop lots and company yards are usually used by just one trucking company as there are no routine provisions for interchanging containers or chassis between truckers. Any interchange, either to deliver a load or re-use an empty, usually requires special arrangement. Holding loaded containers at a drop lot or company yard requires a secure location with fencing, lighting, and security personnel. For this reason, truckers usually hold loads only at company yards, not at off-site drop lots.

Dray-Off Yards. The “dray off” concept refers to the practice of splitting port drayage into two segments:

- The long-haul segment between the port area and the customer, and

- A short shuttle move within the port area.

The “dray off” yard is the point at which the container on chassis is exchanged between the two drivers and tractors.

Many truckers with company terminals near a port use their own facilities as dray-off yards. These companies may split their work force into one group to handle port shuttles during terminal gate hours and another group that can then operate 24/7 as required to serve customer locations. Some port-area truckers also sub-contract to provide port terminal service for long-haul truckers, with the exchange taking place at the port trucker’s yard.

The only multi-user dray-off yard known to The Tioga Group is the one operated at the San Pedro Bay ports by TTSI (a trucker) and Pasha (a terminal operator), working with Cargomatic (a software systems provider). At this facility, TTSI operates shuttle trips to and from the marine terminals and over-the-road (OTR) truckers interchange containers on chassis to serve major importers. Containers from pre-approved importers are discharged from the vessel and block-stored at the marine terminal. When a sufficient block is formed, TTSI truckers are dispatched to the marine terminal where the equipment operator “peels off” the containers without regard to consignee. The participating parties are pre-approved, equipment interchange agreements have been signed, and the ILWU provides a gate clerk and mechanic for the near-dock yard operated by Pasha Stevedoring. Truckers dray the containers to the near-dock site operated by Pasha. Either TTSI truckers or truckers dispatched by customers pick up the containers at the near-dock yard and transport them to their destinations.

Satellite Yards for Loads. Off-terminal facilities for loaded containers are very uncommon. Handling import and export loads at a satellite terminal faces significant institutional obstacles. The operator must receive and accept responsibility for the contents of the container as well as the container itself, and in doing so, effectively becomes the ocean carrier’s representative.

Increased interest in these concepts has resulted in a number of related developments:

- NWCS in Portland is linked to Seattle and Tacoma by rail.
- The Virginia Inland Port (VIP) at Front Royal, Virginia, is linked to the Port of Virginia by rail.
- South Carolina Port Authority (Port of Charleston) has opened a rail-served “inland port” at Greer (212 miles away).
- The Port of Wilmington, North Carolina has a truck-served satellite terminal at Charlotte Island and a rail/truck terminal at Piedmont Triad (Greensboro).
- Georgia Ports Authority (Port of Savannah) and Cordele Intermodal Services (a private 3PL) have established a 40-acre, rail-served inland port at Cordele, Georgia (200 miles away).

These facilities are linked to marine terminals by truck or rail and typically accept and deliver import and export loads and empties on behalf of the ocean carrier, thus operating in the same fashion as a port container terminal. The rail or transportation may be included in the ocean carrier rate.

Existing Efforts and Status

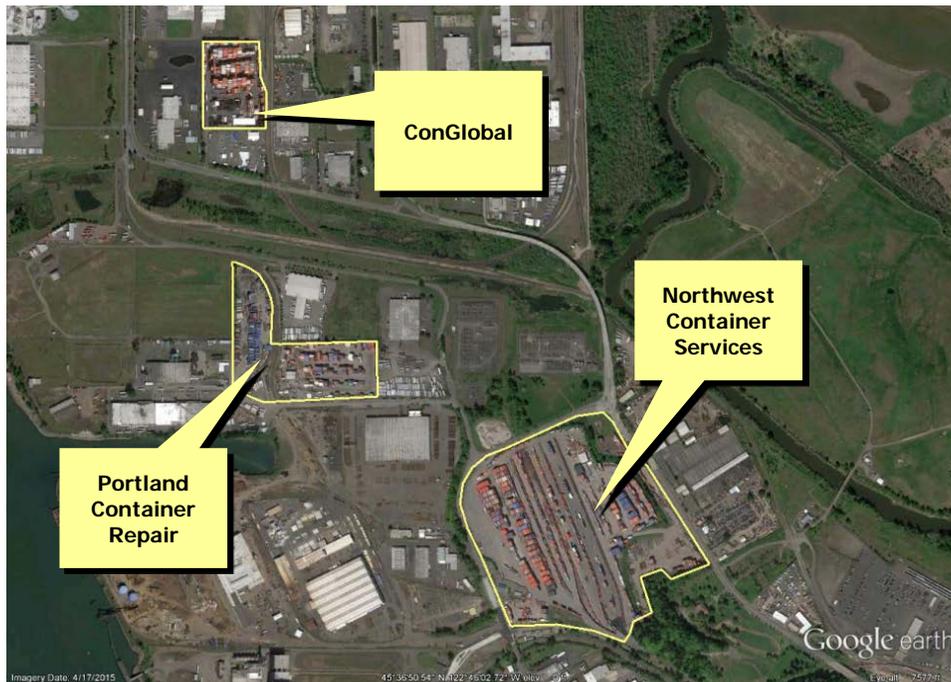
The demand for additional satellite yard capacity and functions is not yet clear. These facilities have been proposed as ways for Oregon importers, exporters, and truckers to cope with the difficulties of using the Ports of Tacoma and Seattle instead of Portland T-6.

The usefulness of drop-off yards in resolving truck driver hours of service issues is clear, and The Tioga Group has been told that some companies are using Tacoma-area drop yards for that purpose already.

Better container supply for exporters is always desirable, but establishing more depots will not resolve the problem unless the container owners – the ocean carries – choose to make supply available at those depots.

Most of the functions proposed for satellite locations are already provided in or near Portland. NWCS, ConGlobal, and Portland Container Repair (Exhibit 4) provide all of the services described above except loaded container dray-off. Portland Container Repair is currently being used for off-dock staging of export loads for Westwood, and in that sense is already functioning as a dray-off yard. Having these facilities can serve as a starting point for additional functions, initially without new capital investment. An important next step in evaluation will be to determine how much of the perceived need they can meet.

