Freight Is Important to the Economy

• Transportation/distribution a niche industry for this region
  – Geography
  – Multi-modal transportation system
  – Creates jobs, generates income
• Freight transportation-dependent businesses account for 60% of Oregon jobs
• Transportation and logistics account for 20-25% of product cost
• Average delivery time today: 2-3 days vs. 30 days in 1960s, 10 days in 1980s
Columbia Sportswear

Inbound movement
- Apparel, footwear, and accessories arrive via ship from Asia at T-6, transported by truck to the Rivergate DC; some move through Seattle and Tacoma.
- Air shipments arrive both at PDX and Seattle/Tacoma.
- Ocean/air shipments arriving in Puget Sound transported by truck to Rivergate.
Columbia Sportswear

**Warehousing**
- Ocean containers unstuffed; airfreight unpacked. Products sorted/stored by SKU.
- Once all SKUs for a customer’s order arrive, shipment packed for delivery.
- Customers provide routing instructions; shipments prepared for truck or air shipment accordingly.
- The Rivergate DC also handles returns.
Columbia Sportswear

Reload Facility
- Freight forwarders transport shipments by truck to reload facility for air shipment.
- LTL carriers take shipments by truck from DC to the LTLs’ local hubs in Portland for consolidation with other loads to same cities.
Outbound Movement

- All three product lines (apparel, footwear, and accessories) shipped out by air or truck.
- Air cargo shipped out of PDX primarily using integrated carriers (such as FedEx, UPS, Emery, etc.) for domestic delivery.
- LTL shipments, once consolidated at carrier’s hub move through carrier’s hub and spoke network throughout North America.
- Full truckload shipments move directly from DC to customers’ warehouses or stores.
A Multi-modal Transportation System Attracts & Retains Industry

<table>
<thead>
<tr>
<th></th>
<th>Truck</th>
<th>Rail</th>
<th>Barge</th>
<th>Ship</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains</td>
<td></td>
<td><em>X</em></td>
<td><em>X</em></td>
<td><em>X</em></td>
<td></td>
</tr>
<tr>
<td>Minerals</td>
<td><em>X</em></td>
<td><em>X</em></td>
<td></td>
<td><em>X</em></td>
<td></td>
</tr>
<tr>
<td>Electronic Equipment</td>
<td><em>X</em></td>
<td><em>X</em></td>
<td></td>
<td><em>X</em></td>
<td><em>X</em></td>
</tr>
<tr>
<td>Transportation Equipment</td>
<td><em>X</em></td>
<td><em>X</em></td>
<td></td>
<td><em>X</em></td>
<td><em>X</em></td>
</tr>
<tr>
<td>Food Products</td>
<td><em>X</em></td>
<td><em>X</em></td>
<td></td>
<td><em>X</em></td>
<td><em>X</em></td>
</tr>
<tr>
<td>Lumber/Paper</td>
<td><em>X</em></td>
<td><em>X</em></td>
<td></td>
<td><em>X</em></td>
<td><em>X</em></td>
</tr>
</tbody>
</table>
Impacts of System Failure

• Unreliability forces businesses to adjust
  – Extra time for pick-up & delivery, less production time
  – Extra vehicles to meet customer “JIT” demands
  – Use of neighborhood streets to lessen delays

• Firms may relocate out of region if transportation costs affect ability to compete
Sustaining & Supporting the Economy

• Understanding the needs of freight
• Collecting data to make informed decisions
• Investing in infrastructure improvements to benefit freight movement
Understanding the Needs of Freight

• Research
  – Collect information about freight movement
  – Identify how much of what moves and how
  – Describe interrelationships between the modes

Commodity Flow Forecast

• Planning
  – Project freight movement on the road network
  – Identify chokepoints
  – Analyze solutions
  – Set priorities

Regional Truck Travel Model

• Approach recognized nationally as innovative
2002 Commodity Flow Update

• Regional project “sponsors”
  – Metro
  – Oregon Department of Transportation
  – Port of Vancouver
  – Regional Transportation Council (Clark County)
  – Port of Portland
• 1997 baseline; forecasts to 2010, 2020, 2030
• Tonnage and dollar value
• Freight moving to, from, within, or through metropolitan area
Portland/Vancouver Region Tonnage Doubles from 1997 to 2030

- 1997 - 2030 average annual growth rate 2.1%
Eight commodity categories comprise 74% of all tonnage shipped in the region on all modes.
# Top Tonnage Growth Commodities
Portland/Vancouver Region 2000-2030

<table>
<thead>
<tr>
<th>Commodity Category Description</th>
<th>CAGR, (%) 2000-2030</th>
<th>Typical Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machinery</td>
<td>3.7%</td>
<td>Truck, rail, ocean, air</td>
</tr>
<tr>
<td>Meat, fish, seafood, and preparations</td>
<td>3.5%</td>
<td>Truck, ocean, rail, air</td>
</tr>
<tr>
<td>Milled grain products and preparations and bakery products</td>
<td>3.3%</td>
<td>Truck, rail</td>
</tr>
<tr>
<td>Foodstuffs and alcoholic beverages</td>
<td>3.3%</td>
<td>Truck, rail</td>
</tr>
<tr>
<td>Mail and Express Traffic</td>
<td>3.3%</td>
<td>Truck, rail, air</td>
</tr>
<tr>
<td>Electronic and other electrical equipment and components, and office equipment</td>
<td>3.3%</td>
<td>Truck, air, ocean</td>
</tr>
<tr>
<td>Precision instruments and apparatus</td>
<td>3.1%</td>
<td>Truck, air</td>
</tr>
<tr>
<td>Printed products</td>
<td>2.9%</td>
<td>Truck, rail, air</td>
</tr>
<tr>
<td>Nonmetallic mineral products</td>
<td>2.7%</td>
<td>Truck, rail, ocean</td>
</tr>
<tr>
<td>Miscellaneous manufactured products</td>
<td>2.7%</td>
<td>Truck, rail, ocean</td>
</tr>
</tbody>
</table>

