



Washington State Transportation
Commission

Statewide Rail Capacity and System Needs Study
Task 1.2.B – Profiles of Freight Rail Users in Washington State

Technical

Memorandum

prepared for

Washington State Transportation Commission

by

Cambridge Systematics, Inc.

with

Global Insight, Inc.

Technical Memorandum

Statewide Rail Capacity and System Needs Study

Task 1.2.B – Profiles of Freight Rail Users in Washington State

prepared for

Washington State Transportation Commission

prepared by

Cambridge Systematics, Inc.
555 12th Street, Suite 1600
Oakland, CA, 94607

May 2006

Table of Contents

Task 1.2.B – Profiles of Freight Rail Users in Washington State	1
Summary	1
Objective	1
Methodology	2
Freight-Rail and the Washington State Economy	2
Importance of Freight-Rail to the Washington State Economy	2
Underlying Trends that Affect Rail and Transportation Demand in Washington	5
Rail-Intensive Industries.....	9
Trade and Distribution.....	9
Agriculture and Food	14
Lumber, Wood, and Paper.....	18
Conclusions	20

List of Tables

1.	Pacific Ports Ranked by TEUs Handled	12
2.	Pacific Ports Ranked by Total Number of Vehicles Handled	13
3.	Market Value of Crops Sold.....	15
4.	Jobs in Lumber, Wood, and Paper Industries	18

List of Figures

1.	Washington’s Economic Structure Compared to the Nation’s.....	3
2.	Washington Economy is Shifting to Service Sectors	4
3.	Washington Expected to Add 2.3 Million People Over Next 25 Years.....	6
4.	Washington’s Population Will Continue to Grow Faster than the Nation’s	6
5.	Washington’s Population Density is Quickly Approaching the United States Average	7
6.	Employment Resuming Fast Growth	8
7.	Real Income Levels in Washington Will Continue to Rise	9
8.	Washington Exports – Value and Share of U.S. Total	10
9.	Washington’s Share of TEUs and Autos Handled by U.S. Ports.....	13
10.	Washington Wheat Production	16
11.	Washington Apple Production.....	16
12.	Washington Timber Production.....	19

Task 1.2.B – Profiles of Freight Rail Users in Washington State

■ Summary

The discussion in Technical Memorandum 1.1.A focused on the *providers* of freight rail services in Washington State. In this chapter, attention is turned to the *users* of freight rail services. This chapter begins with some macroeconomic trends that drive the demand for freight transportation in Washington. These include population, employment, and income. This is followed by a detailed look at three industries which depend on a strong freight rail system:

1. Trade and Distribution;
2. Agriculture and Food; and
3. Lumber, Wood, and Paper.

■ Objective

The objective of this technical memorandum is to describe the roles, benefits, and costs of the freight-rail system for the Washington State, regional, and national economies. It identifies the industries that depend on freight rail transportation and provides a profile of those industries, describing their contribution to the Washington State economy in terms of their output value, employment, and potential for future growth. This technical memorandum describes how these industries use rail transportation and the threats or opportunities they face if freight rail infrastructure and services deteriorate or improve. It documents the market share of transportation services by mode and industry sector, including actual volumes of traffic by tonnage and value. Finally, it summarizes the transportation, social, economic, environmental impacts of the rail system, looking broadly at which communities benefit and which communities lose from current freight rail services and operations. The identification of affected communities is an important input into stakeholder outreach efforts in Task 5.

■ Methodology

Information contained in this technical memorandum was obtained from various trade industry groups and government Internet sites, and discussions with trade industry group representatives, coworkers and subconsultants familiar with the Washington State economy.

■ Freight-Rail and the Washington State Economy

The discussion in Technical Memorandum 1.1.A focused on the *providers* of freight rail services in Washington State. It told how freight railroads carried 2.4 million carloads and 99 million tons of freight over 2,523 route miles.¹ It discussed the two Class I, two Class II, and 16 Class III and switching railroads currently active in the State. In addition to supporting other industries, the memo discussed the nearly 4,000 direct jobs the rail industry provides with an annual payroll in excess of \$265 million.

In this chapter, attention is turned to the *users* of freight rail services. The shippers that depend on rail to transport their goods in the global marketplace, to stock their shelves with the latest products for Washington residents and visitors, and to haul construction materials to keep pace with the rapid population growth.

This chapter begins with some macroeconomic trends that drive the demand for freight transportation in Washington. These include population, employment, and income. This is followed by a detailed look at three industries which depend on a strong freight rail system:

1. Trade and Distribution;
2. Agriculture and Food; and
3. Lumber, Wood, and Paper.

Importance of Freight-Rail to the Washington State Economy

Rail is a key mode in a state transportation system that underpins the \$262 billion Washington economy (an economy larger than Switzerland's) and its 2.8 million jobs.²

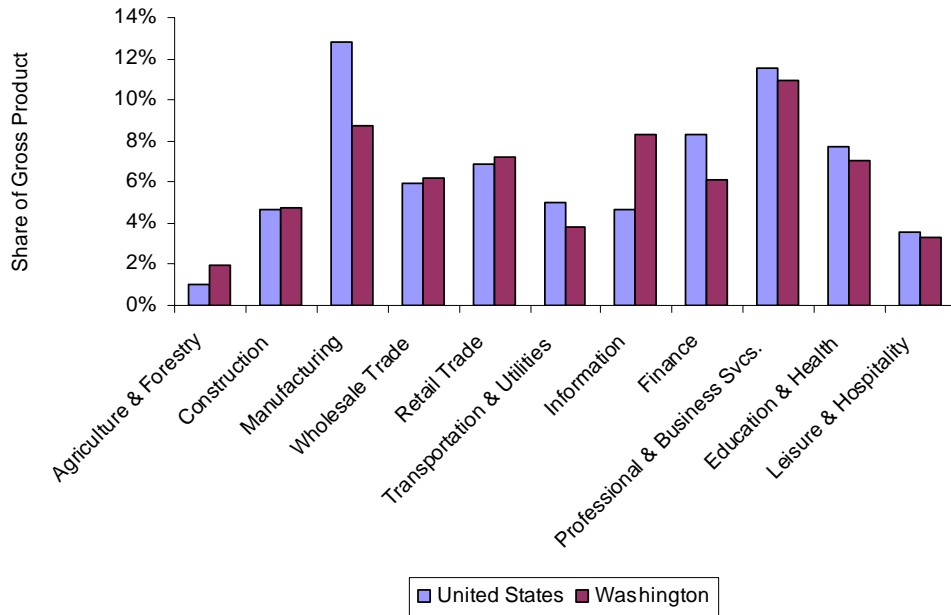
¹ Traffic, wage, and job statistics are from *Railroad Service in Washington*, Association of American Railroads, 2004.

