Improving Freight Infrastructure Investments

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**Freight Policy Transportation Institute**

- **History:**
  - $1.25m (1993-1998) Eastern Washington Intermodal Transportation Study (EWITS)
  - $2.43m (2003-2009) Strategic Freight Transportation Analysis (SFTA)
  - $1.67 m (2009-2019) Freight Policy Transportation Institute (FPTI)

- **Recently Completed Projects:**
  - WSDOT: Improved Methodology to Evaluate Benefits of Highway Preservation
  - USDA: Infrastructure Investment & Economic Modeling: Export Supply Chains
  - USDA: PNW Container Availability Study
  - USACE: Upper Mississippi Transportation Study

- **Current Projects:**
  - Idaho Transportation Dept. Freight Supply Chain Analysis (EROADS)
  - PacTrans: Confounding Factor Analysis of Commercial Vehicle Accidents
  - USDA: Agricultural Truck Safety Study
  - USDA: PNW Inland Terminal Optimization Model
  - USDA: Livestock Transportation and ELD Mandate
FPTI Research

- Modeling Ag. Export Supply Chains
- PNW Container Availability
- Inland Container Hub Optimization Model
Primary Objectives of Research Study

- Improve procedure for how we prioritize transportation infrastructure investments that span an entire supply chain.
  - Improve synergies across agencies
  - Bring more resources to bear on promoting projects outside jurisdictional boundaries
  - May lead to more efficient infrastructure investing
- Convene workshops of stakeholders to share this prioritization process / results.
- Solicit input / reactions from stakeholders.
- Publish Final Report

Export Commodities

- Wheat
- Soybeans
- Tree Nuts
- Poultry
Transportation Infrastructure Projects: Wheat Exports

Summary
189 Projects
117 Locations
$1.4 Billion
Many agencies (public, private)
Infrastructure Investments Supporting Wheat Exports

1. Mouth of the Columbia River Jetty Rehabilitation
   • USACE

2. Port of Longview Industrial Rail Corridor Expansion
   • Port of Longview

3. Double Tracking and New Bridges near Sandpoint, Idaho
   • BNSF

4. The Portland Marine Terminal Freight and Jobs Access Project
   • Port of Portland
Selected Projects for Modeling

- GoPort
- Port of Oakland
- I-5 Golden State Chokepoint Relief Proj.
- Savannah Harbor Expansion Project

Total Projects = 1,180
Across 360 counties
$111,094 billion
All Modes
Summary
322 Projects, 138 Counties
$22.2 Billion
Many agencies (public, private)
Infrastructure Investments
Supporting Soybean Exports

A. Southern California Rail Project

B. Double Tracking and New Rail Bridges - Sandpoint, ID
   - BNSF

C. Merchants Bridge Replacement
   - Terminal Railroad Association of St. Louis (TRRA)

D. Olmsted Locks and Dam
   - USACE
Broiler Export Transportation Infrastructure Projects
(153 Projects, $25.2 billion)
Challenges

• Each agency or private entity has different objectives in how they prioritize their investments, may not be compatible across larger geographies. Leads to inefficiencies in seamless/compatible investments to any one supply chain.

• Infrastructure investments impact many other supply chains, businesses, public agencies and stakeholders. Investments are not unique to only one type of freight movement (benefits & costs).

• Time/cost at compiling information very large.

• Maintaining current information difficult, given that data is constantly changing.
PNW Container Availability Study

- Difficulties faced by agricultural shippers in PNW in accessing containers for export
  - Majority of import container traffic into PNW → Midwest (i.e., Chicago)
  - Other contributors: periodic port labor challenges, port congestion/operation, regional urban growth, etc.

✓ Compile and analyze historical container traffic data for all west coast ports (source: Datamyne)

✓ Survey all the different participants and collect their perspectives (in-person and phone interviews)
Historical Analysis of Datamyne

Each West Coast Port is different

- Northwest Sea Port Alliance has lost some market share
- There are fewer empties available in the PNW
  - Partly due to 53’ market
  - Partly due to Chicago
- Port of L.A./Long Beach is equipped for volumes
- Port of Oakland has exceptional balance of inbound/outbound
## Interviews

<table>
<thead>
<tr>
<th>Ports</th>
<th>Terminals</th>
<th>Drayage</th>
<th>Shippers</th>
<th>Class I Rail</th>
<th>Ocean Carriers</th>
<th>Labor</th>
<th>Brokers</th>
</tr>
</thead>
</table>
| • Maintain, grow volumes  
• Large infrastructure investments | • Max Profit  
• Increase Efficiency  
• Facilitate throughput | • Need turns to make $  
• Congestion major issue | • Wide variety, by commodity and scale  
• Large scale, high volume shippers say no issues obtaining boxes  
• Small and/or infrequent shippers have challenges  
• Several complained about terminal hours | • Max Profit  
• Intermodal is one of many lines  
• Would never move empties east from ports and stop inland  
• They would bring empties west from the Midwest and stop if volumes were large enough | • Max Profit  
• Min Cost, Maximize turns  
• Must deal with weight differential and repositioning  
• Are open to providing services | • Maintain jobs  
• Worried about technology | • Most commented that there were only temporary shortages that get exaggerated |

