Freight Mobility “101”

Developing and Implementing Sustainable Freight Strategies
Fast Facts

- The Portland Metro area is at the confluence of two rivers, two national interstate highways, and two mainline railroads.

- Metro employment in the wholesale and transportation industries exceeds national average.

- Different freight modes work in combination to move goods.

- Efficient delivery of goods throughout the city increases our quality of life.

- Good road access through Portland is critical to the movement of time sensitive freight between this region and outside markets.
What is the Problem?
Combination of the four R’s help make Portland a global gateway for moving goods

Photo credits: Port of Portland

Portland, OR
Importance of a Trade Strategy for Portland

• **Portland’s Cultural, Historical and Economic Foundation**
  - The Portland region’s economic base is largely trade dependent. Portland’s traded industries combined to account for 43% of all gross exports (by value).
  - Portland is the 14th largest exporting region in the US.

• **Globalization of Economy**
  - Nationally trade is expected to grow faster than the economy as a whole. The combined value of US imports and exports in 2001 was about 28% of real GDP. Today (2008) it’s about 33% and forecast to be 58% in 2030.

• **Growth of Traded Sectors in Portland**
  - Oregon’s export shipments in 2007 totaled about $16.5 billion, up from $10.3 billion in 2003.

• **Gateway Role and Proximity to Key Trading Partners**
  - Most of those exports must **travel through the Portland** region for access to market on one of four modal systems: road, rail, air and water.
  - Products that move through Portland to other markets provide the volume to incent investment in transportation corridors.

• **Alignment with Statewide Efforts**
  - Tax incentives, export base and **transportation investments** have a regional and statewide connection.
Trade Drives Employment

- Trade-related employment accounts for about 1/3 of total employment in the region.
- Annual pay in these industries averages about $50,000 per year, above the regional average ($44,000).

Source: Oregon Employment Department 2007
International Trade Connections

- Green energy equipment
- Footwear components
- Apparel
- Electronics
- Metals
- Transportation equipment
- Potash
- Wheat
- Metals
- Chemicals
Volume Market Share by Mode

Tonnage by Mode (estimate for 2010)

- Truck: 67%
- Intermodal: 5%
- Rail: 6%
- Ocean: 10%
- Air: <1%
- Pipeline: 7%
- Barge: 5%

Source: Portland-Vancouver Trade Capacity Study
Value Market Share by Mode

Commodity Value by Mode (estimate for 2010)

- Truck: 82%
- Intermodal: 3%
- Rail: 6%
- Ocean: 4%
- Air: 1%
- Pipeline: 2%
- Barge: 2%

Source: Portland-Vancouver Trade Capacity Study
Value per Ton by Mode

Dollar Value per Ton (estimate for 2010)

- Air: 68%
- Truck: 10%
- Pipeline: 2%
- Rail: 8%
- Intermodal: 6%
- Barge: 3%
- Ocean: 3%

Source: Portland-Vancouver Trade Capacity Study
Transportation Drives Trade

- Direct service (e.g. Asia to/from PDX) drives down costs and provides more efficient access to markets for people, goods, and services.
- Balanced imports/exports within the region attracts sustainable services.
- All modes meet here – good access inland to larger land populations.
- Land for business near existing trade corridors endures better market and labor access.

Creative and Design Services
High Tech and Bio-science
Traditional Manufacturing
Clean Tech Industries

Logistics (transportation distribution services and technology)
Professional Services (Legal, banking, insurance, engineering)
Markets
Inland Columbia/Snake River System

- 14’ channel
- Extends 365 miles inland from Portland/Vancouver to Lewiston, ID
- 8 locks
- 10M tons of cargo annually
- $3B in value
- 25 grain elevator locations on the CSRS
- 16 separate grain elevator companies
Wheat and Barley - #1 in U.S. Exports
Wood and Bulk Minerals - #1 on West Coast
The Role of Barge on the Columbia/Snake River System

- Container on barge service started on the Columbia River in 1975
- Container on barge serves Port of Portland’s Terminal 6
- Containerized municipal solid waste service
- Millions of barrels of petroleum each year
- Half of all LCR wheat exports arrive by barge
- Third largest grain export gateway in the world
- Keeps 700,000 trucks off highways that run through Columbia River Gorge
## Alternate Transportation Mode Comparison

<table>
<thead>
<tr>
<th>Mode</th>
<th>Capacity</th>
<th>Equivalent Capacity</th>
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</thead>
<tbody>
<tr>
<td>One Barge</td>
<td>3500 tons</td>
<td></td>
</tr>
<tr>
<td>One 4-Barge Tow</td>
<td>14,000 tons</td>
<td></td>
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<tr>
<td>Rail Car</td>
<td>100 tons</td>
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<tr>
<td>110-Car Shuttle Train</td>
<td>11,000 tons</td>
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<tr>
<td>Large Semi</td>
<td>29 tons</td>
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</table>

1 Barge = 35 Rail Cars

1 Tow = 140 Rail Cars

Barging is the lowest cost, most environmentally friendly form of freight transportation.
Rock Products
Moving Rock to Portland