² Economic and employment data from the U.S. Bureau of Economic Analysis.

One way rail supports the economy is through hauling stone, cement, structural steel, and other materials used by Washington’s fast-growing construction industry, an industry particularly dependent on rail. Another way is by lowering logistics costs, thus making Washington’s agricultural, timber, and paper industries more competitive throughout the country. These efficiencies also are crucial to making Washington’s major ports preferred gateways for international trade. Washington’s economy is twice as dependent on exports than the nation.

Washington’s economy is more dependent than the United States’ economy on information services, agriculture and forestry, and wholesale and retail trade. Figure 1 shows the contribution of each major sector to Washington’s gross state product (GSP). The relatively high shares in agriculture and forestry, trade, as well as in construction puts more demands on the State’s transportation system.

Figure 1. Washington’s Economic Structure Compared to the Nation’s State Has Particular Concentrations in Information, Agriculture and Forestry, and Trade

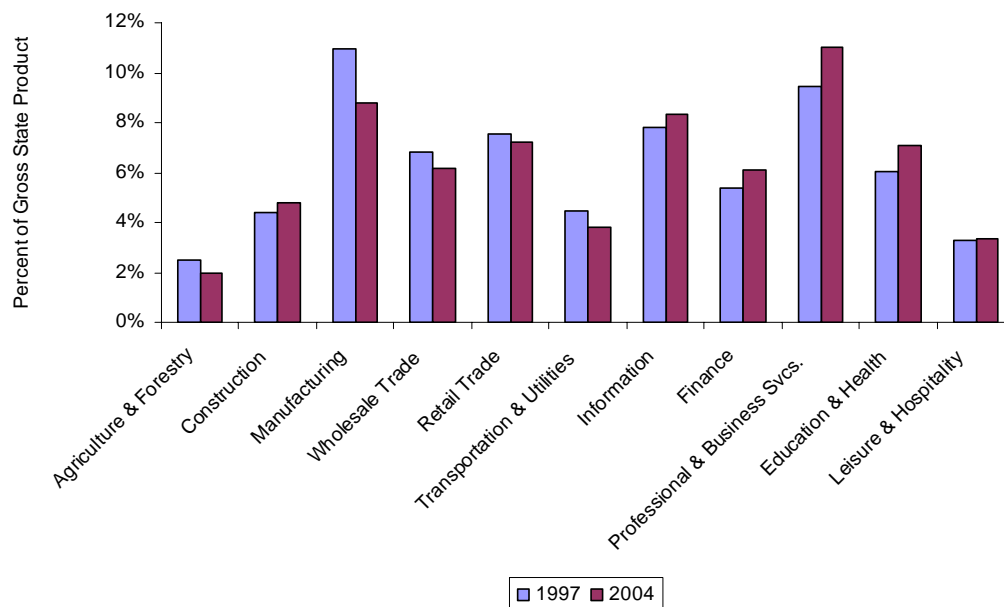


Source: Bureau of Economic Analysis.

Similar to trends nationwide, Washington’s economy is shifting from legacy industries such as agriculture, forestry, and manufacturing to services sectors. All major services sectors – information, finance, professional, and business services, education, and health – are becoming more prominent in the Washington economy (Figure 2). Service industries tend to move higher value, more time-sensitive goods. They often keep inventories low to reduce costs, but this requires a dependable supply chain. The trucking industry has historically dominated these types of shipments, but railroads have responded by offering

scheduled services and improved reliability. Containers and trailers filled with goods supporting service industries have exhibited, and continue to exhibit, the greatest growth rate in the rail industry.

Figure 2. Washington Economy Is Shifting to Service Sectors
Share of Gross State Product by Major Industry, 1997-2004



Source: Bureau of Economic Analysis.

Continued improvements to Washington’s rail system in terms of reliability, frequency of service, reduced times, and access can have tangible benefits to the state economy and its overall competitiveness. These benefits (see box) include:

- Savings in production costs;
- Reductions in inventory levels;
- The ability to expand sales by reaching more markets;
- A more competitive economy, yielding higher output and employment; and
- Access to a wider range of suppliers, promoting greater competition.

Economic Benefits of Freight Rail Improvements

The economic benefits of rail and transportation improvements include:

- For many industry sectors, rail improvements reduce the costs of producing a given level of output by reducing transportation costs. These cost savings can be used by companies to increase profit, make new investments, or expand market share.
- Since lower production costs can lead to lower product prices and increased sales, rail improvements also generate an “output effect” that grows the economy. Expanding output can stimulate increases in employment and further investment.
- Rail improvements allow businesses, such as manufacturers and construction companies, to maintain smaller inventories, resulting in cost savings, but rail service must be reliable for “just-in-time” operations to work.
- Improvements in the freight transportation system, including rail, allow businesses to draw supplies from a wider area, potentially yielding savings in material costs and improvements in quality.

Whether it is through the movement of retail merchandise, cement, or fertilizers, rail brings vital goods into and out of the State, helps to keep production costs down, and reduces truck volumes on Washington’s highway system. The importance of these and other industries to the Washington economy and the role of rail in making these industries productive is explored in greater detail in subsequent sections of this chapter.

Underlying Trends that Affect Rail and Transportation Demand in Washington

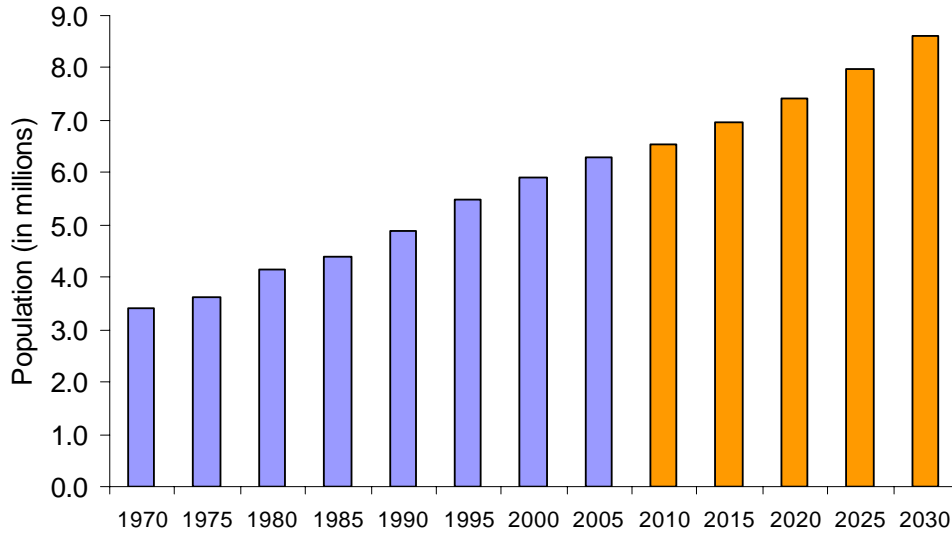
Reflective of the shifts in the nation’s economic activity and population growth from the Northeast and Midwest to the South and West, Washington ranks among the fastest growing states in the nation. The pace of the State’s population and economic growth puts pressure on all aspects of Washington’s infrastructure: its water systems, schools, healthcare facilities, natural environment, etc. In particular, the State’s transportation system, including rail, must accommodate the mobility, consumer, and logistics needs of an increasing number of residents, workers, visitors, and businesses, and do so reliably, safely, and efficiently. For these reasons, the decision-making process regarding the future of Washington’s rail infrastructure and services needs to incorporate and respond to these high-growth conditions. Washington trends regarding population, density, employment, and income are briefly described.

