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Introduction

A Shared Transportation Choke Point

Portland and Vancouver, along with Oregon and Washington, share a common transportation choke point—the I-5 Interstate bridge and the adjacent rail crossing, which span the Columbia River between Portland, Oregon and Vancouver, Washington.

These crossings are of strategic importance to freight and passenger transportation in the Portland-Vancouver area and the Pacific Northwest, but their ability to effectively serve the region is threatened by growing congestion.

- The highway crossing operates at capacity for four hours each day. By 2020 it will operate at capacity for over eight hours each day.
- Congestion in the crossing area causes 18,000 hours vehicle hours of delay today. By 2020 delay hours may climb to 32,000 hours, an increase of 77 percent.
- The cost of truck delay will increase by 140 percent from $14 million in 2000 to $34 million in 2020.
- Relative to its size, rail congestion in the Portland-Vancouver rail network, which includes the rail crossing, is twice that of Chicago, the nation's largest rail hub. Congestion adds about 40 minutes to every rail move through Portland-Vancouver.[1]

A Shared Economy

The cost of this congestion accrues to Portland-Vancouver commuters and businesses and to all businesses across Oregon and Washington that move freight through the area. Businesses see these costs as increased shipping and production costs, shrinking and more expensive labor markets, and reduced competitiveness in regional, national, and global markets.

The economy of the Pacific Northwest is particularly dependent on trade, and much of the freight traffic upon which the regional economy depends funnels through the Portland-Vancouver crossings. Congestion is eroding the reliability of freight transportation in the Pacific Northwest, reducing the region's quality of life and threatening the economic well being of business and industry. Congestion will become an even greater drag on the economy in the future as the region grows and the demand for travel increases.

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[1] I-5 Trade and Transportation Partnership. *Final Strategic Plan,* June 2002. Unless otherwise noted, all statistics in this document are taken from the strategic plan.

A Regional Partnership

The I-5 Transportation and Trade Partnership, a consortium of state and local transportation planning organizations and stakeholders from Portland-Vancouver, has identified the transportation improvements needed to address rail and highway congestion at the Columbia River crossings.[2] But congestion at the crossings in not just a local problem, it is a Pacific Northwest problem. Realizing the improvements depends on building a partnership across Oregon and Washington that will share the risks and benefits to ensure the economic well being of the region.

A Regional Economic Study

This report investigates the regional economic impacts of the I-5 Corridor/Columbia River crossing transportation choke points. It first reviews the local economic effects, then examines the regional economic effects of congestion at the Portland-Vancouver crossings. It analyzes the regional economic impacts on five freight-intensive industries:

- Lumber, wood, and paper products industry; transportation equipment industry; and farm and food products industry—traditional pillars of the Oregon and Washington economies;
- High-technology industry—a key emerging industry, critical to the region's future growth; and
- Distribution and warehousing—the sectors that supply manufacturers, retailers, and service-sector offices.

The study finds that Portland-Vancouver and the Pacific Northwest are very dependent on reliable and cost-effective transportation and heavily impacted by congestion at the Portland-Vancouver highway and rail crossings. It recommends that Oregon and Washington make a coordinated effort to act promptly to decide on a course of action and determine a source of funding for the recommended transportation improvements in the I-5 corridor.

[2] See the I-5 Trade and Transportation Partnership's *Final Strategic Plan*, June 2002, available at www.i-5partnership.com, for details.

Local Economic Effects

The Columbia River Highway and Rail Crossings Are Transportation Choke Points for Portland-Vancouver

The Columbia River highway and rail crossings connect the communities of Portland and Vancouver for work, recreation, shopping, and entertainment. They provide critical connections to the area's two major ports for deep-water shipping and up-river barging; link its two transcontinental rail lines; and connect much of the region's industrial land.

The crossings are transportation choke points because the Portland-Vancouver area has only two highway bridges and one rail bridge over the Columbia River. Figure 1 shows the location of the I-5 and I-205 highway bridges and the Burlington Northern Santa Fe rail bridge crossing the Columbia River. The area has fewer river crossings than metropolitan areas of similar size across the United States. Table 1 compares the number of highway and rail crossings serving the Portland-Vancouver area with the number of crossing serving other river cities.

The I-5 Columbia River Highway Crossing Is Severely Congested

I-5 with its bridge crossing the Columbia River is the backbone of the Portland-Vancouver area transportation system. On an average day more than 125,000 vehicles,[1] including 10,000 trucks, cross the I-5 bridge.

Today the Portland-Vancouver area's population is about 1.7 million. By 2020, the metropolitan population is expected to increase to 2.4 million. As the region grows, traffic volume on the bridge is expected to grow proportionately to 180,000 vehicles per day, an increase of 44 percent. Vehicle travel times between downtown Portland and north Vancouver will increase 22 percent, from 38 minutes in 2000 to 44 minutes in 2020.

The I-5 highway crossing operates at capacity for two hours during the morning peak-traffic period and another two hours during the evening peak-traffic period. Unless capacity is added, no additional vehicle trips can be squeezed into these hours. New trips will be made earlier or later, forcing the duration of peak-period congestion to double by 2020. The morning congestion period will expand from two to four hours and the evening congestion period will increase from two hours to over five and one-half hours. Figure 2 compares the duration of the morning and evening peak periods in 2000 and 2020 without increased highway capacity.

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[1] Oregon Department of Transportation. *2001 Transportation Volume Tables.*

Congestion is caused by limited through-put capacity on the bridge itself and by the complex traffic patterns on the roadways on the Oregon and Washington sides of the river:

- The six traffic lanes on the I-5 bridge are inadequate for the volume of traffic crossing the river;
- Close interchange spacing north and south of bridge does not allow for adequate merging and weaving sections, effectively reducing the number lanes available for through traffic;
- Short entrance and exit ramps force trucks to accelerate and decelerate on the freeway, further slowing traffic; and
- The bridge's low-level lift span, one of the last remaining on the Interstate highway system, opens for barge traffic 20 to 30 times per month in off-peak periods, effectively closing the highway and bringing traffic to a halt for periods of 10 minutes or more.

The eight-lane Glenn Jackson Bridge, which carries I-205 across the Columbia River six miles up river of the I-5 bridge, provides an alternate to the I-5 crossing. But the Glenn Jackson Bridge, which carries 132,000 vehicles (including 7,800 trucks) across the river each day, also operates near capacity. The next closest Columbia River highway crossing is a two-lane bridge at Longview, Washington, 53 miles downstream; it provides little relief to the metropolitan area.

With few alternative routes, congestion on I-5 spills onto other roadways in the Portland-Vancouver area. Drivers headed to the I-5 bridge use the arterial roadways paralleling I-5 rather than grind through the traffic on the I-5 approaches to the bridge. This diverted traffic fills the local north-south streets and jams the interchanges near the bridge, blocking the east-west arterial streets as well.

Freight traffic is disproportionately affected by this congestion:

- Trucks enter and leave the highway at the closely spaced interchanges north and south of the bridge to access the ports, intermodal rail yards, industrial areas, and the commercial areas near the Columbia and Willamette Rivers, but the interchanges and ramps cannot safely and efficiently handle the large volumes of truck traffic;
- Bridge openings are limited to off-peak hours to reduce the impacts on commuters, but bridge lifts during midday and off-peak hours coincide with the heaviest volumes of trucks on I-5;
- Traffic congestion prevents trucks from getting to the Ports of Portland and Vancouver and to the BNSF and Union Pacific intermodal rail terminals; and
- Congestion blocks trucks moving among the manufacturing plants, warehouses, and distribution centers that line Columbia Boulevard on the Portland side of the river and SR 14 on the Vancouver side of the river.

The high volume of traffic using the I-5 highway crossing and the lack of alternate routes creates gridlock across the Portland-Vancouver area when an incident on I-5 reduces capacity or temporarily closes the highway during peak periods.

The Portland-Vancouver Rail Network and the Columbia River Rail Crossing Also Are Severely Congested

The dual-track BNSF rail bridge, adjacent to the I-5 Interstate Bridge, is the only rail crossing connecting Portland and Vancouver. The rail bridge carries 63 freight trains and 10 Amtrak passenger trains across the river each day.[2] The next major rail crossing of the Columbia River is 92 miles upstream near The Dalles, Oregon. Figure 3 shows the Portland-Vancouver rail network. On the Vancouver side of the river, rail lines run north to Seattle and east along the north side of Columbia Gorge toward Chicago. On the Portland side of the river, rail lines run west to the port terminals, south to California, and east along the south side of the Columbia Gorge toward Chicago.

The primary cause of congestion in the rail system is not the bridge itself, rather inadequate capacity within the overall Portland-Vancouver terminal and junction "triangle." On each side of the river, trains crossing the bridge compete for track space with local and long-distance trains moving among rail yards and terminals. Single tracks connect most junctions, and yard capacity is inadequate for the volume of rail traffic traveling to and from rail yards and port terminals in Portland and Vancouver. Local operations—the movement of locomotives and cars between yards and the movement of trains into and out of port and railroad terminals—must share track time and space with long-distance, through trains, including intermodal trains traveling from Seattle and Tacoma to Chicago through the Portland-Vancouver area.

When measured in terms of delay per train, rail congestion in the Portland-Vancouver area is about twice that of Chicago, the nation's largest rail hub. An analysis of the Portland-Vancouver rail system found that over a typical 96-hour (four-day) period, the terminal area handled 555 freight trains and 38 passenger trains. The average speed of those trains through the Portland-Vancouver network was 12.3 mph and they accrued 402 hours of delay (about 41 minutes of delay per train). By comparison, over the same period the Chicago rail network handled 1,977 freight trains and 1,542 passenger trains. The average speed was 12.5 mph, and the trains accrued 813 hours of delay. With one-fifth the number of trains as Chicago, the Portland-Vancouver rail network experiences nearly half the delay hours of Chicago.

[2] I-5 Trade and Transportation Partnership. *Final Strategic Plan,* June 2002.

Transportation Congestion Has Significant Costs for the Portland-Vancouver Area

The Portland-Vancouver metropolitan area as a whole accrued an estimated 34.4 million road-traveler hours of delays in 2000. This is equivalent to 47 hours per road-traveler per year or a four-day weekend. The economic cost to Portland-Vancouver area road-travelers was estimated at $670 million per year, or about $910 per road-traveler.[3]

Congestion at the Columbia River crossings accounted for a portion of this delay and congestion at the crossings will grow over the next 20 years. If no improvements are made to the I-5 corridor, total vehicle hours of delay in the four-hour evening peak period alone will increase 77 percent from 18,000 hours per day in 2000 to 32,000 hours per day in 2020.

Because the I-5 crossing serves the industrial core of the region, trucks and the businesses they serve will see significant increases in congestion and delay costs:

- Annual vehicle hours of delay on truck routes in the I-5 corridor will increase by 93 percent from 13,400 hours in 2000 to 25,800 hours by 2020;
- Congested lane-miles on truck routes will increase by 58 percent; and
- The value of truck delay will increase by 140 percent to nearly $34 million.

Equally important, rail system capacity will not be adequate to support increased intercity passenger service from Eugene to Portland-Vancouver to Seattle. And rail congestion will limit opportunities for growth at the ports of Portland, Vancouver, Kalama, and Longview.

Congestion delays at the crossings affect a wide range of transportation users, including employees commuting to work, customers traveling to stores and business meetings, trucks picking up and delivering goods, and trains moving freight to and from ports and intermodal terminals. The costs are passed through to Portland-Vancouver businesses, either directly or indirectly, by:

- **Increasing Production Costs** – Congestion leads to higher transportation costs for businesses due to delay, unreliable travel times, and increased logistics and inventory costs. Freight shippers and delivery services must hire more drivers and purchase more vehicles to serve the same customers, and firms must accommodate larger inventories of parts, supplies, and products, causing operating costs to increase.
- **Shrinking Labor Pools** – Congestion effectively reduces the geographical area in which potential employees can afford to work (or are willing to work) by increasing

[3] Texas Transportation Institute, *2002 Urban Mobility Study*, Mobility Data for Portland-Vancouver, Oregon-Washington for 2000.

the time and cost of commuting. As a region's quality of life deteriorates and cost of living increases, the area also becomes less attractive to new workers. Business productivity declines as the number of workers with specialized skills decreases.

- **Reducing Access to Business Inputs and Markets** – Congestion shrinks business market areas and reduces the economies of scale that can be realized by operating in large urban areas near concentrations of similar firms or concentrations of competing suppliers.

As their operations are compromised, businesses respond to congestion by moving away, going out of business, or adjusting to smaller market areas for workers, suppliers, and customers. All of these lead to a reduction in productivity, which in turn limits economic competitiveness and curtails economic expansion.

Figure 1. Map of Columbia River Crossings in Portland-Vancouver Area

Table 1. Comparison of River Crossings in U.S. Metropolitan Areas of Similar Size

Metro Area	Population	Body of Water	Highway Crossings	Rail Crossings
Norfolk	1.57 million	Hampton Roads/Chesapeake Bay	4	0
Cincinnati	1.65 million	Ohio River	7	2
Kansas City	1.78 million	Missouri River	10	3
Portland-Vancouver	**1.92 million**	**Columbia River**	**2**	**1**
Pittsburgh	2.36 million	Three Rivers	>30	3
St. Louis	2.60 million	Mississippi River	8	2

Figure 2. Duration of A.M. and P.M. Peak Period Traffic in 2000 and 2020

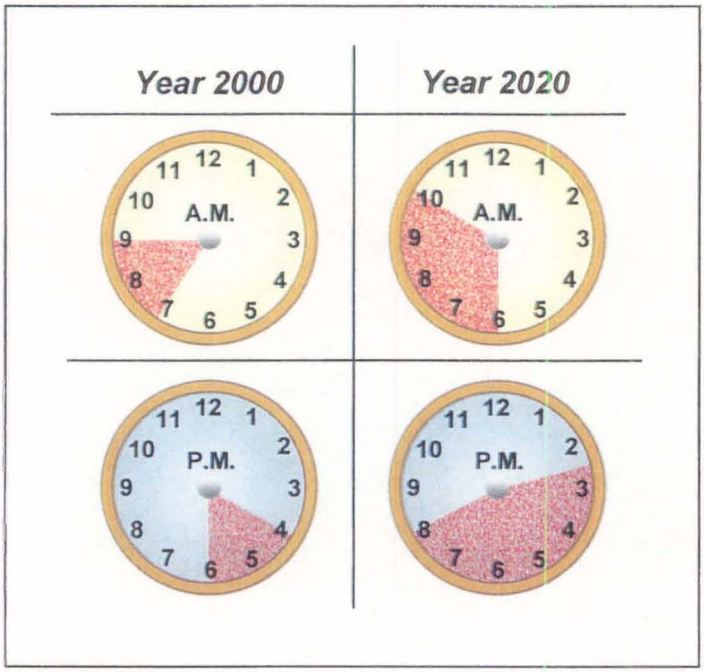
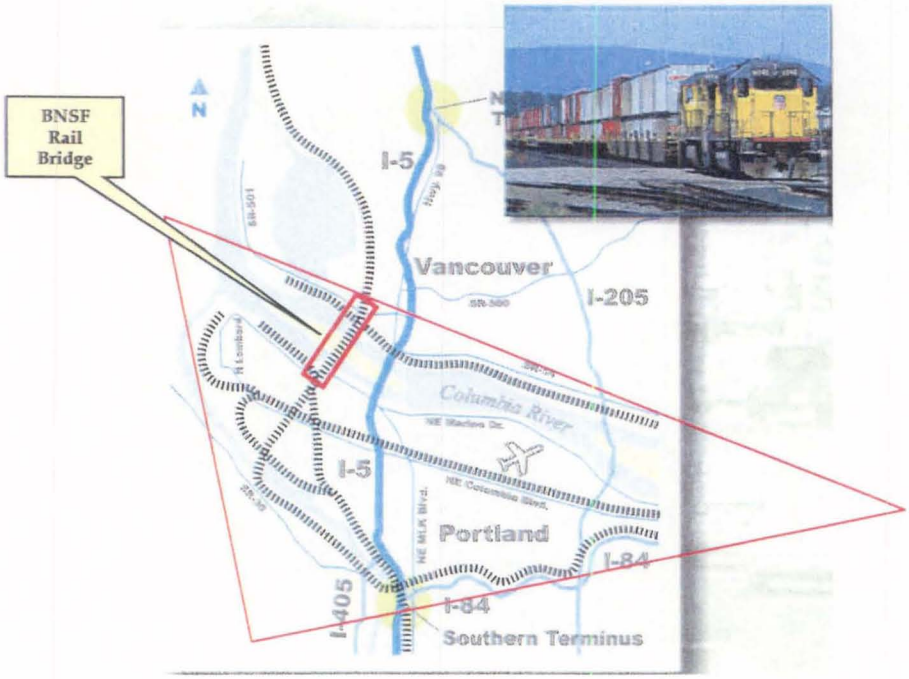


Figure 3. Portland-Vancouver Rail Terminal "Triangle"



Regional Economic Effects

The Crossings Are Transportation Choke Points for the Pacific Northwest

Congestion delays in the Portland-Vancouver area are not just a local problem. The economy of the Pacific Northwest is very dependant on trade, and much of the freight traffic upon which the regional economy depends funnels through the Portland-Vancouver crossings. Congestion at the Columbia River highway and rail crossings affects the entire Pacific Northwest.

The geography of the Pacific Northwest defines the regional transportation system and makes the crossings at Portland-Vancouver strategic regional choke points. Figure 4 shows the geography of Oregon and Washington and highway system. Mountains ring the region and constrain highways, rail lines, and most major populated areas to a narrow corridor running from Vancouver, British Columbia through the Portland-Vancouver area to Eugene, Oregon. Highway and rail routes connecting the region to the other major North American trade blocs to the east and south run through difficult mountain passes.

The region has excellent deepwater ports with access to the West Coast and Pacific Rim, and the Columbia/Snake River system provides barge access to the agricultural areas in eastern half of the region. The Columbia River is a major regional transportation artery, but the river also is major regional barrier. There are just nine highway bridges and two rail crossings between Umatilla, where the river curves northward into Washington State, and the Pacific Ocean, a distance of 292 miles, or only a little less than the distance between San Francisco and Los Angeles.

Congestion at the I-5/Columbia River Highway Crossing Delays Truck Shipments Across Oregon and Washington

The I-5 bridge at Portland-Vancouver is a critical link in the Pacific Northwest's regional highway network. Congestion at the I-5 highway crossing affects truck traffic throughout Oregon and Washington, but especially within the I-5 corridor.

Figure 5 shows just those Oregon and Washington counties and highways affected by congestion at the I-5 highway crossing. The figure indicates the counties (in gray scale) that ship or receive truck freight that uses the I-5 crossing; the darker gray the county, the more tonnage shipped or received from that county. (Commodities shipped to and from British Columbia are assigned to Whatcom County.) The figure also shows the highways (in color) that are used by trucks moving to and from these counties; the wider and redder the bandwidth of the highway line, the greater the truck tonnage carried on the highway.

Congestion at the Rail Crossing Has a Major Impact on Washington State Rail Shippers

The rail junction at Portland-Vancouver is critical link in the Pacific Northwest rail system. Congestion at the rail crossing has a major impact on Washington State rail shippers.

Figure 6 shows freight-rail tonnage for the major rail lines serving Oregon and Washington; the wider and redder the bandwidth of the rail line, the greater the commodity tonnage carried on the rail line. (The figures shows commodity or net tonnage, not gross tonnage, which would include the weight of the locomotive and railcars.)

Figure 7 shows just those Oregon and Washington counties and highways affected by rail congestion in the Portland-Vancouver area. The figure shows the counties (in gray scale) that ship or receive rail freight that moves through the Portland-Vancouver area; the darker gray the county, the more tonnage shipped or received from that county. (Commodities shipped to and from British Columbia are assigned to Whatcom County.)

Congestion at Portland-Vancouver has a major impact on Seattle-Tacoma, Washington State's Columbia River ports, and the Portland-Vancouver area. The congestion catches shipments of grain, lumber, and minerals moving west by rail from Montana, Idaho, and eastern Washington for export through the ports. And it also catches intermodal container shipments of merchandise moving east by rail from Seattle-Tacoma, wood products from western Washington moving south and east, and automobiles being carried inland from Portland.

Congestion at the Crossings Impedes Oregon and Washington Trade with National Markets

The population and economy of Oregon and Washington are small compared to the other economic regions of the United States. Transportation is critical for Pacific Northwest businesses moving and selling products to the larger California and Eastern markets. Figure 8 shows the relative sizes of the national trade regions. The shaded circles show the relative population size of the major metropolitan areas, the ovals indicate the geographic scope of the multi-state trade regions, and the square columns show the relative size of the regional economies, measured as a share of gross domestic product (GDP). (Florida, shows in the dotted-line oval, is usually counted as part of the Atlanta-Southeast trade region, but is emerging as a major trade and distribution center for the Caribbean and Latin America.)

Figure 9 shows the flows of truck freight between the Oregon-Washington region and the rest of the United States; the wider the bandwidth of the highway line, the higher the tonnage of truck freight moving over that highway. The ovals again delineate the multi-state trade regions. The small circle shows the location of the I-5 highway crossing. The density of truck freight on I-5 and I-84 indicates the importance of these trade routes to

Oregon and Washington businesses and the significance of congestion at the I-5 highway crossing.

Congestion at the Crossings Weakens the Region's Competitiveness in Global Markets

The Pacific Northwest is heavily reliant on international trade. With exports worth $45 billion per year, the region is more dependent on international trade than the United States as a whole. Figure 10 tracks the value of exports from Oregon and Washington as a percentage of gross domestic product (GDP) compared the value of exports from the United States.

Good access to Pacific Northwest ports and airports—measured in travel time, cost, and reliability—gives the region's businesses a competitive edge in reaching global markets. However, its preeminent position as an export region is being undermined by global competition and rising transportation costs.

Over half of the Pacific Northwest's export trade today is with Pacific Rim countries, much of this is grain that moves through Portland-Vancouver and the other Columbia River ports. Grain export sales are particularly sensitive to cost. Differences of a few cents a ton affect buyers' choices among global suppliers. Highway and rail congestion at the Portland-Vancouver crossings increase the cost and decrease the reliability of export shipments, weakening the competitive position of businesses selling to overseas markets.

The ports of Seattle and Tacoma have been major transshipment centers for imported merchandise moving from the Pacific Rim to United States Midwest and East Coast markets. About half of this trade has moved inland by rail, traveling south from Seattle and Tacoma through Portland-Vancouver, then eastward along one of the Columbia Gorge rail lines. But the Pacific Northwest is no longer on the shortest, most cost-effective route from the major, global load centers of South and Southeast Asia to the major United States Midwest and East Coast markets. As illustrated in the schematic diagram in Figure 11, when the cost of transporting goods by land across the United States is considered, shipping routes via the Cape of Good Hope or the Suez Canal and the Atlantic Ocean are now competitive with Pacific routes.

In the future, the Pacific Northwest ports will be competing with the ports in New York, New Jersey, and the Southeast United States as well as the ports of Los Angeles-Long Beach. For Oregon and Washington ports to retain a share of the global merchandise trade, congestion at the I-5 crossings and access to and from the ports must be as reliable and cost-effective as possible.

Regional Growth and Increasing Demand for Freight Transportation Will Magnify the Economic Impacts of the Crossing Choke Points

The region has significant potential for economic expansion. The regional economy has grown at 3.4 percent per year over the last 20 years, outpacing the United States average in the last decade. Figure 12 compares the growth of the Oregon-Washington economy to the United States average. Regional employment also has grown faster than the national average.

Despite a recent slowdown in the economy, the economy of the Pacific Northwest is forecast to grow steadily, matching or exceeding the national average again over the next 20 years. With this growth will come a increased demand for reliable and cost-effective freight transportation. At moderate United States economic growth rates (e.g., 3.1 percent per year), import/export freight tonnage could double by 2020, and domestic freight tonnage could increase by about 70 percent.[1]

This growth will strain the national freight transportation system. Over the last two decades, passenger and freight movements on the nation's transportation system have increased dramatically. Vehicle-miles-of-travel by passenger cars and trucks grew by 72 percent while road-lane-miles grew by only one percent (Federal Highway Administration data).[2] Over the same period, ton-miles-of-freight moving over the nation's railroads increased by 55 percent while system mileage actually declined (Eno Foundation data).[3]

The Portland-Vancouver area and the Pacific Northwest can expect growth in freight volumes to occur at similar rates, but congestion at the Portland-Vancouver crossings could put the Pacific Northwest's economic growth, competitiveness, and jobs at risk by driving up the cost of labor and materials, making supply chains and distribution networks less reliable, reducing access to regional, national and global markets, and making it difficult to attract and retain new businesses.

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[1] Federal Highway Administration, Freight Analysis Framework Project estimates, 2002.

[2] Federal Highway Administration, *Highway Statistics*.

[3] Eno Foundation.