- One gravel barge = 8,000 tons
- That’s 250 dump trucks (@32 tons apiece)
- Barges move over 2 million tons of rock to Portland per year
- That’s 62,500 truckloads per year
- For a 50-mile round trip, shippers save an average $5.75 per ton
- That’s a huge average annual savings
The Union Pacific Railroad Today

- Operate in 23 States
- 33,000 Miles of Track
- 43,000 Employees
- Over 7,000 Communities

2009 Business Mix:
- Intermodal 19%
- Agricultural Products 20%
- Autos 6%
- Industrial 16%
- Chemicals 16%
- Energy 23%
Union Pacific In Oregon

2010 FAST FACTS

- Miles of Track: 1,073
- Annual Payroll: $121.4 Million
- Employees: 1,581
- In-State Purchases: $84.9 Million
- Capital Spend: $89.6 Million
Benefits of Freight Railroads

• One train takes 280 trucks off the highway
• Safest mode of transportation
• 3 times more fuel efficient than trucks
• 3 times cleaner than trucks on a ton-mile basis
Expected Rail Traffic vs. Rail Capacity

- **Today**
  - Below capacity: Green
  - Near capacity: Yellow
  - At capacity: Orange
- **2035 Without Improvements**
  - Above capacity: Red
Railroads Already Spend More Than Most State Highway Agencies!

$ in Billions

<table>
<thead>
<tr>
<th>Rank</th>
<th>State</th>
<th>Spending ($)</th>
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<td>Texas</td>
<td>10.96</td>
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<tr>
<td>2</td>
<td>Florida</td>
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Class I Railroad Spending* on Infrastructure

VS.

State Highway Agency Spending* - 2007

*Capital outlays plus maintenance expenses.
Sources: FHWA Highway Statistics; AAR
PDX - The Region’s Gateway

• More than 13.1 million passengers in 2010 (+2%)
• More than 209,000 tons of air cargo in 2010 (+6.4%)
• 10,000 jobs at PDX; 223,068 takeoffs/landings annually
• Nonstop international service to Europe, Asia and Canada
  (One of 12 cities with service to Asia and Europe)
The Supply Chain & Transportation

- Shift to Lean Manufacturing and “Just in Time” business strategy
  - Keeping smaller inventory on-hand to reduce costs.
  - Inventory is kept “in motion” rather than stored in warehouses.
  - Emphasis on supply chain that moves freight fast and efficiently.
  - Increasing demand for reliable, timely, cost-effective delivery.

- Shift from “Push” to “Pull” Logistics.

- Increasing demand and growth in information technology and e-commerce in transportation and warehousing.

- Businesses are becoming more sensitive to congestion.

- Cheaper freight rates and reliance on dependable transportation have become a substitute for carrying inventory and has shortened re-stock cycles.
Logistics: From Push to Pull

3PL

Secondary Supplier(s)

Primary Supplier

Secondary Supplier(s)

Designer

Manufacturer

Marketer

Returns/Recycled Products

Point of Sale Data

Distributor

Customer

“PUSH” METHODS OF CONTROL (relative Importance)

“PULL” METHODS OF CONTROL (relative Importance)

Inventory

Information System

Transport System

Inventory

Information System

Transport System
FREIGHT MASTER PLAN

MOBILITY
✓ Ensure Portland’s transportation system can meet increased freight and goods movement demand.
✓ Understand where we need to invest in system improvements for all modes of freight.

LIVABILITY
✓ Develop strategies for reducing community impacts from freight movement.
✓ Look for ways to balance truck movement needs with those of other transportation modes.

ECONOMY
✓ Recognize role of goods delivery in supporting healthy, vibrant industrial districts, mixed-use centers, and main streets.
✓ Use strategic investments in freight transportation to benefit existing businesses and attract new ones.
Portland Freight Network
Key Findings From Portland/Vancouver Trade Capacity Study

**Effects of Trade Volume Doubling by 2035**

- **Trucking Remains Dominant Mode**
  - Trucks are the workhorse of the economy
  - Linkage between various modes

- **Air Cargo Continues to Require Efficient Access**
  - Quick access to airport critical to flight and production schedules for high value goods

- **Increased Need for Industrial Waterfront Land**
  - Growth in maritime trade requires region to have waterfront land ready to develop

- **Rail Business Changes**
  - Unit train focus
  - Local and long-haul capacity issues
  - Increased demand for intermodal yard service

- **Distribution Center Growth**
  - Portland attractive for logistics
  - Distribution Centers create quality jobs

**Charts:**
- Annual Tons (Millions)
  - 2000: 200
  - 2010: 400
  - 2020: 600
  - 2030: 700
  - 2035: 700
Infrastructure Improvements for Freight Mobility

1. **Highway** - Improvements on Portland’s freeway system such as interchange upgrades and auxiliary lanes.

2. **Street** - Improvements on Portland’s street system such as intersection upgrades, access management, new road connections.

3. **System Management** - Installation of Intelligent Transportation System (ITS) infrastructure such as closed circuit TV cameras and variable message signs.

4. **Bridge** - Upgrading load-limits, improving clearances, seismic upgrades, and new structures.

5. **Rail** - Infrastructure improvements to improve rail capacity and reduce bottlenecks.

6. **Marine** - Infrastructure improvements that upgrade river operations and marine terminal facilities.
Freight Mobility “101”
Moving Forward
The Portland Freight Committee at your Service