Exhibit 4: Port-Area Container Facilities



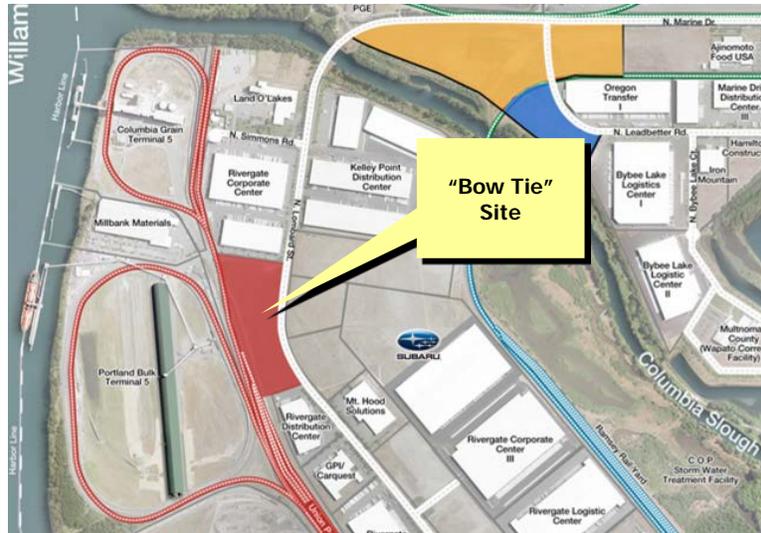
Location Options

Portland. The key advantages to locating new facilities or new capacity in Portland are: 1) anchoring cargo handling capability in Portland, and 2) taking advantage of Portland's mid-point location in the Interstate 5 corridor between the lower Willamette Valley and the Puget Sound ports.

The one example of a commercial multi-customer dray-off yard, the TTSI/Pasha facility, is located near the container terminals. An analogous effort in this case would be to put the facility near the Port of Tacoma, the Port of Seattle, or accessible to both. In this scenario, Oregon truckers would keep the over-the road movement between Tacoma and their Oregon customers, and a locally based trucker or driver would shuttle containers between the dray-off lot and the marine terminals.

The Port of Portland and other landowners in Portland also have sites available for the purpose. The Rivergate area “Bow Tie” property, shown in Exhibit 5, would be ideally suited for any of the functions discussed.

Exhibit 5: Port of Portland Rivergate Properties



Puget Sound. There are already container depots at ports of Tacoma and Seattle. NWCS has depots at both Puget Sound ports, and ConGlobal operates a large depot at Seattle. These depots offer basically the same functions as at Portland. These operations would be the logical starting points for additional functions and capacity, especially since two of the operators are already present at Portland.

The notion of a Tacoma-area or Seattle-area drop lot or dray-off yard appears to have been advanced primarily as a response to the long Puget Sound turn times in late 2014 and early 2015. Based on stakeholder interviews, those turn times have declined. The persistent source of delay is reportedly Interstate 5 congestion in and around Tacoma. A Tacoma-area drop lot or dray-off yard would not address the Interstate 5 congestion problem. Drivers from the lower Willamette Valley face a 400–500 mile round trip to Tacoma, which is right at ordinary hours of service limits. Significant Interstate 5 delay between Oregon and a Tacoma-area facility would frequently jeopardize the ability of a driver to complete the trip legally.

Moreover, a Tacoma or Seattle drop-lot or dray-off approach is essentially a Port of Portland bypass strategy, and may not be consistent with the state of Oregon’s long-term interests.

Willamette Valley. Some stakeholders also expressed an interest in a satellite facility in the Willamette Valley or elsewhere in Oregon. The proposed barge/rail linkage at Boardman effectively turns Boardman into a satellite terminal. Given the concentration of Oregon cargo

origins and destinations identified in the Phase 1 research report, the other potential service area is the Willamette Valley.

There has been specific interest in using the Lowe's Regional Distribution Center in Lebanon as a site for street turns. Representatives of Lowe's have reportedly expressed willingness to make their empty import containers available on-site for re-use by regional exporters. Such an initiative might serve as a starting point for routine re-use of import containers in the Willamette Valley, with potential long-term location at a regional drop lot or other third-party site.

Siting a satellite yard in the Willamette Valley, however, raises many of the same difficulties as a Puget Sound location. A location in Salem, for example, would be about 185 miles from Tacoma and 205 miles from Seattle, making single-day round trips unreliable. Moreover, a Willamette Valley location would still require Oregon trucker to negotiate the Puget Sound port terminals.

The idea of a satellite container yard in the Willamette Valley has been connected with the idea of a rail intermodal terminal there, and is addressed as a separate business case. If associated with a rail intermodal terminal, the availability of empty container supply and return capability there could facilitate some of the same economic advantages of NWCS in Portland by reducing the need to move empties by rail.

The Port of Oakland is cooperating with Shipper's Transport Express to establish a remote empty supply depot in California's Central Valley, about 63 miles from the Port. This inland depot is very comparable to the Oregon situation as it addresses the difficulty of making long round trips to the port within a single driver's HOS limits. The Port of Oakland hopes to achieve several objectives:

- Create a satellite start/stop location for empties and chassis,
- Reduce empty drays,
- Provide a "relief valve" for terminal and road congestion,
- Increase inland equipment supply, and
- Allow for future handling of import and export loads.

Potential Public Agency Role

Adding satellite container functions, capacity, and locations would be consistent with the roles of both Business Oregon and the Port of Portland. From the perspective of economic development, container depots and related facilities are industrial facilities and employers, fundamentally similar to other business types that the state of Oregon might wish to encourage. From the Port of Portland perspective, local container depots and related facilities are support functions and potential tenants for Port industrial land. Facilities at Puget Sound ports or in the Willamette Valley, however, could be pull cargo from T-6, making return of Portland container service more difficult.

Public agencies could encourage additional depot/drop lot/dray-off capacity, locations, and functions through:

- Assistance with land acquisition or leasing. The Port of Portland's Rivergate "bow tie" site would be one candidate if additional capacity is need in the Portland area.

- Conventional economic development tools, such as tax incentives or Enterprise Zone locations. These options would be useful to either establish new facilities or expand existing sites.
- Financial support for pilot programs.

