



Washington Mill Survey 2012

Series Report #22

PUBLISHED FEBRUARY 2014



WASHINGTON STATE DEPARTMENT OF
Natural Resources
Peter Goldmark - Commissioner of Public Lands

Acknowledgements

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Cover photographs — **Left:** A laminated Centralia PUD utility pole on Cook's Hill Road.

DNR Photo/Dorian Smith . See article on Page 18. **Right:** This photo of Vaagen Brothers' chip pile illustrates the magnitude of chipping operations. In the last 10 years Washington's annual chip production grew from just more than 500,000 tons to 1.5 million tons. Based in Colville, Vaagen's is a family-owned business; with 140 employees, it operates the largest lumber mill in Eastern Washington.
Vaagen Brothers Photo

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Introduction

Washington's wood products industries continue to move in new directions to adapt to domestic and global market influences. Also natural wood resources are becoming scarce: for example, fewer western redcedar trees are available to make shakes and shingles or large timber poles to carry broadband and utility cables across neighborhoods.

A few years ago laminated wood telephone poles began to appear on streets and along county roads. These poles are stronger and taller than single log poles, and cheaper than steel. As the nation prepares to make long-overdue improvements to infrastructure, the telephone pole industry is re-organizing to support this need.

The history of these shifts and other industrial trends are recorded in each **Washington Mill Survey** (mill survey). Since the 1960s, the Washington Department of Natural Resources has covered wood product manufacturing and mill characteristics from data voluntarily reported by mill managers and owners throughout the state. It covers mills and log exporting operations that all originally use unprocessed logs. While pulp and plywood mills have modified their manufacturing processes and now use fewer logs, they are kept in the mill survey to maintain statistical continuity.

Mill Survey released in Chapters

In an effort to speed up delivery of 2012 data, this edition of the Mill Survey will be released in separate chapters. The first part includes statewide summaries and 10-year trend analyses. Later chapters will report greater statistical details of select sectors.

The tables include data on log volumes, mill capacities, log species, days of operation, and the uses of mill residues. The mill survey is a resource for a wide audience of industry managers, economists, public officials, and state residents.

While the survey covers nearly all businesses in the industry, some data estimates were based on statistics from previous years. Additionally, tables and categories (for industry sectors, counties or economic areas with few mills) are combined into "Other" categories to avoid disclosing companies' proprietary data.

Seven wood product sectors:

- Sawmills
- Veneer and Plywood
- Log Chipping
- Post, Pole, and Piling
- Shake and Shingle
- Log Export Operations
- Pulp

Most log measurements are in thousand board feet, the Scribner Rule — a mid-19th century scale that estimates a log's potential lumber volume. It accounts for the taper, low end diameter, and height. Due to mill efficiencies in recent decades, sawmills' net output (measured in "lumber tally") usually exceeds log input in the Scribner scale.

Washington's tree-growing heritage

In just 30 years Washington's Douglas-fir trees can reach a merchantable size with a diameter of 12 to 16 inches and a height of 70 to 90 feet. A single acre of trees grown to rotation age of 60 years can yield 30,000 to 60,000 board feet, enough to build two to four average-sized homes.

The Southern U.S. has developed a successful wood industry on a different scale. In Georgia loblolly pine forests yield 3,000 to 10,000 board feet per acre.

The U.S. is the world's largest producer of softwood products. Among the states, Washington is the second largest producer with 16.2 million acres of working forest out of a total of 23 million forested acres.

Washington's forests generate nearly \$5 billion annually in sales, or 1.5 percent of the state's Gross Domestic Product (GDP). Log and lumber commodities are ranked third among Washington's exports, according to the state's Department of Commerce.

Report Summary: 2012 Washington Mill Summary

In 2012, Washington's primary wood products industry continued to veer from traditions that had sustained it for generations. The total number of mills dropped from 125 in 2010 to 105 in 2012, a decline of 16 percent. The total volume of logs consumed fell to 3.35 billion board feet from 3.7 billion board feet in 2010.

The story in 2012 wasn't just about declines. The log export market repeated its boost, tallying more than one billion board feet of logs in 2012. There were also several recent industrial adaptations. Veneer and plywood operations no longer share the same niche and future prospects. Most are now separate mills under separate ownerships as distinct enterprises pursuing separate opportunities. Overtaken by Oriented Strand Board (OSB) in the market place, plywood managers explored sanded and textured plywood, sheathing panels, siding, and overlay products. The veneer industry is now looking into hardwood veneer. It has also joined engineered wood manufacturers for some products.

Since the late 1960s the mill survey has recorded the volumes, percentages, values, averages and other statistics of surveys conducted by the Department of Natural Resources (DNR). This 2012 version will be released in separate chapters: this edition includes the 10-year analyses and the statewide totals. Upcoming publications will focus on statistics for each sector.

Below are tallies of the two major statistics (in million board feet).

Timber consumed by sector	
<i>Mill sector</i>	<i>2012</i>
Lumber	1,768
Veneer and plywood	171
Pulp*	31
Shakes and shingles	244
Exports	1010
Posts-poles-pilings	44
Chips	355

*Pulp mills also consumed 6,470,277 tons of mill residues and chips.

Original owners (sources) of logs		
<i>Owner category</i>	<i>2002</i>	<i>2012</i>
Forest Industry	2,608	1,955
Small private landowners	698	458
Native American	208	160
Federal	47	112
State	477	624
Other Public	31	11

Economic areas used in this report



Throughout the Mill Survey these economic areas are used to indicate the locations of mill operations and forests where timber is harvested. An economic area is determined by the similarity of economic activity in the forest products industry. The boundaries of an economic area are not always drawn according to natural geographic features or county lines.