- High value manufactures and foods grow fastest
Commodity Share of Portland/Vancouver Region Value

(Percent Share of Total Value in 1997)

- Ten commodity categories comprise 77% of all value shipped in the region on all modes
- Air cargo goods appear on this list
Modal Shares of Portland/Vancouver Region Total Tonnage

(Percent Share of Total Tonnage 1997 vs. 2030)

- Air, Truck and Rail increase share of total tonnage
- Barge and Ocean lose share, but still grow
Implications of Forecast

• Freight to remain a central element of region’s economy
• Increased volumes will put additional pressure on transportation system
• Need all modes to function effectively
Understanding the Needs of Freight

- **Research**
  - Collect information about freight movement
  - Identify how much of what moves and how
  - Describe interrelationships between the modes

  *Commodity Flow Forecast*

- **Planning**
  - Project freight movement on the road network
  - Identify chokepoints
  - Analyze solutions
  - Set priorities

  *Regional Truck Travel Model*

- Approach recognized nationally as innovative
Commodity Based Model

• Commodity volumes, not employment, drive the number of truck trips
• Commodity type influences transport decisions
  – Type of vehicle
  – Load factors
  – Time of day
Logic for the Modeling System

- Truck movement more complex than passenger vehicle movement
2020 PM 2 HR Truck Percentage

- 5.8% 24% increase
- 3.5% 75% increase
- 7.5% 50% increase
- 4.4% 36% increase
Data Gaps

• What commodities (and how much of them) are trucked across the Interstate Bridge every day?
• How much cargo moves from Washington County to PDX?
• What time of day are there the most trucks on the road in Clackamas near all the distribution facilities?
Filling in the Gaps

• Collection of origin/destination data
• Refine truck routing patterns
• Establish comprehensive freight vehicle classification count program
Regional Freight Data Collection Project

• Purpose: address as many as the data and information gaps as possible

• Regional in nature
  – Metro & RTC
  – ODOT & WSDOT
  – Port of Portland & Port of Vancouver
  – Cities and Counties
Regional Freight Data Collection: Phase 1

• Completed April 2003
• Needs assessment
  – Questions region needs to answer
  – Issues region needs to address
  – General freight data needs
• Analysis of data required
• Analysis of data collection methods
• Recommended approaches
Interview Process

• Focus-group style sessions conducted with several transportation/planning agencies and private sector representatives
• Stakeholders assessed the kinds of questions and data needs that freight data collection would ideally address
• 13 groups with representatives of more than 50 different firms, agencies, organizations
Agencies and Firms Interviewed

- Metro
- FHWA
- City of Portland
- Multnomah County
- Clackamas County
- ODOT
- City of Tualatin
- Washington County
- City of Gresham
- Port of Portland
- Westside Economic Alliance
- Columbia Corridor Assoc.
- Schnitzer Steel
- Portland Business Alliance
- Oregon Trucking Assoc.
- Traffic/Transportation Engineers
Agencies and Firms Interviewed

• WSDOT
• SW Washington RTC
• Port of Vancouver
• Clark County
• City of Vancouver
• Puget Sound Regional Council
• Washington State University
Key Policy Issues & Freight Questions

• What is the value of freight (for economic development and business development projects)?
• Why is it more important if trucks are delayed?
• Why is it not possible to use rail for more freight?
• Can trucks be pushed to off-peak times? Can truck-only lanes be developed?
• What is the capacity for other modes?
Key Policy Issues & Freight Questions

- How do trucks get to terminals?
- Where does freight consolidation occur?
- What percent of freight passes through Portland, but is being shipped out of other marine and airports?
- What percent of activity at airport are actually truck-truck moves?
Examples of Data Needs

- Truck-rail diversions
- Backhaul opportunities (currently using 1996 O-D survey)
- Possibility of using freight rail for intra-city moves (e.g. logs)
- Fine-tuning of commodity flow data to reflect known patterns, particularly for north-south data
- More truck count data
- Through trips
Regional Freight Data Collection: Phase 2

• Primary Objectives
  • Origin/Destination
  • Truck Counts
  • Routing

• Timing
  • Kick-off: May 2005
  • Initial data available: Spring 2006?
  • Project completion: Fall 2006
Project Sponsors

- Metro MTIP Allocation
- Oregon Department of Transportation
- SW Washington Regional Transportation Council
- Washington State Department of Transportation
- Multnomah County
- Port of Portland

Project funding: $730,000
Leveraging Other Research

• Washington State University/ODOT
  – Effective survey instruments for truck drivers
  – How and where to best survey truck drivers
  – Other methods of collecting data
• Oregon State University/Metro/Port of Portland
  – GPS data collection technology
  – Data accuracy
  – TransNow grant
Sample GIS Data Display: Route Chart
Sample GIS Data Display: Route Chart
Sample GIS Data Display: Single-Truck-Single-Day Route & “Delivery” Stops
Sample GIS Data Display: Between-Stop Route
Sample GIS Data Display: Density by TAZ
Sample GIS Data Display: Density by Street
Wrap-Up

- Economy depends on ability to move freight
- Freight volumes (tonnage) will double by 2030
- Funding limited, need to prioritize investment
- Requires knowing when, where, how freight moves
Wrap-Up

- Data specific to region not readily available
- Region a national leader in freight data collection
- Leveraging investment in Commodity Flow Forecast by conducting Regional Freight Data Collection Project
  - Specific regional O/D points identified
  - On-going regional truck count program launched
  - Routing information generated (though limited)