Economic Vitality

Freight Systems

Freight system investments are intended to generate overall economic prosperity and wealth to citizens in the state. They are focused on focused on improving the performance of the freight system for the users and customers of the system. These improvements are necessary to support Washington's role as a global gateway, our own state's manufacturers and agricultural growers, and the state's retail and wholesale distribution system.

Washington State's strategic investment plan in the freight transportation system is supported by the Washington Transportation Plan Freight Report, which was presented to decision-makers in 2005 and 2006. It is organized in three chapters that explain Washington's role as a gateway state, how freight transport supports Washington's regional economies, and the role of the local distribution system.

The report analyzes original research and existent information about Washington State freight customers, to inform decision-makers:

- Who are the customers of the state's freight system
- Why freight customers matter in terms of jobs and contribution to Gross State Revenues
- What performance the customers expect from the freight system
- Where key performance gaps are located
- How decision-makers may make the most productive strategic investments in Washington State's freight system.

The report provides context for the system's assessment by featuring more than a dozen case studies of Washington State freight carriers, producers and distributors. It defines terms to create a common vocabulary, and summarizes data from state and federal freight studies relevant to Washington.

Overview of Washington State's Freight System

The three components of Washington State's freight system:

- **Global Gateways** – International and National Trade Flows Through Washington
- **Made in Washington** – Regional Economies Rely on the Freight System
- **Delivering Goods to You** – The Retail and Wholesale Distribution System

underpin our national and state economies, support national defense, directly sustain hundreds of thousands of jobs, and distribute the necessities of life to every resident of the state everyday.

First, Washington is a gateway state, connecting Asian trade flows to the U.S. economy, Alaska to the Lower 48, and Canada to the U.S. West Coast. About 70 percent of international goods entering Washington gateways continue on to the larger U.S. market. Thirty percent become part of Washington's manufactured output or are distributed in our retail system.

Second, our own state's manufacturers and farmers rely on the freight system to ship Washington-made products to local customers, to the big U.S. markets in California and on the East Coast, and worldwide. Washington's producers generate wealth and jobs in every region in the state.

Finally, Washington's distribution system is a fundamental local utility, since without it our citizens would have nothing to eat, nothing to wear, nothing to read, no spare parts, no fuel for their cars and no heat for their homes. In other words, the economy of the region would no longer function.

The value and volume of goods moving in these freight systems is huge and growing.

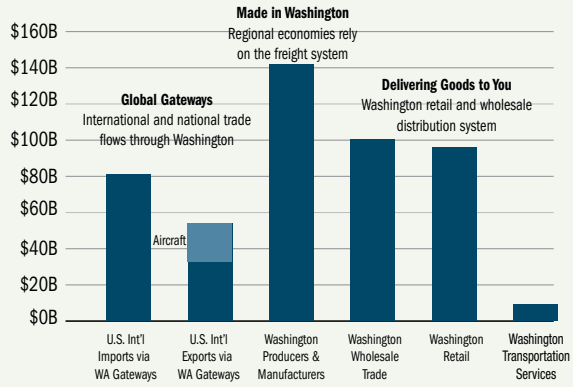
What are the findings?

Globalization, competitive industry trends, and new technologies are pushing freight volumes up twice as fast as Washington's overall population and traffic growth. Without strategic investment by the

public sector, our natural population growth, intensified by these three trends, will choke international trade flows through the state, undermine regional economies, and spill over into competition for road capacity in congested metro centers. With strategic investment, Washington will continue to compete.