Figure 4. Geography of Pacific Northwest
With Interstate and U.S. Highways

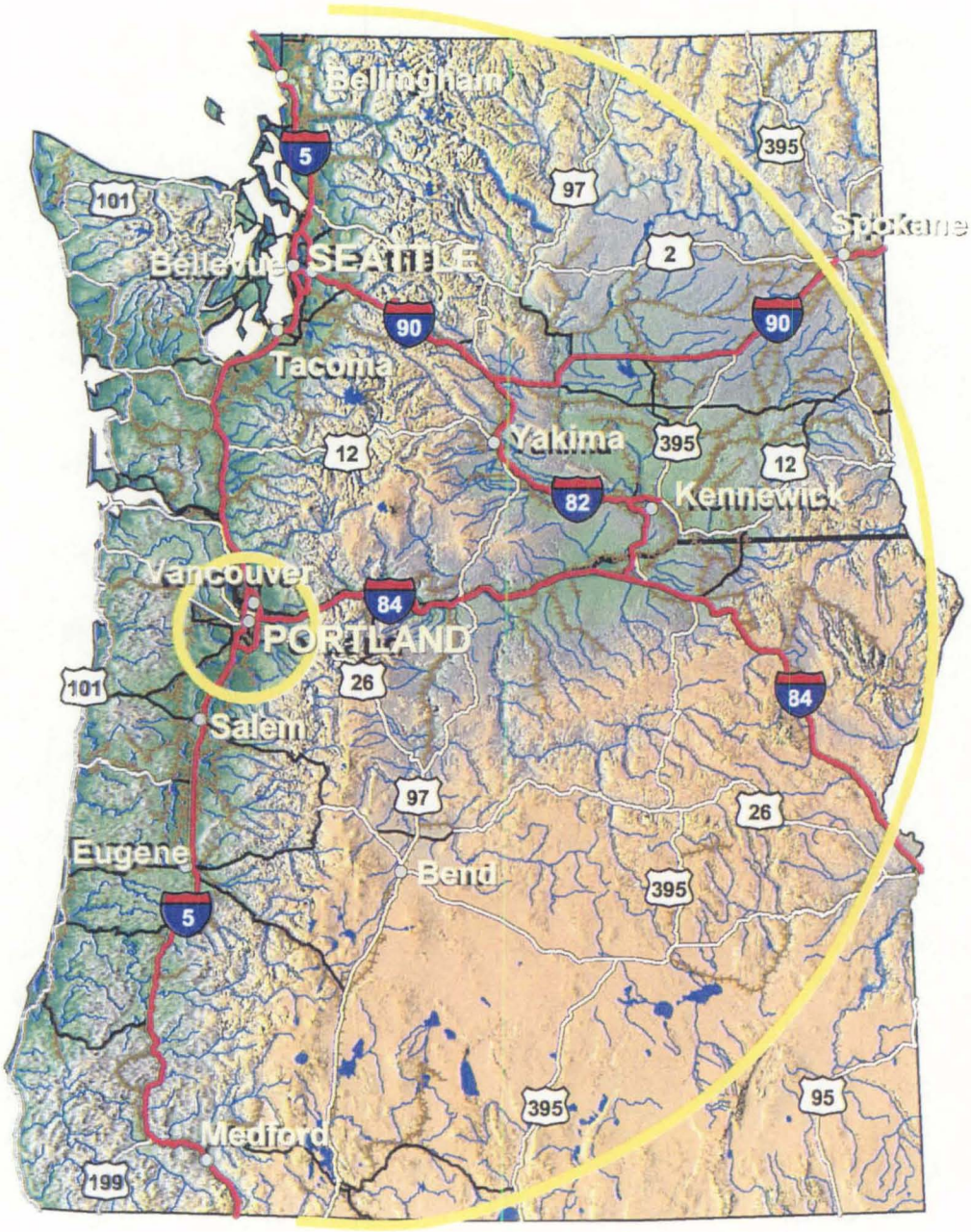


Figure 5. Oregon-Washington Origins and Destinations for Truck Freight Crossing the I-5 Bridge at Portland-Vancouver
With Tonnage of Freight on Truck Routes Used to Access Bridge

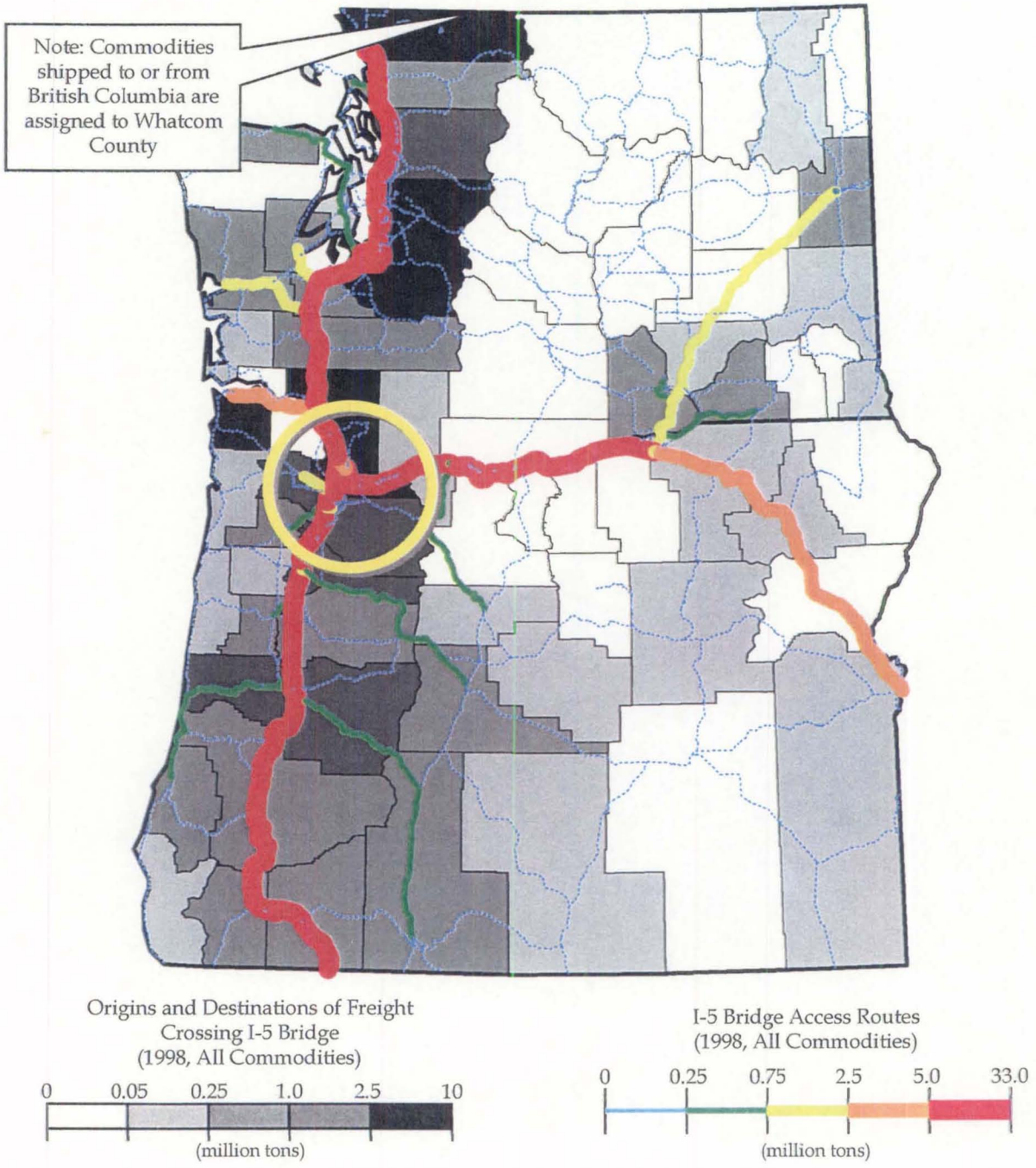


Figure 6. Volume of Freight on Pacific Northwest Rail Network

Figure 7. Oregon-Washington Origins and Destinations for Rail Freight Using the Portland-Vancouver Rail Triangle
With Tonnage of Freight on Rail Lines Used to Access Triangle

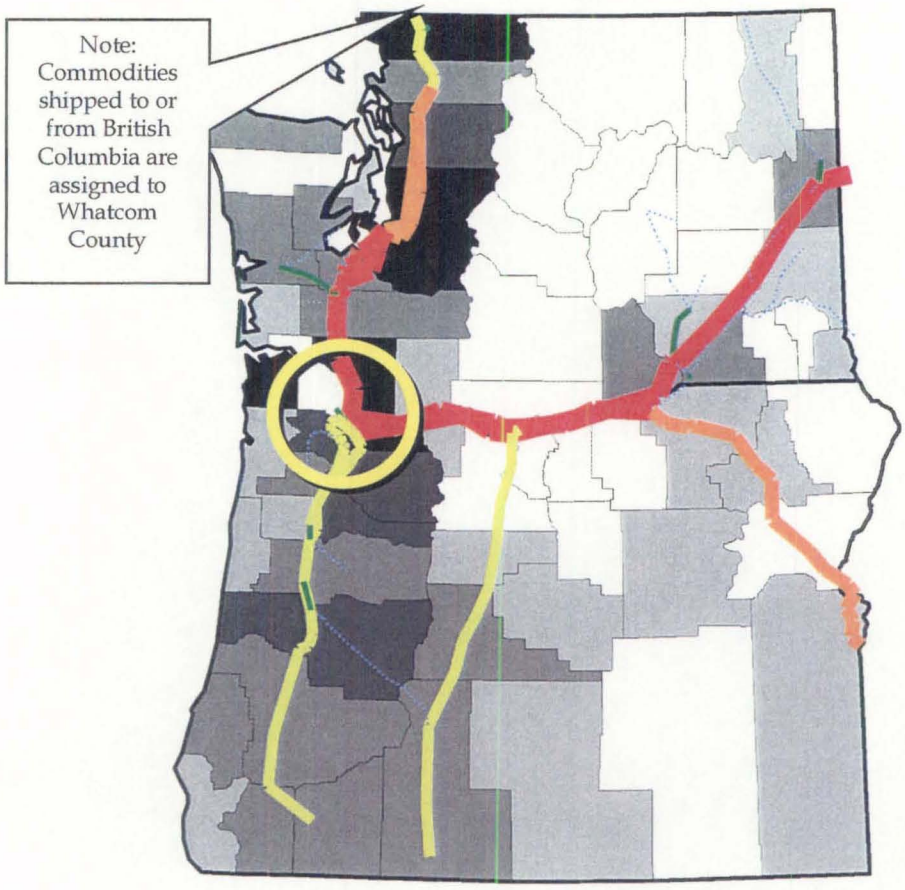


Figure 8. Gross Regional Product of Eight U.S. Trade Blocs, with Major Population Centers

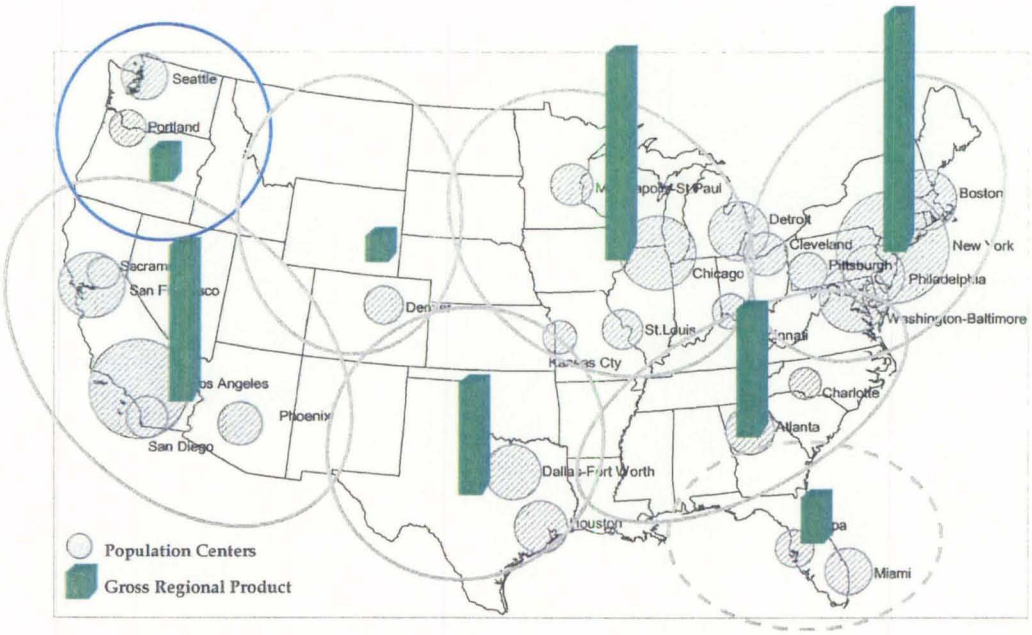


Figure 9. National Freight Flows for Goods with Origin or Destination in Oregon or Washington

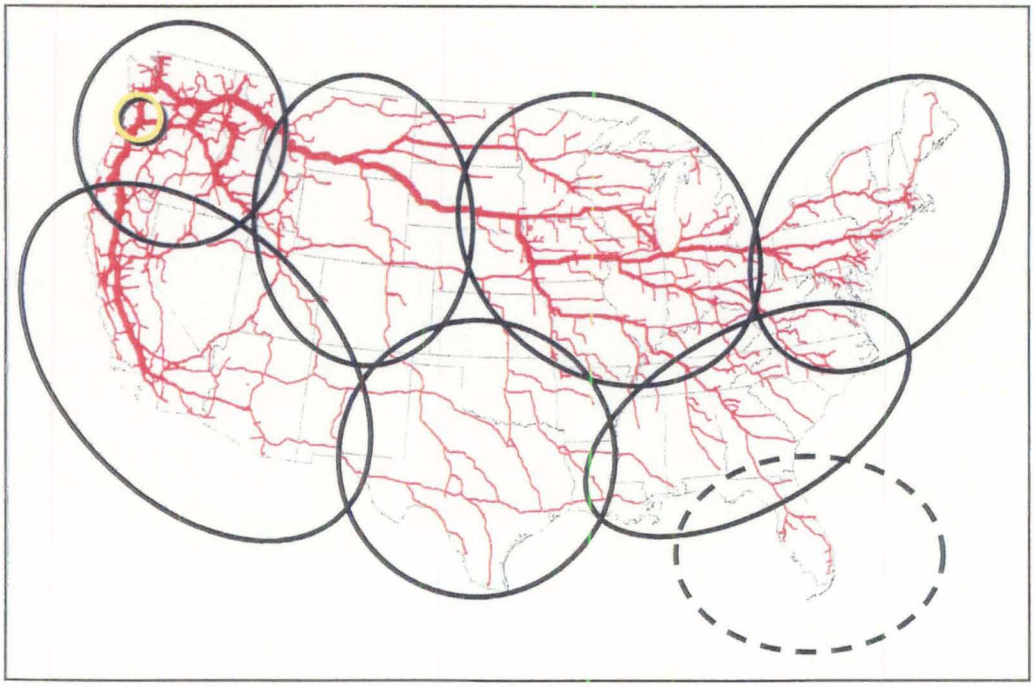


Figure 10. Exports as a Percentage of Pacific Northwest Gross Regional Product and U.S. Gross Domestic Product

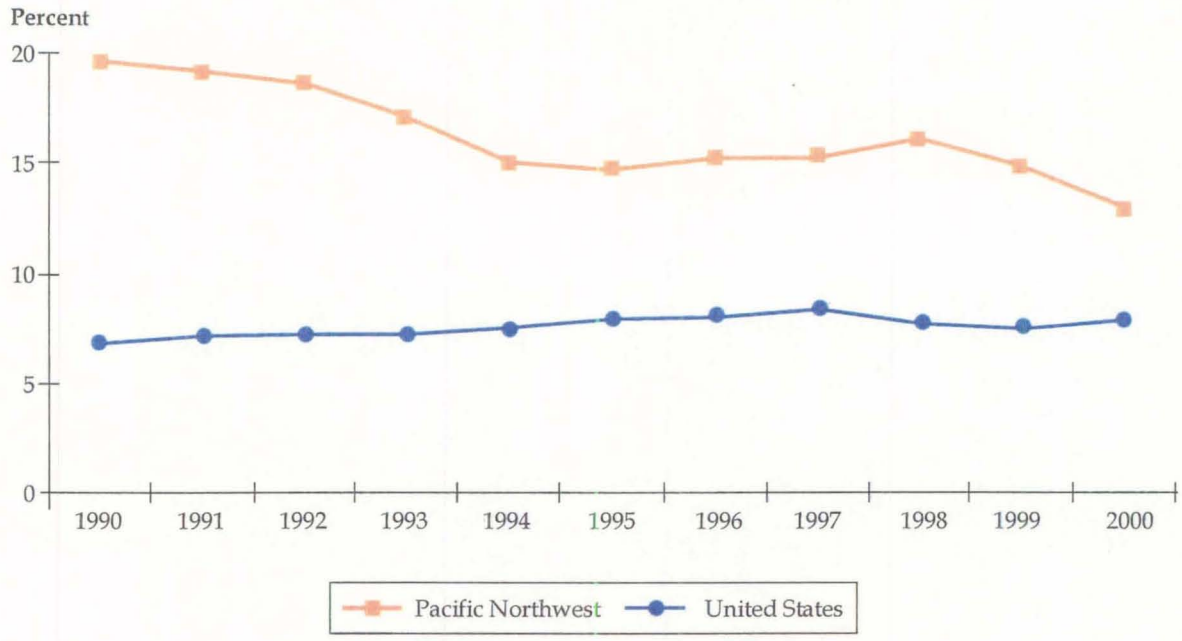


Figure 11. Shipping Routes from Southeast and South Asia Load Center to East Coast and Midwest Markets in U.S.

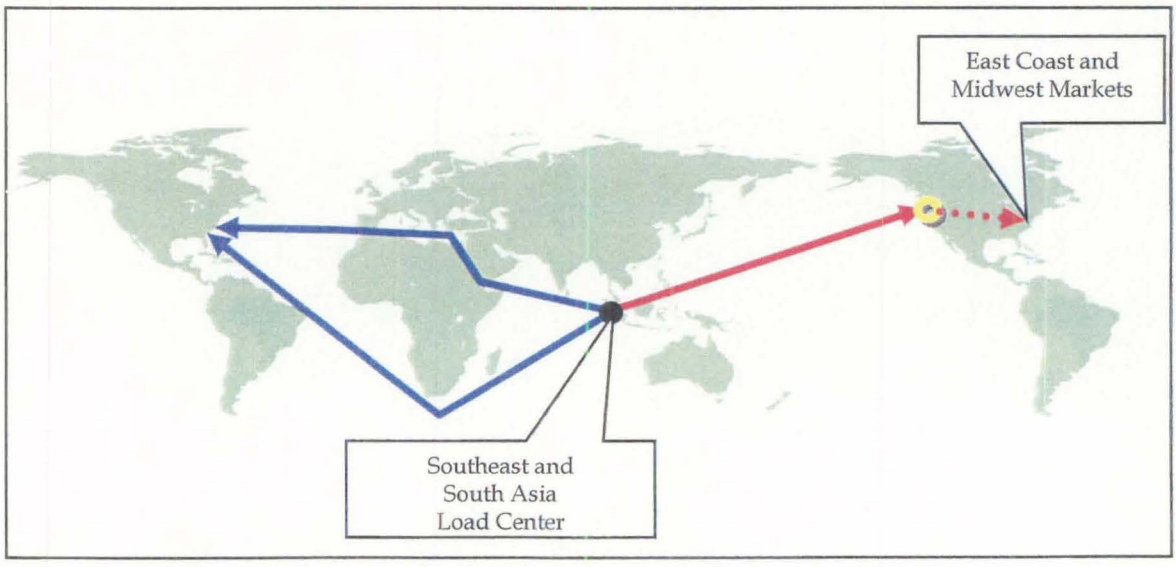
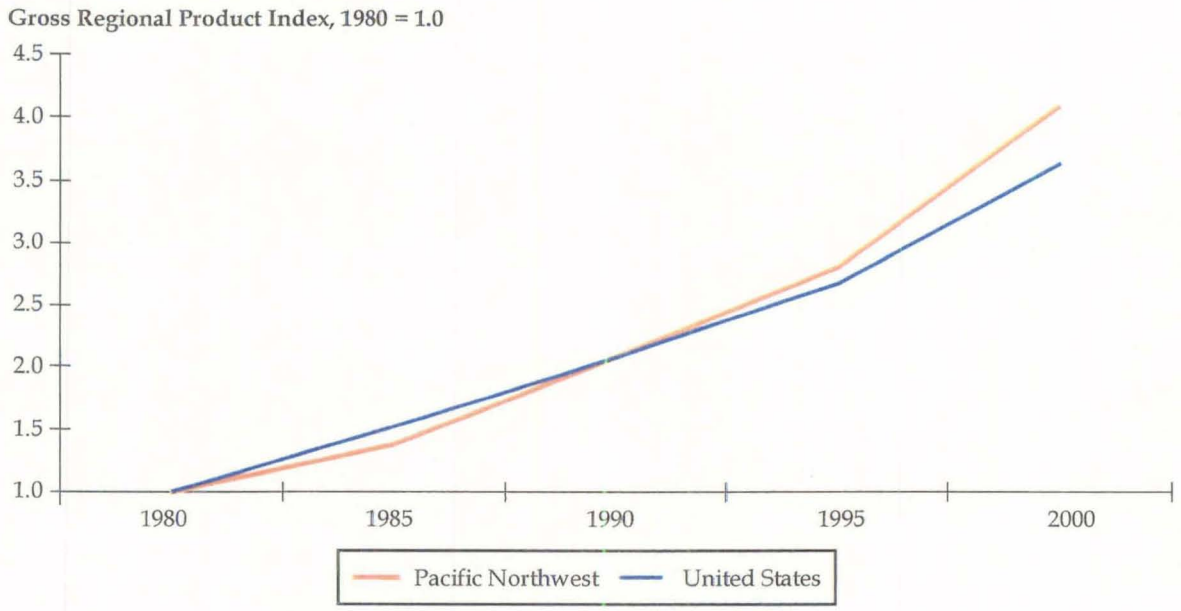


Figure 12. Growth in Pacific Northwest Gross Regional Product (GRP) and U.S. Gross Domestic (GDP)



Economic Effects by Industry

The Regional Economy Is Dependent on Reliable and Cost-Effective Transportation

Transportation underpins the Pacific Northwest's $350 billion economy and the region's 5.5 million jobs.[1] Figure 13 shows the contribution of eight economic sectors to the Gross Regional Product (GRP) of Oregon and Washington, and Figure 14 shows the distribution of employment across these sectors.

Each of these industries depends on transportation for access to employees, but five of the eight economic sectors are heavily dependent on transportation for the delivery of parts and supplies and the distribution of finished products. These sectors are: agriculture, construction, transportation and utilities, wholesale and retail trade, and manufacturing. Transportation congestion and delay costs directly impact the daily operations and productivity of industries in these sectors.

Within the five transportation-dependant economic sectors, five specific industries are especially affected by the Portland-Vancouver highway and rail choke points are:

- Lumber, wood and paper products;
- Transportation equipment manufacturing and steel;
- Farm and food products;
- High-technology; and
- Distribution and warehousing.

These "freight-intensive" industries account for 30 percent of the Pacific Northwest's Gross Regional Product (GRP) and 20 percent of the region's employment.[2] Table 2 provides a breakout of contribution of these industries to the GRP. Table 3 provides a breakout of employment by industry. [The high-technology industry numbers shown in the tables cover the electronics industry and the scientific instruments industry, selected because these sectors correspond to the Standard Transportation Commodity Code industry classifications used for analyzing the movement of goods. The American Electronics Association (AEA) uses a broader definition of high-technology that includes high-tech services such as software. The AEA's classification would show 225,200 high-tech employees in Oregon and Washington in 2001.]

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[1] Bureau of Economic Analysis.

[2] Bureau of Economic Analysis.

These five industries account for approximately 70 percent of the commodity tonnage crossing the I-5 highway bridge by large truck and about 60 percent of the commodity tonnage moving through the Portland-Vancouver rail network. Figure 15 shows the distribution of commodity tonnage by industry for the highway crossing. Figure 16 shows the distribution of commodity tonnage by industry for the rail network. (These figures are commodity or net tonnage numbers; they are not gross tonnage numbers, which would include tonnage for truck tractors and trailers or locomotives and cars. The statistics capture primary and long-haul freight moves (e.g., supplier to manufacturer; manufacturer to distribution center; and most intermodal moves), but do not capture local distribution to retail moves and moves made by smaller trucks and service vehicles. The total of all freight movement by truck and rail will be higher than reported in the figures, but reliable data accounting for all truck moves are not readily available.)

The five freight-intensive industries represent the Pacific Northwest's:

- Traditional economic strengths—lumber, wood, and paper products; transportation equipment and steel; and farm and food products;
- Key emerging industries that are critical to the region's future growth—high-technology; and
- Goods-moving sectors that supply manufacturers, retailers, and service-sector offices—distribution and warehousing.

These industries place significant demands on the transportation system and are particularly vulnerable to the delays and decreased travel time reliability resulting from roadway and rail congestion in Portland and Vancouver.

The next sections examine each of these five industries, providing an overview of key industry trends, a look at the importance of the Portland-Vancouver choke points to the industry's logistics, and a discussion of the economic effects of the choke points on the industry. Brief case studies of the experience of specific firms are provided for each industry. The industry profiles and case studies were built from interviews with company executives, industry association experts, and regional development economists.

Figure 13 Contribution in Pacific Northwest Gross Regional Product (GRP) by Eight Industry Sectors

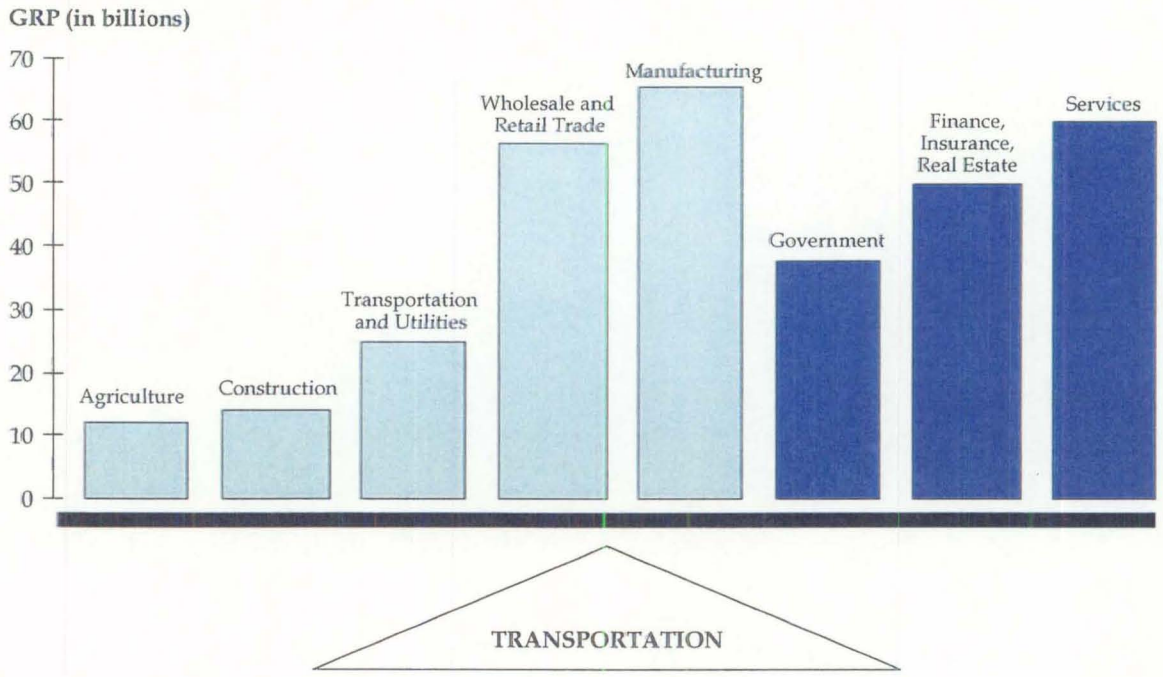


Figure 14 Pacific Northwest Employment in Eight Industry Sectors

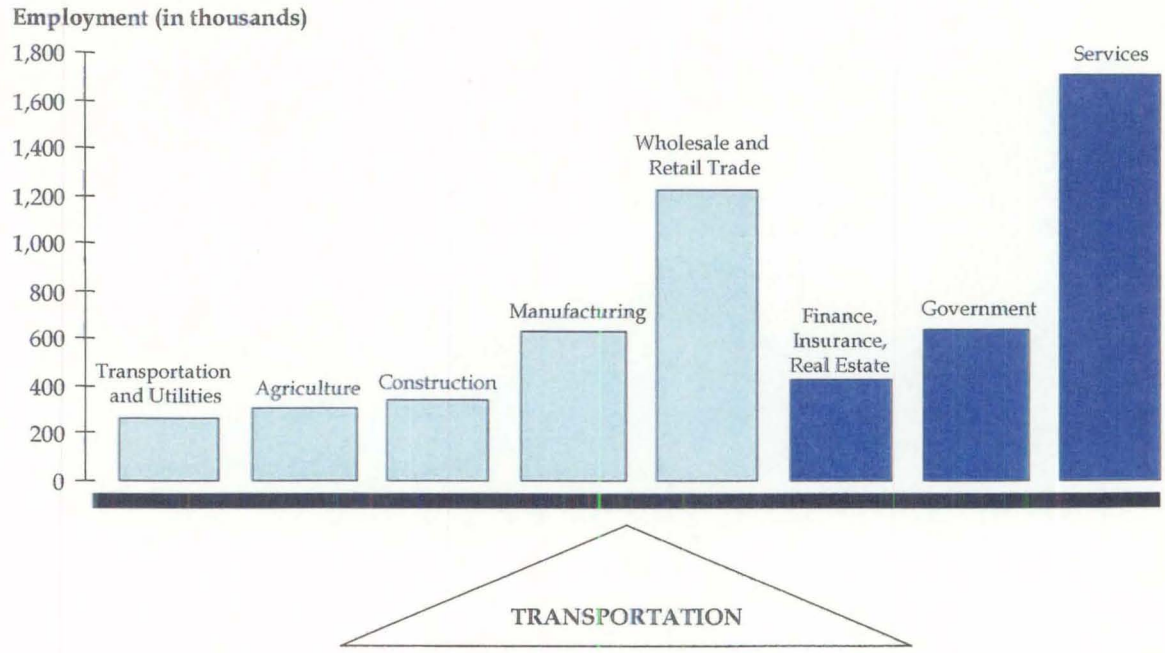


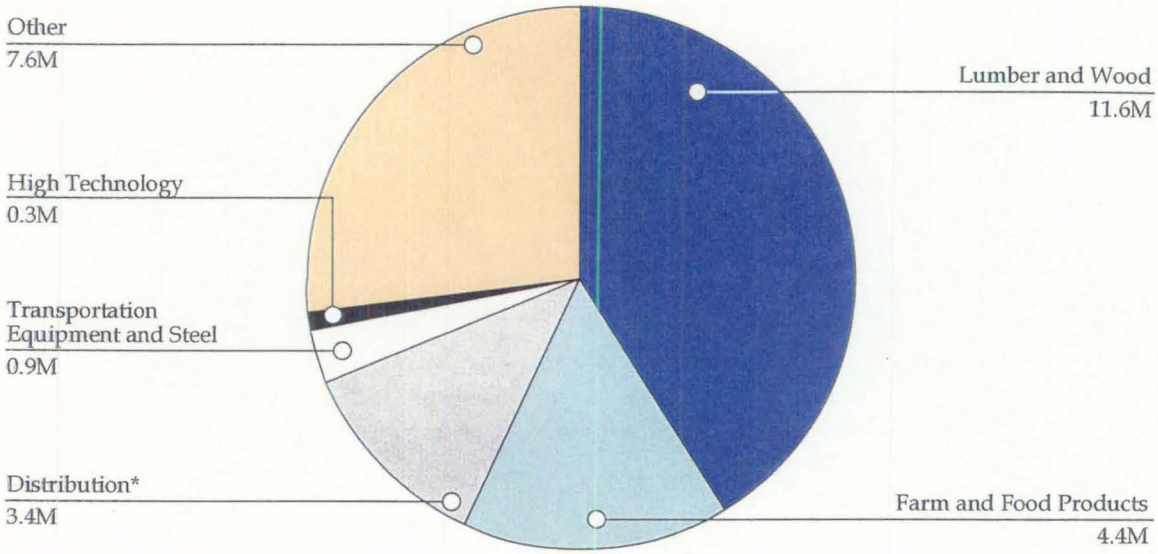
Table 2. Contribution to Pacific Northwest GRP by Five Freight-Intensive Industries