Next Steps

Satellite depot/drop lot/dray-off concepts have significant promise, have been proposed by multiple stakeholders, and have a feasible public agency role. Consideration of such facilities should be part of the Trade and Logistics Initiative. There are precedents that can be analyzed to identify best practices and determine applicability for Oregon. The extent and nature of unmet need is still an open question, and might be usefully addressed as an ongoing part of the Trade and Logistics Initiative.

The facilities in question require minimal fixed investment beyond fencing, simple offices, and possibly paving. Any public involvement in fixed assets, therefore, should be modest. Lift equipment, when required, is more costly (e.g., \$500,000), but has significant resale value.

Beyond establishing unmet needs in more detail, steps by public agencies should be focused on facilitation of private sector freight logistics efforts. As there are private firms in these businesses already, there does not appear to be a need for competing public sector developments.

Given that many of the proposed functions are available at Portland-area facilities, it should be possible to phase-in additional capacity and functions rather than attempting to establish a new facility. A phased approach is inherently lower-risk, and would enable sponsors to adjust strategy and commitment.

4. New Rail Intermodal Services and Yards

Overview

Some stakeholders have suggested establishing additional rail intermodal services and yards in the Willamette Valley or elsewhere in Oregon. The goal would be to extend or supplement the Northwest Container Service (NWCS) from Portland and expand intermodal rail use, thus reducing the cost of accessing the Puget Sound ports and taking trucks off the highway. A new rail intermodal terminal could also serve as a container depot and supply point for Oregon exporters.

The primary stakeholder interest has been in a facility and service in the Willamette Valley. Possible points mentioned for a new rail intermodal terminal in the Willamette Valley include Albany, Springfield, Eugene, Lebanon, and Medford. NWCS was actively considering a Willamette Valley service in 2005–08. There has also been some interest in involving short line railroads (e.g., the Albany & Eastern) in intermodal terminal development.

Establishment of a new rail intermodal terminal in the Willamette Valley, however, faces some operational, economic, and institutional barriers. A standalone rail intermodal service over the short distances involved is expected to be more costly than truck service. Intermodal rail service in the Interstate 5 corridor requires the active participation of UP, which owns the lines. Railroads typically prefer long haul moves of 500 or more miles.

Existing Efforts and Status

Oregon currently has five rail intermodal facilities served by UP and BNSF railroads.

Port of Portland Terminal 6. The on-dock rail intermodal transfer capabilities of T-6 are currently idle pending resumption of weekly vessel service that could use those capabilities (Exhibit 6). This facility is accessible to both BNSF and UP.

Exhibit 6: Port of Portland T-6 Intermodal Terminal



NWCS Portland. The NWCS Portland terminal (pictured in Exhibit 7) is served by UP. In addition to transferring containers to and from rail cars, this facility serves as a container depot and a container maintenance and repair site. The site is about 90 acres.

Exhibit 7: NWCS Portland Intermodal Terminal



NWCS Boardman. The NWCS Boardman terminal (Exhibit 8) was developed as a joint effort between NWCS and the Port of Morrow, using funding from the federal government and *ConnectOregon*. Initial cost of the 15-acre facility was roughly \$10 million.

Exhibit 8: NWCS Boardman Intermodal Terminal



UP Portland. The UP (former Southern Pacific) terminal at Portland handles containers and trailers for UP’s regular intermodal services.

BNSF Portland. The BNSF (former Burlington Northern) terminal at Portland likewise handles containers and trailers for BNSF’s regular intermodal services.

Rail Intermodal Service Factors

A successful rail intermodal service in the Willamette valley or elsewhere will require a business model that brings together the volume, service, and cost factors below in a combination that is both more efficient than truck drayage and attractive to potential customers.

Volume

The potential container volume handled by rail intermodal service will not determine its economic feasibility, which is instead dictated by the business model. Volume does, however, help determine interest in such an initiative and the potential for public benefits. Volume also affects the scale economies of terminal and rail line-haul operation.

The large volumes needed for intermodal services are typically generated by large ports or population centers. Typical threshold values are population centers of a million or more or a port with 250,000 TEU (about 150,000 containers) or more. Occasionally very large, concentrated production centers will also produce enough volume to demand intermodal service. The Honda production complex in and around Marysville, Ohio near Columbus is an example.

Customers are understandably reluctant to commit important business to a start-up intermodal service without a performance record and with no guarantee of ongoing service. Service providers must have sufficient staying power to establish a service record with sub-optimal volumes. One critical element, especially at start-up, is one or more “anchor” customers willing and able to commit substantial business volumes. Many of the first double-stack container trains were established only after the ocean carrier customers provided long-term volume guarantees to the railroads.

Error! Reference source not found. shows identifiable Willamette Valley container volumes from 2014 Port Import-Export Reporting System customs data from the Journal of Commerce. These estimates may be somewhat conservative because actual origins and destinations cannot be identified for many third party shipments, and the allocation method used by The Tioga Group for Port of Portland cargo cannot be safely applied to Puget Sound trade data that lack usable location information. These data do, however, show the rough magnitude of container movements and the import/export balance by county.

Exhibit 9: Estimated 2014 Identifiable Container Volumes – Oregon Markets

Market	County	Est. Import Containers	Est. Export Containers	Est. Total Containers
Portland - North Willamette	Clackamas	13,868	5,088	18,956
Portland - North Willamette	Clatsop	88	258	345
Portland - North Willamette	Columbia	58	-	58
Portland - North Willamette	Multnomah	18,577	6,615	25,192
Portland - North Willamette	Tillamook	2	-	2
Portland - North Willamette	Washington	5,221	1,562	6,783
Portland - North Willamette	Yamhill	227	535	762
Portland - North Willamette	Subtotal	38,041	14,057	52,098
Middle Willamette	Benton	219	98	318
Middle Willamette	Lane	4,900	1,073	5,973
Middle Willamette	Lincoln	116	1,121	1,237
Middle Willamette	Linn	1,296	13,629	14,925
Middle Willamette	Marion	1,157	10,105	11,262
Middle Willamette	Polk	19	3,279	3,298
Middle Willamette	Subtotal	7,707	29,305	37,012
Southern Oregon	Coos	10	13	22
Southern Oregon	Curry	1	129	130
Southern Oregon	Douglas	187	115	302
Southern Oregon	Jackson	943	266	1,209
Southern Oregon	Josephine	67	-	67
Southern Oregon	Klamath	44	646	690
Southern Oregon	Subtotal	1,251	1,170	2,421
Central Oregon	Crook	3,731	-	3,731
Central Oregon	Deschutes	612	1	613
Central Oregon	Morrow	304	12,614	12,918
Central Oregon	Sherman	-	-	-
Central Oregon	Hood River	115	35	150
Central Oregon	Jefferson	423	30	453
Central Oregon	Wasco	21	6	26
Central Oregon	Wheeler	0	0	0
Central Oregon	Subtotal	5,205	12,686	17,891
Eastern Oregon	Baker	6	-	6
Eastern Oregon	Gilliam	-	-	-
Eastern Oregon	Grant	1	5	6
Eastern Oregon	Harney	0	-	0
Eastern Oregon	Lake	-	635	635
Eastern Oregon	Malheur	7	400	407
Eastern Oregon	Umatilla	348	364	712
Eastern Oregon	Union	1	-	1
Eastern Oregon	Wallowa	-	-	-
Eastern Oregon	Subtotal	363	1,404	1,767
Oregon	Total	52,567	58,623	111,190