While Washington State's population grew from 4.1 million to 6.1 million from 1980 to 2003 (the 45 percent increase includes substantial in-migration), and is projected to grow to 8.5 million (a 34 percent increase) by 2030, growth in the freight system is increasing at a much higher rate.[1] Truck trips increased by 94 percent on the Interstate 5 corridor, and by 72 percent on the Interstate 90 corridor, in the ten years between 1993 and 2003.[2] From 1998 to 2020, freight volumes in Washington State are expected to increase by 80 percent.[3]

Washington State Value of Freight Shipments, 2005
in billions of dollars



Trade through Washington
by volume

[1] *Washington State Office of Financial Management*
[2] *Washington State University, Strategic Freight Transportation Analysis*
[3] *U.S. Department of Transportation*

Global Gateways – International and National Trade Flows Through Washington

» Washington State is an important and growing gateway for trade access to the Pacific Rim, Canada and U.S.

The state's global gateways freight system serves the national economy and national defense.

It also provides competitive advantage for logistics and trade, manufacturing, agribusiness and timber/wood products sectors.

Globalization, in particular the emergence of China and Asia as an important part of the factory floor for the United States, will double the volume of imported container freight entering the Ports of Seattle and Tacoma by 2025.[4] Midwest and East Coast consumers, at the far end of the Asia-to-United States supply chain, purchased about three-fourths of the international goods entering Washington ports in 2005. Most of these goods are shipped to the Midwest in containers via rail.

Washington's exporter and importer distribution facilities are concentrated in the Kent and Auburn Valley. They have no practical alternative to the state's most heavily used north-south freight routes:

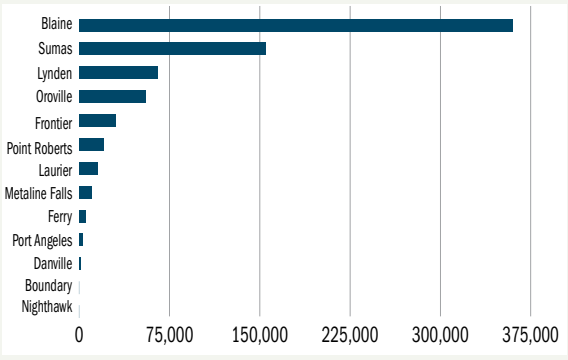
» Interstate 5
» Interstate 405-Highway 167
» Highway 99-Alaskan Way Viaduct
» Highway 509

Delay costs everyone. Consumer goods cost more. Shippers turn fewer shipments to the ports. Manufacturers have shorter windows to ship air cargo. Worst of all, it takes more trucks to ship the same volume, as each truck gets fewer trips per day.

Global security needs and our national defense depends on the United States' ability to rapidly project force when needed. Fort Lewis is the only Power Projection Platform on the West Coast. In the event of a major conflict, essential equipment and supplies will rush to Fort Lewis from all over the United States by rail and road, then ship through the Ports of Tacoma, Olympia and Seattle to support the troops. The military traffic will attempt to surge through highway freight systems that have already reached their capacity limits on Interstate 5 in Central Puget Sound.[5]