Abbreviations and Conversions

Volume

A log's volume is measured in **Scribner Scale** which accounts for the narrowing width of a tree.

Lumber is measured in **lumber tally**.

A tree's **Scribner Scale volume** is usually less than its actual lumber tally. On average the conversion is 2:1 lumber tally for each board foot of Scribner logs.

Lumber

board foot (bf) = 12 inches x 12 inches x 1 inch
 mbf = 1 thousand board feet
 mmbf = 1 million board feet

Pulp (weight)

ton = 2,000 pound
 bone dry tons (bdt) = 2,200 pounds (10% water)
 1 mbf logs = 5 tons

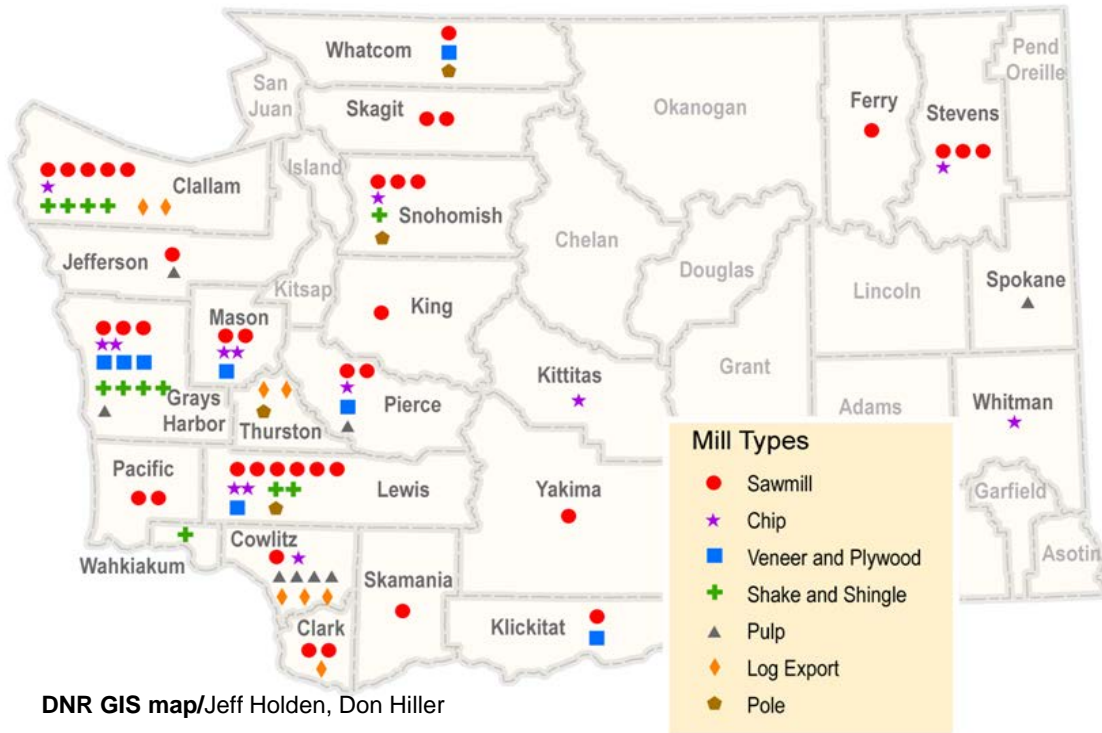
Shake & Shingle (area)

1 square = 100 square feet
 1 square = 4 bundles
 10 squares = 1 mbf

Plywood and Veneer

msf 3/8-inch basis = 1 thousand square feet 3/8-inch thick
 mmsf 3/8-inch basis = 1 million square feet 3/8-inch thick

Wood Processing Mills by County



DNR GIS map/Jeff Holden, Don Hiller

County rank by timber volume used by state mills

Counties ranked by volume from where timber was harvested before delivery to Washington mills or export in 2012 (thousand board feet, Scribner Scale).

1 Grays Harbor	361,533	17 Klickitat	45,407
2 Lewis	322,480	18 Wahkiakum	44,010
3 Clallam	265,424	19 Kitsap	33,230
4 Cowlitz	223,141	20 Skamania	30,506
5 Pacific	161,711	21 Ferry	26,407
6 Snohomish	151,256	22 Okanogan	23,938
7 Mason	141,538	23 Pend Oreille	17,672
8 Thurston	140,391	24 Spokane	15,452
9 Skagit	120,770	25 Chelan	12,323
10 Clark	107,760	26 Kittitas	6,447
11 Pierce	89,316	27 Island	4,294
12 Stevens	87,140	28 Columbia	1,948
13 Jefferson	72,851	29 Garfield	658
14 Whatcom	70,806	30 Lincoln	518
15 Yakima	52,289	31 Whitman	132
16 King	50,560		