- The largest concentration of containerized cargo is in the Portland-North Willamette area. These locations are generally within 50 miles of Portland and would probably be served by a Portland rail terminal (e.g., NWCS) rather than by a new terminal further south.
- The Middle Willamette Valley counties most accessible to a Lebanon terminal had an estimated identifiable total of about 37,312 containers in 2014, with an export/import ratio of 3.8 to 1.
- Southern Oregon had less container traffic in 2014, an estimated total of 2,421 containers about evenly balanced between imports and exports.
- The Central Oregon area had about 17,891 containers in 2014, with a 2.4 to 1 ratio of exports to imports. This volume is heavily influenced by Les Schwab imports in Prineville. The Morrow County trade is too far north to be accessible to a Willamette Valley service.

The markets surrounding a Lebanon terminal thus had a total of about 44,406 containers in 2014 (not counting Morrow County), about 2.2 to 1 in favor of exports. Based on industry interviews, around half of this total is being trucked to and from the NWCS terminal at Portland and the remainder trucked to and from the ports of Seattle and Tacoma.

Facilities and Equipment

Facilities. Rail, highway, customer and community needs and costs are all elements in selecting a terminal location. The typical location for an intermodal rail operation is at or near an existing rail yard, with good highway access, and with the closest possible proximity to shippers. Rail infrastructure and track needs to be provided for loading and storage areas for rail cars. Parking areas for containers, chassis, terminal equipment, and employees are also required. Terminals operate at times dictated by the needs of the market and the associated rail operation, which means they need to be well lighted and secured.

Railroads usually own their rail intermodal terminals, and are compensated for land and fixed investments through the profit margin on the rail service. The railroad customer pays the railroad for the combined terminal and line-haul services under a single rate; there are no separate lift or facility fees.

The existing Albany & Eastern transloading site in Lebanon has been mentioned as a possible beginning point for a rail intermodal terminal. Typical development costs for a site of this type would be in the neighborhood of \$10 million, comparable to the NWCS Boardman facility.

Terminal Equipment. Heavy-duty mobile lift equipment is required to transfer containers between truck chassis, ground storage, and rail cars. Small facilities can start out with one lift machine, perhaps used. As volume grows, a second machine is required for both capacity and reliability. Larger intermodal facilities have multiple lift machines. There are several different types of lift machines in use. Exhibit 10 shows a “reach stacker” recently acquired by NWCS.

Exhibit 10: NWCS Lift Equipment



Rail Car Supply. Rail cars are typically provided by the railroad. Rail cars are usually obtained from the TTX Company, a national pool owned by Class I rail carriers. TTX is paid by the railroads on a per-day and per-car-mile basis¹. Railroads also own some of their cars. To protect supply, sometimes stakeholders provide and control the rail cars. NWCS overcomes the car supply problem by owning or controlling most of its own cars (a substantial investment), and obtaining others from TTX as needed (Exhibit 11).

Exhibit 11: NWCS Double-Stack Car



Rail Service and Connections

Rail Service Roles. Rail intermodal service for international containers may involve multiple railroads. Most domestic intermodal service is provided exclusively by Class I railroads. International container service to and from ports may also involve port switching railroads. Short-line railroads have participated in intermodal service in a few cases.

¹ It is sometimes said, inaccurately, that railroads lease cars from TTX. TTX is a pool, not a leasing company.

- **Class I Railroad.** The railroad typically provides a combined terminal and line-haul service between points on its own lines or via interchange with another Class I or port switching railroad.
- **Port Switching Railroads.** Some ports have switching railroads that handle train movements between an interchange with the Class I railroad and the marine terminals or near-dock port terminals, such as Tacoma Rail at Tacoma. They typically charge for the service under a public tariff on a per-car basis. Tacoma Rail charges \$47 per railcar platform (usually two containers) to switch cars between the UP interchange and the South Intermodal Yard at Tacoma.
- **Short-Line Railroads.** Participation of short-line railroads can have both advantages and disadvantages. Potential advantages include: 1) the ability to locate the facility off the Class I main line and isolate it from traffic flow; 2) greater flexibility in operations; and 3) lower cost in some categories. Potential disadvantages include: 1) the complications of Class I/short-line interchanges; 2) possible limitations of short-line infrastructure; and 3) fewer opportunities to merge multiple flows and operations into a network.