Central Puget Sound Container Port to Regional Distribution Center

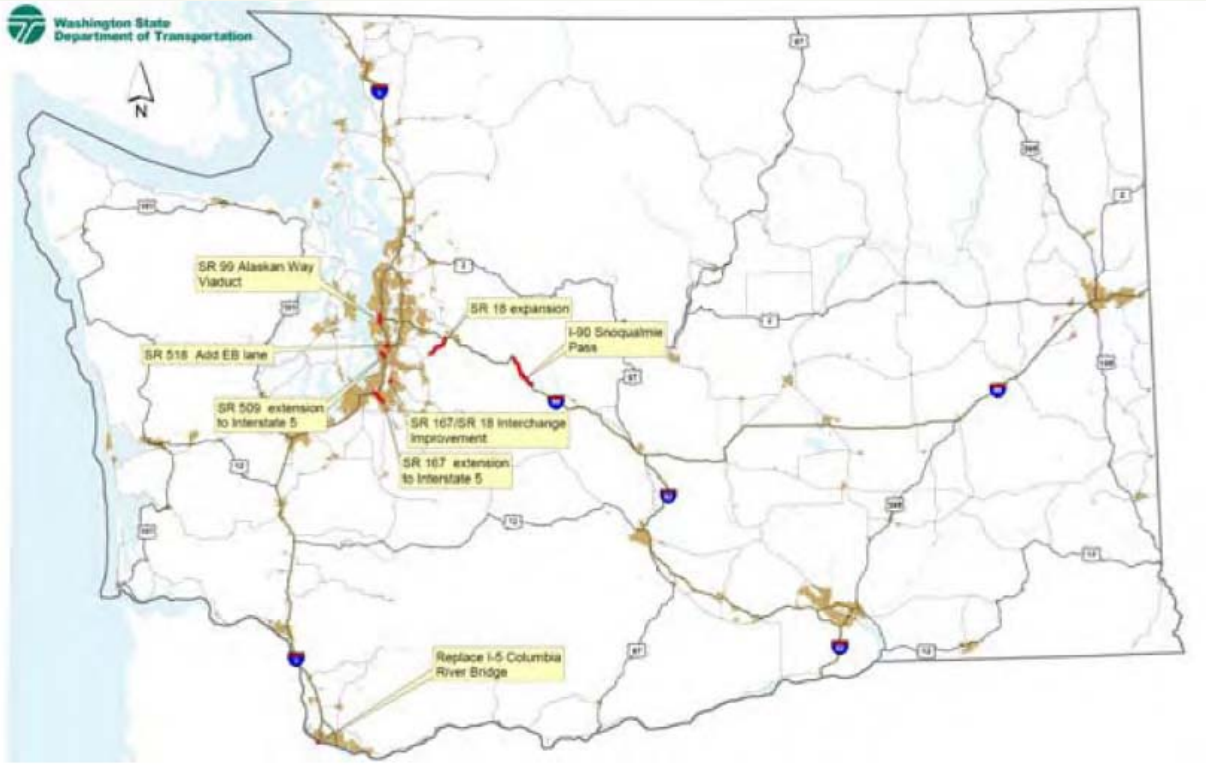
Trucks Entering Washington State from Canada
Total in 2005



[4] *BST Associates. 2004 Marine Cargo Forecast*

[5] *Surface Deployment and Distribution Command – Transportation Engineering Agency*

Deficiencies and Failing Structures on the Core Freight System Grid



Washington's own largest waterborne export is food, mostly grain. Eighty-five percent of eastern Washington wheat is shipped to Asia via Columbia River ports, but farmers struggle to get product through the state's freight system.[6] For example, growers can't get produce off the farm up to two months a year due to weight-restrictions on county roads.

By far, Washington's largest waterborne import is crude oil from Alaska, shipped to the state's refineries.[7] Refined product: gas, diesel and jet fuel, then moves by pipeline or barge to distribution centers and is trucked to gas stations. The Olympic Pipe Line, currently operating at close to 100 percent capacity, has no plans to add pipeline capacity in the state.[8]

Cross-border truck volumes have nearly doubled at western Washington crossings over the past 11 years.[9] This growth has strained border crossing facilities and enforcement agencies processes, resulting in queues of trucks north and southbound.

Needs

The following are representative needs for the Global Gateways Highway Freight System:

- There are deficiencies on the core freight system grid in Central Puget Sound:
  - Congestion on the I-5 corridor from Everett to Olympia
  - Missing highway links and failing structures such as Highway 509 and Highway 167, and the Alaskan Way Viaduct
  - Failing structures

[6] *Washington Wheat Commission*
[7] *U.S. Army Corps of Engineers*
[8] *Energy Information Administration*