GRP by Industry (in $ Millions)	1990	2000
Lumber/Wood/Paper	10,623	7,293
Distribution/Wholesale Trade	16,074	28,588
Transportation Equipment/Steel	10,937	9,829
Farm and Food Products	12,549	18,983
Electronics and Scientific Jobs	2,537	34,332
Total GRP, Key Sectors	52,720	99,025
Key Sectors as a Percentage of Pacific Northwest	26%	31%

Table 3. Employment in Five Freight-Intensive Industries

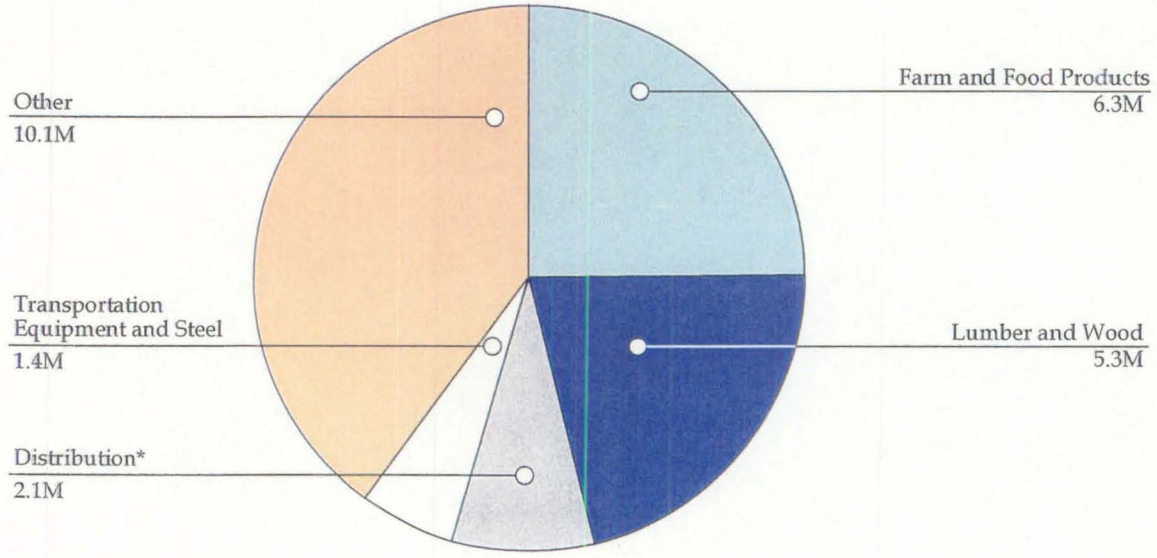
Employment by Industry	1990	2000
Lumber/Wood/Paper	143,712	114,331
Distribution/Wholesale Trade	294,668	350,875
Transportation Equipment/Steel	169,254	144,846
Farm and Food Products	208,962	211,655
Electronics and Scientific Jobs	56,246	85,333
Total, Key Sectors	872,842	907,040
Key Sectors as a Percentage of Pacific Northwest	24%	20%

Figure 15 Distribution of Freight Crossing I-5 Interstate Bridge by Industry



* Distribution (or "Miscellaneous Shipments") includes most intermodal shipments.

Figure 16 Distribution of Freight Using Portland-Vancouver Rail System by Industry



* Distribution (or "Miscellaneous Shipments") includes most intermodal shipments.

Lumber, Wood and Paper Products Industry

Industry Classifications (SICs):	24, 26
Employment (2000):	114,331
Value of Production (2000):	$7.3 billion

Industry Trends

Lumber, wood, and paper are traditional pillars of the Pacific Northwest economy. While employment and output in this industry have been declining for years in the region, a shift toward more value-added processing has created new opportunities for businesses in Oregon and Washington. Instead of exporting large volumes raw logs, wood is now transformed into more valuable items such as structural architectural framings before being shipped to domestic markets or overseas. This increasing specialization translates to less cost-sensitive export of bulky raw materials and more time-sensitive export of higher-value processed goods.

Importance of Crossings to Industry

Historically, the Pacific Northwest has been the primary source of lumber and wood products for the entire United States market. Lumber and wood products were shipped from the Pacific Northwest to the major United States Midwest and East Coast markets. However, the supplier-market relationship has changed over time. Today, the Pacific Northwest remains the principal supplier to the large Southern California market, but lumber- and wood-product manufacturers in the South Central states and Ontario now supply the Midwest market, and the Southeast and Eastern Canada suppliers serve the East Coast market. This has caused a major reorientation of the industry's shipping patterns—from predominately west-to-east 20 years ago to predominately north-to-south today.

Figure 17 presents a national picture of just those rail shipments of lumber, wood, and paper products that move through the Portland-Vancouver rail triangle. The figure shows the counties (in gray scale) that ship or receive rail freight that moves through the triangle; the darker gray the county, the more tonnage shipped or received from that county. (Commodities shipped to and from British Columbia are assigned to Whatcom County.) The figure also shows freight-rail tonnage of lumber, wood, and paper products moving on the major rail lines; the wider and redder the bandwidth of the rail line, the greater the commodity tonnage carried on the rail line. (The data in Figure 17 represent net tonnages of commodities only, as opposed to gross tonnages, which would include the weight of the locomotive and railcars.) According to the data presented in the figure, the Oregon-Washington lumber, wood, and paper products industry is strongly oriented towards the Southern California and Texas markets.

Truck shipments of lumber, wood, and paper products that cross the I-5 highway bridge are even more strongly oriented to the Southern California market. Figure 18 shows just those truck shipments of lumber, wood, and paper products that cross the I-5 highway

bridge. As in the rail figure, the gray scale indicates the total commodity tonnage shipped and received by county, and the highway bandwidth and color indicate the tonnage of commodities moving by truck along the highways.

Figure 19 shows more detail of the rail movements of lumber, wood, and paper products within Oregon and Washington. The figure shows just those rail shipments of lumber, wood, and paper products that move through the Portland-Vancouver rail triangle. The gray scale indicates the total commodity tonnage shipped and received by county, and the bandwidth and color of the lines indicate the tonnage of commodities moving by rail along the major rail lines. Figure 19 illustrates the importance of rail service to the lumber industry and ports of southwest Washington as well as industry in British Columbia.

Figure 20 illustrates the pattern of truck movements of lumber, wood, and paper products within Oregon and Washington. It shows that every county in western Oregon and western Washington has a major stake in reliable truck movement across the I-5 bridge. Again, the figure shows just those truck shipments of lumber, wood, and paper products that cross the I-5 bridge, but it includes inter-plant truck moves (described in the case study below) as well as truck moves for export and import. Although North American production accounts for most lumber-related traffic in the region, overseas wood imports are growing. Radiata pines from New Zealand arrive at the Port of Portland and then are transported by truck to provide feedstock for Pacific Northwest lumber mills, allowing the mills to be utilized more fully. Lumber trucks must negotiate port-area traffic exacerbated by I-5 congestion and then cross either the Columbia River Bridge or I-205 to reach mills in Washington.

Effects of Choke Points on Industry

Highway and rail congestion at the Portland-Vancouver crossings affect the lumber, wood, and paper products industry three ways:

- Shrink the supply areas that serve mills and reduce manufacturing plant efficiency by making it more costly to move logs, chips, and production materials between mills and manufacturers that are located north and south of the Portland-Vancouver area;

- Increase the cost of reaching national markets by raising long-haul trucking and rail costs. Lumber and wood products transported by rail must negotiate congestion in the Portland-Vancouver terminal area before continuing on to more distant domestic markets, including Los Angeles and Dallas-Fort Worth. Congestion leads to longer transit times and deteriorates delivery reliability, making rail less competitive than trucking; however, trucking costs for heavy, bulky lumber and wood products are usually higher than rail costs, especially for long-distance trips. In the long term, increased shipping costs will cause Oregon-Washington businesses to lose market share and profitability.

- Increase the cost of exports and imports. Exports generate jobs and income for Oregon and Washington, and imports help keep the region's mills running. Congestion that causes longer transit times and deteriorating delivery reliability also undermines the

competitiveness of Oregon-Washington businesses in global markets. As trade volumes drop, ports lose economies of scale and become less cost-efficient and less attractive to other shippers.

On a national scale, the delays and costs encountered at the Portland-Vancouver crossings are significant because they have an impact on the nearly eight percent of United States lumber, wood, and paper production that emanates from either Oregon or Washington.

Lumber, Wood and Paper Products Case Study
Interstate Wood Products

Firm Location: Kelso, Washington.

Products: Hauling of wood chips from lumber mills to processing plants.

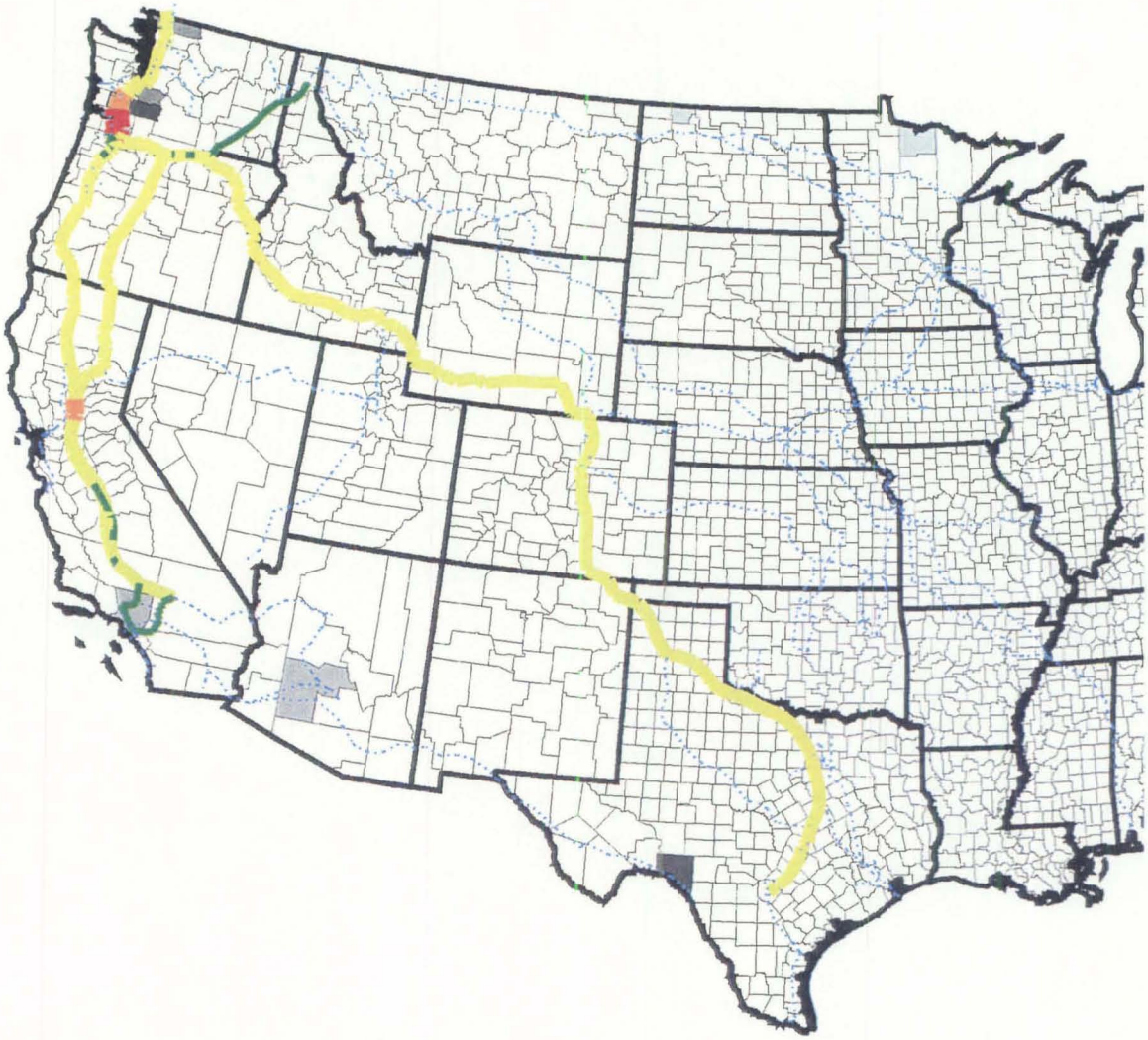
Background: Interstate Wood Products is medium-sized trucking firm that specializes in hauling wood chips from lumber mills to processing plants where the chips are converted to pulp, paper, and board products.

Product Shipping Processes: The company is strategically located 50 miles north of Portland and 125 miles south of Seattle. Serving west-central Washington and northern Oregon, the company uses specialized trucks to pick up scrap wood chips at lumber mills and deliver them to processing plants. The processing plants are capital intensive and require a steady stream of feedstock (wood chips) to keep them operational. Disruptions in production due to a lack of supplies are costly.

Effects of I-5 River Crossing Congestion on Company: Interstate Wood Products has already been priced out of the Seattle market due to congestion. The company used to link mills and plants north and south of Seattle, but congestion made round-trip times long, unpredictable, and costly—four-hour round-trips through Seattle frequently extended to six and eight hours due to traffic jams. Now, due to congestion at the I-5 highway crossing, the company is encountering similar problems in serving clients north and south of Portland.

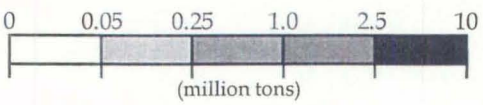
Impacts on Competitiveness: Transportation costs are rising and service areas are shrinking. Poor reliability and increasing delays make the regional lumber products less competitive as costs are either passed on to customers, or if that is not possible due to competition with other regions, companies absorb the costs themselves, reducing profits and lowering long-term viability.

Figure 17. National Origins and Destinations for Lumber, Wood, and Paper Products Using the Portland-Vancouver Rail Triangle
With Tonnage of Freight on Rail Lines Used to Access Triangle



Counties (in grayscale) that ship or receive rail freight that uses the Columbia River rail crossing; and
Rail tons (in colored bandwidths) by route between those counties

Origins and Destinations of Freight Crossing I-5 Bridge (1998, Lumber/Wood/Paper)



I-5 Bridge Access Routes (1998, Lumber/Wood/Paper)

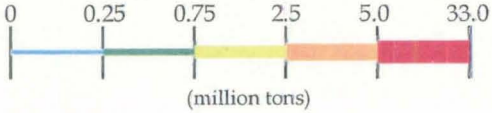
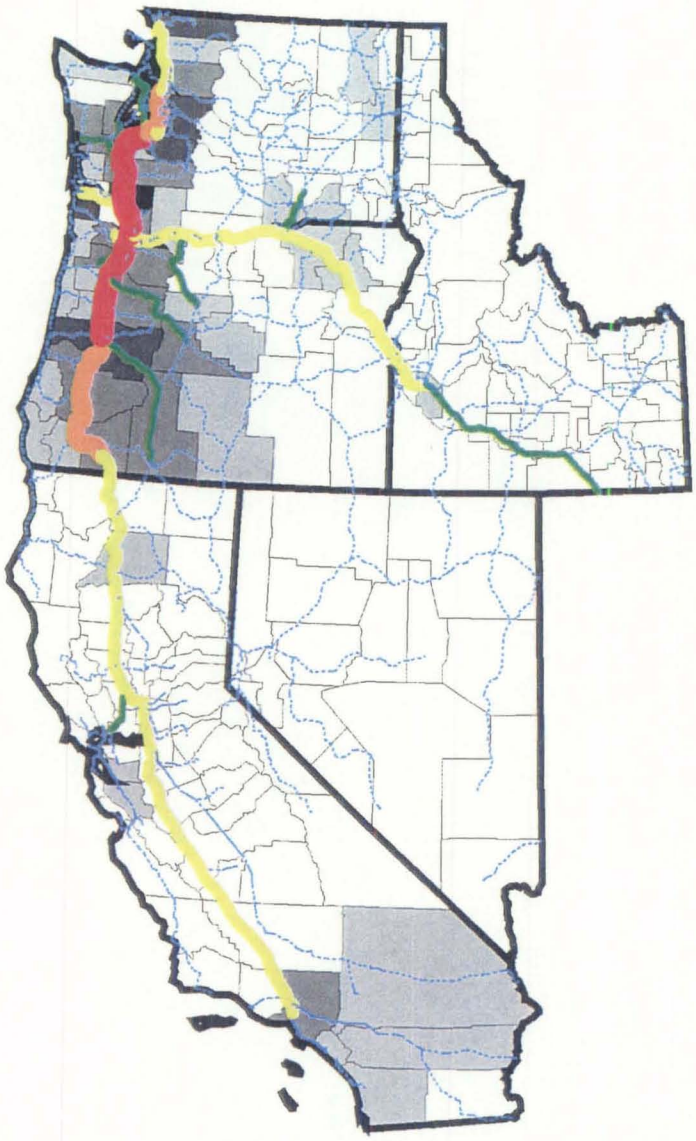
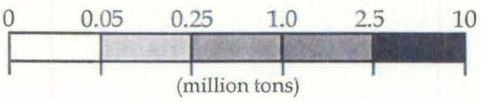


Figure 18. West Coast Origins and Destinations for Lumber, Wood, and Paper Products Crossing the I-5 Bridge at Portland-Vancouver
With Tonnage of Freight on Truck Routes Used to Access Bridge



Origins and Destinations of Freight Crossing I-5 Bridge (1998, Lumber/Wood/Paper)



I-5 Bridge Access Routes (1998, Lumber/Wood/Paper)

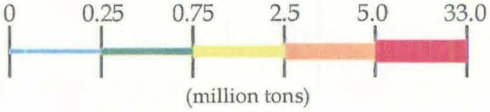


Figure 19. Oregon-Washington Origins and Destinations for Lumber, Wood, and Paper Products Using the Portland-Vancouver Rail Triangle
With Tonnage of Freight on Rail Lines Used to Access Triangle

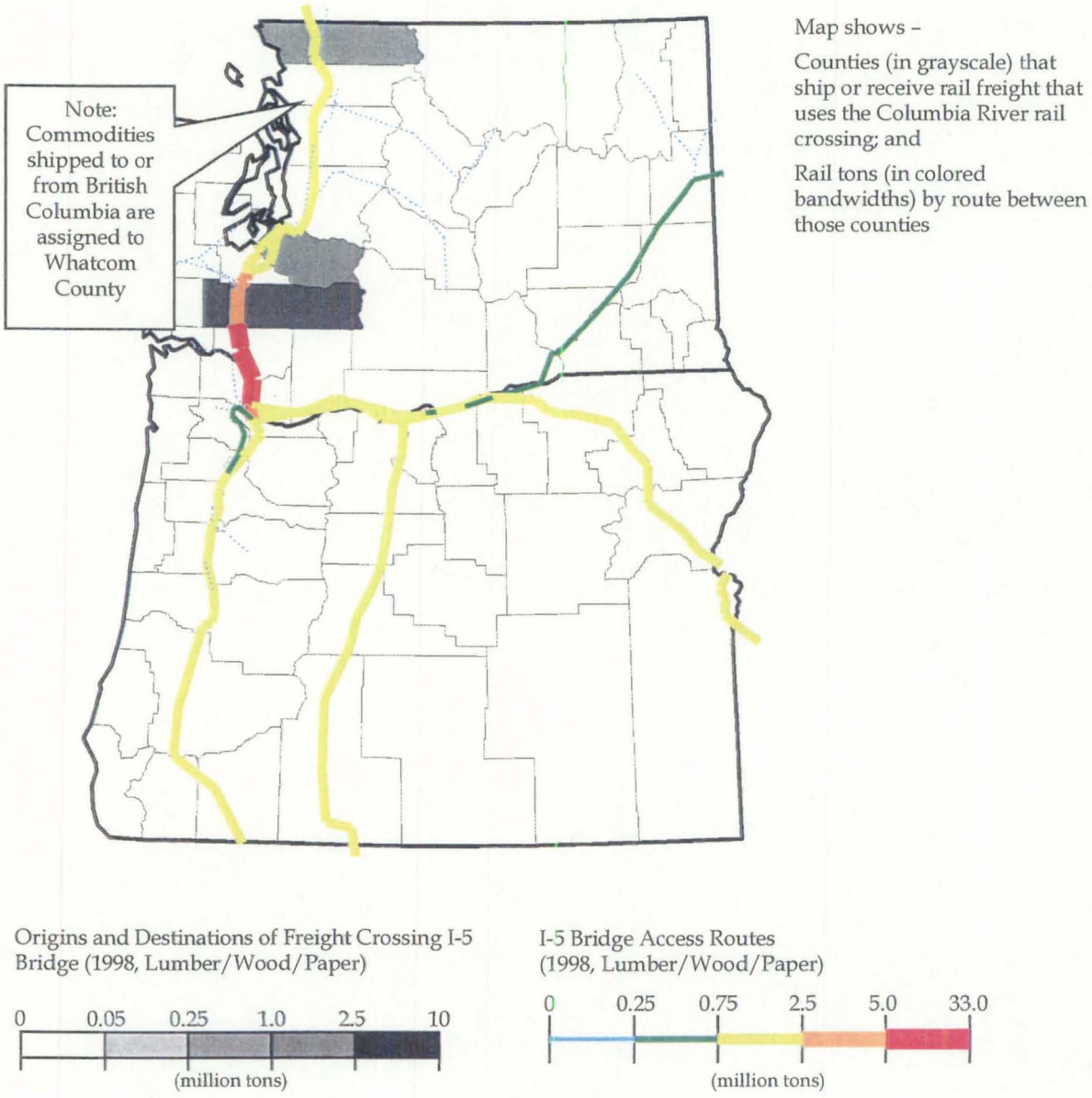
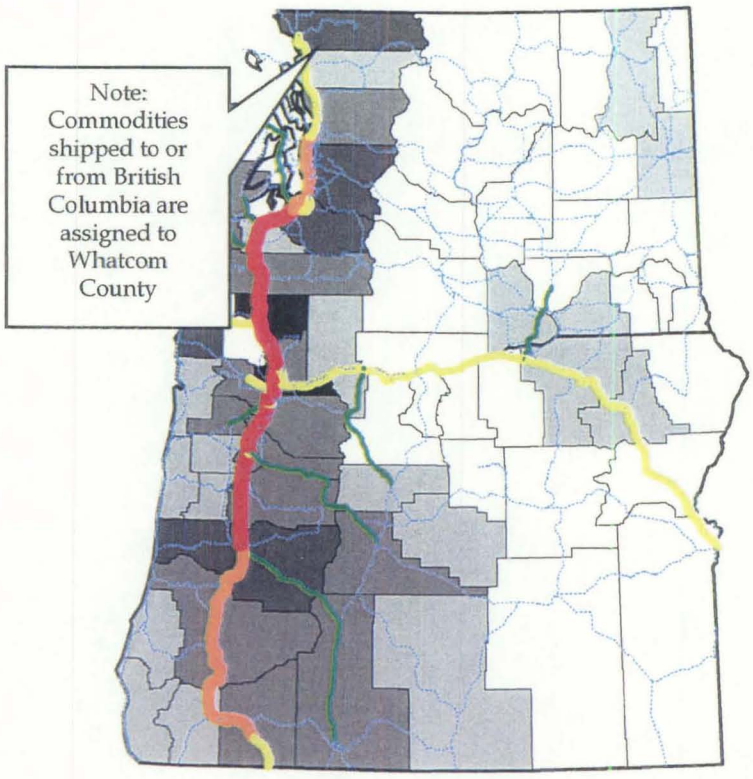


Figure 20. Oregon-Washington Origins and Destinations for Lumber, Wood, and Paper Products Crossing the I-5 Bridge at Portland-Vancouver
With Tonnage of Freight on Truck Routes Used to Access Bridge

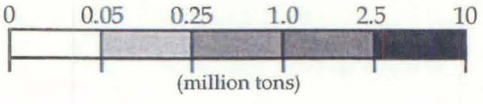


Map shows –

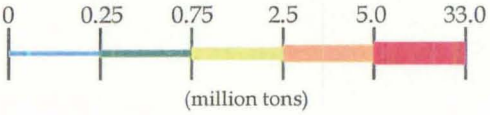
Counties (in grayscale) that ship or receive truck freight that uses the I-5 Corridor/Columbia River highway crossing; and

Truck tons (in colored bandwidths) by route between those counties

Origins and Destinations of Freight Crossing I-5 Bridge (1998, Lumber/Wood/Paper)



I-5 Bridge Access Routes (1998, Lumber/Wood/Paper)



Farm and Food Products Industry

Industry Classifications (SICs):	01, 02, 07, 20
Employment (2000):	211,655
Value of Production (2000):	$19.0 billion

Industry Trends

The productivity of the Pacific Northwest agricultural industry is growing, with output expanding while overall employment remains steady. The region is a leading grower of grains such as wheat and barley as well as a wide variety of fruits, including apples, pears, grapes, and cranberries. The region also has a significant food products industry, producing processed items such as wine, pasta, and roasted coffee.

Importance of Portland-Vancouver Crossings to Industry

The region, which includes Washington, Oregon, Montana, Idaho, and portions of the Upper Midwest, has some of the most productive agricultural regions in the country. Farm and food products businesses in the region depend on the Columbia River ports, the Port of Seattle, and the Port of Tacoma to reach export markets.