Willamette Valley Options. The Lebanon site is served by the short-line Albany & Eastern railroad. The Albany & Eastern (A&E) connects with the Portland & Western (P&W), and the Portland & Western connects in turn to UP at the Albina Yard in Albany. BNSF operates between P&W and A&E under trackage rights agreement with UP. A Lebanon-Tacoma trip, therefore, would involve four railroads: A&E, P&W, UP (or conceivably BNSF), and Tacoma Rail. The UP/Tacoma Rail interchange is routine and a part of existing NWCS service. There are at least four conceivable intermodal operating options:

- **UP Hook and Haul Service.** It is technically possible for UP (or BNSF, over trackage rights) to provide locomotives and crew to move intermodal cars between a Willamette Valley facility and Portland or Tacoma. UP would have to operate over P&W and A&E for the purpose. This option would probably be uneconomical at start-up or while volumes remain low. The NWCS service at Portland operates in this manner. NWCS assembles the train and UP provides locomotives and crew to move the train between Portland, the interchange with Tacoma Rail, and Seattle. UP is not involved in loading or unloading the trains.
- **Short-Line/UP “Manifest” Service.** It is also possible for A&E/P&W to move the cars between Lebanon and Albany, and UP to move the cars as part of its regular railcar (“manifest”) train service to Portland or Tacoma. The A&E/P&W/UP multi-carrier interchange, however, would be highly unusual for rail intermodal service, and such an arrangement would likely be much slower than intermodal-only service. This option might be possible as an interim step, but would be inefficient in the long run.
- **UP “Block Swap” Service.** Existing or planned UP intermodal trains operating through the Willamette Valley (e.g., north-south service in the Interstate 5 Corridor) may be able to pick up northbound cars at Albina Yard and take them to Puget Sound, and drop off southbound cars from Puget Sound. P&W/A&E would then move the cars between Albany and Lebanon. The feasibility and efficiency of this

option would depend on the operating pattern of the existing or planned north-south trains.

- **P&W Trackage Rights Service.** P&W reportedly has trackage rights over UP between Albany and points in Portland close to the NWCS terminal. If agreements could be reached with UP to connect all the way between Albany and the NWCS terminal, and operate over A&E to Lebanon, P&W could operate intermodal trains directly from Lebanon to the NWCS terminal. At the NWCS terminal, the cars would be combined with regular NWCS trains.

Cost Factors

Rail intermodal services entail costs for local drayage, terminal lift, and line-haul rail operations. The combined cost usually must be less than the comparable trucking cost to attract business, as rail intermodal services are slower over short distances.

Drayage Costs. Customers currently draying containers between Willamette Valley locations and NWCS in Portland, the Port of Tacoma, or the Port of Seattle would dray containers to and from a Willamette Valley rail intermodal instead. The difference between the two drayage costs sets a ceiling on the price customers would be willing to pay for rail intermodal service.

Lift Costs. The terminal operator lifts the containers to and from rail cars. The operator often provides cranes and other equipment needed to perform those services, and charges the railroad on a per-lift basis. Most railroad intermodal terminals are operated under contract by companies such as Parsec, Intermodal Terminal Services, Pacific Rail Services, or Eagle Intermodal Services.

The size and scope of the facility is determined by anticipated volume, as shown in Exhibit 12. The minimum size is typically 10-20 acres. Terminal equipment is typically provided by the terminal owner or by a contract operator.

Exhibit 12: Typical Small Intermodal Terminal Features

Annual Lifts	<10,000	10,000- 20,000	20,000 - 30,000
Lift Machines (typical)	1 Used	1 New	2 New/Used
Size (Acres)	10	10-15	15-20
Labor FTE	2	3	4 to 6

Rail intermodal terminal operations have strong economies of scale. At a modest start-up volume of around 30,000 annual lifts, the contract operator’s, would be at least \$50 per lift at present. Two lifts are required at each end of the trip, one on and one off. To obtain significant economies of scale, the volume would need to first triple, and then double. Such volumes are far beyond the reach of small intermodal facilities.

When ports provide on-dock or near-dock rail intermodal transfer facilities, there is a separate charge to the ocean carrier for terminal services. For example, the charge at Tacoma’s South Intermodal Terminal is \$70.15 per container lifted on or off.

Rail Line-haul Costs. In previous studies, rail costing experts working with The Tioga Group estimated Class I operating costs in similar short-haul corridors at about \$1.00 per mile at 2015 cost levels. The rail distance from Albany and the Port of Tacoma is roughly 221 miles each way,

or 442 miles round trip, with a rail line-haul cost of \$442. P&W costs may be lower, but would include trackage rights payments to UP.

Port of Tacoma Rail Costs. The Port of Tacoma publishes a public tariff for container handling fees at its near-dock rail terminals. At the South Intermodal yard, for example, the fee is about \$70 per lift. There is also a Tacoma Rail switching fee equivalent to \$23.50 per container. Container handling fees at Tacoma would total about \$93.50 in each direction, or \$187 for an empty/load round trip, in the absence of any negotiated reductions. (The ocean carriers absorb the Tacoma lift fees for the current NWCS service from Portland.)

Business Model

A robust, pragmatic business model is a crucial factor in the success or failure of intermodal services. Rail intermodal service has substantial terminal costs for loading and unloading the trains, building and maintaining the terminals, and draying the containers between the rail terminals and their actual origins and destinations at the other end. These costs often amount to several hundred dollars on each move. Railroads have substantially lower unit line-haul costs than individual trucks. A double-stack container train can carry 300+ containers yet be operated by a crew of two. The inherent line-haul efficiency of rail technology likewise dramatically reduces unit fuel costs compared to trucks.

The railroad, however, must operate a large enough train over a long enough trip for those line-haul savings to offset the high initial terminal costs. The breakeven distance has usually been estimated somewhere in the 500-1,000 mile range with around 750 miles being a common ballpark figure.

At shorter distances, such as those between Oregon cities and the Puget Sound ports, rail intermodal service cannot ordinarily compete with trucking if customers bear the full round-trip costs. Success in these short-haul intermodal markets, therefore, depends on economic leverage or cost-sharing of some kind.

Conventional Business Model. The ordinary formula for success for rail intermodal services is to move a large volume of cargo a long distance. The largest intermodal flows of international container are between West Coast ports and Midwestern hubs such as Chicago and Memphis, distances of 1,800-2,000 miles. The economics of such services also depend on high volumes at hub terminals, in some cases exceeding one million annual lifts.

NWCS Business Model. The 170-mile NWCS service between Portland, Tacoma, and Seattle is extremely short by rail intermodal standards. The service is made economically viable by the financial participation of Tacoma and Seattle ocean carriers using the service to compete for the Oregon market in lieu of direct Portland service.

The Tioga Group understands that the economics of the NWCS service depend on:

- Load/load container moves rather than empty/load round trips;
- Additional revenue from container storage and maintenance and repair work at Portland;
- Ownership or control of the rail cars;

- Additional empty container repositioning paid for by the ocean carriers; and
- Ocean carrier coverage of the Port of Tacoma lift fees.