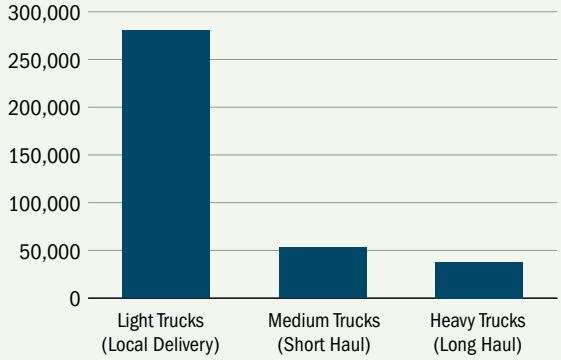
[9] *Whatcom Council of Governments*

- The I-5 Columbia River Bridge is at capacity and needs to be replaced
- I-90 Snoqualmie Pass improvements to prevent severe weather closures
- A local truck route program is needed to connect ports to the core freight system grid
- Washington-Canadian border delays, congestion and security issues
- Ground access for air cargo: SR 518
- Grade separations at high-impact locations
- Operational improvements: complete statewide Weigh-In-Motion system, communications/ITS, truck rest stops

Made in Washington – Regional Economies Rely on the Freight System

Our state's regions have built strong and distinct economies based on industry and agriculture.

Most Commercial Trucks Licensed in Washington State Are Light



Regional manufacturing, agriculture, construction, and forestry depend on an effective and efficient freight transportation system.

Over 519,000 jobs in regional manufacturing, agriculture, construction and forestry depend on Washington's freight system, and accounted for

Washington State Regional Economies

$145.7 billion, or 36 percent of all state gross business revenues in 2005.[10] Transportation is especially important for Washington agriculture because the state produces about three times as much food – and for some commodities up to 20 times as much on a tonnage basis – as it consumes, and it is separated by long distances from the majority of the nation's consumers.[11] More efficient freight systems will help Washington manufacturers compete in the larger West Coast market.

Competitive pressure to cut inventories from every step in the manufacturing process is reshaping industrial supply chains, and causing more frequent freight shipments. The Boeing Company, employing 65,000 in Central Puget Sound, is Washington's largest manufacturer with $22.7 billion in airplane revenues in 2005. Boeing's dependence on the state's freight system will become even greater as it sets new levels of efficiency in the manufacture of the new 787 Dreamliner. Although Boeing has historically made planes from up to a million smaller pieces and shipped them by truck, train and boat, its new strategy to gain efficiency is based on major component assembly. Fewer parts, with more frequent deliveries, will support their just-in-time inventory reduction strategy.

Cost-cutting inventory reduction strategies are also underway at thousands of other mid-market manufacturers and producers around the state. For example, the Vancouver Frito-Lay plant receives up to 50 truckloads of fresh potatoes each week from growers in the Columbia Basin. The plant keeps just enough potatoes on hand for one eight-hour shift; if the potatoes do not arrive on time, the plant cannot run. WaferTech's one-million-square-foot semiconductor foundry in East Clark County can't function without fast and reliable air cargo; if a tool is delayed overnight in the supply chain from Taiwan, the plant will shut down and idle 1,000 employees. Farmers ship vegetable produce over 200 miles from Prosser to Costco in Central Puget Sound, and are required to deliver within 15 minutes of their scheduled appointment.

These competitive trends are repeated in thousands of manufacturing plants, construction sites, agricultural growers and processors, and distributors facilities in Spokane, Bellingham, TriCities and across the state – driving logistics practices toward perfect flow that puts more trucks on the road, more frequently, with ever-shorter delivery windows.

Spokane regional manufacturers and health care system practitioners, and Eastern Washington agricultural growers and processors, all cite severe winter weather closures on Interstate 90 at Snoqualmie Pass as Eastern Washington's top freight priority. They ship to customers in Central Puget Sound, so fixing delays on Interstate 5 from Everett to Olympia comes in a close second.

Northwest and Southwest Washington manufacturers and trucking firms are also shipping to the Central Puget Sound region, so they put fixing the Interstate 5 corridor at the top of the list.

The Columbia Basin/North Central Washington agricultural center leads the nation in apple and potato production. Apples and potatoes must be shipped in refrigerated truck or rail cars; 90 percent are trucked to market. Continued refrigerated truck shortages are likely due to seasonal peak demand and an ongoing pull from other U.S. regions for refrigerated capacity.