Mill Survey Analysis

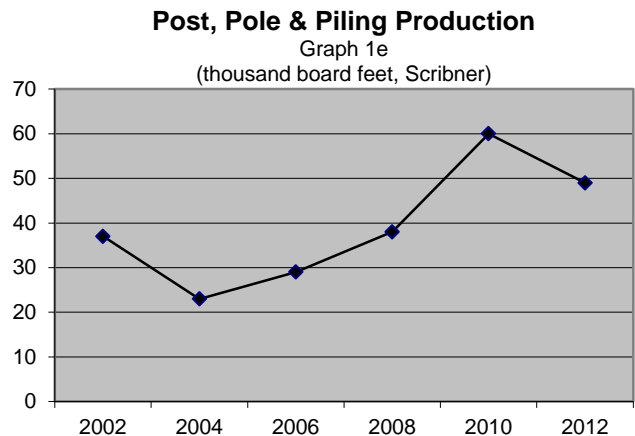
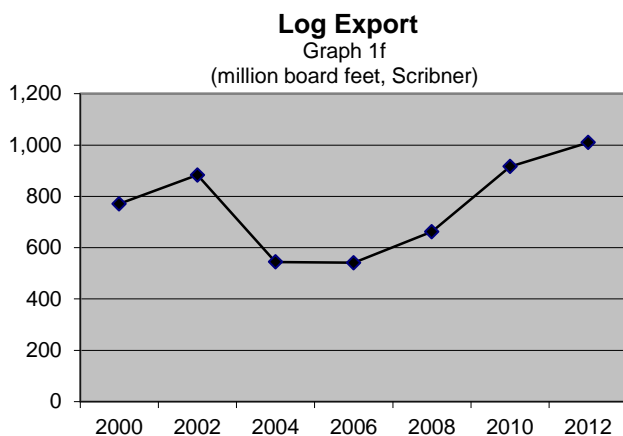
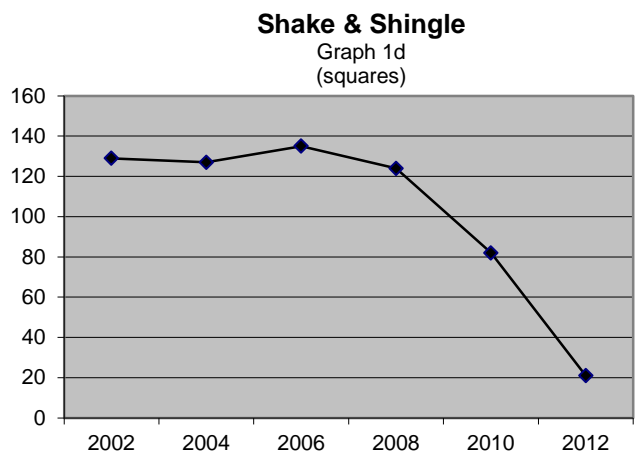
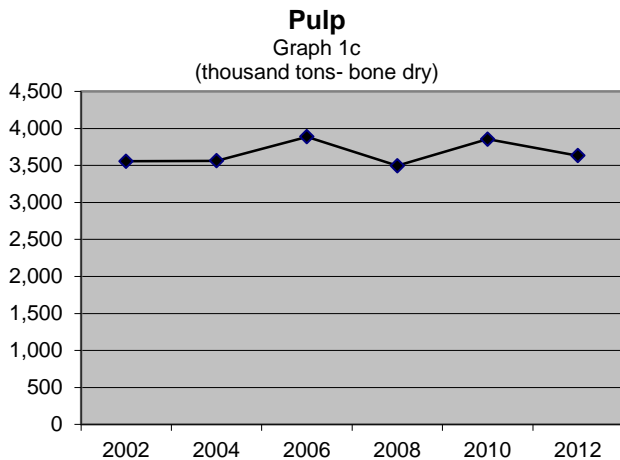
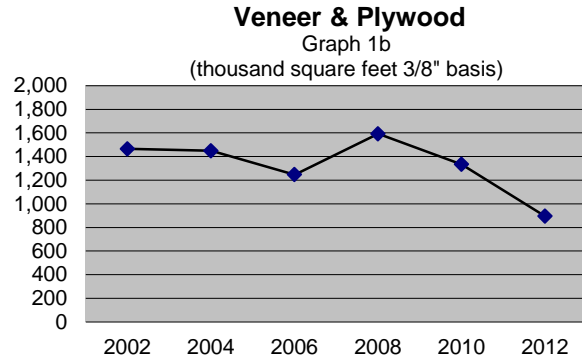
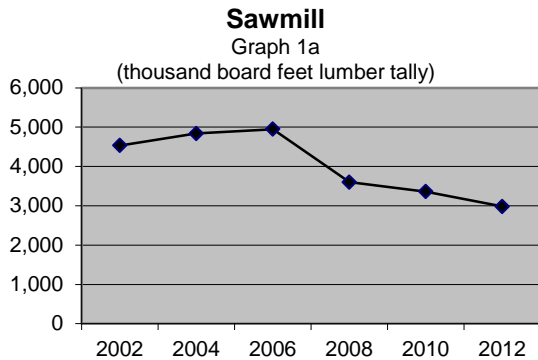
2002-2012

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Graph 1 Production

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Charts 1a-f display total production by sectors. Lumber output from sawmills (1a). Total volume of logs processed by sawmills continued to drop between 2008 and 2012, tracing the continued effects of the troubled housing market and economy in general. Also declining dramatically was the shake and shingle sector (1d) which dropped two-thirds over the past decade. Pulp mills (1c) produced more pulp and paper products. Post, pole and piling mills (1e) sold more utility poles, following a trend that started in 2004. Log exports in 2012 had another banner year, topping a billion board feet of logs.