### Would an inland container hub improve container access?
Stakeholder Perspectives - Questions

• All stakeholders
  - adequacy of available empty containers in the PNW for ag shippers in the region
  - impacts of the following:
    - port’s considerable infrastructure investments
    - deepening of channel to accommodate larger vessels
    - consolidation among ocean carriers
  - remedy to improve container access for regional ag shippers
Stakeholder Perspectives - Questions

- Stakeholders involved in shipping:
  - level of difficulty encountered in getting access to containers
  - seasonality of products
  - logistical issues
  - potential solutions to mitigate the issues of moving freight out of the region
Theme 1: Large agricultural shippers are not affected by the shortage of containers.

We move large volumes of our product... Shipping lines go out of their way to make sure our needs are met. Shipping lines are not interested in 20 shippers who each “may” be interested in shipping 2-4 containers per week. They want volumes and consistent volumes. They will service those customers.

Infrequency of shipment may affect access to containers more than the volume of shipment.

There are peak and off-peak seasons for our shipments. We ship a large volume. We are in the top priority list for reefer cargo in the PNW.
Theme 2: Increased use of alliances by ocean carriers limit the number of containers available.

Merging can be a challenge since ocean shippers share vessels; each has a max capacity, meaning limited number of containers that can be carried.

There is a deadweight issue. Typically, bulky goods are brought in, but the outbound cargo can be heavy such that the weight limitation of the vessel is reached early ...typical of Asia-US-Asia shipments not only in Sea/Tac.

If many containers have heavy products, the ocean vessel is forced to load some empties in order to not go over the capacity constraint.
Theme 3: Highway congestion is costly for shippers accessing the ports.

Overall traffic congestion in PNW is one of the biggest issues with moving freight out of the PNW.

Seattle is too congested. Highway 18 to Tacoma is a big slowdown for trucks.

One of the biggest challenges is the current infrastructure, such as roadways, where there is significant congestion.

Losing some road access to the port due to industrial development/urbanization in Seattle adds to congestion affecting travel time of trucks to the port.
Theme 4: The port terminals’ business hours, together with port congestion and highway traffic, limit the number of turns that trucks can make in a shift, and contribute to delays in shipment.

There are vessel time cut-offs and terminals are closed on weekends. If products are loaded on a Friday missed the cut-off, products will sit in the containers for 2 days before shipping. This delay can affect the quality of the products.

One or two people will be working in the terminal gate. With increasing volume, it might make sense to have extended hours like the Ports of LA/Long Beach.

No night gate operation where truck drivers can arrive to drop off/pick up boxes after hours as they do in LA/Long Beach... leads to massive lines during times they are open... exacerbated by Puget Sound highway traffic.
Suggestions to Mitigate Challenges

1. Port Operational Improvements
   • Terminals allowing pick up/drop off for containers after hours and on weekends
   • Better information technology
   • Better access into port facilities (roads and ramps)
   • Dedicated truck-only lanes
   • Technology tools to improve tracking and monitoring container location within the terminal and improve efficient throughput.
2. Collective Coordinating Organization

Individual/separate Ag shippers

versus

Organization representing jointly vested container shipping interests across PNW Ag → generate large volume → successful cooperation with ocean and rail carriers.
3. Inland Container Terminal/Hub

• Common reasons:
  - Increasing urban pressure and space constraints on ocean port property;
  - Severe highway congestion accessing the port;
  - Improved access to containers outside the urban area;
  - Improved air quality and reduced emissions;
  - Improved vessel loading/unloading operations if containers arrive/leave via unit trains vs. individual trucks.
3. Inland Container Terminal/Hub

- Stakeholders
  - May be beneficial as alternative to Ports of Seattle and Tacoma.
  - Can improve truck turn times.

- Stakeholders
  - Low probability that Class I rail will build infrastructure.
  - Shorter timeframe of delivering the products directly to the port compared to going through the inland hub first.
4. Container Simulation Model to Identify Site Potential

- Current challenge with an inland container hub:
  - Shipper interest & Class I rail service potential = ambiguous

- Simulation model: study different tangential factors affecting the market and success of an inland hub
  - Illuminate trade-offs associated with marginal choices on service/rates/volumes
  - Example: ↑ highway congestion scenarios = ↑ time spent in traffic congestion, ↑ desirability of an inland hub as option.
Thank You!

Questions?

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Freight Data Warehouse:
http://ses.wsu.edu/freight-data-warehouse/