Needs

The following are representative needs for the Made in Washington Highway Freight System:

- There are deficiencies on the core freight system grid in Central Puget Sound:
  - Congestion on the I-5 corridor from Everett to Olympia
  - Missing highway links and failing structures such as Highway 509 and Highway 167, and the Alaskan Way Viaduct
  - Failing structures
- The I-5 Columbia River Bridge is at capacity and needs to be replaced
- I-90 Snoqualmie Pass improvements to prevent severe weather closures

[10] *Washington State Office of Financial Management and Washington State Department of Revenue*
[11] *Washington State University, Strategic Freight Transportation Analysis*

- Washington – Canadian border delays, congestion and security issues
- Ground access for air cargo: SR 518
- Operational improvements: complete statewide Weigh-In-Motion system, communications/ITS, truck rest stops
- Local roads are closed or weight restricted to heavy trucks for up to two months a year during spring thaw.
- A local truck route program is needed to connect industry to the interstate and the state highway system.
- A solution is needed for refrigerated truck and railcar shortages.

Delivering Goods to You – The Retail and Wholesale Distribution System

Distribution is a critical component of the freight system, as it produces up to 80 percent of all truck trips in metropolitan areas, and serves the retail, wholesale and business services sectors.[12] Over 732,000 jobs are involved in the distribution system; accounting for $221 billion in 2005 gross business revenues, equal to 71 percent of total state revenues.[13] An enormous variety of goods are handled on this system; food and groceries, fuel, pharmaceuticals and medical supplies, retail stock, office supplies and documents, trash and garbage, construction materials and equipment.

Washington State's modern service economy depends on speed of delivery through the freight system. Distribution companies must provide fast and ubiquitous service that is reliable under all conditions. FedEx and UPS drivers do not go home until every package is delivered. Hospital patients cannot wait for drug deliveries. Washington's modern service economy depends on speed of delivery through the freight system. These companies rely on Interstate 90 and the core freight system grid to reach population centers; and

The most common method of distributing goods is by truck from large Distribution Centers (DCs) to stores and businesses. When those trucks run into congestion, companies compensate for delays by sending more trucks out on the road, causing even more congestion. Land use costs are also causing higher truck volumes. For example, in response to increased consumer demand for a wider variety of food products, grocers are increasing overall store size and shelf space. But back-storage space doesn't generate sales, so modern grocery stores are reducing expensive, non-productive storage space. This requires more frequent deliveries in smaller quantities; one Seattle specialty grocery store, for example, receives 375 truck deliveries per week.[14]

New technologies enable companies to track more and more trucks, balance their inventories and capital usage, while managing very tight delivery windows. For example, UPS and FedEx's high-tech logistics services allow companies to track inventory on the Internet no matter which warehouse, truck, or other location holds their products. By implication, the greatest increase in overall truck volumes will be seen in many more, smaller trucks on the roads.

Tremendous population and employment growth in Washington State will increase the need for distribution services. The state's 2005 population of over 6 million will grow to 7.8 million by 2020, and to 8.6 million by 2030.[15] Employment is projected to grow from 3.1 million in 2005 to almost 3.8 million by 2020, and to over 4.1 million by 2030.[16] Growing urban areas need daily delivery of consumer goods; most are coming from the state's major distribution hubs in Central Puget Sound. In order to achieve population and employment growth, the freight system must be able to provide delivery of consumer goods to residents everyday

Needs

The following are representative needs for the Delivering Goods to You Highway Freight System:

- There are deficiencies on the core freight system grid in Central Puget Sound:

[12] *Cambridge Systematics, with TranSystems Corporation, Heffron Transportation, and the University of Washington*
[13] *Washington State Office of Financial Management and Washington State Department of Revenue*
[14] *Heffron Transportation, Inc.*
[15] *Office of Financial Management (OFM)*
[16] *Office of Financial Management (OFM)*

  - Congestion on the I-5 corridor from Everett to Olympia
  - Missing highway links and failing structures such as Highway 509 and Highway 167, and the Alaskan Way Viaduct
  - Failing structures