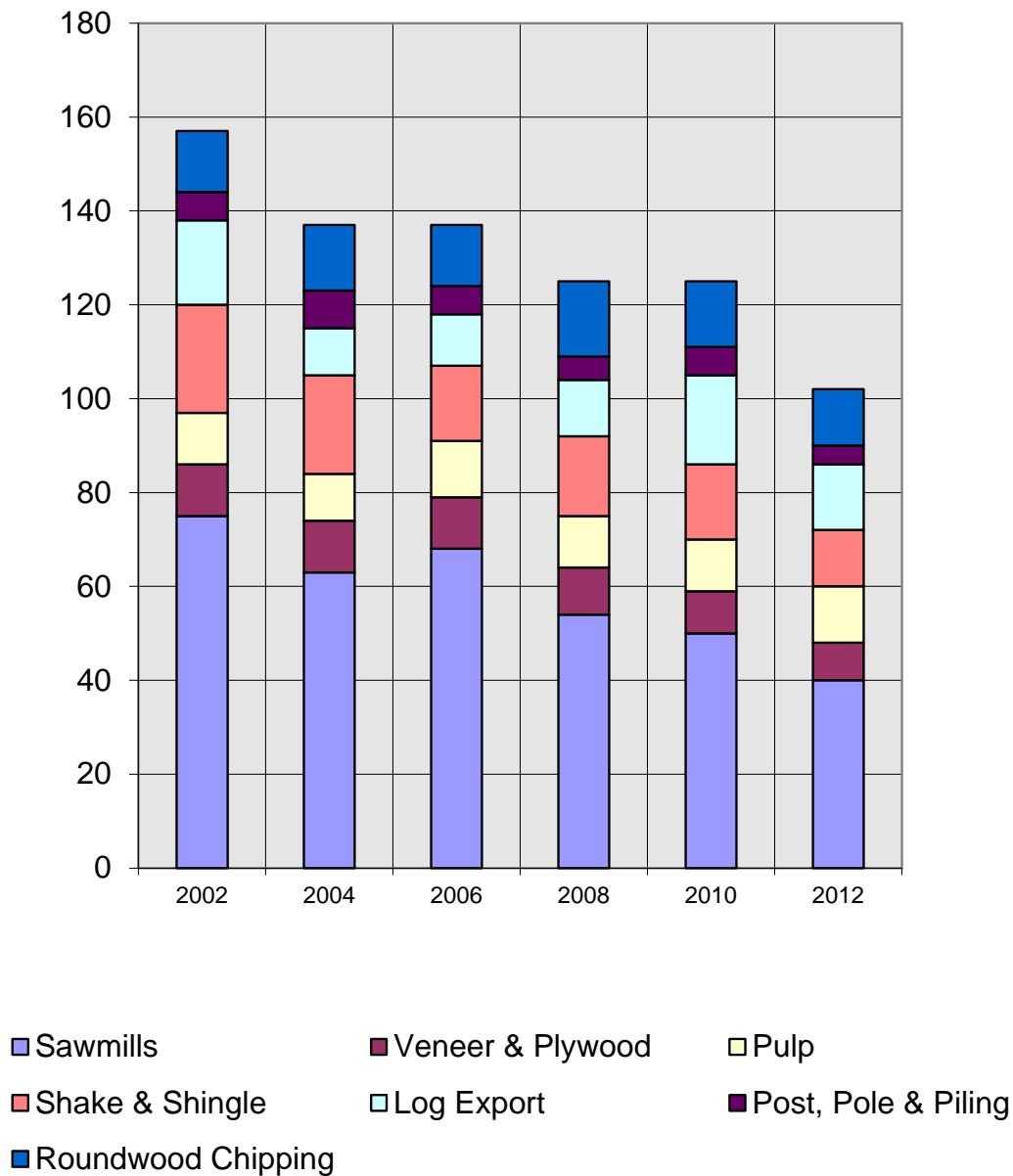
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Graph 2 Number of operations

This graph shows the total number of operations in the primary forest products industry in Washington by sector (mills and log export businesses). Throughout this period mills in all sectors closed, declining from more than 150 in 2002 to 105 in 2012. In some sectors, many small mills were replaced by a few large and high-tech operations. An exception was the log export sector, where the number of established export log brokers and forest owners remained roughly the same. High prices paid by China encouraged a few dozen additional large and small forest owners (who were not included in this tally) to ship more than 8,214 containers of logs from the Port of Seattle.