Population

Population growth has a direct impact on transportation demand. More people take more trips, require more services, and need more goods to sustain themselves, and Washington is adding population at a faster pace (rate) than the nation and most other states. Washington’s population reached almost 6.3 million in 2005 (Figure 3), and recently surpassed Indiana to become the 14th largest state in the country. By 2030 Washington is

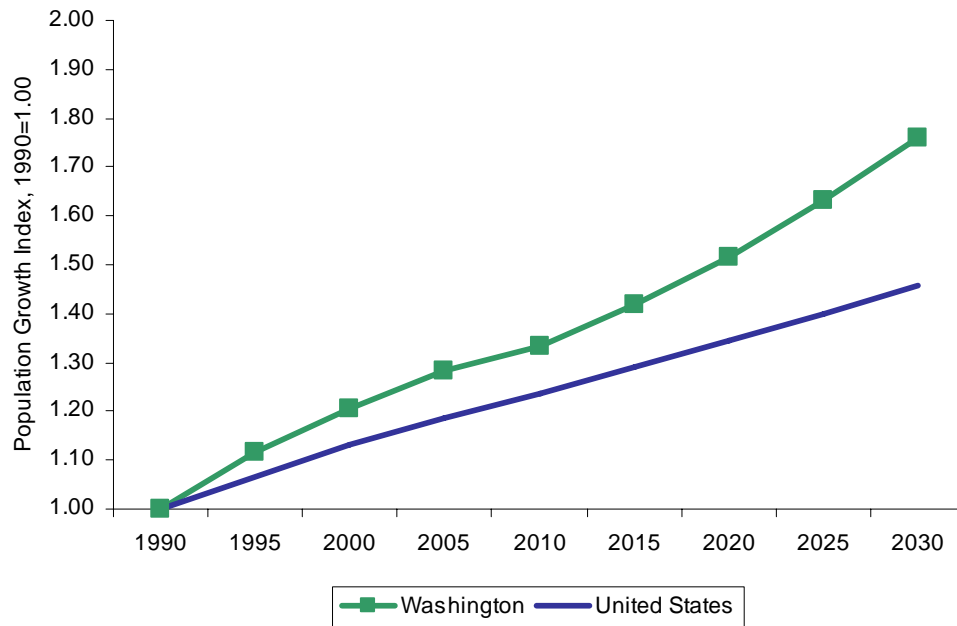
forecast to have 8.6 million people and will add more people than all but seven states during the next 25 years. To reach these levels, Washington is expected to see increases in population that are two-thirds higher than the national average (see Figure 4).

Figure 3. Washington Expected to Add 2.3 Million People Over Next 25 Years



Source: U.S. Census Bureau (Historic, 1970-2005; and Forecast, 2010-2030).

Figure 4. Washington’s Population Will Continue To Grow Faster Than the Nation’s

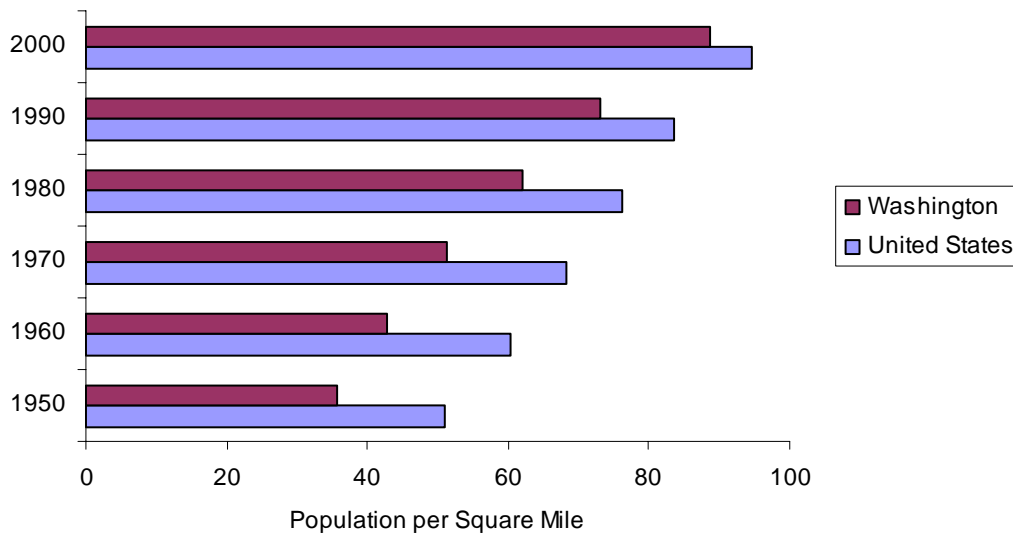


Source: U.S. Census Bureau.

Population Density

Since 1970, Washington has been growing by 750,000 to 1 million people per decade – a trend that is forecast to continue through 2030. Although Washington has a relatively large land area, absorbing a rapidly expanding population introduces complexities as the State’s buildable areas are limited by agricultural lands, water, and topography. Since 1950, the very nature of Washington has changed as a result of significant increases in population density. In 1950, Washington’s population density (36 people per square mile) was similar to that of other largely agricultural and rural states, including Maine and Oklahoma and far lower than the United States (51 people per square mile). By 2000, however, Washington’s growing population density (87 people per square mile) had made it much more akin to the industrial states of the Midwest such as Wisconsin and Missouri, and very close to the U.S. average (see Figure 5). The ramifications of Washington’s emergence as a more populous and urbanized state, combined with a restrictive topography, have heightened interest in land-use issues, congestion, and the limited availability of alignments for building new or expanded guideways (i.e., rail lines and roadways), especially along the western side of the State. By 2030, Washington is expected to be more densely populated than the United States average and will be just lower in density than present day Georgia.