- The I-5 Columbia River Bridge is at capacity and needs to be replaced
- I-90 Snoqualmie Pass improvements to prevent severe weather closures
- A local truck route program is needed to connect distributors and urban areas to the interstate and the state highway system
- Construction planning on truck routes
- Operational improvements and active management of the system to ensure that high-value, time-critical deliveries must move quickly through the freight distribution system

Performance Measurement

Transportation agencies throughout the United States are just beginning to think about how to create freight performance measures, and how to collect the data needed to tell them whether their improvement efforts are succeeding or not. The purpose of freight performance measures is to help us know whether public investments and strategies deliver the level of performance desired by the state's freight customers. WSDOT's Freight Systems Division is developing freight performance measures that matter to customers: manufacturing, agribusiness, construction, timber/wood products, wholesale and retail distribution sectors, and trucking, rail, barge, air cargo, freight integrators and logistics sectors. Examples of Washington State freight system performance measures may include:

1. **Goal:** Reliability of truck deliveries is highly valued by retailers, wholesalers, manufacturers, construction companies, and trucking companies as it reduces the need to hold expensive buffer stock (inventory) and enables efficient labor planning. Unreliability on the road system is the biggest cost driver in the delivery system. Improved reliability of the freight system would improve our state industries' comparative advantage and lower the price of consumer goods for Washington's citizens.

   Problem Statement: About 80 percent of all truck trips occur in metro centers, where highway and road congestion cause increased system unreliability.

   M**easure:** Reliability of the urban freight system is created by reducing variance around the mean for truck deliveries from origin to destination. WSDOT is developing a data framework to track variance in the urban truck delivery system.

2. **Goal:** Washington State agribusiness, manufacturers and timber/wood products companies need to be able to ship their products to customers everyday of the year. Removing persistent barriers to the freight system will enable our state's agribusiness and manufacturing sectors to become more reliable vendors to global and regional buyers.

   Problem Statement: Snoqualmie Pass on I-90 is often closed during severe weather, and county roads are weight-restricted up to four weeks a year to large trucks during seasonal spring-thaw conditions. These two freight system barriers intermittently block Washington's farmers and manufacturers access to their customers. About 28 percent of goods shipped over Snoqualmie Pass are agricultural products and 19 percent are manufactured goods. Weight-restricted county roads in eastern Washington are used by most regional agribusiness, wood and mining producers; northwest Washington also weight restricts roads to manufacturers and agribusiness.

   Measure: The number and percentage of total acres of agricultural production and industrial-zoned land in Washington State that have road access to their markets, 365 days per year.

3. **Goal:** Increasing the efficiency of Washington State's freight system will lower in-state freight transportation costs and improve our state's manufacturing and agribusiness sectors' comparative advantage over like sectors in other regions.

Problem Statement: Freight-dependent industries spend a high percentage of total production costs on transportation and these costs add little value for buyers. Agribusiness is particularly sensitive to transportation costs as Washington is far from major population centers, and transportation costs can be the differentiating factor for buyers.

Measure: The Freight Systems Division conducted a statistically-valid survey of manufacturers, agribusiness, timber/wood products and wholesale companies in seven regions in Washington State in 2004 and in 2007 to measure their total transportation costs as a percentage of Costs of Goods Sold (COG) and total logistics costs as a percentage of COG.

The Freight Systems Division is also considering performance measures and associated data collection proposals to gauge progress towards:

- Making major cargo airports attractive for truck deliveries and pick ups
- Improving truck access and flow on highway networks in the state's metro centers
- Improving truck efficiencies between national mega-regions such as Vancouver B.C./ Bellingham, Seattle/Bellevue/Tacoma, Portland/ Vancouver WA, San Francisco/Oakland, and L.A./ Long Beach.

WTP Freight Report: Truck Impedance Survey, 2005

submitted by Washington Trucking Associations