Mill Count by Sector

Graph 2



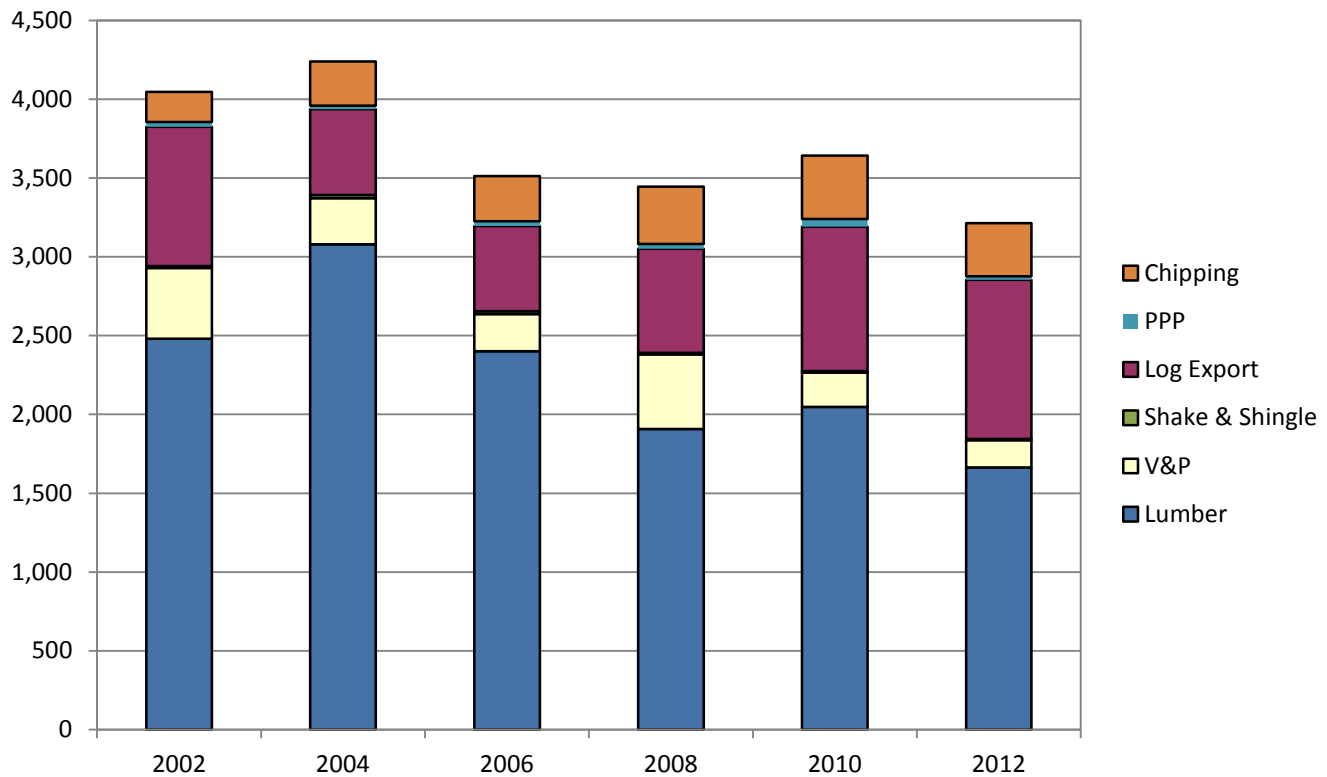
Graph 3 Log consumption by sector

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Total log consumption of Washington's primary wood product mills declined 16.5 percent in the past 10 years during the largest boom and largest recession in half a century. With the moderate recovery of the housing industry in the past three years, sawmill declines leveled, and veneer and plywood operations lost the struggle against particle board competition. Small shake mills have shown no signs of prosperity in the past decades. Pulp mills are holding their own with fluctuations for 10 years. Only two sectors have been picking up speed: telephone pole mills and log export operations continue to expand.

Log consumption by sector

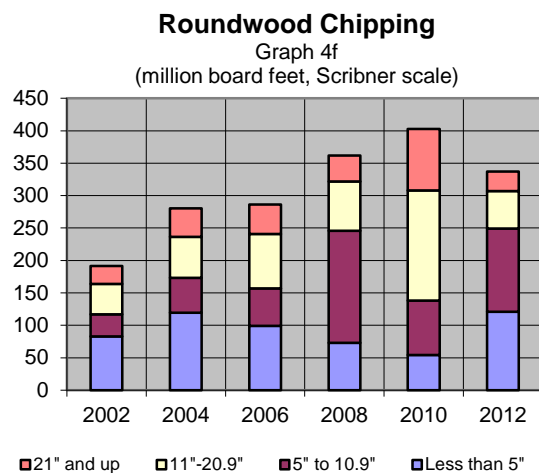
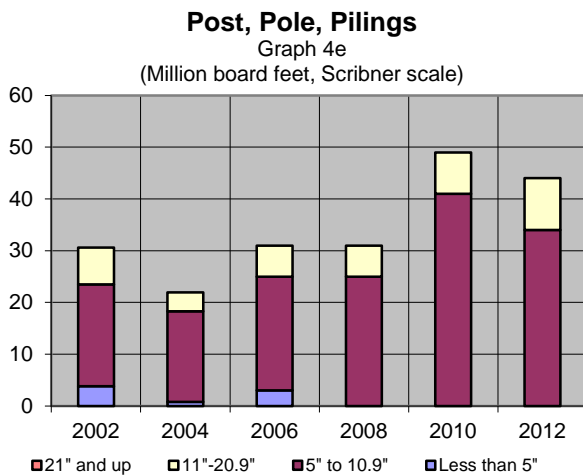
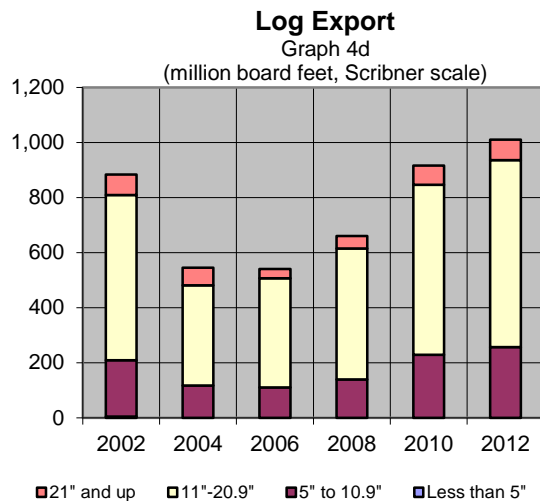
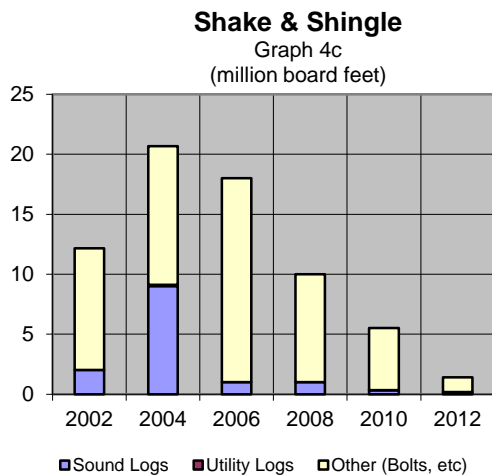
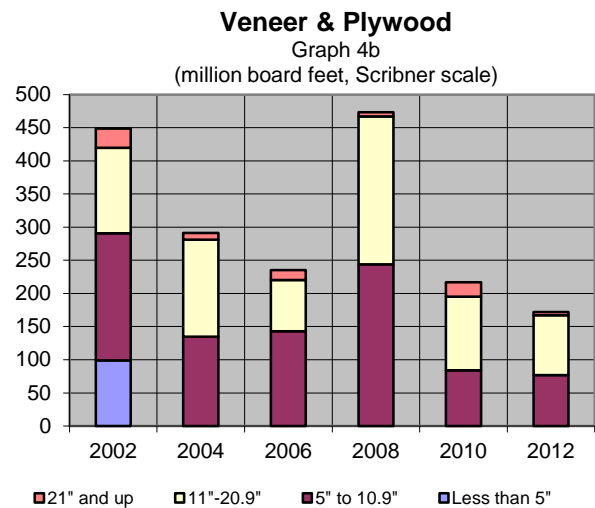
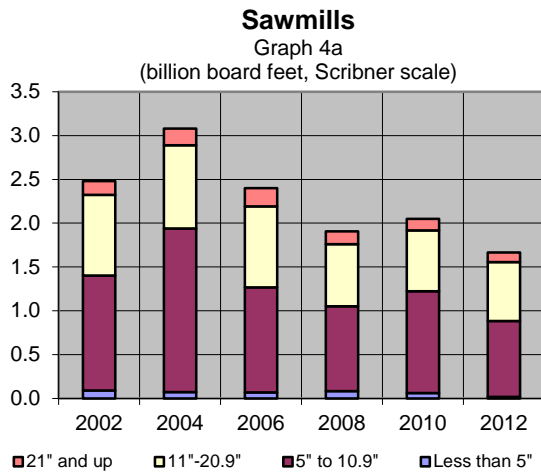
Graph 3
(million board feet)