Absent these sources of economic leverage and cost-sharing, it is unlikely that a stand-alone rail intermodal service between Portland and Puget Sound could compete with trucks.

NWCS explored a potential Willamette Valley operation in 2005–08. The firm located potential sites, and met with local representatives, the short line railroads, and local customers. NWCS also pursued a \$5 million federal grant to develop the terminals. At the time, however, UP was unwilling to support the project. Line capacity may have been a UP concern at the time, which was a period of rapid intermodal growth and congestion in some corridors.

Ocean Carrier Participation. Economic participation of the ocean carriers is a critical part of the NWCS business model. The carriers compensate NWCS for repositioning empty containers if needed so Oregon shippers pay only the equivalent of a one-way loaded move. The ocean carriers also absorb the Port of Tacoma lift fee, which would otherwise be \$70 per container. Similar ocean carrier participation or an equivalent subsidy from an outside source will likely be necessary for a Willamette Valley intermodal rail service to succeed. There may be less motivation for ocean carriers to participate if they already have the Willamette Valley traffic under current rates through NWCS or under rate agreements that require the customer to pay for drayage.

Competitive Response. Bringing intermodal costs under existing truck rates will not guarantee a lasting price advantage. As of late 2015, truck rates remain high due to the shortage of capacity and the longer turn times experienced with Tacoma and Seattle trips. Motor carriers have considerable latitude in pricing, however, and can be expected to respond to new intermodal competition by reducing rates to keep the business.

Potential Benefits

The primary beneficiaries of a Willamette Valley intermodal service would be importers and exporters that could use the service instead of trucking to and from NWCS at Portland or the ports of Tacoma and Seattle. The extent of benefits would depend on volume and on savings over truck costs. The volume depends in turn on the market area that could be accessed and the share that can be achieved. The cost savings to customers would depend on the development and implementation of a business model to bring the customer cost below that of trucking.

Potential Public Agency Role

Given the interest by Willamette Valley shippers in this concept, state agency financial assistance may be warranted to fund a detailed feasibility study and business case. The feasibility study should determine:

- The cost factors involved (e.g., local truck drayage, terminal operations, rail equipment supply, line-haul rail service), and how those costs would compare to comparable truck rates.
- The availability and development cost of potential terminal sites.

- The documented interest of UP, short-line railroads, ocean carriers, and intermodal terminal operators in providing rail intermodal service, and their expectations for compensation.
- Available volume commitments from anchor customers.
- Potential business volumes under different rate and service scenarios.

The detailed business case should then determine the requirements for success, the potential benefits to the state of Oregon, and, if justified, the options for implementation. This detailed business case should also evaluate the experience of similar facilities in other U.S. markets.

Any long-term public agency involvement should be contingent on private sector development of a robust business and operations plan with the necessary commitments from anchor customers, UP, and ocean carriers. Longer term, there may be a state role to help advance such service via start-up grants, demonstration project funding, or conventional economic development tools used to encourage new businesses of any kind. In the absence of sufficient subsidy from private stakeholders, public agencies might be asked to fund permanent operating subsidies.

There have been many cases of public support for intermodal terminal facilities or equipment. The NWCS terminal at Boardman used *ConnectOregon* funds, and NWCS is also using public funds to rebuild and upgrade double-stack cars.

Next Steps

Rail intermodal service over such short distances requires special circumstances to succeed. NWCS Portland appears to have assembled a working formula involving favorable terms from ocean carriers, rail car ownership, and load-load operations.

Concrete, detailed, private sector proposals for Willamette Valley intermodal yards and service have yet to emerge. The 2005–08 NWCS efforts to establish a Willamette operation suggest that under the right circumstances such an operation might succeed. Public agency participation may be appropriate if NWCS or another stakeholder can bring together the necessary elements, most critically support from UP and the ocean carriers.

5. Columbia River Barge/Rail Service

Overview

The former Columbia River container barge service has been dormant due to loss of the ocean carrier connection at Portland. Due to heavy-weight loads and low margins, agricultural producers are significantly affected by the lack of barge service with increased transit time, logistics costs, and business risks. The present service replaces part of the Columbia River barge service between Lewiston and Portland with a barge/rail combination:

- Barge service between Lewiston, Idaho and Boardman, Oregon;
- NWCS rail intermodal service between Boardman and the NWCS terminal in Portland, and

- NWCS rail intermodal service between Portland and Seattle/Tacoma.

The Boardman-Lewiston-Portland-Seattle/Tacoma barge/rail service repositions empties to Boardman by rail, re-establishes barge service from Lewiston to Boardman, and provides rail intermodal delivery to Portland and Seattle/Tacoma ports. Hapag-Lloyd sponsored the repositioning of empty containers to Boardman.

Benefits

The immediate benefit of barge/rail service is to reduce source-to-port movement costs for upriver shippers in the Lewiston and Boardman area. These customers have been facing trucking costs for movement to Tacoma that greatly exceed the previous barge costs to Portland. Heavy-weight pulses (e.g., peas, beans and lentils) and other agricultural products from Eastern Oregon, Idaho, Washington and Montana have specific movement needs. There is a significant shortage of trucks and heavy-weight chassis for transport of these products, particularly east of Portland. Moreover, the service is taking these truck movements off the highways.

The barge/rail service also benefits the Port of Morrow, where state investment in capacity that was underutilized, can now be put into service to a much greater extent.

An additional long-term benefit is the retention of Lewiston barge service that can be re-connected to the Portland T-6 when weekly vessel service resumes.

Requirements

The major facility and operational requirements of the barge/rail service are:

- Barge terminals at Lewiston and Boardman capable of handling containers;
- A regular, efficient barge service between Lewiston and Boardman;
- Rail intermodal terminals at Boardman and Portland; and
- Regular, efficient rail intermodal service between Boardman, Portland, and the Puget Sound ports.

These capabilities were all in place from the previous Tidewater Barge container service discontinued with the departure of Hanjin and Hapag-Lloyd T-6 service.

The organizational, financial, and institutional requirements include:

- Commitment by UP to move intermodal cars between Boardman and Portland; and
- Commitment by the ocean carriers (initially Hapag-Lloyd) to make empty containers available at Boardman and competitive rates available at Tacoma.