Rail links from these regions to the Port of Portland, the largest grain exporting port on the West Coast, are particularly important. Figure 21 presents a national picture of just those rail shipments of farm and food products that move through the Portland-Vancouver rail triangle. The figure shows how farm and food export shipments from the entire northwestern tier of the country converge on the Port of Portland and other Columbia River ports. Figure 22 shows the pattern of rail shipments of farm and food products within Oregon and Washington. The gray scale indicates the total commodity tonnage shipped and received by county, and the bandwidth and color of the lines indicate the tonnage of commodities moving by rail along the major rail lines. The importance of the Columbia River and Seattle-Tacoma ports are clear as is the dependence of eastern Washington wheat growers on rail service.

Rail capacity issues in Portland-Vancouver would be a lot worse if it were not for the large volumes—over 12 million tons annually—of grain and other products transported by barge to and from the Port of Portland. Barges can economically ship bulk commodities, such as the grains grown in eastern Washington and Oregon, that would otherwise be shipped almost entirely by rail. Figure 23 shows the tonnage and types of commodities moved by barge downriver (inbound) to the Portland-Vancouver ports and upriver (outbound) to eastern Washington and Oregon.

While not used intensively for bulk commodities such as grain, trucks handle large volumes of food products. Trucks deliver higher value, processed foods to supermarkets and transport highly perishable, time-sensitive food products such as Washington oysters. Figure 24 shows the West Coast movement of farm and food products that cross the I-5

bridge by truck. Over 3 million tons of food products are trucked across the I-5 bridge annually, with many of these products destined for sale in Southern California markets.

Figure 25 shows the more detailed pattern of truck movements of farm and foods products within Oregon and Washington. The gray scale indicates the total commodity tonnage shipped and received by county, and the bandwidth and color of the lines indicate the tonnage of commodities moving by truck along the major highways. The figure makes clear that businesses up and down the I-5 corridor, as well as those in central and eastern Oregon and Washington, move products across the I-5 bridge.

Effects of Portland-Vancouver Choke Points on Industry

Producers of farm and food products face challenges similar to those encountered by the region's lumber, wood, and paper products industry. Congestion raises the cost of interplant truck moves for value-added food processors. This sector is forecast to be a long-term growth industry for the region, but rising congestion costs risk dampening the potential for job and revenue growth.

More important for the Oregon-Washington economy, the agricultural goods produced in Oregon and Washington are global commodities. The Portland-Vancouver highway and rail choke points raise the cost of exports to worldwide markets where competition is measured in differences of cents to the ton. The railroads have introduced heavier, higher-capacity rail cars and longer trains to gain economies of scale and keep down the cost of transportation, especially for long-haul bulk wheat shipments. These improvements to one link of the logistics chain are exacerbating congestion in the Portland-Vancouver rail network, which threatens to increase the cost of all rail movements through the area. If shippers absorb the higher transportation costs in their pricing, Oregon-Washington producers risk losing market share to overseas producers. More problematic, if grains and food products cannot move through or to the Columbia River ports or the Puget Sound ports efficiently, the goods will be transported to competing ports such as New Orleans and Houston.

A large component of the Pacific Northwest farm and food products industry is wheat. The case study below details how wheat and grain are dependent on a combination of barge and rail service to the Port of Portland. Given existing demands on the Portland-Vancouver rail infrastructure, any potential decline in barge use would magnify existing rail congestion issues.

Farm and Food Products Case Study
Eastern Washington and Oregon Wheat

Background: The eastern parts of Washington and Oregon are national leaders in wheat production. Overall, Washington ranks fourth among the states in wheat production and Oregon ranks 13th. Portland and the Columbia River ports of Longview and Kalama are critical export gateways for Washington, Oregon, North Dakota, Montana, Idaho, South Dakota, Colorado, and Minnesota grains.

Wheat Production – Leading States, 1997

1. Kansas
2. North Dakota
3. Montana
4. **WASHINGTON**
5. Oklahoma
6. Idaho
7. Texas
8. South Dakota
9. Colorado
10. Minnesota
13. **OREGON**

Six Pacific Northwest counties rank among the top 10 wheat growing counties in the entire nation.

Wheat Production – Top Counties in the United States, 1997

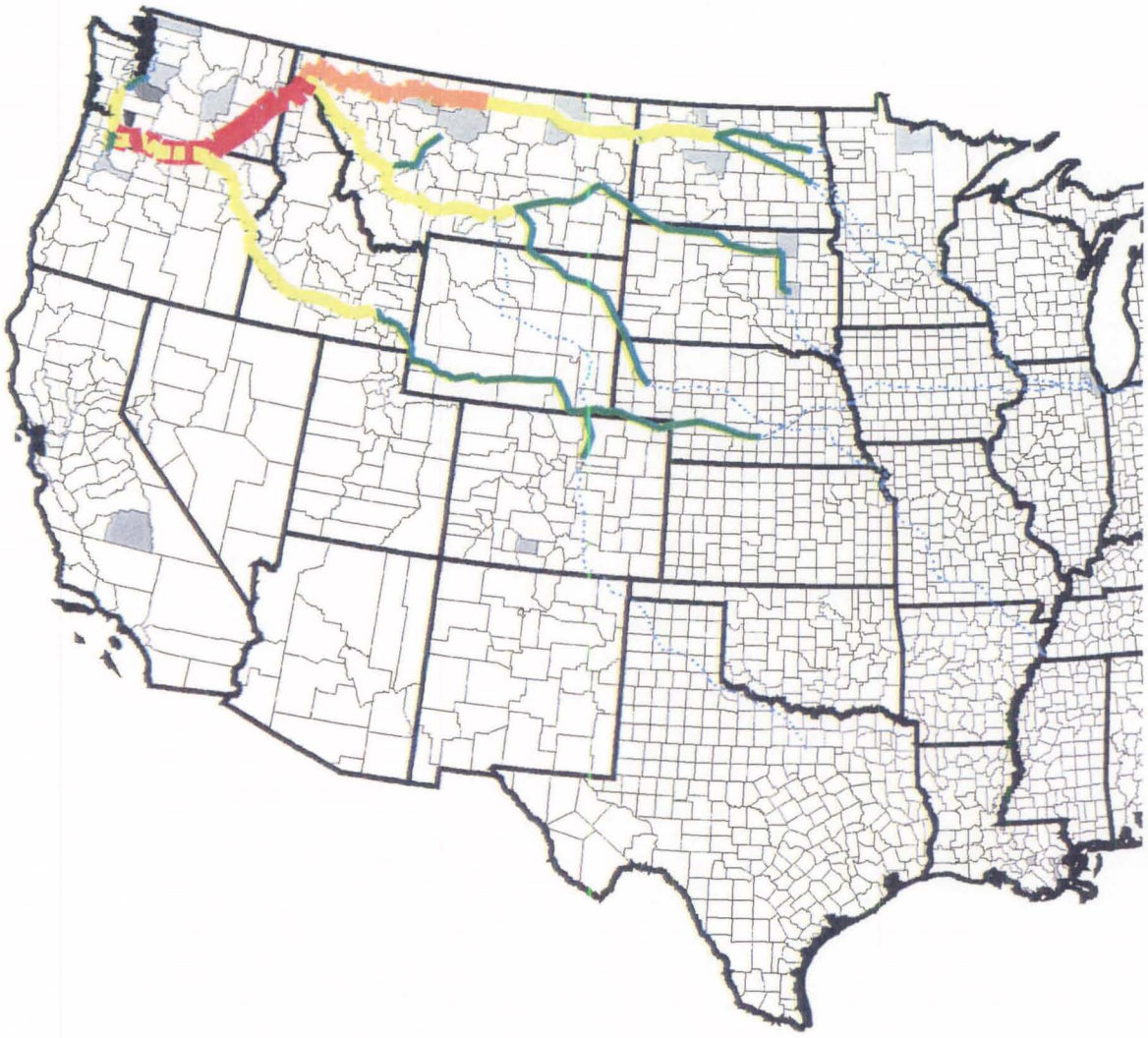
1. **WHITMAN, Washington**
2. **LINCOLN, Washington**
3. Chouteau, Montana
4. **ADAMS, Washington**
5. **UMATILLA, Oregon**
6. Sumner, Kansas
7. **GRANT, Washington**
8. **WALLA WALLA, Washington**
9. Bingham, Idaho
10. Hill, Montana

Product Shipping Processes: On an annual basis, about 133 million bushels of wheat grown in eastern Washington and Oregon are shipped by rail and barge to the Port of Portland for export to foreign markets. Barges account for 61 percent of this total, while rail accounts for the remaining 36 percent of these shipments.

Effects of I-5 River Crossing Congestion: Farmers in Eastern Washington and Oregon are well served by barge and railroads that ensure grains reach the Columbia ports and critical export markets such as Japan. If the Columbia River system were to become non-navigable (e.g., closure of dams or low water), farmers would lose the option to ship by barge and would have to rely on rail almost entirely. A shift from barge to rail would require the Portland-Vancouver area to accommodate an additional 1,100 65-car train sets per year. This would present an immense challenge given existing constraints.

Impacts on Competitiveness: The Columbia River ports do not have the rail capacity to accommodate the increased rail shipments that would result from a loss in barge traffic. Additional rail capacity in the Portland-Vancouver area would better insure Eastern Washington and Oregon farmers against any possible reduction in barge service.

Figure 21. National Origins and Destinations for Farm and Food Products Using the Portland-Vancouver Rail Triangle
With Tonnage of Freight on Rail Lines Used to Access Triangle



Map shows –
Counties (in grayscale) that ship or receive rail freight that uses the Columbia River rail crossing; and
Rail tons (in colored bandwidths) by route between those counties

Origins and Destinations of Freight Crossing I-5 Bridge (1998, Farm and Food Products)

0 0.05 0.25 1.0 2.5 10
(million tons)

I-5 Bridge Access Routes
(1998, Farm and Food Products)

0 0.25 0.75 2.5 5.0 33.0
(million tons)

Figure 22. Oregon-Washington Origins and Destinations for Farm and Food Products Using the Portland-Vancouver Rail Triangle
With Tonnage of Freight on Rail Lines Used to Access Triangle

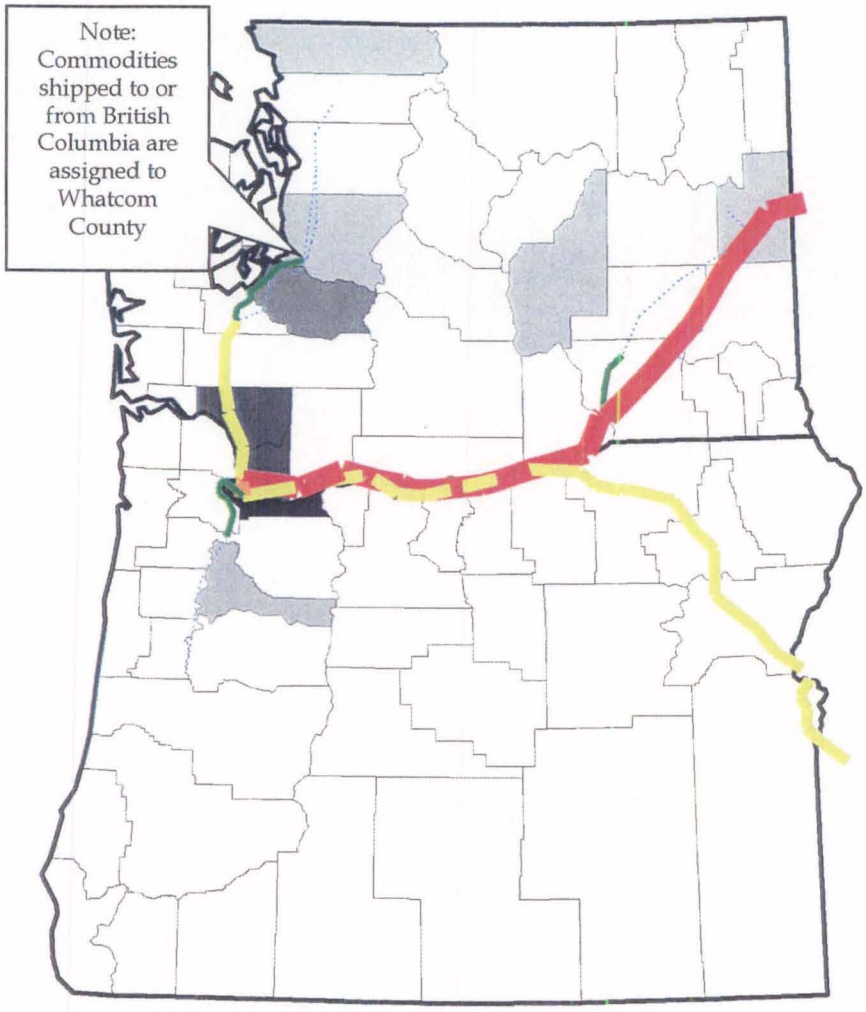


Figure 23. Port of Portland Barge Commodities

Inbound (Down River) and Outbound (Up River)

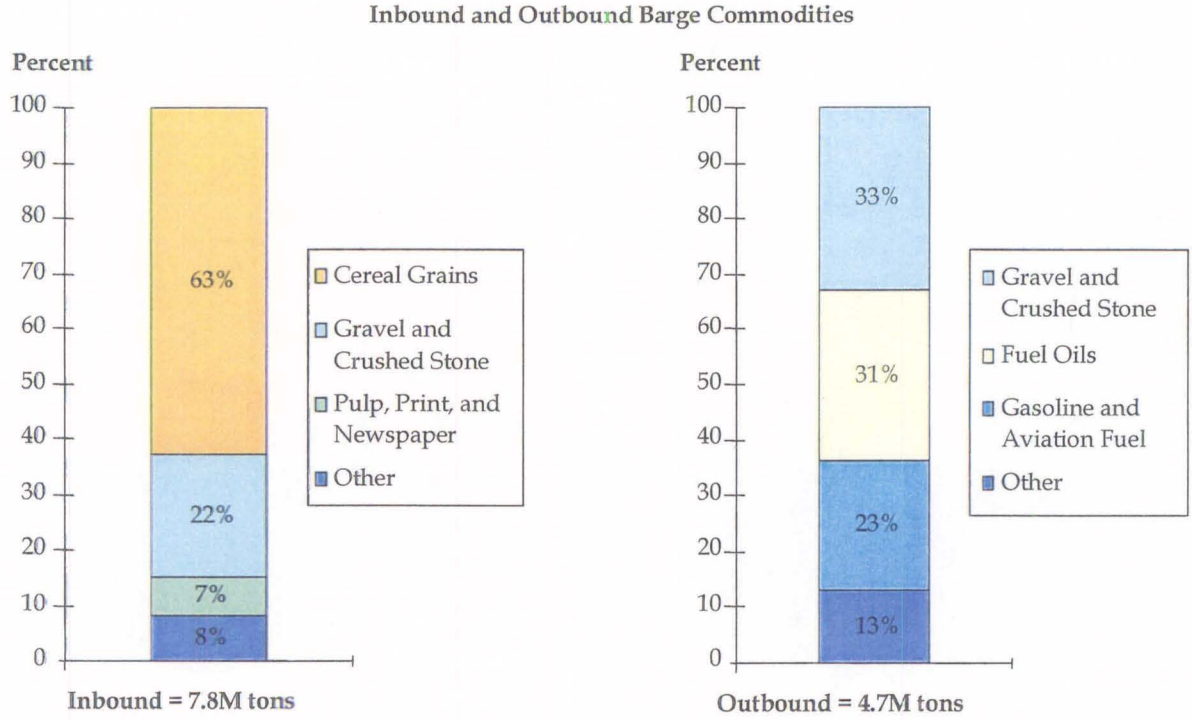
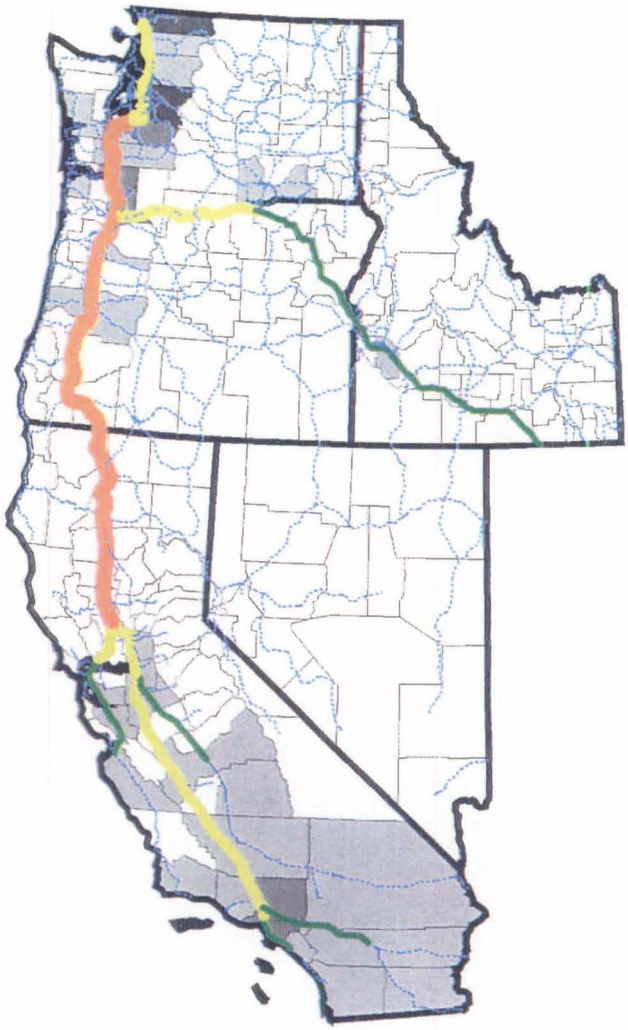


Figure 24. West Coast Origins and Destinations for Farm and Food Products Crossing the I-5 Bridge at Portland-Vancouver

With Tonnage of Freight on Truck Routes Used to Access Bridge



Map shows –

Counties (in grayscale) that ship or receive truck freight that uses the I-5 Corridor/Columbia River highway crossing; and

Truck tons (in colored bandwidths) by route between those counties

Origins and Destinations of Freight Crossing I-5 Bridge (1998, Farm and Food Products)

0 0.05 0.25 1.0 2.5 10

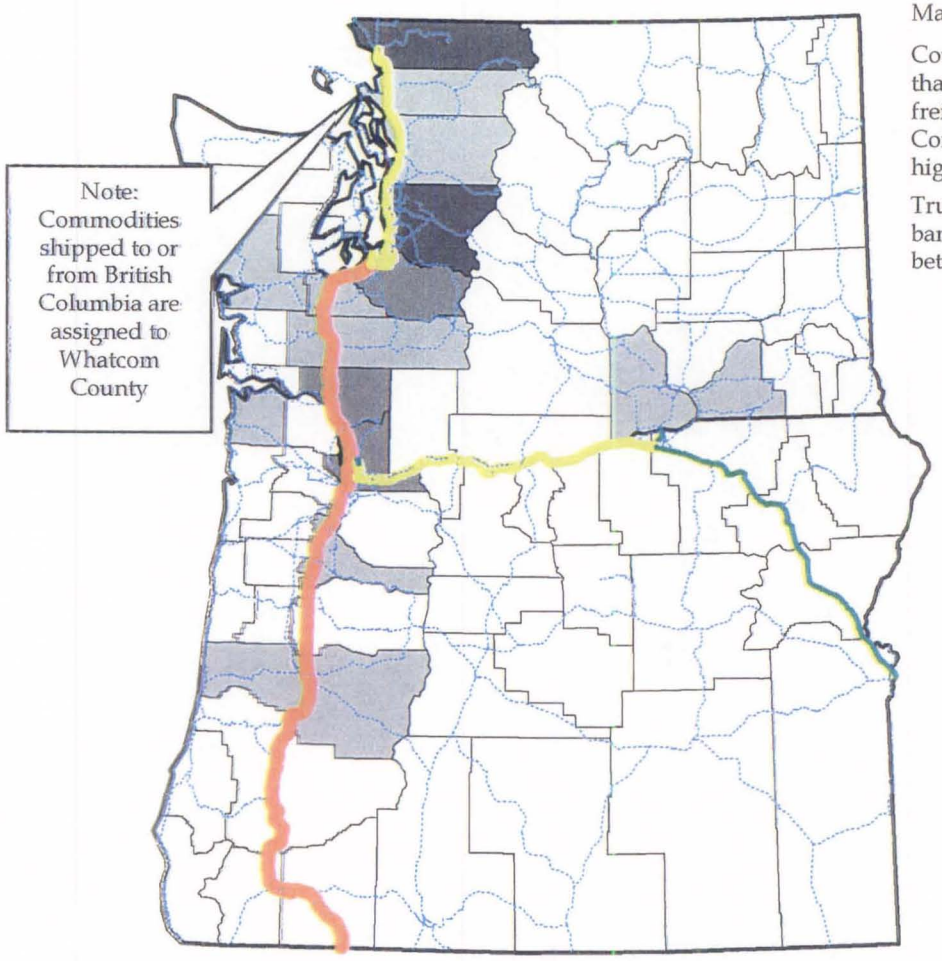
(million tons)

I-5 Bridge Access Routes (1998, Farm and Food Products)

0 0.25 0.75 2.5 5.0 33.0

(million tons)

Figure 25. Oregon-Washington Origins and Destinations for Farm and Food Products Crossing the I-5 Bridge at Portland-Vancouver
With Tonnage of Freight on Truck Routes Used to Access Bridge



Transportation Equipment and Steel Industry

Industry Classifications (SICs):	33, 37
Employment (2000):	144,846
Value of Production (2000):	$9.8 billion

Industry Trends

The Pacific Northwest is home to one of the preeminent concentrations of transportation equipment manufacturers in the United States, including Boeing and Paccar in Seattle, and Freightliner and Gunderson in Portland. Suppliers that support the aerospace, truck, and railcar manufacturing industries, including aluminum and steel producers, are located throughout the region.

The transportation equipment industry tends to be cyclical, beholden to long-term economic cycles. After a decade of robust growth, Boeing, the region's largest employer in the transportation equipment industry, is confronting a sharp decline in jet aircraft orders. In contrast, a major railcar manufacturer, Gunderson, has noticed an increase in orders despite the economic slowdown. Overall, production levels for transportation equipment in the Pacific Northwest are declining modestly while employment in the industry is falling more rapidly.

Importance of Portland-Vancouver Crossings to Industry

The transportation equipment sector requires reliable, low-cost access to suppliers located throughout the Pacific Northwest to remain cost-competitive and viable. Parts and supplies are either destined for the Portland-Vancouver area or must transit the area to reach manufacturers in the Puget Sound region. For example, shipments carried by truck from the east or from ports in Washington use I-5 to access the railcar and truck plants in the North Portland industrial complex. The Boeing parts facility in Gresham relies on the I-205 bridge to transport supplies to production facilities in the Seattle area, but congestion on that bridge is worsening as it continues to draw overflow from I-5.

Figure 26 shows the approximate distribution of transportation equipment shippers and receivers and the associated truck moves by value within Oregon and Washington. The figure shows just those truck shipments of transportation equipment that move cross the I-5 highway bridge. The gray scale indicates the total commodity value shipped and received by county, and the bandwidth and color of the lines indicate the value of commodities moving by truck along the major highways. (Commodities shipped to and from British Columbia are assigned to Whatcom County.) The broad bandwidth of I-5 underscores the importance of the region's ports for import and export of transportation equipment products. The Port of Tacoma is the most important origin and destination for transportation equipment and metal products moved over the I-5 bridge by truck. Commodities, including rolled steel, are imported through Tacoma for use by Portland area manufacturers.

Figure 27 shows the corresponding distribution of transportation equipment shippers and truck moves by tonnage (not value as in the prior figure) across the West Coast. Again, the figure shows just those truck shipments of transportation equipment that move cross the I-5 highway bridge. The figure reveals the strong interdependence of businesses along the I-5 corridor in Washington and Oregon as well as the strong links between the Oregon-Washington transportation equipment industry and the Southern California aerospace and transportation equipment industries.

The final figure in the series, Figure 28 shows the movement of transportation equipment between Oregon-Washington counties and the rest of the United States by rail. The figure shows counties of origin and destination for products moving through the Portland-Vancouver rail triangle, and the routes used by these products to access the triangle. Many of the transportation equipment industry's finished products are distributed by rail (or air, not captured in these diagrams), rather than by truck. Southern California, the Midwest, and the Port of Houston are primary destinations for transportation equipment passing through the Portland-Vancouver rail network; parts and supplies come from Chicago and the East Coast.

Effects of Portland-Vancouver Choke Points on Industry

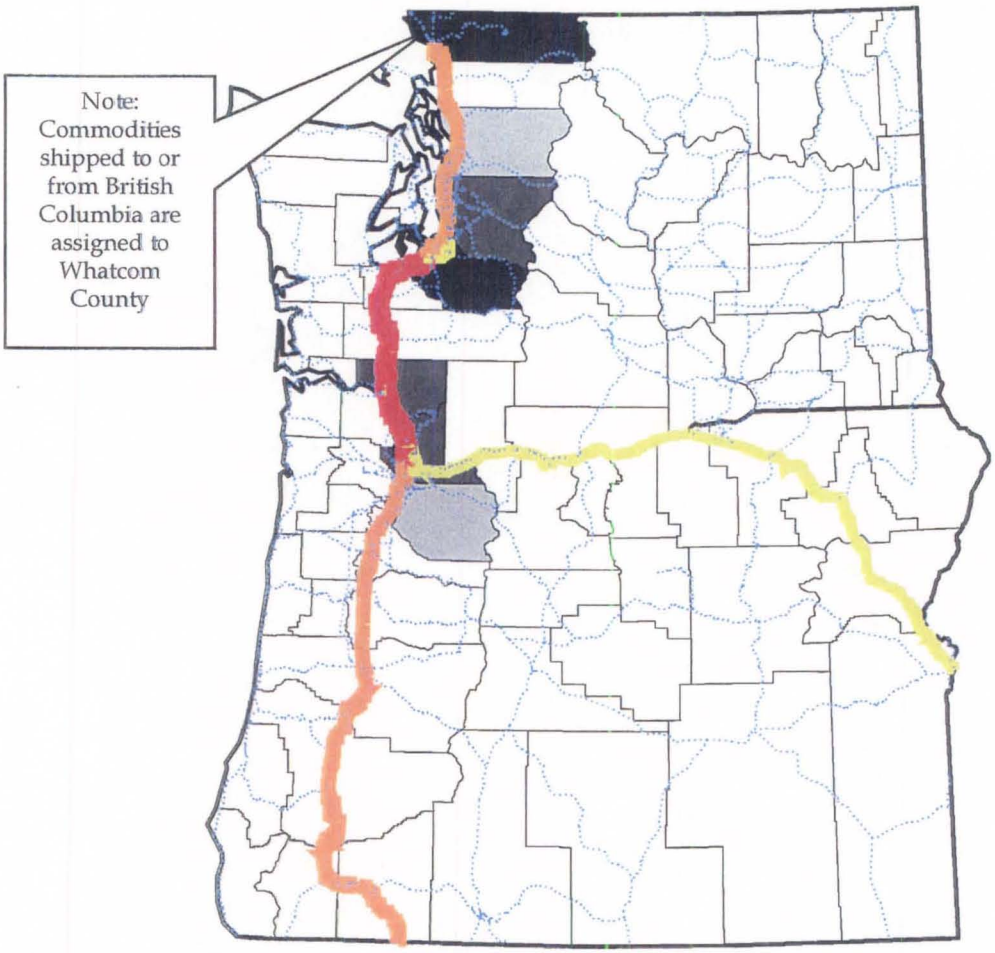
Bottlenecks prevent efficient distribution of transportation equipment in the Pacific Northwest. Auto imports from the Pacific Rim are transferred from ship to rail at the Port of Portland, then leave via rail lines to markets in the Eastern United States. The potential growth of the port as an entry point for motor vehicles is constrained by rail system congestion.