Figure 5. Washington’s Population Density Is Quickly Approaching the United States Average
Population Density, 1950-2000

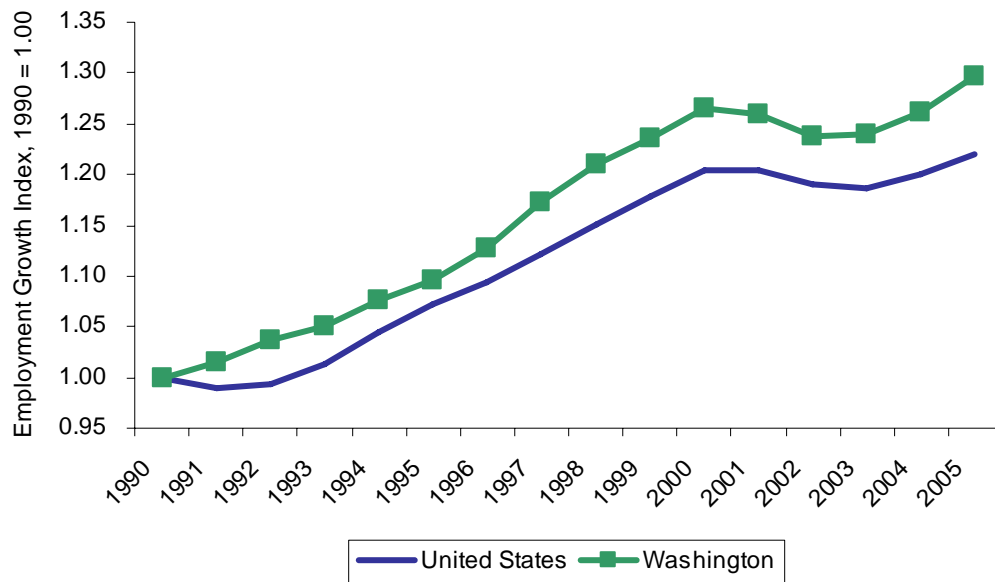


Source: U.S. Census Bureau; United States density excludes Alaska and Hawaii.

Employment

Washington’s expanding economy, cultural amenities, and natural attractions draw people from throughout the United States and the world. Since 1990, Washington has added jobs at a faster rate than the U.S. average (see Figure 6), generally gaining over 40,000 new jobs per year. Washington, like much of the rest of the country, saw employment decline during the short 2001-2002 recession. The State, however, has recovered robustly with solid job gains posted since 2003. Washington’s growing economy and job numbers, like population, translate to higher demand for a full range of goods—all possessing transportation requirements. Washington’s long-term trend for moderate-to-high job growth is not forecast to change in the future.

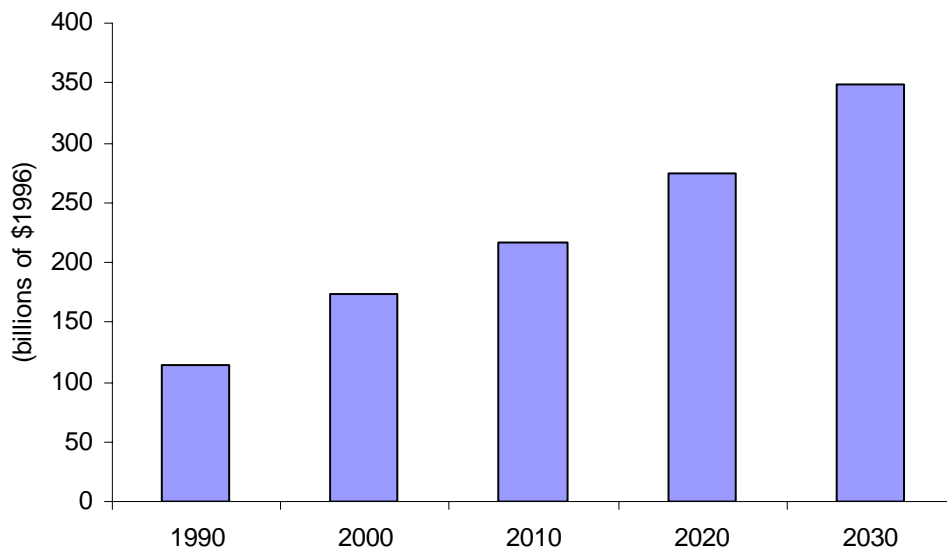
Figure 6. Employment Resuming Fast Growth
State Has Recovered from Recession Earlier This Decade



Source: Bureau of Labor Statistics.

Income

While the expansion of jobs is a valid proxy of overall economic growth, people ultimately need higher-income levels to justify increased consumption. In real terms, total income levels in Washington have historically grown quickly and are forecast to continue increasing at a fast pace (see Figure 7). Between 2000 and 2030, Washington’s total income is expected to increase by about \$175 billion (equivalent to the current total of Minnesota’s annual income). These dollars will contribute to much higher demand in Washington in coming years, increasing the need for efficient goods movement to satisfy this demand.

Figure 7. Real Income Levels in Washington Will Continue to Rise

Source: Woods & Poole, 2004.

■ Rail-Intensive Industries

Within the Washington economy, three specific industries were selected as being especially sensitive to the performance of the State's rail system. These industries are:

1. Trade and Distribution;
2. Agriculture and Food; and
3. Lumber, Paper, and Wood.

Each of these industries requires dependable, efficient rail service for inbound supplies and/or outbound products.

Trade and Distribution

Trade and Distribution Industry Profile

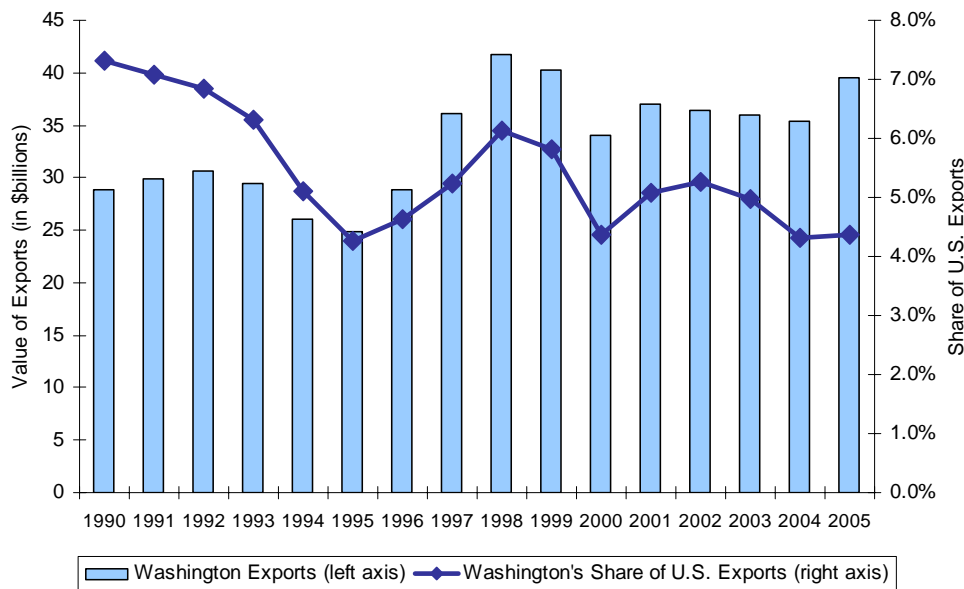
The trade and distribution industry is comprised of two key economic sectors – wholesale trade and transportation and warehousing. Together, these sectors employ over 214 thousand people in Washington, accounting for eight percent of the State's jobs. These sectors also are major contributors to the State's overall economic growth, adding nearly 18,000