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Graph 4 Log consumption by log size and sector

Tables 4a-f display log consumption by log size, except 4c which displays log consumption by type. Nearly all wood delivered to shake mills is gathered as bolts, sections of logs or the remains of salvaging operations. Post-pole-piling mills are selective in their log-size preferences where chip mills most any fiber they can find. In 2012 the log export market (primarily to China) focused on logs 10-inches to 21-inches in diameter.

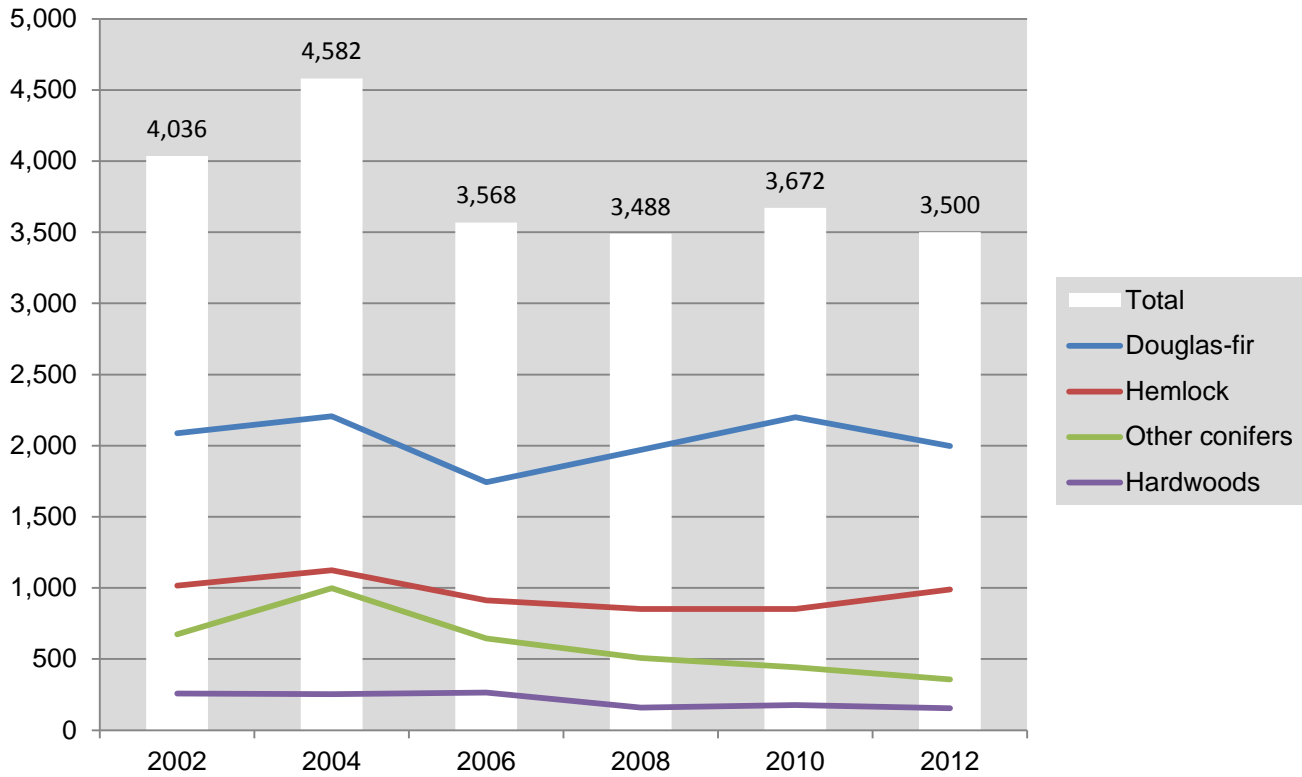


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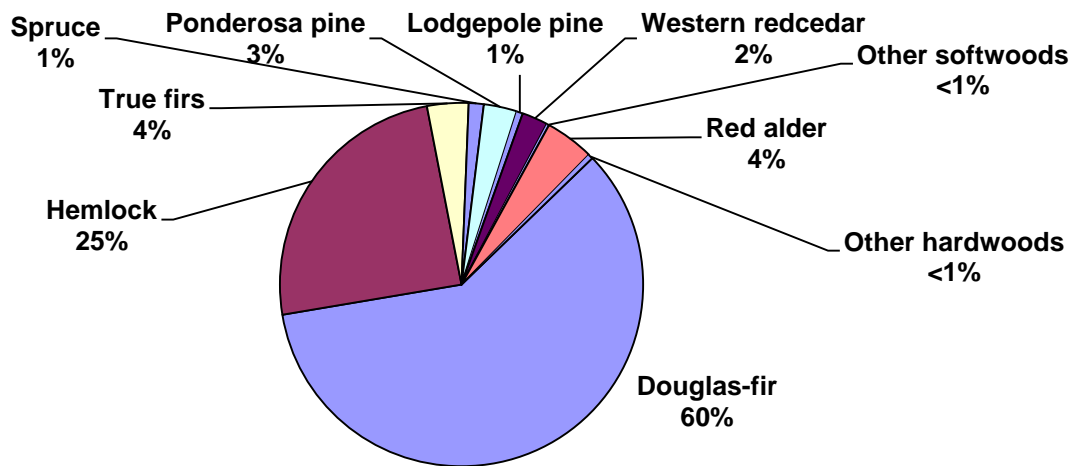
Graph 5 Tree species

Douglas-fir has always been the dominant species for most of Washington’s wood products industries. In 2012 this prized species made up 60% of the consumed timber (Graph 5a), followed by