Parts used in the manufacture of transportation equipment are also delayed by congestion at the Portland rail yards. In addition, trucks have difficulty accessing intermodal transfer facilities due to roadway congestion. Congestion in Portland-Vancouver reduces the dependability of deliveries and shipments, adding to business costs in the region.

The case study of Gunderson, below, demonstrates the importance of rail and trucking to maintain the supply streams that keep the company's North Portland production facility running. With its North Portland location, Gunderson is affected first hand by rail capacity issues and congestion on the Columbia River Bridge and I-5.

Figure 26. Oregon-Washington Origins and Destinations for Transportation Equipment and Steel Products Crossing the I-5 Bridge at Portland-Vancouver

With Value of Freight on Truck Routes Used to Access Bridge

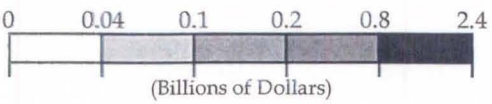


Map shows –

Counties (in grayscale) that ship or receive truck freight that uses the I-5 Corridor/Columbia River highway crossing; and

Freight value (in colored bandwidths) by route between those counties

Origins and Destinations of Freight Crossing I-5 Bridge (1998, Transportation Equipement and Steel Products)



I-5 Bridge Access Routes (1998, Transportation Equipement and Steel Products)

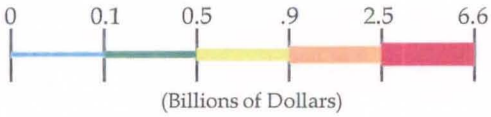
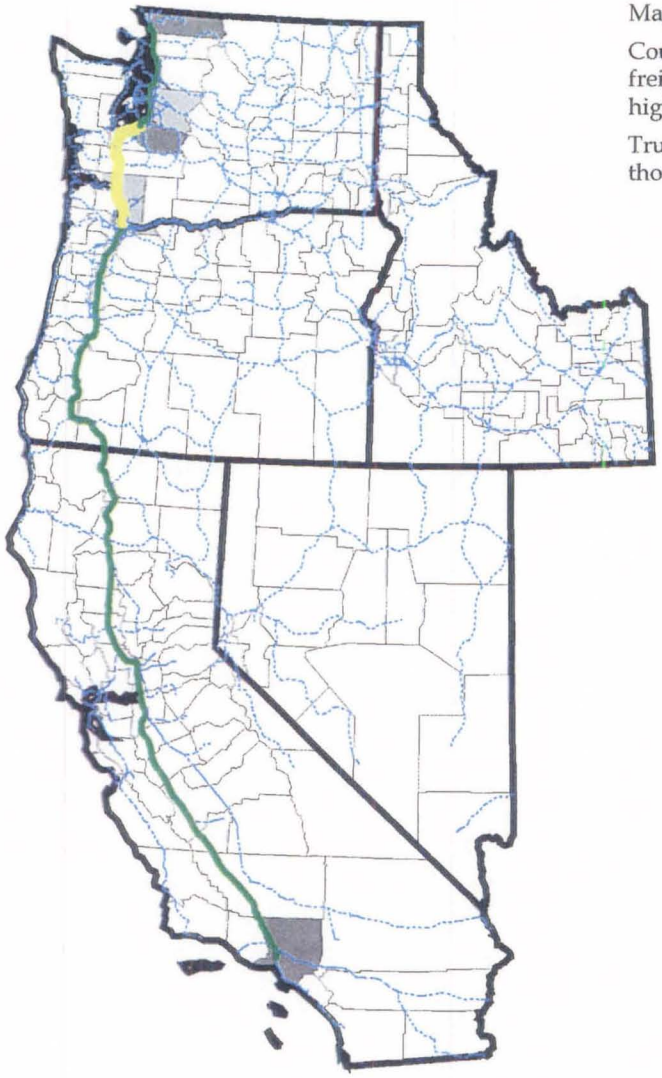


Figure 27. West Coast Origins and Destinations for Transportation Equipment and Steel Products Crossing the I-5 Bridge at Portland-Vancouver
With Tonnage of Freight on Truck Routes Used to Access Bridge



Map shows –

Counties (in grayscale) that ship or receive truck freight that uses the I-5 Corridor/Columbia River highway crossing; and

Truck tons (in colored bandwidths) by route between those counties

Origins and Destinations of Freight Crossing I-5 Bridge (1998, Primary Metal and Trans Equipment)

0 0.05 0.25 1.0 2.5 10

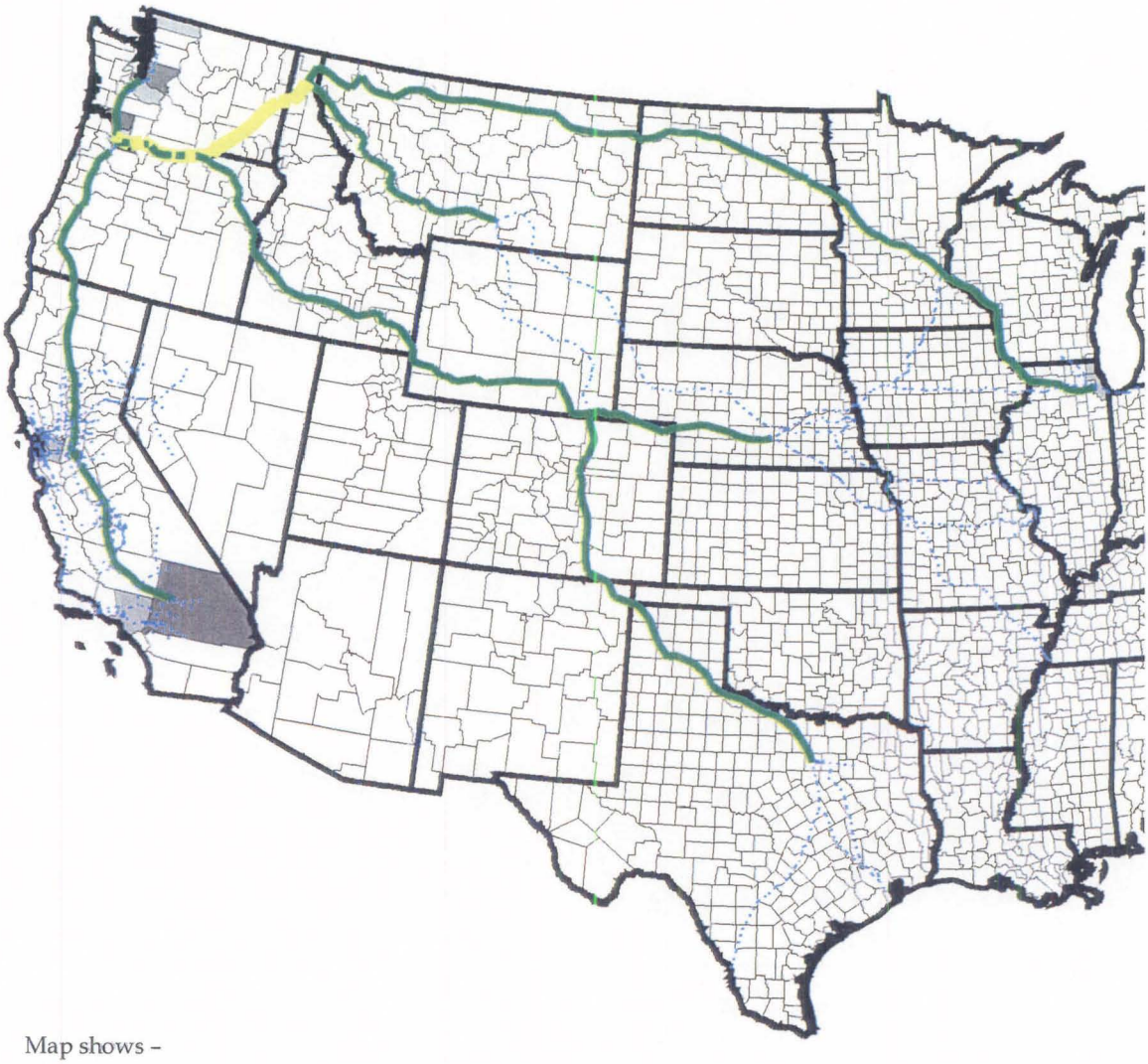
(million tons)

I-5 Bridge Access Routes (1998, Primary Metal and Trans Equipment)

0 0.25 0.75 2.5 5.0 33.0

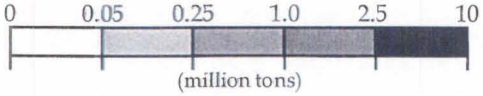
(million tons)

Figure 28. National Origins and Destinations for Transportation Equipment and Steel Products Using the Portland-Vancouver Rail Triangle
With Tonnage of Freight on Rail Lines Used to Access Triangle

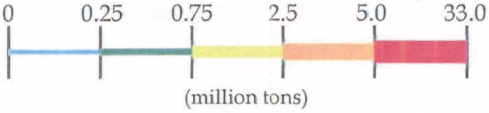


Map shows –
Counties (in gray scale) that ship or receive rail freight that uses the Columbia River rail crossing; and
Rail tonnage (in colored bandwidths) by route between those counties

Origins and Destinations of Freight Crossing I-5 Bridge (1998, Primary Metal and Trans Equipment)



I-5 Bridge Access Routes (1998, Primary Metal and Trans Equipment)



High-Technology Industry*

Industry Classifications (SICs):	36, 38
Employment (2000):	85,333
Value of Production (2000):	$34.3 billion

*(*The high-technology industry analyzed in this section covers the electronics industry and the scientific instruments industry, selected because these sectors correspond to the Standard Transportation Commodity Code industry classifications used for analyzing the movement of goods. The American Electronics Association uses a broader definition of high-technology that includes high-tech services such as software. The AEA's classification would show 225,200 high-tech employees in Oregon and Washington in 2001.)*

Industry Trends

A strength of the Pacific Northwest is that it is a "creative economy"—a region that cultivates innovation and successfully attracts educated, generally young, people. These attributes helped guide an unprecedented high-technology boom in the region during the 1990s. The growth was led by semiconductors and semiconductor research in the Portland-Vancouver area and software development around Puget Sound. By 2000, two high-technology-related industries—electronics and scientific instruments—accounted for over 11 percent of the entire Pacific Northwest's economy, up from just over one percent in 1990.

The high-technology boom in the Pacific Northwest has since come to a halt due to a decline in worldwide demand, an economic slowdown, and a shift in commodity production to overseas markets, but the high-tech industry is expected to be a long-term growth engine for the region. The resumption in growth will be led by a new generation of semiconductors, environmental technologies, software, flat panel and infrared displays, and biotechnology.

Importance of Portland-Vancouver Crossings to Industry

Due to their relatively high values and low weights, high-tech goods are generally shipped by truck or air. The value of high-tech goods that cross the I-5 bridge exceeds $1.5 billion per year. Figure 29 maps the distribution of high-tech manufacturing shippers and receivers and the associated truck moves by value within Oregon and Washington. Many of the counties that most intensively ship high-tech goods over the I-5 bridge are in the Puget Sound area. The figure shows just those truck shipments of high-tech goods that move across the I-5 highway bridge. The gray scale indicates the total commodity value shipped and received by each county, and the bandwidth and color of the lines indicate the value of commodities moving by truck along the major highways. (Commodities shipped to and from British Columbia are assigned to Whatcom County.)

The I-5 corridor connects suppliers and manufacturers, but also provides critical access to the region's international airports. In 2001, over $850 million in Oregon exports, much of which was generated by the high-tech industry, was shipped overseas from the Seattle-

Tacoma (Sea-Tac) International Airport gateway. Even more of Oregon's high-tech exports traveled via domestic flights from Portland International Airport to other major international air-cargo gateways. Due to the frequency of international flights and availability of cargo carriers at larger out-of-state airports, the value of Oregon exports departing from Sea-Tac, Los Angeles International Airport, and San Francisco International Airport exceeded those leaving from Portland International Airport. The reliable movement of high-tech goods by truck from Oregon manufacturers to Portland International Airport, Sea-Tac, and even the more distant gateway airports on I-5 is critical to the future success of the industry in the region.

Figure 30 shows the linkages between the Oregon-Washington high-tech industry and suppliers and markets in San Francisco and Los Angeles. As before, the figure shows just those truck shipments of high-tech good that move across the I-5 highway bridge. The gray scale indicates the total commodity value shipped and received by county, and the bandwidth and color of the lines indicate the value of commodities moving by truck along the major highways.

Effects of Portland-Vancouver Choke Points on Industry

High-tech companies are very dependent on air cargo, and congestion makes it difficult to reliably reach the Portland International Airport from the Westside technology area. To ensure on-time deliveries, companies have resorted to shipping finished products to the airport during off-peak, mid-day hours.

In an industry that pioneered low-inventory, just-in-time manufacturing, congestion is making logistics calibrations between labor and parts more difficult. Companies are increasing night deliveries to avoid congestion. While this improves the reliability of deliveries, labor costs also increase as staffing levels have to be maintained during off hours.

Congestion on the I-5 bridge adds to business costs in the region by reducing the size and quality of the labor pool that can access places of employment. For example, commuters from relatively affordable residential areas in fast-growing Clark County, Washington face a long, costly, and unpredictable commute to jobs at Westside technology companies. The effect of the I-5 congestion is to bifurcate the labor market into smaller subregional markets within the Portland-Vancouver area as workers seek jobs closer to their homes. Unable to draw from a larger labor pool, employers must increase wages to maintain their attractiveness in the face of the longer commutes and attract the workers they need.

High-Technology Case Study
Intel

Location: Hillsboro, Oregon.

Products: Semiconductor research and semiconductor production.

Background: Intel produces extremely high-value semiconductors, the "brains" that enable computers to process information and accept commands, at its Hillsboro facility. While lower-end "commodity" semiconductors are increasingly being produced overseas in Southeast Asia and Latin America, Intel researches and produces its most advanced products in the Portland area. This includes a 300 millimeter chip, currently under development, that will allow computers in the future to operate at much higher speeds. Growth at Intel was a major contributor to the overall expansion of the Oregon economy during the 1990s.

Product Shipping Processes: Intel, with its high-value, low-weight production of semiconductors, is dependent on air cargo. Finished products are shipped by truck from Hillsboro to Portland International Airport (PDX). From PDX, air-freight carriers transport semiconductors to locations throughout the United States. Due to limited international service from Portland, semiconductors destined for overseas markets often transit through Los Angeles International, San Francisco International, or Seattle-Tacoma International Airport.

Effects of I-5 River Crossing Congestion on Company: Intel ships finished products to PDX early in the afternoon to ensure they arrive before the 5:30 p.m. scheduled departures of overnight express carriers. The early shipments are required because roadway reliability in the North Portland area, largely due to I-5 congestion and the lack of predictability, is poor. Incidents on I-5 such as breakdowns, accidents, and the raising of the Columbia River Bridge cause motorists and trucks to use surrounding arterials to reach I-205 in order to avoid prolonged delays and resume their trips. These arterials become clogged with traffic—the same arterials used by Intel to reach the airport. Intel ships early to avoid this congestion, which is worse during peak late afternoon periods, and to allow sufficient time should heavy congestion be encountered. Congestion also is pushing delivery trucks onto back roads to reach Intel and other technology companies, creating safety concerns, and has made just-in-time logistics calibrations between labor and parts deliveries more difficult. To increase reliability, companies increasingly using night deliveries.

Impacts on Competitiveness: Adds to business and labor costs.

High-Technology Case Study:
Hewlett Packard

Location(s): Corvallis, Oregon.

Products: Inkjet printers.

Background: Corvallis, located between Salem and Eugene, is home to a Hewlett Packard design and fabrication facility that employs about 4,000 people. This facility produces advanced inkjet printers and is the second largest employer in the community after Oregon State University.

Product Shipping Processes: Finished inkjet printers and cartridges are shipped by truck to airports in Portland, Seattle, and Vancouver (British Columbia). I-5 is the primary roadway used to reach these airports.

Effects of I-5 River Crossing Congestion on Company: Predictable truck service on I-5 is critical so Hewlett Packard's products can link with domestic and international air freight service.

Impacts on Competitiveness: Congestion on I-5 disrupts the delivery of parts and finished goods, adding to business costs.

Figure 29. Oregon-Washington Origins and Destinations for High-Tech Manufacturing Products Crossing the I-5 Bridge at Portland-Vancouver
With Value of Freight on Truck Routes Used to Access Bridge

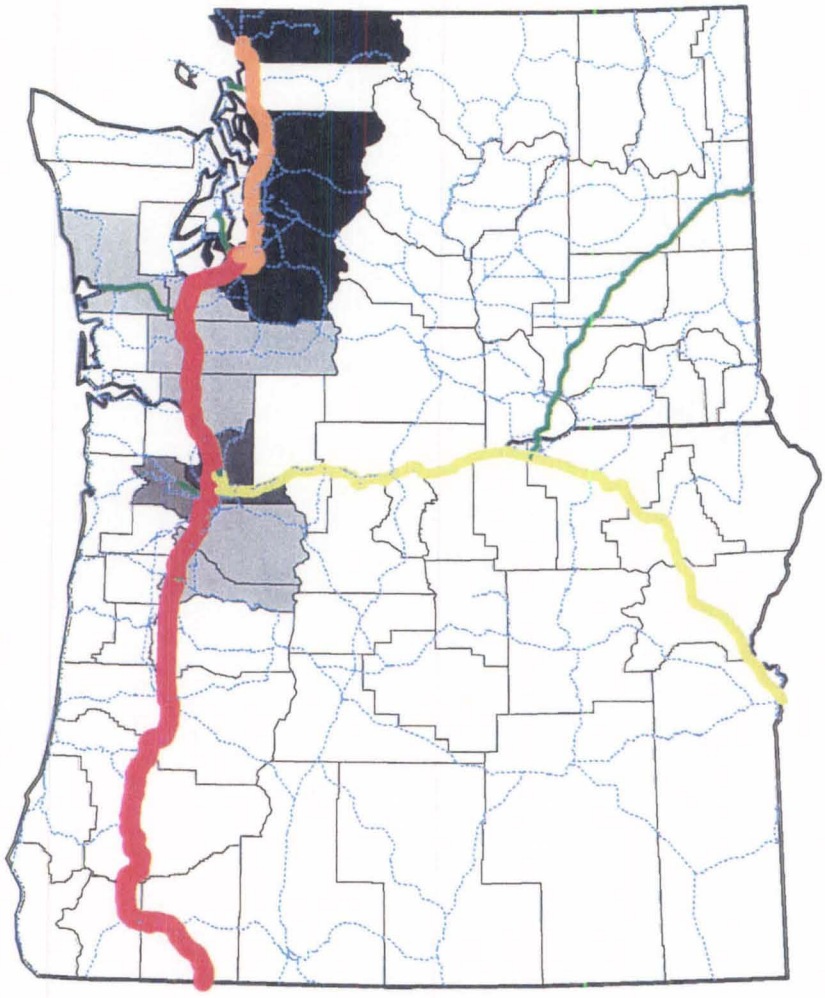
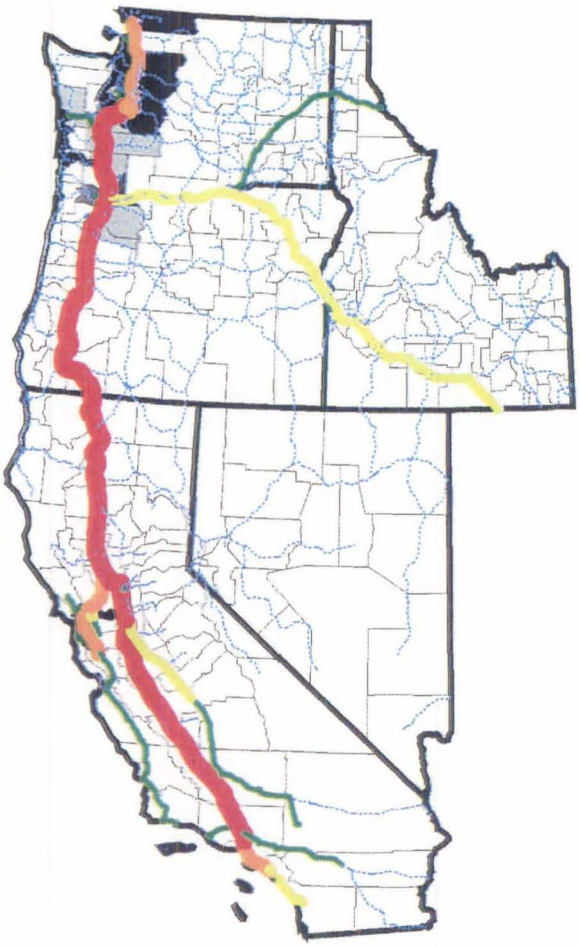
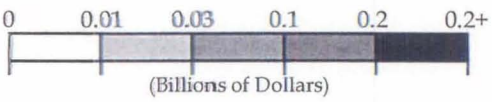


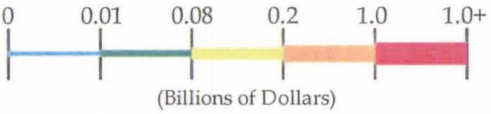
Figure 30. West Coast Origins and Destinations for High-Tech Manufacturing Products Crossing the I-5 Bridge at Portland-Vancouver
With Value of Freight on Truck Routes Used to Access Bridge



Origins and Destinations of Freight Crossing I-5 Bridge (1998, High Tech Products)



I-5 Bridge Access Routes (1998, High Tech Products)



Distribution and Warehousing Industry

Industry Classifications (SICs):	42, 50
Employment (2000):	350,875
Value of Production (2000):	$28.6 billion

Industry Trends

Distribution is part of Portland-Vancouver's economic legacy. The area developed as the distribution center for the Pacific Northwest because of its unique geographic advantages. Portland-Vancouver, as well as nearby Longview and Kalama, Washington, have access to interior states via a navigable waterway, giving these ports an advantage over other West Coast ports. Water access, combined with its location in the major valley of a mountainous region and proximity to the Pacific Ocean, make the Portland-Vancouver area an ideal distribution hub. As the rail, water, and roadway network have developed around Portland-Vancouver, the distribution industry in the metropolitan area has grown, attracting distributors that today serve Oregon, Washington, Idaho, the western portions of Montana, and the northern parts of California. In recent decades the distribution and warehousing industry has expanded to accommodate a large influx of new residents into the region. As the Pacific Northwest continues to grow in population, the distribution industry is expected to expand commensurately.

Importance of Portland-Vancouver Crossings to Industry

On an annual basis, over 5 million tons of goods tied to the distribution and warehousing industry cross the I-5 bridge by truck between Portland and Vancouver. These flows represent a wide range of shipments, including goods bound for retailers and manufacturers, containerized intermodal merchandise (most of which is classified into a "miscellaneous shipments category" that is included here as part of the "distribution" sector), and business supplies.

Figure 31 shows the origins, destinations, and flow patterns of distribution and warehouse goods moving across Oregon and Washington. The figure shows just those truck shipments of distribution and warehousing goods that cross the I-5 highway bridge. The gray scale indicates the total commodity value shipped and received by county, and the bandwidth and color of the lines indicate the value of commodities moving by truck along the major highways. Within the Pacific Northwest, distributors in the most populous counties, including King County, Washington and Multnomah County, Oregon, are the most intensive users of the I-5 crossing.

Figure 32 provides comparable information for the West Coast. Trucks plying the I-5 bridge are critical to maintaining the intraregional flow of goods between Oregon and Washington as well the movement of goods up and down the West Coast. Reflecting the importance of I-5 to distributors serving the entire West Coast, over 2 million tons of goods using the I-5 bridge either originate in or are destined for California.

The Portland-Vancouver area also is the hub of intermodal rail moves that connect distributors and warehouse operators in the Pacific Northwest with the rest of the country. Figure 33 shows the span of distribution and warehousing freight moving through the Portland-Vancouver rail triangle. This freight activity centers on Seattle-Tacoma and Portland-Vancouver. The Puget Sound ports of Seattle and Tacoma, if combined, would rank as the third-busiest container port in the United States, following Los Angeles-Long Beach and New York-Northern New Jersey.

About half of the containers processed for import and export by these two ports, as well as by the Port of Portland, transit the Portland-Vancouver rail triangle on their journeys to and from the Midwest and East Coast. This traffic is routed through Portland-Vancouver because the BNSF line on the north side of the Columbia Gorge and the UP line on the south side have relatively flatter grades and are easier to navigate in bad weather than the more northerly routes out of Seattle, one of which goes through the high, single-track Stevens Pass tunnel, and the other through the winding Stampede Pass route. However, the competitiveness of Puget Sound ports in attracting and retaining container traffic is affected directly by their ability to move goods through Portland-Vancouver reliably.

Effects of Portland-Vancouver Choke Points on Industry

The I-5 highway and rail choke points reduce the geographical reach of distributors by raising the costs of reaching markets. Although the distribution and warehousing industry has traditionally been Portland-centered, increasing congestion at the crossing and spreading peak hours are leading to changes in the region's distribution system.

Congestion, in combination with high prices for available industrial land in Portland-Vancouver, is pushing distributors to the periphery of the Portland-Vancouver area and to other parts of the Pacific Northwest. Distributors that serve markets outside Portland-Vancouver are finding it difficult to remain in the area as travel times within the region shrink the size of their service areas. In response, major distribution centers have been moving to the Pasco-Hermiston area to the east and companies that used to serve both the Puget Sound and Portland areas from a single location in Portland-Vancouver are opening additional facilities in Washington (e.g., Centralia).

While distribution and warehousing remains important in Portland-Vancouver, the lack of available land is directing new growth to Clark County, Washington. As the distribution and warehousing industry in Clark County expands, higher volumes of truck traffic will cross the I-5 and I-205 bridges to supply the Portland market, contributing further to traffic delays and the cost of distribution and warehousing. These higher transportation expenses ultimately will be passed on to consumers and manufacturers in the form of higher prices or the reduced availability of goods.

Distribution Case Study
Les Schwab Tire Center

Locations: Prineville, Portland, Boardman, and Ontario, Oregon; Redding, California.

Products: Tire sales.

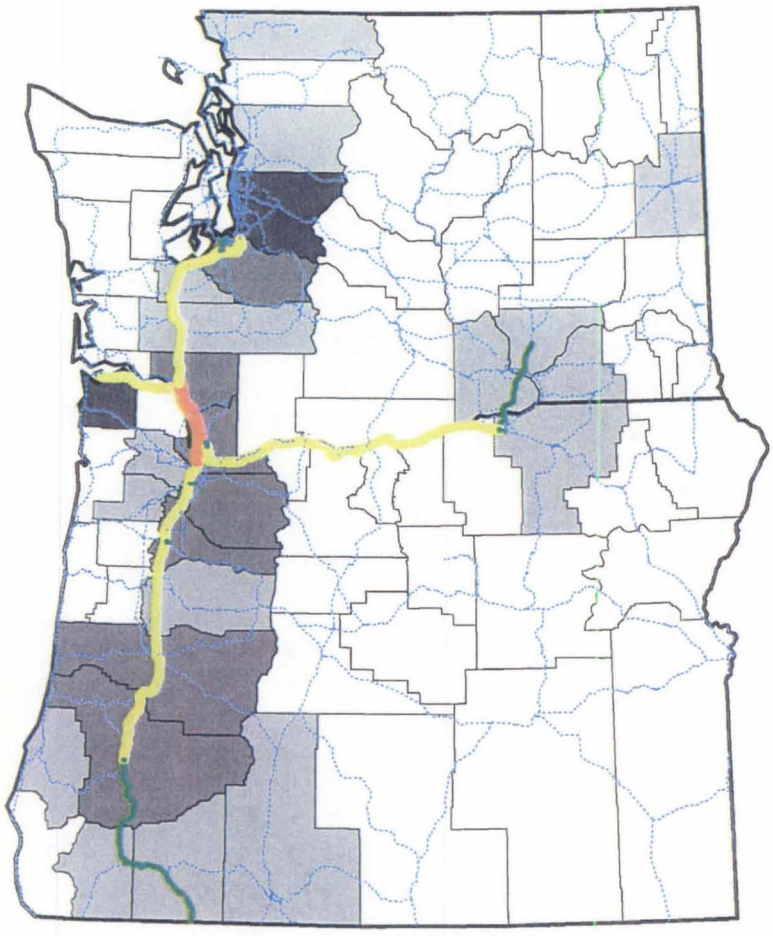
Background: Les Schwab is one of the largest independent tire companies in the United States. The company has a retail sales network of 344 stores, including both company-owned and member dealer locations, located in Oregon, Washington, Idaho, Montana, northern California, Nevada, and Alaska. Annual sales are approximately $1 billion.