jobs between 1995 and 2005. Primarily due to the very high productivity (value-added per employee) of the wholesale trade and transportation/warehousing industries, the trade and distribution sector accounts for 10 percent of Washington’s gross state product (GSP) or about \$26 billion in 2004.

Wholesale trade (maintaining inventory, sorting, and selling merchandise to retailers and manufacturers, construction, and professional contractors), will expand in tandem with the overall growth of the State’s population and economy. The growth of wholesale trade was fairly strong during the 1990s as companies increased the use of outsourcing to perform wholesale trade functions that had previously been conducted in-house. Likely due to the presence of major border crossings and international ports and airports, wholesale trade is more concentrated in Washington than the nation.

A large part of the trade and distribution industry in Washington relates to the operation of the State’s international airport and port gateways. These gateways receive goods from throughout the country for export to foreign markets and process goods imported from overseas for distribution to destinations both within Washington and nationwide. The total value of Washington’s exports has experienced slow-to-moderate growth since the early 1990s, growing from about \$29 billion in 1990 to \$40 billion in 2005 (see Figure 8). Today, Washington accounts for over four percent of the nation’s exports. The value of Washington’s exports are equivalent to about 14 percent of the State’s GSP, making exports twice as important to the State’s economy as they are for the nation (the value of total U.S. exports is equal to seven percent of the national economy).

Figure 8. Washington Exports – Value and Share of U.S. Total 1990-2005



Sources: Massachusetts Institute for Social and Economic Research (1990-2000) and World Institute for Strategic and Economic Research (2001-2005).

Rail's Role in the Washington Trade and Distribution Industry

Washington's trade and distribution industry depends on the efficient movement of goods to keep costs down and to remain competitive. While trucking is the leading mode to support the movement of merchandise to and from wholesalers as well as to retailers, rail is crucial for the long-hauls that bring goods into the State from distribution hubs such as Chicago, New York, and Los Angeles—the leading point of entry for consumer items entering the United States from Asia. Washington's wholesalers realize cost savings by using rail and weigh that against reliability concerns.

Rail service and infrastructure also are crucial for maintaining or improving the competitiveness of Washington's ports. Washington's container ports handled nearly 3.6 million 20-foot equivalent units (TEU) in 2004, accounting for 17 percent of all the containers processed by the nation's Pacific ports (see Table 1). Despite strong growth at the Port of Tacoma, Washington's ports, overall, lost ground to competing ports, notably Los Angeles-Long Beach during the 1994 to 2004 period. However, since 2001 the number of TEUs handled in the State has shown signs of recovery and Washington's ports, once again, are securing a larger share of the national TEU market (see Figure 9). On-dock or near-dock rail access is a prerequisite for container ports to compete and expand market share. The efficiency of the ship-to-rail intermodal connections (as measured by quality of service and infrastructure capacity) at Washington's ports will be a determinant in how successfully they compete against Los Angeles, Long Beach, and Oakland, as well as East Coast ports that are becoming more attractive gateways for Asian trade. The adequacy of the rail service can make the difference between a competitive container port and one that is relegated to niche status.

In addition to containers, Washington's ports also are crucial for handling trade in motor vehicles. Imported vehicles enter the United States through deep seaports located nationwide, including two in Washington (Tacoma and Vancouver), and are subsequently transported to destinations throughout the country by rail or by truck. The Port of Tacoma has experienced significant growth in motor vehicle trade, handling 183,000 vehicles in 2005, up 49 percent over 2005 (see Table 2). The Port of Vancouver has a nascent, but fast-growing vehicle operation, processing 47,000 vehicles in 2005. Growth in vehicle business at the Port of Vancouver has blossomed since the opening of specialized auto staging facilities in 1995. Vancouver is the main port of entry for Subarus entering the United States. After being unloaded, processed, and sorted, vehicles are distributed nationwide from the Port of Vancouver by rail or truck. The efficient transfer of vehicles to rail at the Port of Tacoma's auto import/export facilities is essential to the port's success in attracting and retaining the large-scale business of such auto companies as Mazda, Kia, Mitsubishi, and Suzuki.

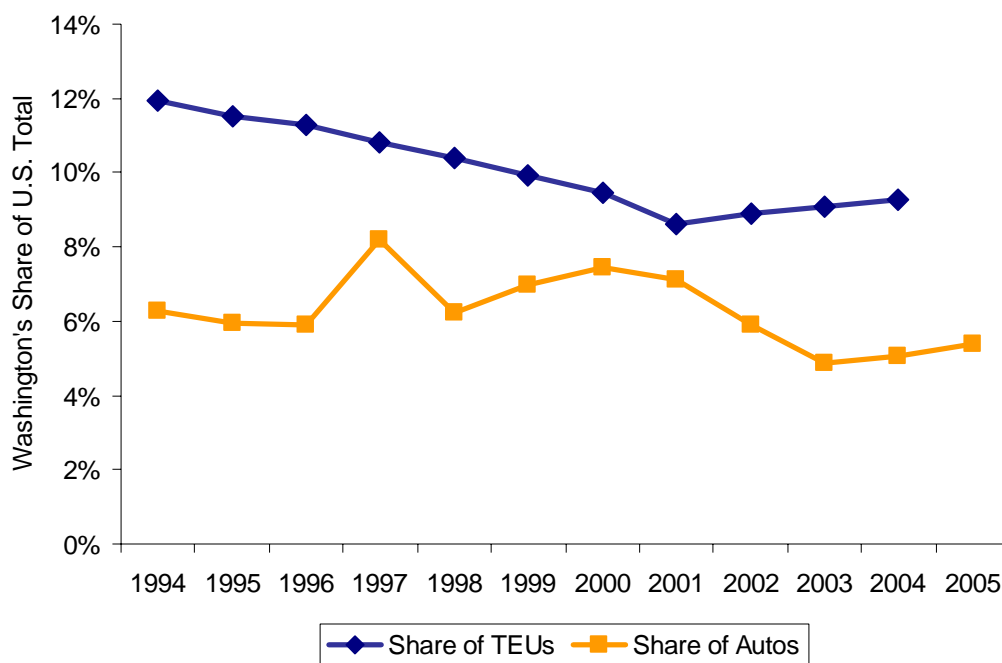
Due to the size and the growth of the market for imported vehicles, competition is fierce between ports to secure contracts with large automobile manufacturers. In recent years, Washington's ports have made small gains in market share in the auto trade after reaching a peak in 1997 (see Figure 9). The competitiveness of the market underscores the importance of making constant improvements to port efficiency to keep costs low.