Existing Efforts and Status

In November 2015, NWCS and the Port of Portland obtained the commitments required to launch this barge/rail container service. This service is being implemented as a partnership with NWCS, Tidewater Barge, Hapag-Lloyd, Port of Portland, Port of Morrow and Port of Lewiston. The key

objectives are to sustain barge economics for upriver shippers, maintain barge capability, and anchor container cargo transfers in Portland.

- Empty containers are transported by rail to Boardman weekly (carriers will pay the repositioning cost), and then by Tidewater Barge to the Port of Lewiston every other week.
- Tidewater barges arrive at the Port of Lewiston with assigned/booked export containers by booking, approximately 90 empty containers currently. The barges are immediately reloaded with loaded export containers and moved to the Port of Morrow in Boardman. These containers are then trucked to NWCS's rail terminal in Boardman.
- At Boardman, Oregon local agricultural products can be added to the NWCS loads.
- From Boardman, containers move on UP rail lines with NWCS to their Portland terminal. A portion of these containers could be trucked to T-6 for Westwood shipment to Asia (monthly currently with expansion potential). Containers not delivered to T-6 continue via UP to Tacoma/Seattle.

The initial service is bi-weekly, with expected expansion to weekly as volume increases. The service would use the barge terminals at Boardman and Lewiston as local hubs, as was the practice prior to the T-6 service loss. The participants are seeking an increase to weekly service, which would provide an opportunity to maximize the state's investment in Boardman by creating an inland hub at Boardman. Additional benefits to Oregon agricultural shippers will accrue from the expansion of barge/rail service. Cargo movement from Idaho and other points helps build the cargo market critical to expanding and sustaining T-6 service.

Many of the commodities formerly shipped by barge are dense, and a fully loaded ocean-going container of pulses, for example, would exceed highway weight limits. To enable the barge/rail combination to handle heavy loads safely, NWCS has acquired rail cars capable of carrying 53,000 pound loads in 20 foot containers versus the 44,000 pound loads ordinarily feasible for trucking.

A second key factor in barge/rail feasibility is cooperation of the ocean carrier in container supply and free time. The Port has assisted in negotiations with Hapag-Lloyd to bring this about.

Potential Public Agency Role

The Port of Portland has provided limited start-up seed funding for the barge/rail service to help with drayage costs from the river to the rail loadings at NWCS Boardman. If the proposed barge/rail service is commercially successful and can accommodate demand, there may be no public agency role. A public agency role could emerge if there is some obstacle to start-up or expansion that public agency action could overcome. Possibilities include a need for more terminal space or low-cost capital for additional equipment.

Next Steps

The barge/rail service is currently in a start-up phase, with planned expansion to weekly service. Monitoring the development of this service should be part of the Trade and Logistics Initiative.

6. Portland Transloading, Cold Storage and Logistics Services

Overview

Many Oregon shippers rely on third-party logistics services such as transloading, independent cold storage, freight forwarding, or consolidation for their containerized imports and exports. Small and medium-sized shippers (SMEs) often lack these specialized capabilities, especially when imports and exports are not a large part of their business. Large shippers also use third-party logistics services for specialized needs or when their own capacity is exceeded in peak seasons.

Benefits

In the long run, the Port of Portland and its Oregon customers would benefit from having the full array of such services available. Moreover, these activities generate Oregon jobs and tax revenue. Finally, growing and maintaining these capabilities in the Portland metro area will assist in anchoring trade functions near the Port of Portland and increase the commercial potential for direct vessel calls at T-6.

Requirements

Third-party logistics providers (3PLs) can offer a wide variety of services to supplement the capabilities of Oregon importers and exporters. As described in a separate effort to facilitate the use of such services by SMEs, 3PLs fill a critical gap for companies that have specific import or export logistics needs but lack the volume or capital required to fill those needs themselves.

Transloading. Transloading refers to the transfer of cargo between marine containers and domestic containers, trailers, or rail cars. Transloading occurs in both directions. Imports can be transloaded to larger domestic equipment to save on inland transportation cost, or allow mixing and matching shipments. Exports can be transloaded from bulk domestic shipment to marine containers, or to condense multiple domestic shipments into fewer, larger international shipments.

Heavy and bulky export commodities such as hay, pulses, grain, forest products, and wine are important to Oregon's economy and to the Port of Portland. These commodities are often moved by truck in highway-legal quantities and transloaded into heavy container loads near the Port. Overweight imports can include wine in bulk, marble countertops, hardwood lumber and veneer. It would benefit Oregon importers and exporters, and the Port of Portland to establish and retain sufficient capacity for transloading and other logistics services in Portland.

Overweight Container Loads. When loaded containers exceed the standard highway weight limit, they require either a special permit or a designated overweight corridor for legal movement, and may also require a "super chassis" or other special equipment.

Portland's competitors have or are creating designated overweight corridors in the port areas to facilitate such movement and encourage the growth of import and export transloading. The ports of Tacoma and Oakland both have overweight corridors and the Port of Seattle has just announced its intention to develop such a system.

Transloaders and their contract truckers that routinely move overweight marine containers would likely require annual Contiguous Operation Variance Permits (COVPs) from ODOT. These are

available from the Oregon Trucking Associations, the Clackamas County Motor Carrier Division, and other agencies. These permits cover Portland streets, according to the ODOT website, which enables transloaders to move heavy loads to and from T-6 as long as there are no posted route restrictions.

Based on The Tioga Group’s understanding to date, the COVPs would meet the needs of Portland import and export transloaders. This understanding should be verified with industry stakeholders.

Cold Storage. Refrigerated frozen or chilled cargoes are important to Oregon’s economy and have been historically important to the Port of Portland. The Phase 1 research report documented the importance of fresh and frozen fruits and vegetables, seafood, and beverages in the 2014 T-6 cargo flows. Some workshop participants suggested that new Oregon cold storage facilities could serve to anchor cargo flows in Portland or attract new Portland cargo.

In April 2015, Ecotrust published a report analyzing infrastructure issues in Oregon food production.ⁱⁱ The Ecotrust study concluded that adequate cold storage capacity existed, or could quickly be added both in general and for some specific commodities they studied (e.g., beef, small grains and legumes, storage crops and greens).ⁱⁱⁱ The report notes a potential shortage of cold storage and freezing facilities for chicken,^{iv} and that additional freezing capacity may need to be considered for beef^v and pork^{vi} as well.