hemlock with 25%. For the past 10 years species’ proportions were fairly consistent. Other species have their niche markets. Red alder and other hardwoods account for less than 5% of Washington’s total wood production but are popular species for furniture and machined wood products.

Tree species
Graph 5a



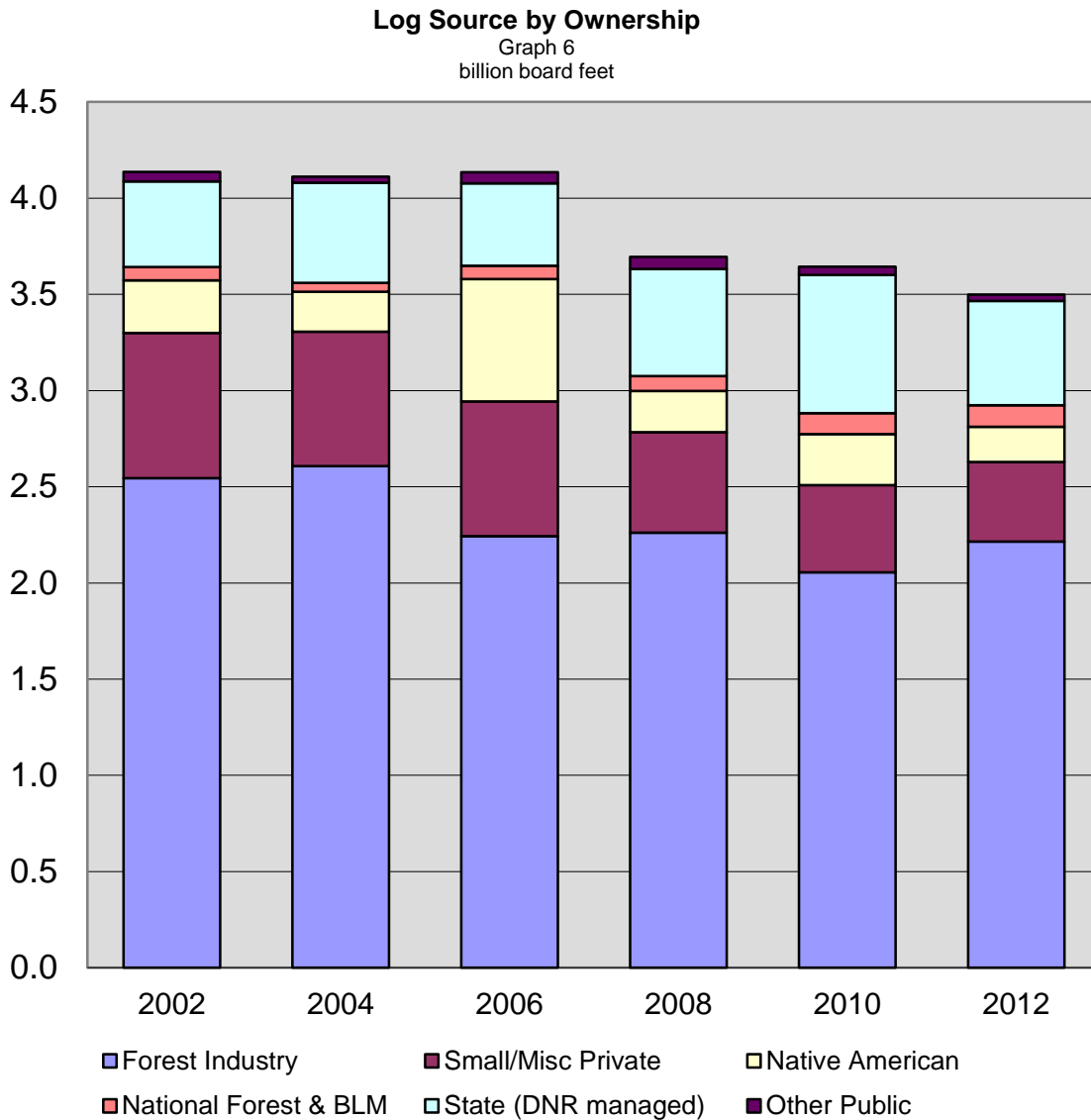
Log consumption by Species - 2012
Graph 5b



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Graph 6 Log sources

Log source by ownership is a separate tally from "all trees harvested," because some timber harvested in-state is exported out-of-state for milling. Graph 6 shows that private timberlands (forest industry and small private landowners) continue to provide the bulk of logs for the primary forest products industry. However, DNR is a significant source of logs, up from 11 percent in 2000 to 18 percent in 2012.