**Table 1. Pacific Ports Ranked by TEUs Handled
2004**

Port	1994	2004	Percent Change
Los Angeles (California)	2,518,619	7,321,440	191%
Long Beach (California)	2,573,827	5,779,852	125%
Oakland (California)	1,491,002	2,043,122	37%
Tacoma	1,027,928	1,797,560	75%
Seattle	1,414,000	1,775,858	26%
Honolulu (Hawaii)	435,658	1,041,455	139%
Anchorage (Alaska)	333,138	543,831	63%
Portland (Oregon)	317,961	274,609	-14%
Everett	875	6,764	673%
Grays Harbor	-	-	-
Longview	2,694	-	-
Olympia	-	-	-
Vancouver	2,324	-	-
Total Washington	2,447,821	3,580,182	46%
Total U.S.	20,488,364	38,561,494	88%
Percent of U.S.	11.9%	9.3%	-

Source: American Association of Port Authorities.

**Figure 9. Washington’s Share of TEUs and Autos Handled by U.S. Ports
 1994-2005**



Source: American Association of Port Authorities.

**Table 2. Pacific Ports Ranked by Total Number of Vehicles Handled
 2005**

Port	1995	2005	Percent Change
Long Beach (California)	234,772	449,318	91%
Portland (Oregon)	233,807	353,380	51%
Los Angeles (California)	325,740	255,927	-21%
San Diego (California)	40,833	232,251	469%
Tacoma	91,127	135,900	49%
Vancouver(Washington)	19,678	46,870	138%
Seattle	39,176	-	-
Total Washington	149,981	182,770	22%
Total U.S.	2,526,436	3,385,135	34%
Percent of U.S.	5.94%	5.4%	-

Source: American Association of Port Authorities.

Washington Industry Profile – Trade and Distribution

Item	Description
NAICS Codes:	Wholesale Trade (super sector). Transportation and Warehousing (super sector).
Employment:	Wholesale trade: 1995 = 109,200; 2005 = 122,700. Transportation and Warehousing: 1995 = 87,600; 2005 = 91,500.
Contribution to GSP:	Wholesale Trade: 1997 = \$12.2B; 2004 = \$16.1B. Transportation and Warehousing: 1997 = \$7.9B; 2004 = \$9.9B.
Trend:	Moderate growth, driven by economic, population, and import/export growth.
Suppliers:	Wholesale Trade: Business and professional services, real estate, communications, wholesale trade, printing, electrical equipment, auto repair, public utilities.
Markets:	Wholesale Trade: Gas and oil, primary metals, fuel oil and coal, retail trade, autos and parts, exports, clothing, food and beverages.
Rail Impacts:	Rail helps lower costs of goods entering and leaving Washington, especially long-haul products. Rail also helps Washington's ports remain competitive for imports and exports of intermodal, automotive, and bulk goods.

Agriculture and Food

Agriculture and Food Industry Profile

Agriculture and food are two interrelated industries. “Agriculture” represents the growing of crops (e.g., wheat, apples, etc.) and the raising of livestock, while “food” represents the manufacture of the items commonly found on grocery store shelves (e.g., bread, juice, cheese, meat, soda, pasta, etc.) other than fresh produce. Both agriculture and food use rail for inbound materials as well as to transport goods to more distant markets.

Agriculture – Washington’s agriculture industry is the 11th largest in the country, producing crops and livestock valued at \$5.3 billion in 2002. While livestock sales reached some \$1.7 billion in 2002, Washington’s agriculture industry, based on value, is distinguished by its crop production (e.g., wheat, apples, pears, berries, grapes). In 2002, the value of crops grown in Washington reached \$3.6 billion, ranking the State seventh in the country (see Table 3).

Table 3. Market Value of Crops Sold
States Ranked by Total Sales, 2002

	Value (in Billions Dollars)	Share of U.S.
California	19.2	20.1%
Iowa	6.1	6.4%
Illinois	5.9	6.2%
Florida	5.0	5.3%
Minnesota	4.6	4.8%
Texas	3.7	3.9%
Washington	3.6	3.8%
Nebraska	3.4	3.6%
Indiana	3.0	3.1%
North Dakota	2.5	2.6%
United States	95.2	

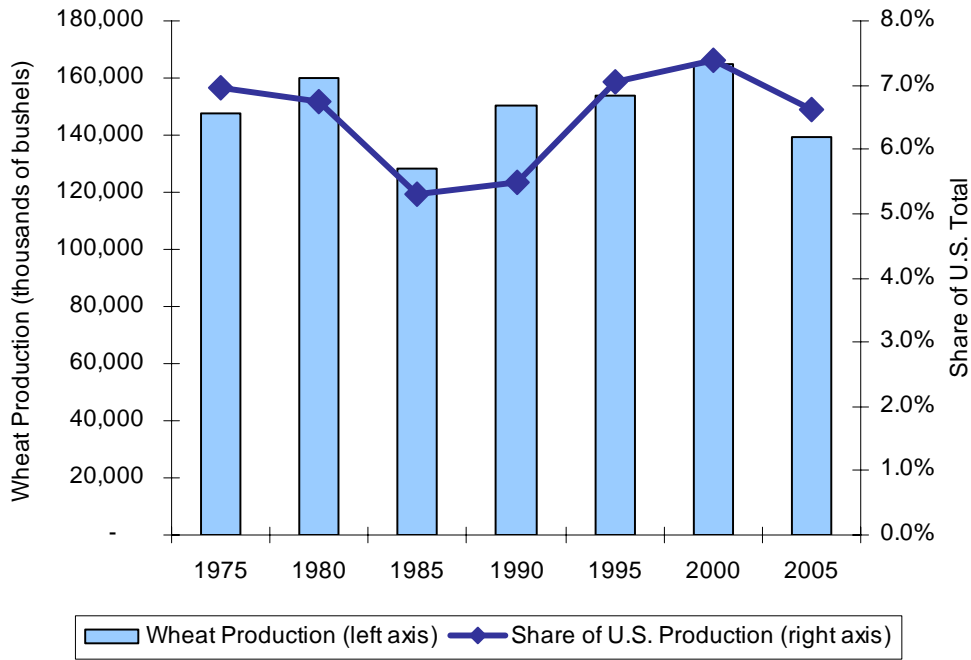
Source: 2002 Census of Agriculture, U.S. Department of Agriculture.