To the extent a shortage of cold storage exists, it is likely to affect small users most. As Sno Temp chief executive officer Jason Lafferty said, “In a bulk warehouse environment, bringing in a pallet or two or three is a challenge. We’ve had to say no to the smaller folks. We’ve been protecting space for our core customers.”^{vii} Amanda Osborne, the lead author of the April 2015 Ecotrust study, stated that small processors “always run out of cold storage first.”^{viii}

Oregon and Washington have numerous cold storage facilities in keeping with the importance of perishable commodities to both states. Most export cold storage facilities are in production regions rather than near the port. These locations allow producers to minimize the trip and time between harvesting, processing, and chilling or freezing. Once chilled or frozen, the product is less vulnerable, and can be transported in refrigerated equipment with minimal, if any, loss of quality. Many of the cold storage facilities near the ports specialize in seafood, and their location is chosen for access by commercial fisheries.

It appears that cold storage operators are investing in more capacity near production areas. A recent study sponsored by Business Oregon noted the need for a cold storage facility in the North Coast region.^{ix} Business Oregon also was instrumental in assisting NORPAC Foods, Inc. and Henningsen Cold Storage to expand facilities in Salem. In addition to the Salem expansion,

ⁱⁱ *Oregon Food Infrastructure Gap Analysis* (Ecotrust, 2015)

ⁱⁱⁱ *Ibid. passim*, particularly pages 60, 117 and 200

^{iv} *Ibid.*, p. 87

^v *Ibid.* p. 117

^{vi} *Ibid.* p. 146

^{vii} “Oregon Cold Storage Plant Announces Expansion,” Capital Press, August 7, 2015

^{viii} *Ibid.*

^{ix} *Regional Economic Development Forums, Discussion Summary – North Coast Region* (Center for Public Service, Portland State University, August 5, 2014)

Henningsen expanded its Portland facilities by 2.7 million cubic feet in 2014. A new \$14.5 million cold storage and rail spur project recently opened in Boardman, aided by \$6 million in *ConnectOregon* funds. This facility will be heavily used by ConAgra Foods-Lamb Weston to store frozen potato products.

At competing ports such as Oakland, there are cold storage facilities for imports, where container loads of chilled or frozen products can be unloaded and stored until sold in smaller lots. The same facilities can often handle both imports and exports, and both frozen and chilled products. For example, VersaCold opened a new 196,000 square foot refrigerated storage facility near the Port of Tacoma to serve Grocery Outlet on October 5, 2015.^x

The Port of Oakland issued a Request For Proposal for a “Cool Port Oakland” cold storage development in February 2014. The resulting project involves a \$47 million, 375,000 square foot, rail-served facility to be operated by Lineage Logistics.

A Rivergate area rail-served cold storage and transload facility could assist in recruiting niche refrigerated vessel or container services to call T-6 with import cargo for processing and distribution. Oregon exporters would then be able to access a larger supply of empty refrigerated equipment for chilled and frozen products. By offering a near-dock, rail-served cold storage option, Portland would compete with Washington and California ports in this growing cargo segment. No Washington or California cold-storage transload facility has the proximity to T-6 that a Rivergate facility would have.

There is an inherent “chicken and egg” aspect to additional cold storage facilities. Such facilities would help to attract new vessel services, but new vessel services may be necessary to induce cold storage development.

Existing Efforts and Status

There are existing providers of transloading and other logistics services in Portland, but it is not clear at this point that they can offer the depth and breadth of services required. Facilities in Portland and Vancouver currently include:

- Chipman Relocations
- Expeditors International
- Bridgeport Distribution
- BTS Container Service
- C.H. Robinson Worldwide
- Columbia Transfer
- Independent Dispatch

These facilities typically consist of warehouses and cross-docking areas. All such firms offer multiple logistics services, including:

- Crating and packing
- Foreign Trade Zones
- Labelling and kitting
- Customs brokerage
- Oversize, overweight, and project cargos
- Household goods moving and storage
- Cold storage

^x “VersaCold opens Port of Tacoma distribution center,” *Refrigerated Transport*, October 5, 2015.

- Freight consolidation.

In the long run, the Port of Portland and its Oregon customers would benefit from having the full array of such services available.

Port of Portland staff in the Commercial Department has been actively engaged in marketing transloading and logistics operations for the past five years, as transloading and logistics facilities are attractive candidates for Port property. Three companies have transloading operations in the region – Fred Meyer International/Kroger, Xerox, and Dollar Tree. Regular container service is considered a prerequisite for growing Portland transload facilities for large importers. Transloading is also one way to free up empty containers for Oregon exporters.

The Port already maintains information on available industrial sites on its website, including those in the Rivergate area. (The “bow tie” site in Rivergate was referenced in the Satellite Container Yards business case.)

Potential Public Role

Facilitating expansion of transloading and logistics services in Portland might be accomplished using conventional economic development tools on non-Port of Portland property or as a project on available Port property.

The potential public sector role in cold storage capacity expansion would be similar to that described for Portland-area transloading and logistics: conventional economic development efforts targeted at a specific industry, or a Port-led property development effort. The efforts by Business Oregon to support the NORPAC and Henningsen expansions in Salem and the *ConnectOregon* support for the Boardman facility are clear precedents for public agency involvement in cold storage capacity expansion.

Next Steps

Expanding and anchoring transloading, cold storage, and other logistics services in Portland could be a valuable part of the Trade and Logistics Initiative. There is a clear public role, and precedents for similar public-private engagement at ports and airports elsewhere. The Tioga Group has not established that there is near-term need for capacity expansion. Detailed evaluation of the need and opportunity for additional transloading capability would require a more detailed assessment of current service capability, a comparison with potential Oregon shipper needs, and a determination of how to bridge any gap.

The industry itself is fairly aggressive about expansion into new services and markets. The recommended strategy is to have the public tools and capabilities in place when the need arises from the private sector. This would entail a working relationship between Business Oregon, Port of Portland Commercial Department staff, and local Portland-area development staff as needed to maintain an inventory of potential sites, incentives, and other means of encouraging and supporting private transload, cold storage and logistics facilities.