Product Shipping Processes: The hub of Les Schwab operations is a 2 million-square-foot distribution center in Prineville, Oregon which handles over 4,600 containers annually. Tires are imported through the Ports of Seattle, Tacoma, and Portland and are shipped to the Prineville facility and transfer facilities by rail and truck. The company serves regional markets through a network of transfer centers located in Portland, Boardman, Ontario (Oregon), and Redding. At any given time, Les Schwab stocks about one million tires in its stores and warehouses.

Effects of I-5 River Crossing Congestion on Company: Les Schwab serves both the large Portland and Seattle markets from its Portland transfer center. Due to congestion in the I-5 corridor, truck operations are scheduled during off-peak, mid-day, and evening time periods to avoid possible delays. Peak spreading in the I-5 corridor narrows the regions that can be served through each facility by truck, reducing economies of scale and increasing delivery costs.

Impacts on Competitiveness: Increased business costs, especially if peak times spread and further limit the periods when trucks can cross the Columbia River without encountering delays.

Figure 31. Oregon-Washington Origins and Destinations for Distribution and Warehouse Goods Crossing the I-5 Bridge at Portland-Vancouver
With Tonnage of Freight on Truck Routes Used to Access Bridge

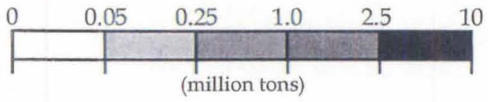


Map shows –

Counties (in grayscale) that ship or receive truck freight that uses the I-5 Corridor/Columbia River highway crossing; and

Truck tons (in colored bandwidths) by route between those counties

Origins and Destinations of Freight
Crossing I-5 Bridge (1998, Warehousing/Distribution)



I-5 Bridge Access Routes
(1998, Warehousing/Distribution)

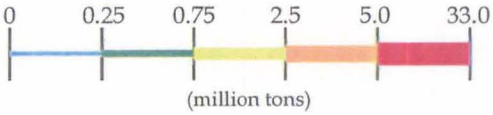
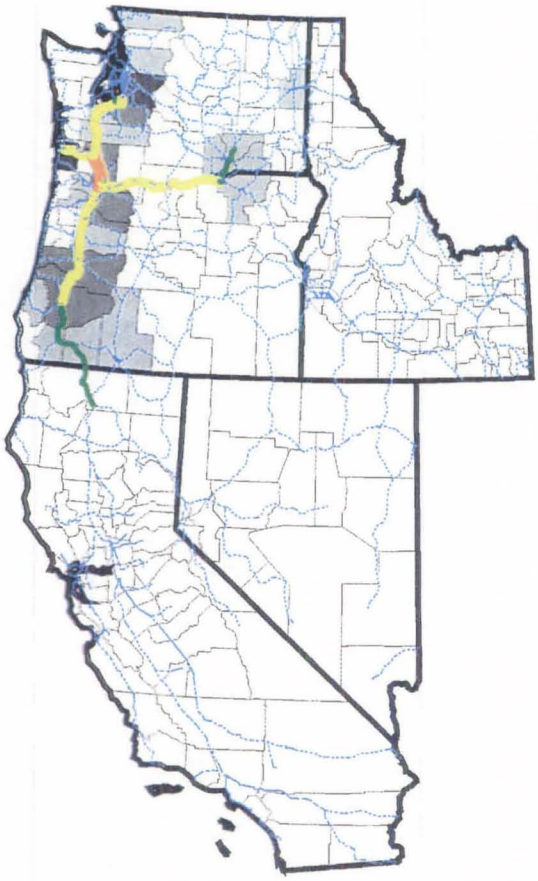


Figure 32. West Coast Origins and Destinations for Distribution and Warehouse Goods Crossing the I-5 Bridge at Portland-Vancouver

With Tonnage of Freight on Truck Routes Used to Access Bridge

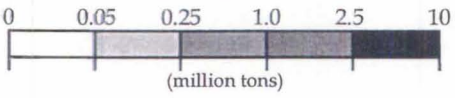


Map shows –

Counties (in grayscale) that ship or receive truck freight that uses the I-5 Corridor/Columbia River highway crossing; and

Truck tons (in colored bandwidths) by route between those counties

Origins and Destinations of Freight
Crossing I-5 Bridge (1998, Warehousing/Distribution)



I-5 Bridge Access Routes
(1998, Warehousing/Distribution)

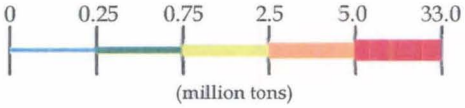
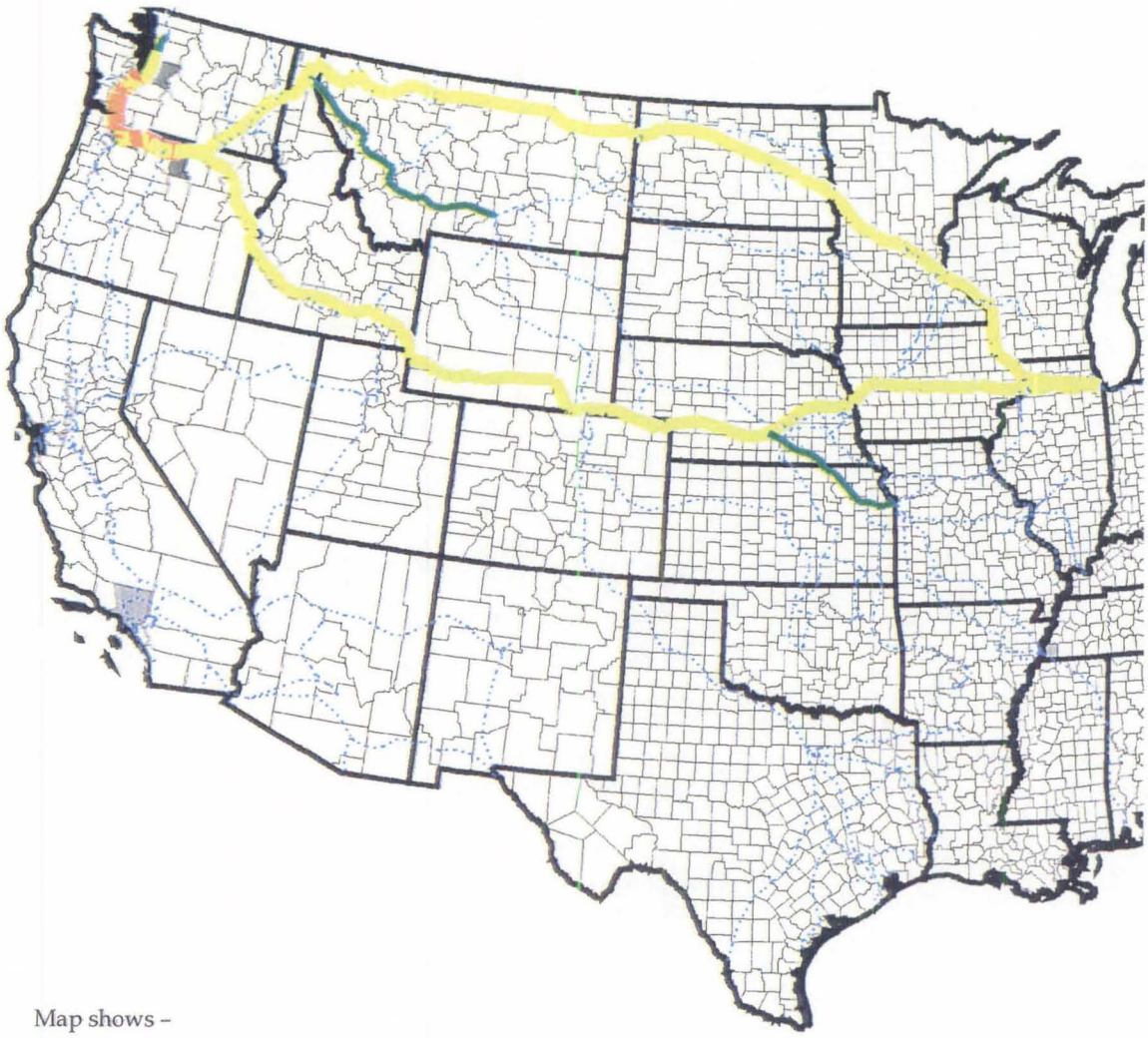


Figure 33. National Origins and Destinations for Distribution and Warehouse Goods Using the Portland-Vancouver Rail Triangle
With Tonnage of Freight on Rail Lines Used to Access Triangle



Map shows –

Counties (in grayscale) that ship or receive rail freight that uses the Columbia River rail crossing; and

Rail tons (in colored bandwidths) by route between those counties

Origins and Destinations of Freight
Crossing I-5 Bridge (1998, Warehousing)

0 0.05 0.25 1.0 2.5 10
(million tons)

I-5 Bridge Access Routes
(1998, Warehousing/Distribution)

0 0.25 0.75 2.5 5.0 33.0
(million tons)

Would you like to build a new bridge across the Columbia River? Do you have one or two billion dollars?

If your name is Don Wagner, Southwest Regional Administrator for the Washington State Department of Transportation, the answers, in order, are "yes" and "no."

Steps toward construction have started to eliminate traffic on one of I-5's main chokepoints between Seattle and Portland.

In the normal timeline of planning, public input and design, construction could begin in seven years. The bridge, under the best conditions, would be operational between 2015 and 2018--a little more than a decade from now.

"If we don't start the process now, and delay beyond 2018, we'll reach the point where the bridge cannot absorb more traffic," Wagner said.

Scratching for dollars has begun.

Between $20 million and $30 million more will be needed just for planning, environmental and early design, Wagner says. The department now has $7 million--a combination funds from Oregon and Washington, and federal dollars.

There is no additional state money at present. However, $ 16 million has been identified at the federal level in House reauthorization funds which result from a six-year cycle of transportation funding. Release of that money is almost a year behind schedule. There are no guarantees until it is approved, Wagner said.

But other preparations continue. An environmental impact statement process will begin within the next 18 months.

About two years ago, the Governors' Task Force for the Portland-Vancouver I-5 Transportation and Trade Partnership developed assumptions about a new bridge.

Among them: --A bridge can be built within the general footprint of the present bridge;

--A new bridge can be built without disrupting traffic (e.g., I-5 at Salmon Creek);

--The new I-5 bridge can be built over the river, and land no farther north on I-5 than the Mill Plain intersection.

Many decisions remain:

Including--toll or no toll? A $2 per vehicle toll would pay off bonds sooner than a $1 toll, but push more traffic to the toll-free 205 bridge.

--Doubledecker span (such as Portland's Fremont Bridge)?

--HOV lanes? Bus-only lane? Light rail lane? Truck-only lane? Tunnel instead of bridge (problematical but still an option)?

--How many lanes? Five in either direction including two auxiliary lanes in each direction?

Then, there's property acquisition. Wagner said the desire is to have no residential "takings," but there must be a traffic transfer to and from State Highway 500, freeway to freeway. While looking at one option, it was felt that in the initial one and a half-mile stretch north from the river, there could be eight partial pieces of property that would need to be bought. That could change depending on bridge design, Wagner said.

Much will depend on traffic collector interchanges, where vehicles are gathered before being fed onto the freeway. That could lead to traffic lanes weaving over/under each other--what Wagner calls "braiding" ramps.

Then there's the height challenge. The present Interstate bridge can lift to 170 to 180 feet clearance above the river. Glen Jackson (I-205) bridge clears 130 to 140 feet. Because the Coast Guard has final say on lift height, Wagner estimates it will be at least 140 feet above the river at the navigation channel. If the span extends over the Burlington Northern Santa Fe railroad tracks, it must be 23.5 feet above them.

Finally, there must be community consideration. Since its completion in the mid 1950's, there have been cries of anguish about the freeway splitting Vancouver, despite the overpasses. Can it be capped and something built on top, similar to the convention center in

8-20-04 - Columbian draft

Seattle?

That's where public input can help influence the design. Wagner said the public, local agencies, civic groups and the Department of Transportation Commissions of both states will have opportunity to put in their two cents and more. A joint Columbia River Crossing subcommittee of the two State Transportation Commissions had its first meeting in May, and will meet again on Sept. 2.

This gigantic project will influence millions of people. The 1917 span was the river's first crossing. It would be smart for us to be informed and involved in a gateway bridge that could stand for the remainder of this century.

Puget Sound Business Journal (Seattle) - March 24, 2003
http://seattle.bizjournals.com/seattle/stories/2003/03/24/newscolumn4.html

PUGET SOUND Business Journal

From the March 21, 2003 print edition
Trade and transport

B.C. port aiming to top Puget Sound in cargo

Steve Wilhelm

The Port of Vancouver, B.C., has lifted its volume of container shipping to a virtual dead heat with the ports of Seattle and Tacoma, and is honing strategies to pull ahead of the two Puget Sound ports.

Officials at the Canadian port hope to more than double its annual container volume by 2020, to 4 million of the industry units called TEUs, each equal to a 20-foot container.

In 2002 containerized shipments through the Port of Vancouver jumped 27 percent to 1.46 million TEUs. During the same period container shipments rose 11 percent at the Port of Tacoma, to 1.47 million, and 9 percent at the Port of Seattle, to 1.44 million.

In recent weeks Canadian port officials have announced plans to expand capacity in the port's two original container terminals in Vancouver's inner harbor, as well as a longer-range plan to build vastly expand capacity at the Roberts Bank container terminal, which is 14 miles south near the U.S. border.

With demand growing, the Canadian port is now preparing for a series of capacity upgrades. In late February port officials announced plans to add a total of 360,000 TEUs of capacity to the Centerm and Vanterm terminals, primarily by adding new equipment and implementing more efficient operating procedures. These projects will take two years, and will increase the port's capacity to 1.97 million TEUs by 2005, said Patrick McLaughlin, director of the port's container group.

Next, the port plans to expand its terminals at Roberts Bank, which is about four miles offshore and south of the Fraser River.

The first step will be to enlarge the current 160-acre Deltaport terminal to 240 acres by adding additional fill, a project to be completed in 2009, McLaughlin said. The next step will be to build a second large container terminal, of about 200 acres, at another Roberts Bank site that has not yet been defined. It is to be completed in 2015.

The array of projects will cost about $680 million U.S. The work will be funded primarily from the port authority's revenues, McLaughlin said.

McLaughlin said he doesn't expect the port's volume to grow as rapidly this year as it did in 2002.

Vancouver benefited from an upward bounce in cargo in late 2002 in the aftermath of the longshore labor dispute, much as the two Puget Sound container ports did. Southern California ports were so congested after the lockout of dock workers that Northwest ports attracted cargo that couldn't gain entry through Southern California.

McLaughlin said he expects that lower Canadian costs, partly caused by the strong dollar, will continue to attract growing percentages of West Coast cargo through the Port of Vancouver. Competing U.S. ports also are handicapped by the U.S. Harbor Maintenance Tax, a fee on shipments going through U.S. ports that pays for dredging projects.

A decade ago about 35 percent of the inbound West Coast traffic to Canada was arriving through the ports of Seattle and Tacoma, but that's now dropped to 8 percent, McLaughlin said.

Number of big ships down in Puget Sound

Over the last two years, sliding volumes of bulk resource exports have cut by 22 percent the number of big ships calling on Puget Sound ports, said Tim Brewer, vice president of harbor services for Seattle-based Foss Maritime Corp.

Brewer said the decline of traditional Northwest export cargoes, especially logs, has been a big change for his company's ship-assist business.

"This isn't related to Sept. 11 — this is changes in the world markets," he said, adding that nations such as Chile, New Zealand, Argentina, and China now produce agricultural products that once were primarily obtained from the Northwest.

Meanwhile, movements of container ships and oil tankers have stayed more stable, Brewer said.

Foss has responded to the declines by trimming employment in shoreside offices by about 30 percent over the last five years to about 150, mostly through attrition, Brewer said.

Reach Steve Wilhelm at 206-447-8505 ext. 113 or swilhelm@bizjournals.com.

Columbia River Crossing

Keep all links under the left hand column, and add this one:

http://www.i-5partnership.com/reports/OrDOT_I-5RegionalReport.pdf
Regional Economic Effects of the I-5 Corridor/Columbia River Crossing Transportation Choke Points

Status Report
December 2003
The Columbia River Crossing effort is currently in the planning stage. WSDOT and ODOT have ushered in a new phase of work that will transition this process from 2002's *I-5 Transportation and Trade Partnership Study* into preparation of the Environmental Impact Statement (EIS).

Overview
In 1998, the Washington State Department of Transportation (WSDOT) partnered with the Oregon Department of Transportation (ODOT) and other local stakeholders in Washington and Oregon to plan and implement corridor improvements along I-5 from I-84 in Oregon to I-205 in Washington.

Two studies, the *Portland/Vancouver I-5 Trade Corridor Freight Feasibility and Needs Assessment Study*, completed in 1999, and the *Portland/Vancouver I-5 Transportation and Trade Partnership Study,* completed in 2002, recommended a wide range of improvements in the corridor. These improvements will increase safety and decrease future congestion on this vital freight and commuter corridor. A key recommendation in both studies was to add additional highway capacity over the Columbia River with a replacement bridge or by supplementing the existing I-5 bridges.

WSDOT and ODOT are now focusing their combined attention on the Columbia River crossing, with the goal of advancing this portion of the overall bi-state I-5 corridor improvement plan toward the start of an Environmental Impact Statement (EIS). Beginning in winter 2003/2004, both states will initiate a pre-EIS transitional phase that will accomplish the following key goals:

- Review and refine the I-5 Transportation and Trade Partnership Study recommendations regarding the Columbia River crossing;
- Develop funding and implementation strategies;
- Determine the bi-state and federal legal requirement for such a project;
- Define the construction and operational management structures of the project; and
- Develop an effective communications and public involvement plan as the project moves ahead.

Once this transitional phase is complete, the Columbia River Crossing process will be ready to move into the EIS phase if funding is available.

Our Partners

The I-5 corridor improvement process is a unique partnership between a variety of state and local stakeholders in both Washington and Oregon, with funding from the federal government. The partners are WSDOT, ODOT (www.odot.state.or.us/home), the Southwest Washington Regional Transportation Council (www.rtc.wa.gov), Metro (www.metro-region.org), Clark County (www.co.clark.wa.us), Multnomah County (www.co.multnomah.or.us), the cities of Vancouver, WA (www.ci.vancouver.wa.us) and Portland, OR (www.ci.vancouver.wa.us), the Port of Vancouver (www.portvancouver.com) and the Port of Portland (www.portofportland.com), TriMet (www.trimet.org) and C-Tran (www.c-tran.com).

Why is WSDOT participating in this process?

I-5 is the primary economic lifeline on the West Coast. In the Portland/Vancouver region, the most economically significant segment of I-5 is from north Portland across the Columbia River and into Vancouver where the interstate intersects with two transcontinental railroads, international shipping through the ports of Portland and Vancouver, and with important industrial land in both states.

If nothing is done to address current and future transportation problems on the I-5 Corridor between Portland and Vancouver, by the year 2020, motorists will be facing significant congestion on I-5 throughout most of the day - doubling the delays we experience today. In addition, shipping freight by truck and rail will be increasingly costly because of the additional time and uncertainty of moving goods through this area.

While the problem of congestion is not unique, it is especially significant on this segment of I-5. It is the most economically important transportation corridor in the Portland/Vancouver region and one of the most important interstate corridors on the West Coast. Problems caused by congestion are becoming worse because:

- Parts of our road system (interchanges, merging lanes, etc.) were built before current safety standards.
- The I-5 Corridor was not designed to handle increasing traffic demands.
- Alternate, reliable, efficient transportation options are not currently available.
- The land uses that have developed over the last century have resulted in the I-5 Corridor becoming critical to many different types of trips, including the growth in freight and commuters.

Benefits

- **Economic:** I-5 provides direct access to some of the region's most critical industrial areas on each side of the Columbia River. Reliable transportation is essential as the Pacific Northwest's trade-dependent character continues to grow. Oregon and

Washington export $45 billion of products each year. As a percentage of the region's economy, this is about twice the national average. The existing Columbia River crossings are transportation choke points and threaten the economic vitality of the Pacific Northwest. Without attention, future congestion in this important corridor threatens the livability and economic promise of the Portland/Vancouver region.

For more information, please review the *Regional Economic Effects of the I-5 Corridor/Columbia River Crossing Transportation Choke Points* report under "Project Info." in the left hand column of this Web page.

- **Congestion Relief:** If nothing is done to address current and future transportation problems on the I-5 Corridor between Portland and Vancouver, by the year 2020, motorists will be facing significant congestion on I-5 throughout most of the day – doubling the delays we experience today. Relieving congestion in this corridor is important to the livability and economic promise of the Portland/Vancouver region.

- **Safety:** A total of 1,344 accidents were reported along the I-5 mainline and ramp terminals within the state of Oregon from January 1995 to December 1997. There was a total of 1,158 total accidents reported along the mainline and ramp terminals within the State of Washington from January 1994 and December 1996. Over half of all these accidents were caused by rear end collisions. Rear end collisions increase as congestion increases. Although no single strategy will solve the safety problems along this corridor, improving mobility and reducing congestions across the Columbia River between Portland and Vancouver is a good place to start.

Process Timeline

December 1999:	WSDOT and ODOT began the bi-state transportation and trade corridor study. Governors Gary Locke and John Kitzhaber appointed a 28-member Bi-State Task Force of community; business, and elected representatives to help WSDOT and ODOT develop an I-5 regional strategic plan.
January 2000	*I-5 Trade Corridor Freight and Feasibility Study Final Report* released http://www.i-5partnership.com/reports/assets/final.pdf
March 2000:	A 100-member Community Forum was formed by the Task Force to provide guidance as the strategic plan for the corridor developed. This group was composed of citizens representing neighborhood, business, and environmental and other interests in the corridor.
June 2002:	The Task Force adopts the Final Strategic Plan Recommendations (http://www.i-5partnership.com/reports/assets/strategic_plan.pdf) for I-5 corridor improvements.
November 2002	WSDOT completes I-5 widening project from Burnt Bridge Creek in Vancouver to NE 78th Street in Hazel Dell. (http://www.wsdot.wa.gov/projects/i5corr78thburntbridge/).
January 2003:	ODOT begins work on the Environmental Assessment for widening I-5 from Delta Park to Lombard (http://www.odot.state.or.us/region1/f_i5p_lombard/index.htm) .

February 2003	Bi-state *I-5 Rail Capacity Study* (http://www.odot.state.or.us/rail/PDFfiles/I-5%20RAIL%20CAPACITY%20FINAL%20REPORT%20ALL.pdf) completed.
April 2003	*Regional Economic Effects on the I-5 Corridor Columbia River Crossing Transportation Choke Points Report* (http://www.wsdot.wa.gov/projects/i5portvacbridge/docs/I5CorrEconReport.pdf) completed.
August 2003	WSDOT starts construction on an I-5 widening project from Salmon Creek to I-205 (http://www.wsdot.wa.gov/projects/I5SalmonCreektoI205/) in Clark County.
September 2003	WSDOT hires Project Director for Columbia River Crossing (http://www.wsdot.wa.gov/regions/southwest/communications/docs/09-03-03_ColumbiaProjectMgr.htm).
December 2003 (?)	WSDOT and ODOT hire consultant, xxx of xxx, to lead pre-Environmental Impact Statement (EIS) transition phase for Columbia River Crossing.

How can I get involved in this process?
Your thoughts and opinions are important to us. A variety of public meetings and open houses were held throughout the creations of the *I-5 Transportation and Trade Partnership Study*. Additional public involvement opportunities will be presented when this process enters the Environmental Impact Statement (EIS) phase.

For information on the latest public involvement meetings occurring in the Southwest Region, visit the SW Region's public involvement page.

Environmental Protection
WSDOT and ODOT both make every effort to assess and minimize environmental impact from our projects. The necessary Environmental Impact Statement (EIS) for this project has not yet been conducted. This study will detail the project's direct and indirect environmental impacts (natural, ecological, societal and economic) in order to guide final design and construction.

Will tribal lands be impacted?
This process does not impact tribal lands. However, as this process moves ahead, WSDOT and ODOT will initiate consultation with tribes as appropriate.

Financial Information
A total of $xx million, including $xx million in federal funds from Oregon and $xx million in federal funds from Washington, plus $xx in local matching funds, will be used to transition the project into the Environmental Impact Statement (EIS) phase. Approximately $10 million from the state of Washington is still needed in order to complete the EIS on the bridge influence area. This amount is Washington's contribution toward a funding partnership with the state of Oregon, and represents a small part of the total project cost. A total project cost will not be accurately known until the EIS and preliminary design work is completed.

How can I get more information?
If you have any questions about this process, please contact:

Dale Himes, Project Director
WSDOT Southwest Region
P.O. Box 1709
11018 NE 51st Circle
Vancouver, WA 98668-1709
Phone: 360-905-2006
E-mail: himesd@wsdot.wa.gov

BRIAN BAIRD
THIRD DISTRICT, WASHINGTON

COMMITTEE ON THE BUDGET

COMMITTEE ON SCIENCE

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

http://www.house.gov/baird

Congress of the United Stat
House of Representatives
Washington, DC 20515

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October 10, 2003

SW Region 10-14-2003
Regional Administrator
Executive Secretary
Project Development
Plans & Design
Landscape
Envir.
Utilities
P.E.
Transportation Planning Mgr.
Communications Mgr.
Operations Engineer
Traffic Operations
Administrative Operations
TEF
CapFac
Special Projects
M.S.
Construction Engineer
Construction Support Eng.
Construction Assistants
Materials Lab
P.E.
Program Manager
Pre-Qual. I.T.
Real Estate Services
File

Don Wagner
WSDOT
PO Box 1709
Vancouver, WA 98668-1709

Dear Don:

Thank you again for being part of our discussions of a coordinated vision for our region's jobs, transportation, and quality of life planning. I appreciated your input and insights and wanted to follow up with a very brief summary of the outcome of the meetings and possible next steps.

As I mentioned at the beginning of the September 2 meeting, and as we are all aware, several challenges face our region today. The Northwest leads the nation in unemployment, with levels in Southwest Washington near or above ten percent. At the same time, we face current and worsening transportation bottlenecks and the rapid pace of population growth over the last decade is substantially altering the character of our communities.

In each of these areas, governmental entities and private sector organizations are in the process of developing strategies and assessing public desires for how to meet these challenges today and in the future. Prominent among these ongoing activities are: Clark County's comprehensive planning process; Identity Clark County's second phase of the Transportation Priorities Project; continued work on the bi-state river-crossing issue following the completion of the I-5 Transportation and Trade Partnership Study; C-TRAN's 20-year transit planning process; coordinated efforts among chambers of commerce to address job development and economic expansion; ongoing transportation planning by the RTC and WSDOT; business recruitment, expansion and retention efforts by EDC; strategic planning by our Ports; and individual and collective planning activities by the cities in our region. Along with these efforts, other private and public sector initiatives, for example those of WSU, Legacy Health Systems, and various business and industrial developers, also are taking place.