Washington is the fourth largest producer of wheat in the United States, trailing only Kansas, North Dakota, and Montana. Generally growing 140 to 160 million bushels per year, Washington's share of U.S. wheat production has remained more or less constant since 1975 (see Figure 10). The variance in Washington's share of national wheat production is likely due to fluctuations in growing conditions.

While Eastern Washington is one of the most productive wheat-growing areas in the United States, it competes in world grain markets with growers from Argentina, Australia, Canada, and the European Union. Pricing is market-driven and Washington farmers must be cost-competitive to secure orders and maintain profitability. Maintaining efficiency and keeping costs low is crucial to the competitiveness and profitability of Washington wheat growers. Rail plays a critical role in controlling costs by providing an inexpensive option for transporting Washington's wheat to West Coast seaports for export. Rail service to ports in Seattle, Tacoma, Longview, Kalama, Vancouver, and Portland (the largest grain exporting port on the West Coast) is vital for Eastern Washington's wheat producers.

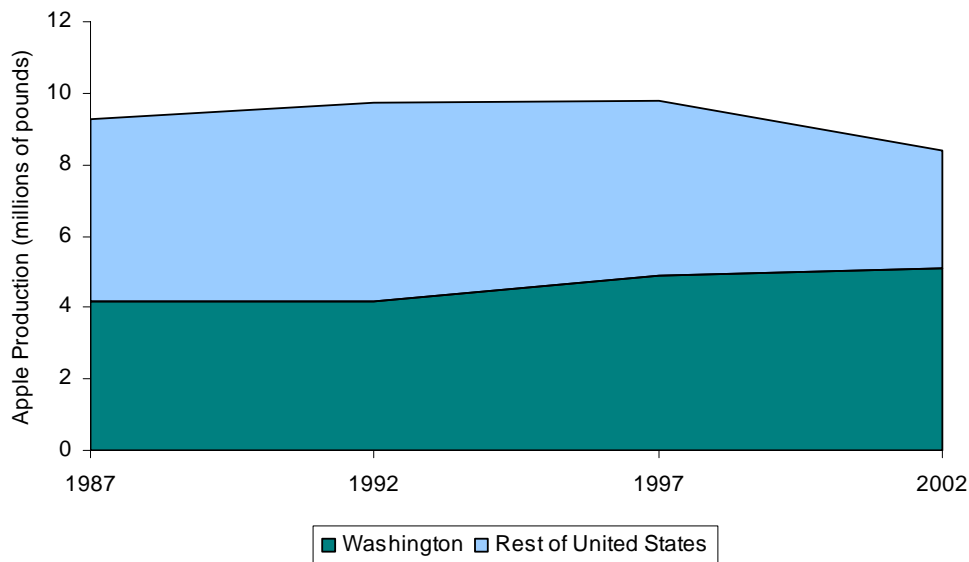
Although the State is a leader in wheat, Washington's agriculture industry is perhaps best known as the top-ranking state in apple and pear production. In 2002, the State grew 5.1 billion pounds of apples, accounting for three-fifths of the U.S. harvest. Apple production in Washington has gradually increased since 1987 (see Figure 11). Freight rail and Amtrak are used to transport Washington apples and other produce to destinations throughout the United States, particularly to the East Coast.

Figure 10. Washington Wheat Production
1975-2005



Source: U.S. Department of Agriculture.

Figure 11. Washington Apple Production
1987-2002



Source: U.S. Department of Agriculture, National Agricultural Statistics Service.

The growing public health emphasis being placed on eating fresh fruits and vegetables bodes well for Washington's agriculture. Increases in per capita fruit and vegetable consumption, further enhanced by rising personal income levels, will stimulate demand for products commonly grown in Washington such as pears, cherries, and raspberries, as well as apples.

Food Products – The value of Washington's food products output reached \$9 billion in 2002, ranking 20th among the states. In real terms, Washington's food production stayed relatively constant during the 1994 to 2002 period. Food production is an important part of the Washington economy, accounting for over 12 percent of the State's manufacturing output. Within the food industry, Washington's particular strength is in frozen food manufacturing, accounting for 7.3 percent of total U.S output.

Washington Industry Profile – Agriculture and Food

Item	Description
NAICS Codes:	Food: 311 – Food Manufacturing. Agriculture: 111 – Crop Production; 112 – Animal Production.
Employment:	Food: 1994 = 33,900; 2004 = 38,400. Agriculture: 1994 = 77,698; 2004 = 81,581.
Contribution to GSP:	Food: 1991 = \$3.2B; 2001 = \$4.8B. Agriculture: 1993 = \$2.5 billion; 2003 = \$2.6 billion.
Trend:	Food: Steady growth tied to population growth. Agriculture: Steady; products market value was \$3.8B in 1992 and \$5.3B in 2002.
Suppliers:	Food: Farms, food products, wholesale trade, paper, fabricated metals, rubber, business services, trucking, printing, glass, public utilities. Agriculture: Farms, food, real estate, agricultural services, chemicals, wholesale trade, trucking, petroleum products, public utilities, and auto repair.
Markets:	Food: Eating and drinking establishments, retail trade, food products, farms, hotels, exports, amusement, and recreation. Agriculture: Food products, farms, tobacco manufacturing, textiles, exports, wholesale and retail trade, eating and drinking establishments.
Rail Impacts:	Offers lower cost transportation service making Washington products (such as wheat and fruits) competitive against foreign imports.

Lumber, Wood, and Paper

Lumber, Wood, and Paper Industry Profile

Washington is at the center of North America's most productive forest areas, stretching from Northern California to British Columbia. The State's timber, lumber, and paper industries are economic legacies of the State and still form an important pillar of the Washington economy. In 2005, these industries accounted for 38,000 jobs in the State (see Table 4). Washington's timber harvest is the second largest in the country, trailing only Oregon. In 2002, Washington accounted for about five percent of the nation's wood products (e.g., sawmills, engineered wood, pallets, etc.) production and paper output. Among the states, Washington's wood products shipments, valued at \$4 billion in 2002, are the sixth highest in the country. The State also ranks sixth in paper production, with output valued at \$3.4 billion in 2002.

Table 4. Jobs in Lumber, Wood, and Paper Industries
1995 and 2005

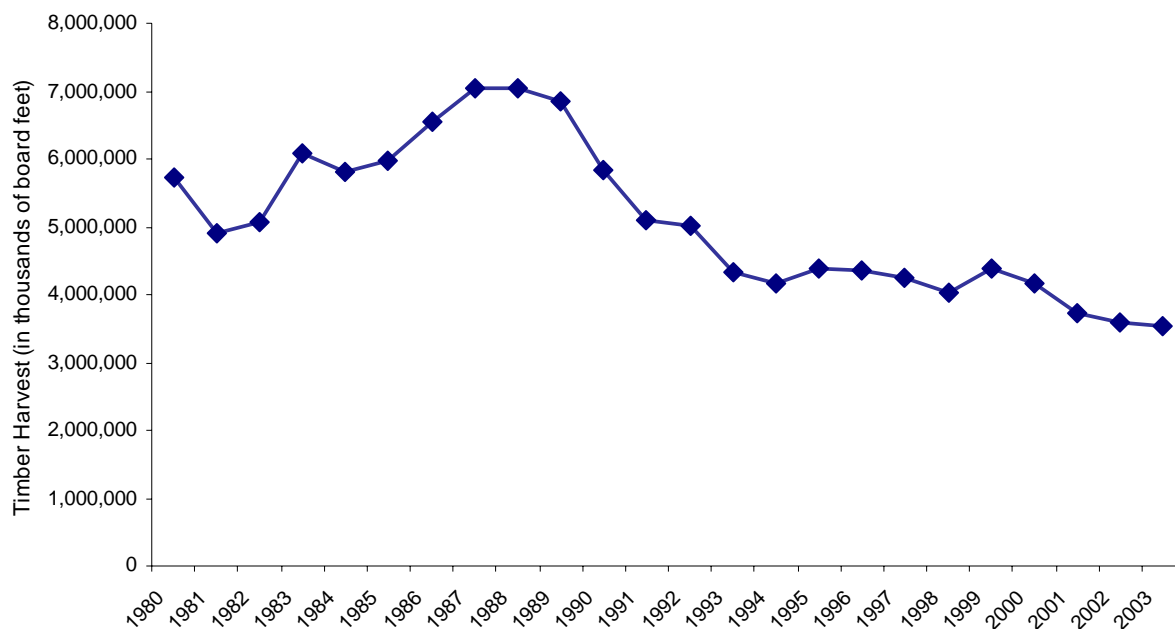
	1995	2005
Lumber	7.2	5.6
Wood Products	22.5	19.9
Paper	15.7	12.2
Industry Total	45.4	37.7
All Jobs – Washington	2,346.9	2,779.1
Industry's Share of Washington Jobs	1.9%	1.4%

Source: Bureau of Labor Statistics.

While lumber, wood, and paper remain important contributors to the Washington economy, timber production and the number of jobs in these industries have declined. In recent decades, Washington's timber production after reaching a peak of seven billion board feet annually in the late 1980s has since declined to about 3.6 billion board in 2003 according to the Washington Department of Natural Resources (see Figure 12). However, the most recent reports for 2004, not yet captured in the State's data indicate that a strong U.S. housing market and a growing economy are stimulating substantial increases in timber and lumber production in Washington and Oregon.³

³ Western Wood Products Association, *Western Lumber Production Hits 14 Year High*, August 1, 2005.

Figure 12. Washington Timber Production
 1980-2003



Source: Washington State Department of Natural Resources.

Despite the declines in the timber harvest and in industry employment levels, the overall outlook for the lumber, wood, and paper industry in Washington is mixed-to-favorable. Paper and fiber market demand is primarily based on population, so long-term demand is expected to be strong as population growth continues to increase, both in the State and throughout the country. Although conditions are generally positive and bode well for the industry in Washington, competition from surplus Canadian pulp can dampen the U.S. market at times. The poor management of forests in Southeast Asia, however, is likely to push China and Japan to source their wood and paper supplies from Latin America and South Africa, as well as from Canada. This shift will reduce competition for domestic suppliers, possibly benefiting Washington businesses.

Technological advancements in forestry and paper production have reduced supply variability, making it possible to ascertain harvest schedules, forecast supply, and anticipate market prices. These management practices are helping to sustain the industry in North America, and are now being exported worldwide so that in 20 years perhaps the entire global market will be much more stable and predictable.

Regulation also plays a role in the paper and fiber industry. Because there are many chemicals (e.g., ammonia) required to break down pulp fiber, there are numerous regulatory requirements around the usage, disposal, and storage of chemicals related to the paper industry. These regulations will continue to become more and more stringent and will contribute to limiting the creation of new mills. Instead, existing mills in Washington

(and elsewhere in the United States) are likely to be upgraded and modernized. The regulations in the long term, should contribute to keeping the industry stable in Washington.

Rail’s Role in the Washington Lumber, Wood, and Paper Industry

Washington is a primary source of lumber, wood, and paper products for much of the United States market. Rail is a key mode for shipping these products to major U.S. markets in the Midwest, East Coast, and California. In particular, rail is crucial for bringing wood products into Southern California and Texas, both growing markets and leading destinations for Pacific Northwest lumber. Due to the relative bulkiness and heavy weights of lumber, rail is the most cost-effective mode for transporting lumber and wood products, especially for long-distance trips. The use of rail helps to manage shipping costs and thus maintain the competitiveness of these industries in Washington.

Washington Industry Profile – Lumber, Wood Products, and Paper

Item	Description
NAICS:	Lumber: 111 – Forestry and Logging. Wood Products: 321 – Wood Products Manufacturing. Paper: 322 – Paper Manufacturing.
Employment:	1995 = 45,400; 2005 = 37,700.
Contribution to GSP:	1994 = \$5.1B; 2004 = \$6.5B.
Trend:	Stable; recent strong increases tied to population and housing growth.
Suppliers:	Paper, wholesale trade, chemicals, trucking, lumber, rubber, public utilities, machinery, petroleum, textiles, railroads.
Markets:	Paper, printing, construction, food, rubber, clothing, tobacco manufacturing, exports, furniture, chemicals.
Rail Impacts:	Useful in all aspects of paper and fiber manufacturing, from inbound movement of raw lumber and processing chemicals to outbound movement of finished product.

■ **Conclusions**

Washington’s economy is largely driven by population growth, the expansion of information services, aerospace, trade, agriculture, and the lumber and wood industries. The State’s economic growth, despite recent fluctuations, is expected to continue a long-term

trend above the national average into the foreseeable future. The State has strong, and in many instances, world-leading industries. However, Washington businesses must continue to strive to gain efficiencies to improve competitiveness while maintaining desirable profit margins. The State's rail network and services are a key foundation that allow the State's businesses to control costs and meet economic goals. The greatest increases in goods movement in Washington will result from consumer demand, construction, and rising levels of international trade. This will place substantial burdens on Washington's already congested roadways, creating a need for expanded and improved rail services.