Based on comments offered at our meetings, there seems to be general agreement on several points about current activities and potential future directions. They include:

1. All of the various planning and public involvement initiatives are taking place in a time of reduced funding availability at all levels of government.

2. There is not a sense that new studies or plans are needed beyond those already underway to meet the region's challenges, but there is merit to better coordinating and communicating the

existing plans to the public and to elected officials and community leaders. Several of the major planning pieces will be completed by the end of this calendar year and will then be available for public review and input.

3. To the degree that proposals resulting from the different planning initiatives may require new public investments, there is merit to taking a thoughtful, strategic approach to communicating both the costs and the benefits and the alternatives to the public. There also may be merit to coordinating or packaging together plans and funding requests, but this will ultimately depend on the willingness and ability of different governmental and private entities to work together for mutual benefit.
4. It is important for Southwest Washington to focus first on its own economic health. The issue of cross river transportation options must also be addressed, but it will not in itself solve the other challenges we face and must not draw focus to the exclusion of other local needs in the short and long term.

I hope you found the meetings helpful. I certainly did. It is clear there are many people working hard to make sure our community has a bright and prosperous future. It also is apparent that the more we work together and collaborate on issues, the more successful we will be. Information abounds on all topics and issue areas. It is up to all of us to use that information wisely, collect additional data when necessary, and move forward with purposeful intent to bring prosperity to our region. I look forward to continuing to work with all of you on this very worthwhile and challenging endeavor.

My office will be collecting copies of the various reports mentioned during our discussions, and we will use this information to help guide my efforts as your Congressman. Thank you again for your time and sharing your thoughts, ideas and knowledge. I am hoping all of you will consider meeting with me periodically to provide feedback on how you see things progressing and sharing information that you think would be helpful to me and my staff. I know these types of discussions are invaluable to me, and I hope you find them of benefit as well.

Thanks again and please keep up the good work.

Sincerely,

Brian

Brian Baird
Member of Congress

BB:tw

Himes, Dale

From: McConnaughey, John
Sent: Thursday, November 20, 2003 1:08 PM
To: Himes, Dale
Cc: Legry, Mary
Subject: RE: WSDOT Landmark Studies and Contacts

Dale - There are three major studies and little else. I'll give you links that the Larkin Group can use to obtain copies. The basic link is
http://www.i-5partnership.com The other link references below can all be found by exploring this website.

1. Portland/Vancouver I-5 Trade Corridor Study - This was a Freight Feasibility and Needs Assessment Study jointly sponsored by ODOT & WSDOT. It began in Fall of 1998 and concluded in January 2000. It is now also referred to as Phase 1 of the I-5 Partnership study. Here are several links to the study http://www.i-5partnership.com/reports/assets/phase.pdf and http://www.i-5partnership.com/reports/assets/final.pdf . I would note that the contractor, Parsons-Brinkerhoff also produced several working papers draft reports on specific topics that were used to prepare the final report. Since the Larkin Group is a subcontractor for ODOT, they may be able to obtain copies of at least some of these working documents from Kate Deane.

2. The Portland/Vancouver I-5 Transportation and Trade Partnership Study. This is also known as the Phase 2 study. ODOT received a FHWA grant to conduct the study with ODOT and WSDOT jointly providing the local match. Here is the main link for the study's Final Strategic Plan http://www.i-5partnership.com/updates/assets/strategic_plan.pdf Here is a link to a page on the general site that contains additional documents http://www.i-5partnership.com/reports/index.html. Again, like the Phase 1 report, there were other working papers and draft documents prepared that the Larkin Group could obtain from ODOT if they were interested in following up on some specific topic. Again, Kate Deane would be the contact.

3. Economic Impact (Choke Point) report. This was a follow-up report by Cambridge Systematics that identified the economic impact of the I-5 rail and highway crossings to freight mobility. It's listed on the index page above but the link is - http://www.i-5partnership.com/reports/OrDOT_I-5RegionalReport.pdf

Finally, I would note that when the Phase 1 study began ODOT and WSDOT as well as the other local "Partners" provided a set of earlier studies and analyses to the ODOT contractor (Parsons-Brinkerhoff). For example, we provided a copy of the Draft EIS that was completed in the mid 1990's for widening of I-5 from 39th Street to Salmon Creek. One other example is the RTC sponsored Futures Committee Study. See http://www.rtc.wa.gov/Studies/Archive/tfc/execsum.htm In my judgement these are of limited relevance for the next stage.

I hope this has been helpful.

-----Original Message-----
From: Himes, Dale
Sent: Wednesday, November 12, 2003 9:45 AM
To: McConnaughey, John
Cc: 'James.M.Whitty@odot.state.or.us'; 'David.G.Williams@odot.state.or.us'; 'LarkinGroupInc@comcast.net'; Legry, Mary
Subject: WSDOT Landmark Studies and Contacts

John,

As of November 10th, the Larkin Group has begun preparing a detailed work plan for the next steps in the I-5 Crossing project. When you return from vacation on Monday, November 17th, could you provide me with any other relevant landmark studies and internal contacts that you may have for our Consultant's use. As you know, the areas of interest include funding options and financial feasibility, tolling options and traffic analyses, legal and bi-state organizational requirements; EIS scope and methodology, preliminary investigations for EIS and communication plan.

Thanks,

Himes, Dale

From: McConnaughey, John
Sent: Thursday, November 20, 2003 1:15 PM
To: Himes, Dale
Cc: Legry, Mary
Subject: RE: WSDOT Landmark Studies and Contacts

Dale - For future reference here is a link on our internal network that provides some (but not all) of the various working papers and draft reports that I referenced that Kate could provide.

G:\Planning\I-5 Trade Partnership

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Thanks,

Dale Himes, AICP
Project Director Columbia River Crossing
WSDOT-Southwest Region
360-905-2006 - office
360-601-3932 - cell
himesd@wsdot.wa.gov

Himes, Dale

From: McConnaughey, John
Sent: Tuesday, December 02, 2003 9:15 AM
To: Legry, Mary; Wagner, Don
Cc: Himes, Dale
Subject: RE: Movable Bridges on the Interstate Bridges

Here is the definition

Bascule \Bas"cule\, n. [F., a seesaw.]
In mechanics an apparatus on the principle of the seesaw, in which one end rises as the other falls.

Bascule bridge, a counterpoise or balanced drawbridge, which is opened by sinking the counterpoise and thus lifting the footway into the air.

The Montlake Bridge that crosses the Lake Washington Ship canal is an example -

We have a nice site that shows an example. http://www.wsdot.wa.gov/environment/culres/bri

Closer to home, the Morrison, Broadway, and Burnside bridges are examples in Portland

http://www.co.multnomah.or.us/dbcs/LUT/bridges/bridge_operations/movable_brdg_ops.shtml

FHWA did respond to my question and their bridge inventory does count the interstate bridg lift spans twice so instead of 5 lift spans on the Interstate System there are 3 so the I- represent 2 out of 3 total lift spans on the Interstate System. There is currently a tota Movable Bridges on the Interstate System. (There do not appear to be any double counted mo bascule bridges). The existing Woodrow Wilson Bridge in Washington D.C.

Is included in the count but the new bridge is not.

not appear to be and double counted Movable Bascule

-----Original Message-----
From: Legry, Mary
Sent: Tuesday, December 02, 2003 7:51 AM
To: McConnaughey, John
Subject: FW: Movable Bridges on the Interstate Bridges

John" Could you please define for Don?
-----Original Message-----

From: Wagner, Don
Sent: Monday, December 01, 2003 3:53 PM
To: Legry, Mary
Subject: RE: Movable Bridges on the Interstate Bridges

I'm sure I should know this already, but what is a movable bascule?

Don Wagner
SWRegion Administrator

-----Original Message-----
From: Legry, Mary
Sent: Monday, December 01, 2003 7:29 AM
To: McConnaughey, John; Himes, Dale; Clark, Mike; Wagner, Don
Cc: 'Frank Nelson (E-mail)'
Subject: RE: Movable Bridges on the Interstate Bridges

Tks, John. 15 or 16 was the number I recalled. Please let us know the final tally after your further clarifications.

-----Original Message-----
From: McConnaughey, John
Sent: Tuesday, November 25, 2003 12:29 PM
To: Legry, Mary; Himes, Dale; Clark, Mike
Cc: Frank Nelson (E-mail)
Subject: FW: Movable Bridges on the Interstate Bridges

FYI - Mary Legry asked me to find out how many draw bridges there were on the Interstate system since we have seen several different numbers used. Here is a preliminary report. The below attachment is a tabulation from the FHWA's National Bridge Inventory. The tabulations indicate that there are 5 Movable Lift Span bridges on the Interstate System and 11 Movable Bascule bridges for a total of 16 movable bridges on the Interstate System.

There are some things I will need to clarify about the FHWA data. Note that 4 of the 5 Movable Lift Spans are in Oregon & Washington (2 each). I will be confirming with FHWA whether they are double counting the two I-5 Interstate Bridges or not.
In addition, the Woodrow Wilson Bridge in the Washington D.C. area does not appear to be included in the tally.

-----Original Message-----
From: McCormick, Raymond [mailto:Raymond.McCormick@fhwa.dot.gov]
Sent: Tuesday, November 25, 2003 10:04 AM
To: mcconnj@wsdot.wa.gov
Subject: Movable Bridges on the Interstate Bridges

John, we did a computer check for all movable bridges on the Interstate by type (bascule, swing..)

Please me know if we can provide further information

Senior Structural Engineer for Bridge Programs
Phone: 202-366-4675
FAX: 202-366-3077

Himes, Dale

From: Himes, Dale
Sent: Friday, December 19, 2003 1:59 PM
To: 'Joel.Rubin@mail.house.gov'
Cc: Ehl, Larry
Subject: Request for Additional Information - Columbia River Crossing Project

Joel

In answering your recent request for additional information, we have put this document together (see attached) to better explain the Columbia River Crossing Project. We believe that this document should answer the questions that you have asked.

Have a good weekend.

Dale Himes, AICP
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COLUMBIA RIVER
CROSSING Import...

12-19-03

COLUMBIA RIVER CROSSING PROJECT, Vancouver, Washington to Portland Oregon

PURPOSE – To provide additional information on why the Columbia River Crossing Project is a strong candidate to be designated a Project of Regional and National Significance under the provisions of Section 1304 of H.R. 3550. The project also meets many of the Senate and Administration goals in promoting freight mobility, improving intermodal connectors, improving safety, providing congestion relief, and supporting a strong national economy.

What is the Problem?

There are only two highway and one rail crossing of the Columbia River in the I-5 corridor between Vancouver Washington and Portland Oregon. Since the mid-1980's this Bi-state metropolitan region has experienced high levels of population and economic growth. This growth has used up the existing rail and highway capacity, and the I-5 corridor in the Vancouver/Portland area is becoming a serious choke point for freight mobility. This lack of highway and rail capacity is already beginning to impact the regional and national economy by increasing shipping costs, reducing productivity of freight movements, impeding international trade, adversely impacting regional employment, and reducing the opportunity for business to compete in an increasingly competitive global market.

Importance of the Columbia River Crossing to the Regional and National Economy

Economic

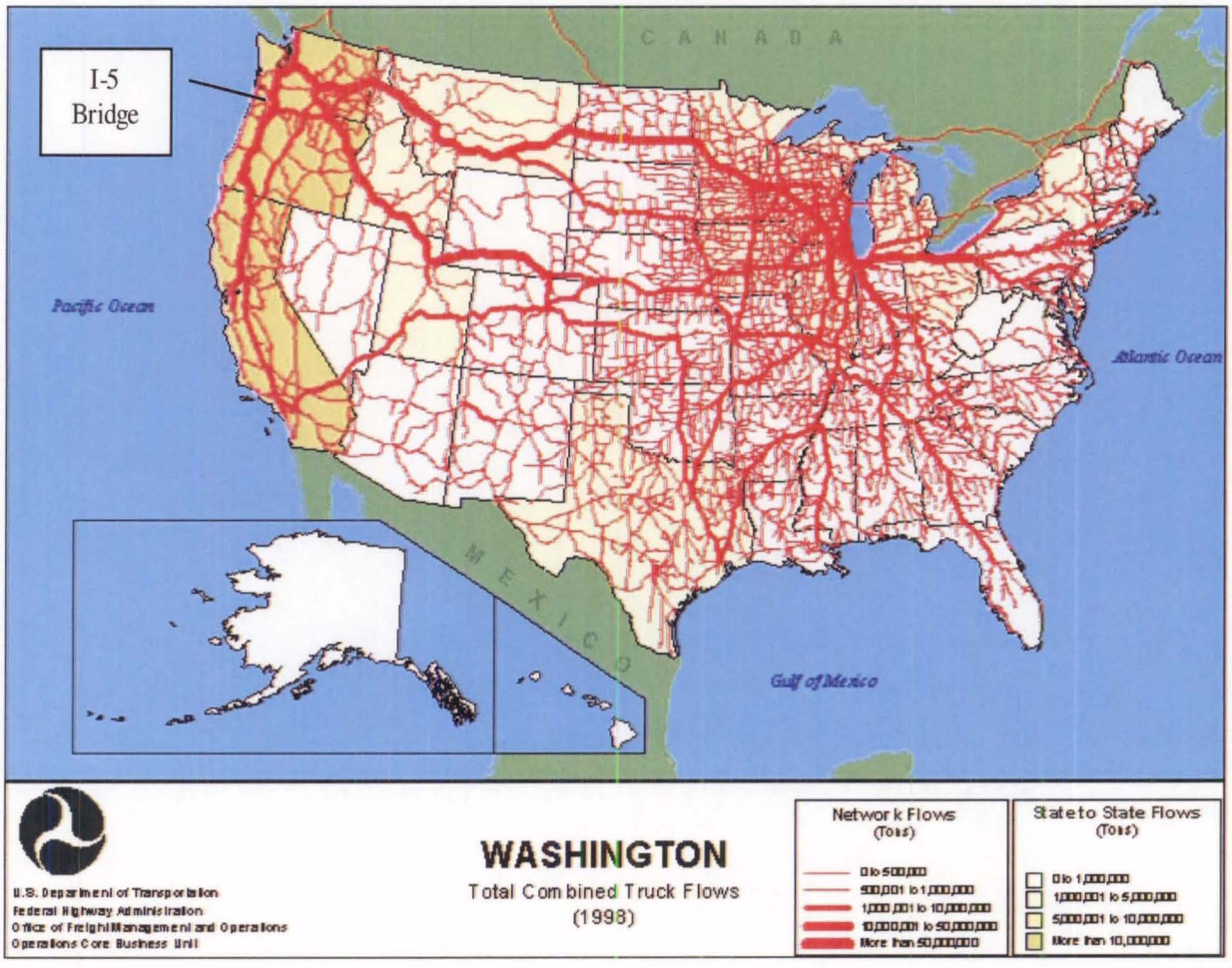
The convergence of highway, rail, upriver barge and deep-water port facilities in the Portland/Vancouver I-5 Corridor makes it a gateway to national and international markets including Canada, Mexico and the Pacific Rim countries. Interstate 5, a national defense corridor, is the only continuous Interstate corridor in the U.S. that directly connects Canada and Mexico. Congress recognized Interstate 5's national significance and economic importance in Section 1105 of the Intermodal Surface Transportation Act (ISTEA) by designating it as a High Priority Corridor. Section 1010 of the same Act designated the existing rail line between Eugene, Oregon and Vancouver, British Columbia as a High Speed Rail Corridor. The Interstate 5 Bridge crossing the Columbia River between Vancouver Washington and Portland Oregon and the BNSF Vancouver Rail Bridge is the key I-5 facility connecting the Interstate and freight rail system with deep-water shipping and upriver barging.

Washington and Oregon are among the most trade-oriented states in the country. Twenty percent of Washington's employment is related to international trade. Oregon's number one industry, agriculture, markets half of its products overseas. Washington and Oregon ports along the Columbia and Snake Rivers are the nation's largest grain-shipping area and the second largest grain-shipping region in the world. On an average weekday, approximately $37 million worth of goods leave the Portland-Vancouver metropolitan area for Washington State, and $40 million goes to California.

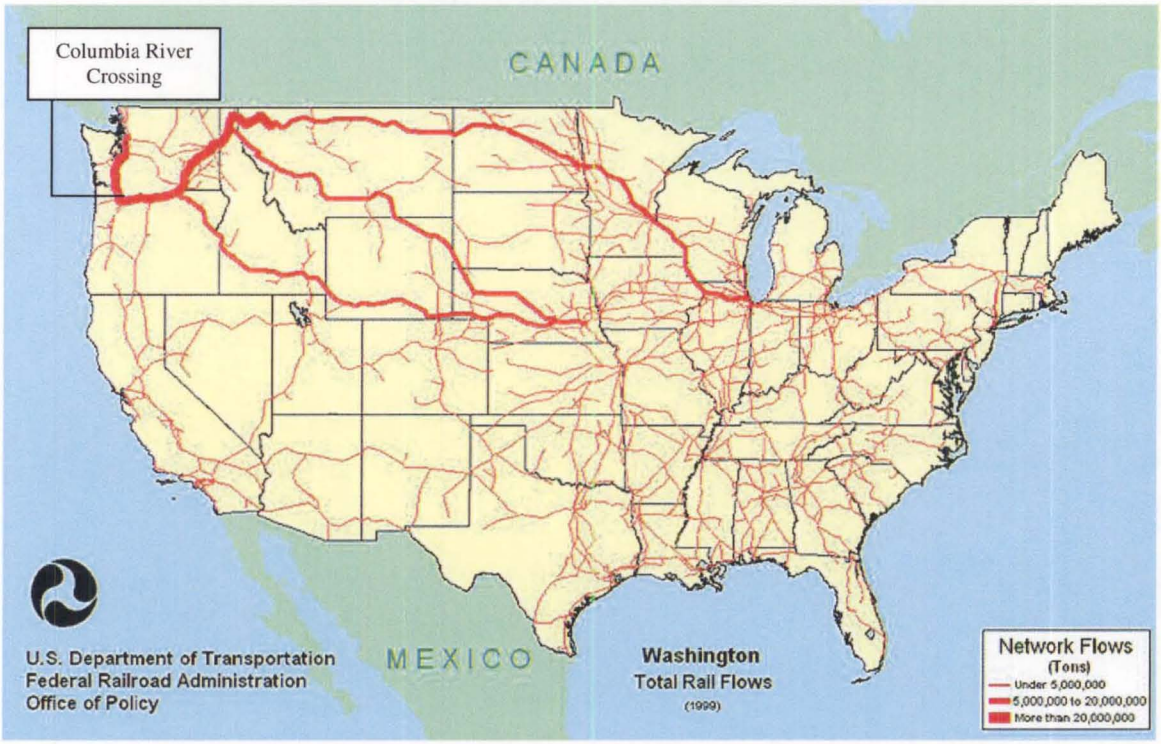
The importance of the Columbia River Crossing to the Regional and National Economy can be illustrated by the following figures that show truck and rail freight flows in Washington and Oregon to regional and national markets. Washington moves $86 billion in total foreign and domestic exports annually - in part because the state is strategically located amidst Midwest, Canada, Mexico and Asia-Pacific markets. More that 85 percent of freight passing through Washington State is on its way to or from Asia-Pacific economies. Asia is expected to comprise 45 percent of the world population by 2015.

The first figures provided below are national trade flows from the Federal Highway Administration's State Freight Profiles. These figures are followed by freight flows over the Columbia River Crossing for key industries to regional and national markets. The latter figures are excerpted from a 2003 study entitled **"Regional Economic Effects of the I-5 Corridor/Columbia River Crossing Transportation Choke Points**

Freight Flows To, From, and Within Washington by Truck: 1998

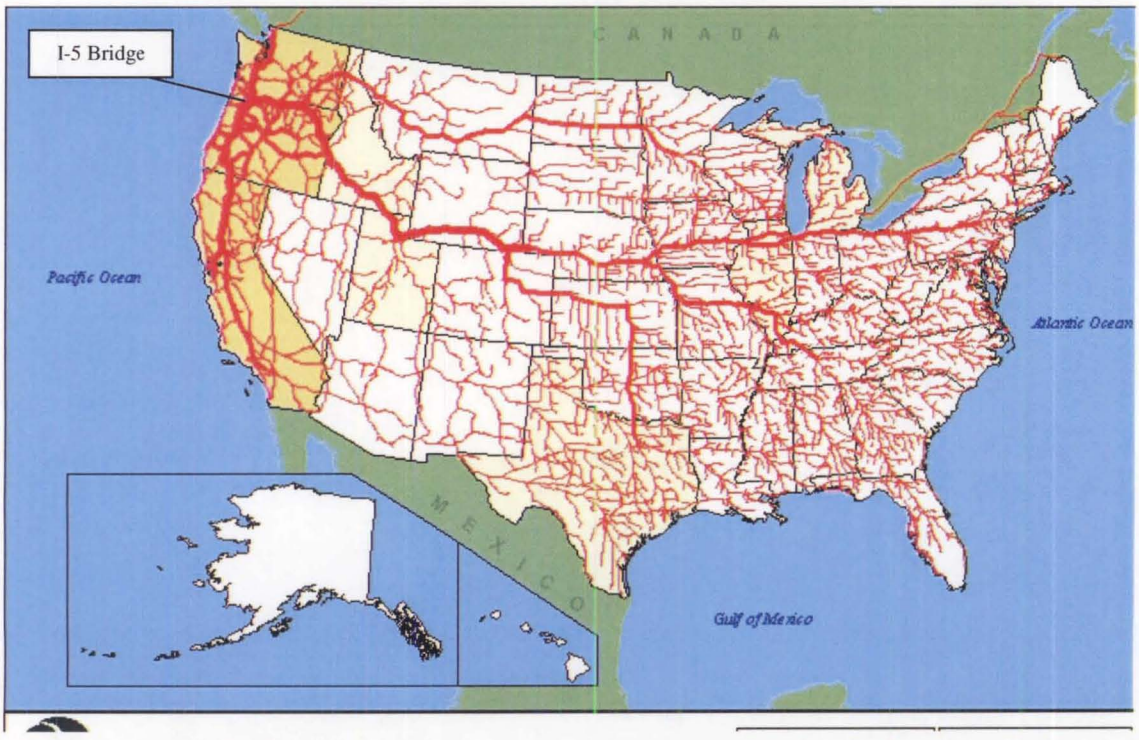


Freight Flows To, From, and Within Washington by Rail: 1998 (tons)

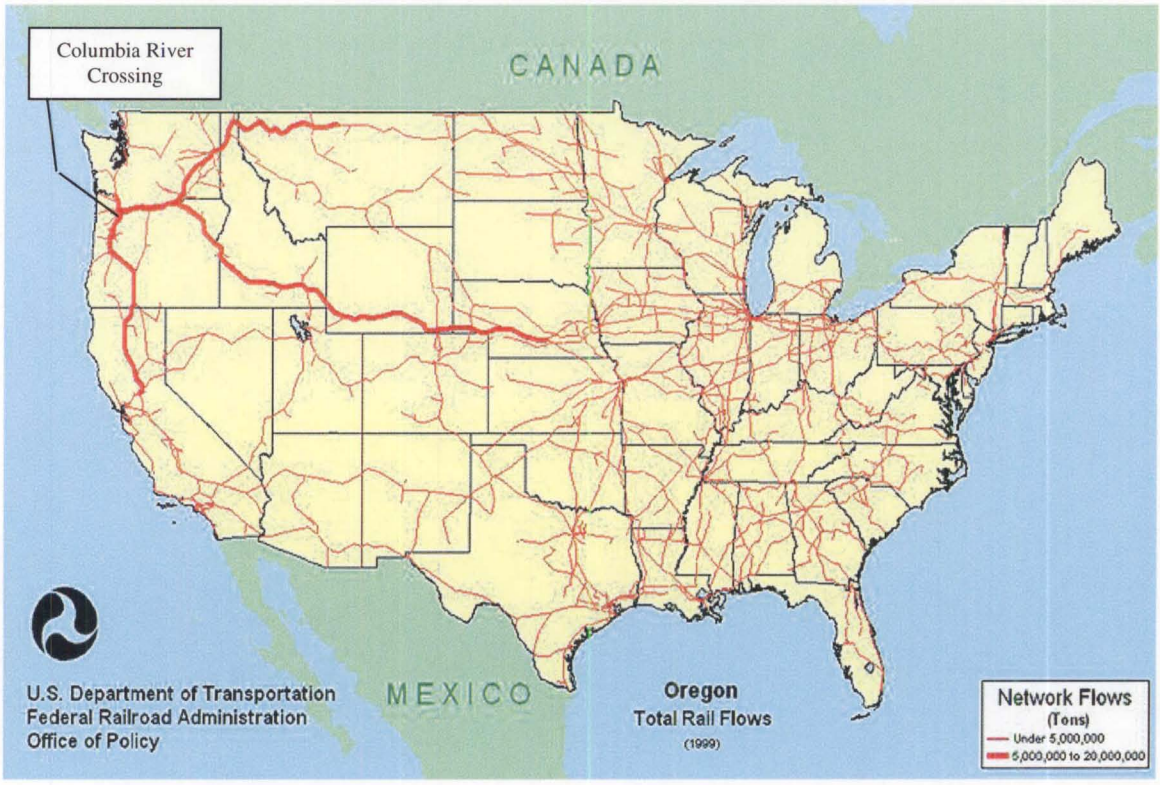


The ports of Seattle and Tacoma have been major transshipment centers for imported merchandise moving from the Pacific Rim to Midwest and East Coast markets. About half of rail shipments originating from Seattle-Tacoma travel south through Portland-Vancouver, then eastward along one of the Columbia River Gorge rail lines.

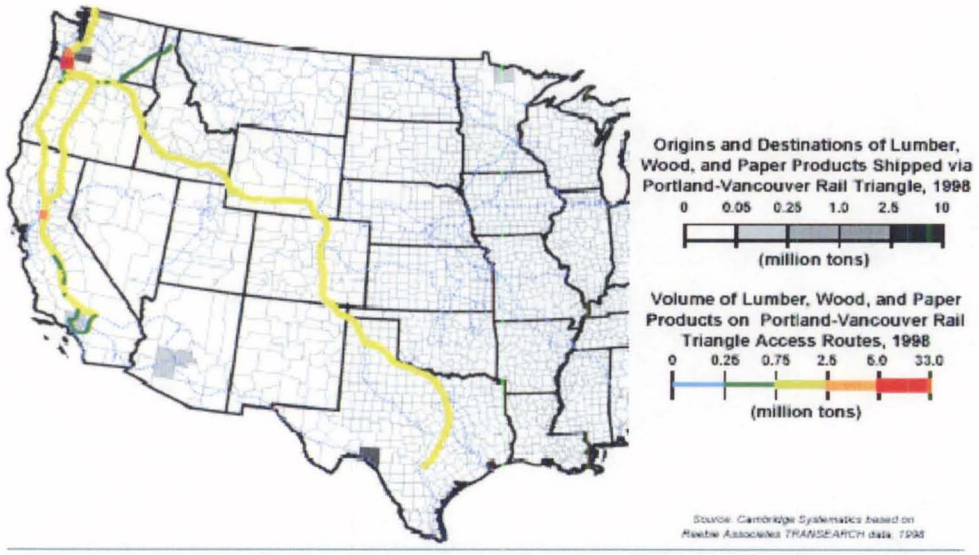
Freight Flows To, From, and Within Oregon by Truck: 1998 (tons)



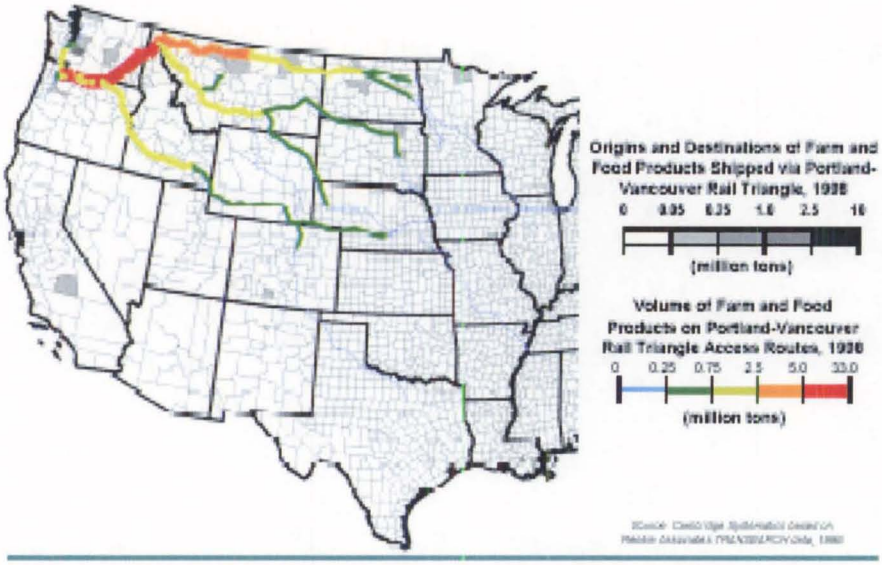
Freight Flows To, From, and Within Oregon by Rail: 1998 (tons)



Western United States Origins and Destinations for Lumber, Wood, and Paper Products Using the Portland-Vancouver Rail Triangle With Tonnage of Freight on Rail Lines Used to Access Triangle

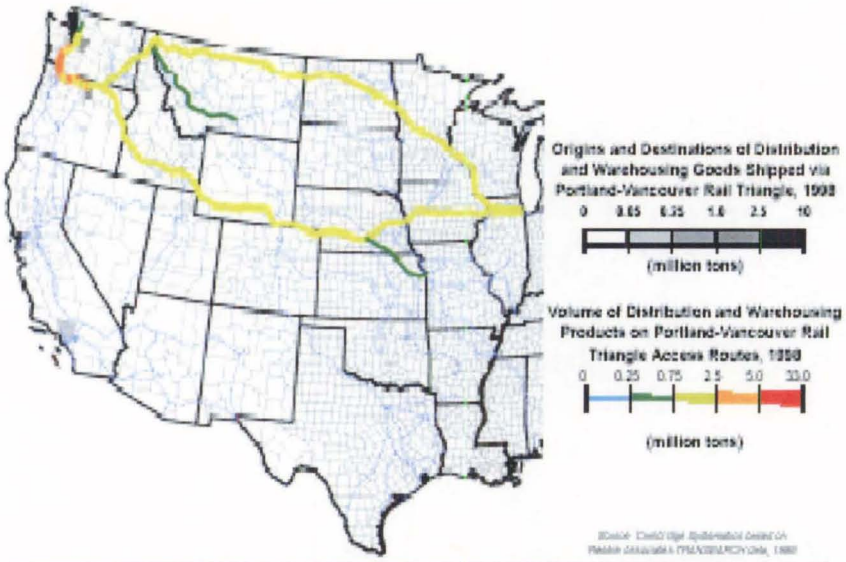


Western United States Origins and Destinations for Farm and Food Products Using the Portland-Vancouver Rail Triangle With Tonnage of Freight on Rail Lines Used to Access Triangle



As the nation's largest wheat shipping area, wheat exports arrive in the region from as far in land as Dakota and Nebraska. In total, the Portland/Vancouver region is the 10th largest exporter in the United States with most of this export activity occurring at the region's two ports and using the transportation facilities in the I-5 Trade Corridor to access the port facilities.

Destinations for Distribution and Warehouse Goods Using the Portland-Vancouver Rail Triangle With Tonnage of Freight on Rail Lines Used to Access Triangle



Due, in large measure, to the transportation infrastructure in the Corridor, the Portland/Vancouver region has become a major freight distribution and transshipment center on the West Coast. Within the 17 western states, the region is the number one origin and the number two destinations for tonnage moved by commercial vehicles. One indicator of region's role in freight distribution is that Portland has the highest value of wholesale trade per capita on the West Coast. This means that many more goods move through the region than are consumed here. The ratio for the nation as a whole is $1.70 in wholesale trade for every $1 of retail trade. Portland's ratio $4.40, two and one half times the national ratio.

Why is there a highway bottleneck?

The Interstate 5 Bridge, connecting Vancouver, Washington, and Portland, Oregon, is actually two lift span bridges side by side. Construction of the original bridge was completed in 1917. It was the first highway bridge across the Columbia River to join Oregon and Washington. A second, similar bridge was built west of the first bridge in 1958. The original bridge carries northbound I-5 while the newer bridge carries southbound I-5 traffic. These functionally obsolete bridges have three narrow lanes and are 2 of the last 14 remaining movable bridges in the Interstate system. The age of the spans, coupled with the complex lift mechanism requires increasingly expensive maintenance.

To relieve congestion on the Interstate Bridge, the I-205 Bridge (about five miles east of I-5) was opened in 1982. The metropolitan area experienced very high rates of population and economic growth beginning in the mid-1980's. Between 1990 and 2000 Clark

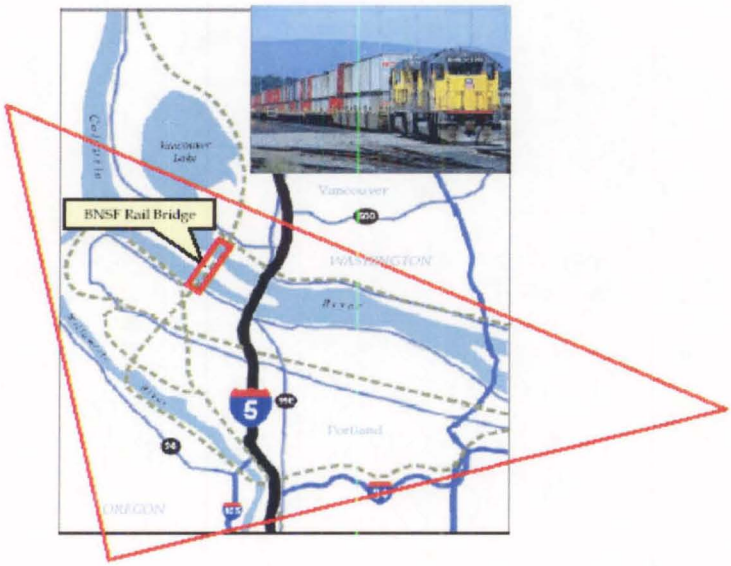
County had the highest rate of population growth in the State of Washington as well as in the larger Portland/Vancouver Metropolitan area. Currently, over 50,000 residents of Clark County commute to Portland each day. As a result, the I-205 Bridge is now also operating at capacity in peak periods.

Because of the high rate of population growth, I-5 was soon congested again by commuter traffic during the morning and afternoon peak periods. While the vast majority of automobile traffic on I-5 is local, the majority of truck traffic on I-5 carries interstate freight through the metropolitan area. Congestion is now spreading into the non-peak periods when the interstate truck movements primarily occur. The ability to effectively serve freight movement and the regional and national economy is threatened by this growing congestion. The parallel I-205 Bridge will be equally congested by 2020.

Why is there a freight rail bottleneck?

The two-track BNSF rail bridge, adjacent to the I-5/Columbia River Bridge, is the only rail crossing connecting Portland and Vancouver. The rail bridge carries 63 freight trains and 10 Amtrak passenger trains across the river each day. The next major rail crossing of the Columbia River is 92 miles upstream near The Dalles, Oregon.

Portland-Vancouver Rail "Triangle"



The primary cause of congestion in the rail system is the growth in freight shipments and passenger rail. This has resulted in inadequate capacity within the overall Portland-Vancouver terminal and junction "triangle." On each side of the Columbia River, trains crossing the bridge compete for track space with local and long-distance trains moving to rail yards and terminals. Single tracks connect most junctions, and yard capacity is inadequate for the volume of rail traffic traveling to and from rail yards and port

terminals in Portland and Vancouver. Local operations—the movement of locomotives and cars between yards and the movement of trains into and out of port and railroad terminals—must share track time and space with long-distance, through trains, including intermodal trains traveling from Seattle and Tacoma to the Midwest and California through the Portland-Vancouver area.

When measured in terms of delay per train, rail congestion in the Portland-Vancouver area is about twice that of Chicago, the nation's largest rail hub. An analysis of the Portland-Vancouver rail system found that over a typical 96-hour (four-day) period the terminal area handled 600 freight and passenger trains. The average speed of those trains through the Portland-Vancouver network was 12.3 mph and they accrued 402 hours of delay (about 41 minutes of delay per train). By comparison, over the same period the Chicago rail network handled about 3,500 freight and passenger trains. The average speed was 12.5 mph, and the trains accrued 813 hours of delay. With less than one-fifth the number of trains as Chicago, the Portland-Vancouver rail network experiences nearly half the delay hours of Chicago.

What are the costs of not fixing the bottlenecks?

The Governors of Washington and Oregon established the I-5 Transportation and Trade Partnership, a consortium of state and local transportation elected officials, agencies, and stakeholders from the Bi-State Portland-Vancouver area, to make recommendations on how to address the I-5 corridor bottlenecks. They prepared a Strategic Plan that has identified over $2 Billion of transportation improvements needed to relieve highway and rail congestion at the I-5 Corridor/Columbia River crossings.

The key recommendations include:

Highway

Widen I-5 to a maximum of three through lanes in each direction from the I-405 Bridge in Portland to the I-205 junction north of Vancouver;

Add a new supplemental or replacement bridge across the Columbia River with up to two auxiliary or arterial lanes in each direction and provision for high capacity transit.

Add auxiliary lanes between interchanges on I-5 and modify the interchanges to increase safety and capacity and discourage the use of I-5 for local trips to preserve regional and national throughput.

Transit

Construct a light-rail loop connecting the existing transit lines in Portland with the communities across the Columbia River in Clark County, Washington.

Initiate premium, peak-hour express bus services in the I-5 and I-205 corridors, consistent with existing regional transportation plans.

Rail

Expand yard capacity and construct bypass tracks so that local trains do not block through trains

Increase track speeds in the Portland-Vancouver area by improving track conditions and repairing or replacing junctions.

Add a second track to single-track sections, permitting simultaneous bi-directional movement of trains.

Add sidings to congested sections to allow for temporary storage of trains and locomotives that are waiting to enter terminals and yards and now block other freight and passenger trains.

What are the major benefits of the Columbia River Crossing Project?

The improvements will establish a transportation system that handles the projected 2020 travel demand with improved performance, reliability, predictability, and safety relative to today. The improvements are forecast to;

Minimize the spread of peak-period congestion, preserving the midday period for truck freight movement within and through the Portland-Vancouver area.

Reduce delays to trucks operating along I-5.

Maintain or enhance existing accessibility to key port and industrial areas.

Accommodate more freight-rail and high-speed passenger-rail service while maintaining or enhancing current rail system performance.

Summary

In summary, it is highly likely that the Bi-State Columbia River Crossing Project will meet all the criteria that the Secretary of Transportation would establish under Section 1304 as a Project of National and Regional Significance. The proposed improvements will generate regional and national economic benefits. Correcting the bottleneck will require a multiple billion-dollar transportation infrastructure investment for several modes of transportation. The 14-mile long project is located in the heart of a vital growing metropolitan area that requires active involvement and participation by multiple layers of government. In addition, there is a high potential to leverage any Federal investment from several non-Federal sources including public-private partnerships,

bridge tolling, and financial contributions for rail improvements by BNSF, AMTRAK (or its successor) and the regional ports.

Himes, Dale

From: Himes, Dale
Sent: Friday, December 05, 2003 2:44 PM
To: 'Theresa.Wagner@mail.house.gov'; Ehl, Larry; Conrad, John; Wagner, Don; Legry, Mary; 'matthew.l.garrett@odot.state.or.us'; 'james.m.whitty@odot.state.or.us'; 'david.g.williams@odot.state.or.us'
Subject: Columbia River Crossing - Baird/Oberstar Briefing Report

Everyone,

Attached is a briefing report sent today to Joel Rubin (Legislative Director for Congressman Baird) for a scheduled meeting with Ranking Member Oberstar on Monday, December 8, 2003. This purpose of the meeting is to discuss the possibility of including the Columbia River Crossing project in the "Program of National and Regional Significance" (PNRS).

Have a good weekend.

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WSDOTBaird.doc

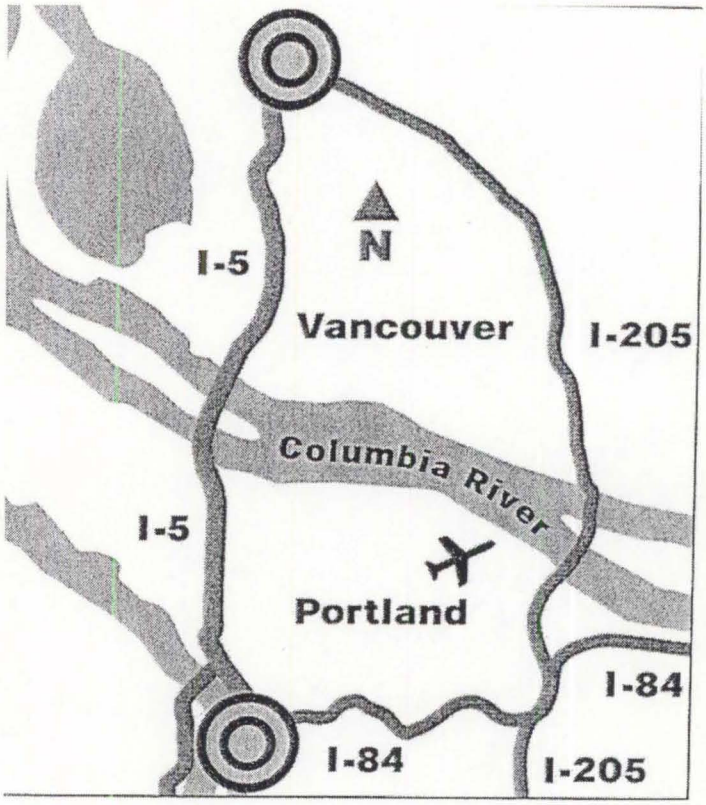
12-5-03

COLUMBIA RIVER CROSSING PROJECT, Vancouver, Washington to Portland,Oregon

BACKGROUND

The 2002 Columbia River Crossing Strategic Corridor Plan called for additional capacity over the Columbia River with a replacement bridge or by supplementing the existing I-5 bridges between Vancouver, Washington and Portland, Oregon to ease impacts of bottle-necked traffic on local and interstate commerce. It also included a variety of corridor-wide improvement and traffic management recommendations.

The Columbia River Crossing Strategic Corridor Plan was the result of work by a Bi-State Task Force appointed by Washington Governor, Gary Locke, and Oregon Governor, John Kitzhaber. It consisted of business, community and elected representatives to make recommendations for the Interstate-5 Corridor between Interstate-84 in Oregon and Interstate-205 in Washington.



I-5 is the only continuous Interstate on the West Coast, and it is critical to the national, regional and local economies. Where I-5 crosses the Columbia River the interstate provides a critical connection to two major ports, deep-water shipping, up-river barging, two transcontinental rail lines, and much of the region's industrial land.

In 1997, 14 million tons of freight (valued a $17 billion) was shipped from the Oregon side of the metro area to locations in Washington. Shipments southbound from Washington into the Oregon totaled 28.5 million tons (worth an estimated $7.5 billion).

For residents in the Portland and Vancouver area, I-5 provides one of two crossings of the Columbia River for transit and automobiles. It connects the Portland and Vancouver metropolitan areas for work, recreation, shopping and entertainment purposes. An average of 125,000 trips are made across the I-5 Bridge every day.

NATIONAL ECONOMIC BENEFITS

Washington State is the most trade-oriented state in the nation. It leads the nation in per capita exports, and the export trade directly or indirectly supports one out of every four jobs in the state. It is estimated that by 2005 one in every three jobs will be export related. Washington State handles seven per cent of America's exports although the State accounts for only two per cent of the U.S. population. Exports average about $34 billion per year. This is about 19 per cent of the State's gross domestic product. Freight mobility in the I-5 highway and rail corridors will be essential to maintaining this source of income and employment for Washington as the Pacific Northwest's trade orientation continues to grow.

CONGESTION

Congestion is a cost of doing business, but the severity of it in this region is leading to a reduction in productivity, which in turn limits economic competitiveness and curtails economic expansion. It will become an even greater drag on the economy in the future as the region grows and the demand for travel increases. Congestion is weakening our competitiveness in global markets.

Between 1998 and 2020 import-export freight tonnage in the Portland/Vancouver area is forecast to grow 123 percent and domestic freight tonnage will increase by 76 percent. Reliable transportation is essential to support this growth. Freight transport by truck through Southwest Washington encounters two major choke points. The first is the congested bridge at the Columbia River and the second is to the north where Interstate 5 drops down to two lanes in each direction through Centralia/Chehalis in Lewis County. Without improvements at the Columbia River highway crossing congestion will spread into the midday period, which is the peak travel period for trucks. Congestion in the Centralia/Chehalis area is already a problem and even minor incidents result in significant traffic backups. This area's problems are expected to grow with anticipated traffic volume increases.

The Portland/Vancouver rail network and Columbia River rail crossing is one of the busiest in the nation, with over 160 trains moving through the region each day. Currently, two transcontinental railroads, Amtrak long distance trains, and the regional Amtrak Cascades use the network. The two-track Burlington Northern-Santa Fe rail bridge, adjacent to the Interstate Bridge, is the only rail crossing connecting Portland and Vancouver. The rail bridge carries 63 freight trains daily. The next major rail crossing of the river is 92 miles upstream near The Dalles, Oregon.

SAFETY

There are potential safety issues within the I-5 bi-state Trade Corridor study area based on accident patterns and associated safety concerns. A total of 1,344 accidents were reported along the mainline and ramp terminals within State of Oregon between January 1995 to December 1997. There was a total of 1,158 total accidents reported along the mainline and ramp terminals within the State of Washington between January 1994 and December 1996. Table 1 summarizes the accident data collected for the two segments of I-5 with the study area.

TABLE 1
I-5 TOTAL NUMBER OF ACCIDENTS ALONG THE CORRIDOR

Location	HAC/SPIS	Accidents				Accident Types		
		Total	Fatalities	Injuries	PDO[1]	Rear -end	Fixed Objects	Other
I-5 in Oregon[2] (MP 301.09 to MP 305.44)	No SPIS locations	1,344	7	1,040	676	867	91	290
I-5 in Washington[3] (MP 0.00 to MP 8.50)	2 HAC segments[4]	1,158	3	709	669	520	178	214
Total		**2,502**	**10**	**1,749**	**1,345**	**1,387**	**269**	**504**

[1]Property Damage Only
[2]ODOT 1998 Accident Summary Report (1995-1997 Data)
[3]Accident data from WSDOT (1994-1996 Data)
[4]Identified by WSDOT Olympia Service Center

I-5 in Washington

Accident data was collected for the three-year period between January 1994 to December 1996. Within this period, a total of 1,158 accidents were reported along the mainline and ramp terminals. There was a total of 3 fatalities, 486 injuries, and 669 property damage related accidents. Almost half of the accidents were caused by rear end collisions. Rear end collisions increase as congestion increases. Along the mainline I-5 Corridor, a total of 628 accidents occurred within the three-year period analyzed. Of the total 628 accidents, 391 occurred along the southbound direction and 236 occurred along the northbound direction of I-5. A total of 78 truck accidents involving semi-tractor trucks, tractor trucks and other truck combinations occurred with the three-year period analyzed.

I-5 in Oregon

Accident data was collected for the three-year period between January 1995 and December 1997. Within the period, a total of 1,344 accidents were reported along the mainline and ramp terminals. Along the mainline, a total of 1, 215 accidents occurred and 129 of the accidents occurred within the ramp locations along the corridor. There were a total of 7 fatalities, 1,040 injuries, and 676 property damage related accidents. Almost 65 percent of the accidents were caused by rear end collisions. Approximately 20 percent of the total accidents were sideswipe accidents caused by vehicle overtaking. There were a total of 177 accidents where a truck was involved. Trucks include light, medium and heavy trucks.

NATIONAL TRANSPORTATION SYSTEM

I-5 is the only continuous highway from Mexico to Canada on the west coast. Within the Portland-Vancouver metropolitan area, I-5 is the north-south backbone of regional trade. The proximity to two interstate highways, I-5 and I-84, makes overnight truck delivery into British Columbia, to Idaho and western Montana and south into the San Francisco bay area possible. As a result, the region serves as the Pacific Northwest domestic

distribution location for many retailers and manufacturers. The Portland-Vancouver area ranks 13th among all US cities based on the value of exports.

Interstate 5 and the Columbia River rail crossings provide critical freight connections to the Pacific Northwest's two major metropolitan areas and to support Washington imports and exports to national and international markets.

- About half of rail shipments originating from the Seattle-Tacoma area travel south through Portland-Vancouver en route to their final destination.
- Oregon and Washington are each other's closest trading partners.
- More than 10,000 trucks per day travel through the corridor.

NON-FEDERAL FINANCIAL COMMITMENTS

The possibility of a Public-Private Partnership for the Columbia Crossing Project is being actively explored by both the States of Washington and Oregon.

PROJECT COSTS

To date:

Freight Feasibility and Needs Assessment, January 2000:	$1M
Columbia River Crossing Strategic Corridor Plan, June 2002:	$ 3.67M
Regional Economic Effects of Transportation Choke Points, April 2003:	$100K

Currently:

Budgeted for Financing Options, Traffic Studies and Bi-state EIS process:	$6.9M

Future Need:

Preliminary Design and EIS:	$50M
Final Design, Right-of-Way, Permitting	$150M
Construction (highway and high capacity transit projects):	$2-2.5B

WASHINGTON DEPARTMENT OF TRANSPORTATION
AND
OREGON DEPARTMENT OF TRANSPORTATION
INTERAGENCY MEMORANDUM OF UNDERSTANDING

COLUMBIA RIVER CROSSING PROJECT (CRCP)

This is a MEMORANDUM OF UNDERSTANDING entered into this 2ND day of SEPTEMBER 2004 between the Washington State Department of Transportation, hereinafter referred to as "WSDOT" and the Oregon Department of Transportation, hereinafter referred to as "ODOT."

PURPOSE

- The Columbia River Crossing Project (CRCP) is one of a finite list of projects recognized by the Oregon and Washington Departments of Transportation as being significant to the future of the Pacific Northwest.
- The CRCP addresses the bottleneck in the I-5 corridor caused by the river crossing.
- By modernizing this aging infrastructure, the CRCP will contribute to the economic and freight mobility needs of Oregon and Washington.
- The CRCP is a product of the I-5 Partnership Strategic Plan adopted in 2002.
- That Plan articulates a 20 to 30-year vision for the I-5 corridor that will be implemented in phases with the Columbia River Crossing being part of the first phase.
- WSDOT and ODOT have formed a Project Team for the CRCP to manage the project as one team that works on behalf of both departments of transportation.
- The following provisions outline how this Project Team will interact and manage the project.

NOW THEREFORE IT IS MUTUALLY AGREED between the parties hereto as follows:

1. DECISION MAKING. The CRCP project team will strive toward building consensus through the following decision making process described below:

    - State Transportation Commissions. The Oregon and Washington transportation commissions have formed the Joint Commission Subcommittee to provide oversight of the CRCP. The Project Team will report progress to the Joint Commission Subcommittee as well as provide briefings to the full Commissions.

    - Joint Commission Subcommittee. The Project Team will report to the Joint Subcommittee regarding the progress of the project. The purpose of the Subcommittee is to ensure that the efforts of the two state transportation departments in planning for improvements to the Columbia River crossing are well coordinated, that maximum value is obtained from the federal grants received for project planning, and that public officials and citizens in both states are kept abreast of progress.

    - Project Team. The Project Team will consist of Senior leadership and Project Directors. Senior leadership will consist of the ODOT Deputy Director, Highway Division and Region 1 Manager, and the WSDOT Assistant Secretary,

Engineering and Regional Operations and Southwest Region Administrator. These individuals will provide project oversight and implementation of this MOU. They will resolve issues and provide guidance to the Project Directors. These Senior leaders will also interact with key stakeholders during the course of the project.

The ODOT Deputy Director, Highway Division and the WSDOT Assistant Secretary, Engineering and Regional Operations will meet quarterly with the Project Team to assist with key decisions and receive project updates. The ODOT Region 1 Manager and WSDOT Southwest Region Administrator will meet with the WSDOT/ODOT Project Directors bi-weekly to oversee project progress.

The WSDOT and ODOT Project Directors are co-directors of the project and are responsible for overall scope, schedule and budget. They will be responsible for staffing the Columbia River Crossing Task Force and the Project Technical Committee. The WSDOT Project Director and ODOT Project Director will provide Senior leadership with bi-weekly project updates.

- Columbia River Crossing Task Force. The Task Force's role will be to provide input into the CRCP. Within the context created by the Strategic Plan, the Task Force will: respond to and advise the joint Project Team on technical data and its policy implications leading to a Notice of Intent; provide advice to the Joint Commission Subcommittee throughout the EIS until the issuance of the Record of Decision; represent and report back to their representative organizations.

- Project Technical Committee. The Project Team will create a technical committee to assist in the technical analysis of the EIS and related work products.

OTHER PARTIES - The Project Team will work to include other key stakeholders, jurisdictions and agencies in the project. The Project Team recognizes the legal responsibilities of the FHWA, FTA and MPO's regarding inclusion of the project within their planning and authorization processes.

2. COMMUNICATION. Communication regarding the CRCP will be open, regular, and inclusive. The Project Team will provide regular updates and include input throughout the project.

3. CO-LOCATION. The Project Directors are currently co-located. It is the intent to co-locate the entire team as the project progresses including other agencies and project consultants.

4. PROJECT DELIVERY. ODOT and WSDOT are committed to implementing this Project on an expedited basis as compared to more traditional approaches to project delivery.

5. ENVIRONMENTAL AND OTHER STUDIES.
The purpose of this planning level phase is to advance the CRCP to a Notice of Intent. The work activities are summarized below:
   - Project Intergovernmental Coordination Plan

- Coordinate with Innovative Partnership Program
- Preliminary Traffic and Tolling Analysis
- Communication and Outreach Strategy in Preparation for the Notice of Intent and Public Scoping
- Conceptual Engineering and Environmental Analysis (at a planning level)
- Analyze Preliminary Tolling Options
- Prepare Conceptual Financial Analyses
- Analyze Federal and State Administrative and Statutory Requirements and Procedures
- Cost Estimating Validation Process

6. FUNDING PLAN. ODOT has dedicated $3.9M ($3.5M federal earmark, $400K state funds) and WSDOT has dedicated $3M (federal earmark) for the Project. These funds will be used to advance the project into the EIS phase. The Project Team will coordinate federal funding strategies for the project through the EIS. Finally, a financial operations plan will be developed as additional funds are made available to the CRCP.

7. FUTURE REVISIONS TO THE MOU. It is understood that mutually agreed upon changes may occur to this MOU. The MOU will be updated as needed.

8. PUBLIC PRIVATE PARTNERSHIP. This MOU is not an agreement, pursuant to OAR 731-070-0050(5), allowing ODOT to consider unsolicited proposals for a public private partnership under ORS 367.800 to 367.826.

The undersigned hereby acknowledges, agrees, and accepts the provisions as set forth in this MEMORANDUM OF UNDERSTANDING.

Bruce Warner, Director, Oregon Department of Transportation

Douglas MacDonald, Washington State Secretary of Transportation

Draft 09-29-04