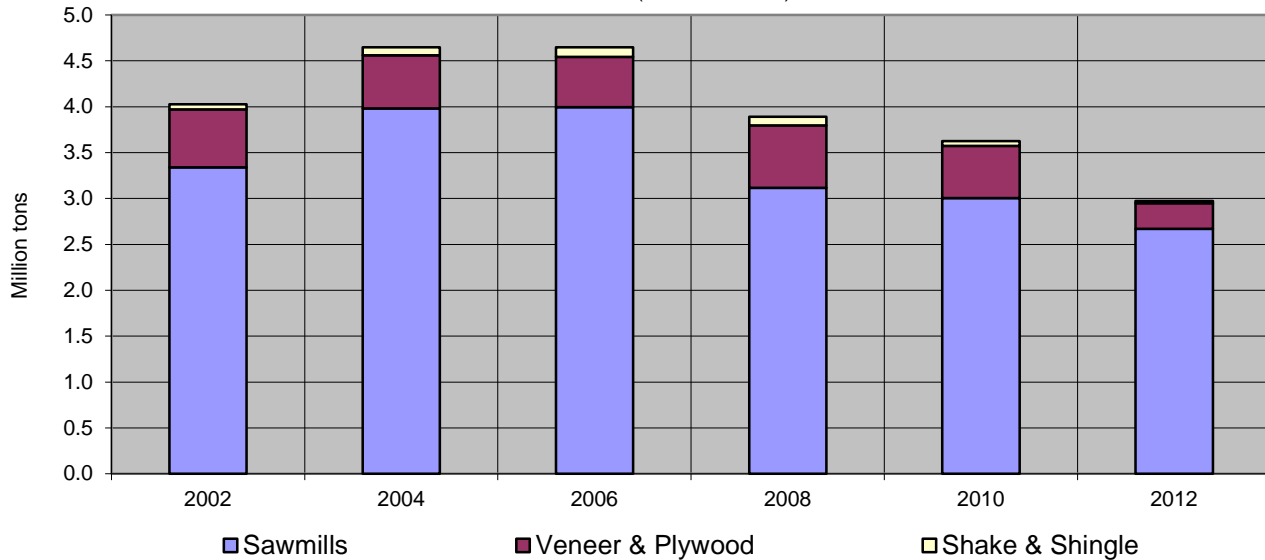
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Graph 7 Wood residues

Graphs 7a-b display the production and use of wood residues, a product that has grown in importance since the advent of biomass and wood pellets. Currently, sawmills (not plywood and shake mills) produce about 90% of all residues. Innovation is reconfiguring the old economic system and improving the efficiency of sawmills. However, pulp mills are losing sawmill residue as a major feedstock. In the past few years pulp mills have become more reliant on chip mills for fiber. See Graph 15 for further discussion and information.

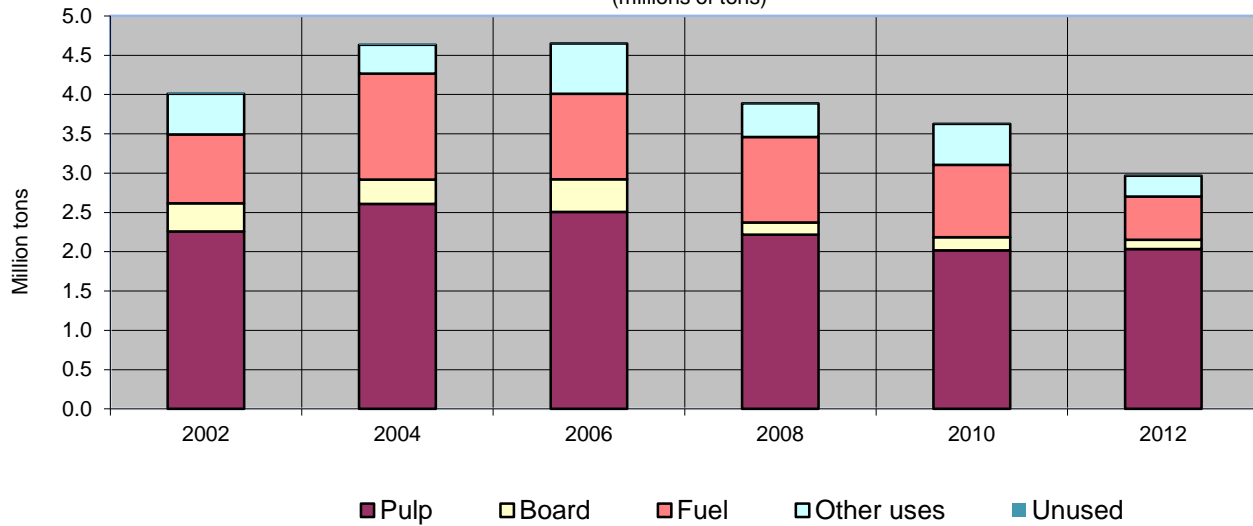
Production of Wood Residue (not bark)

Graph 7a
(millions of tons)



Use of Wood Residue (not bark)

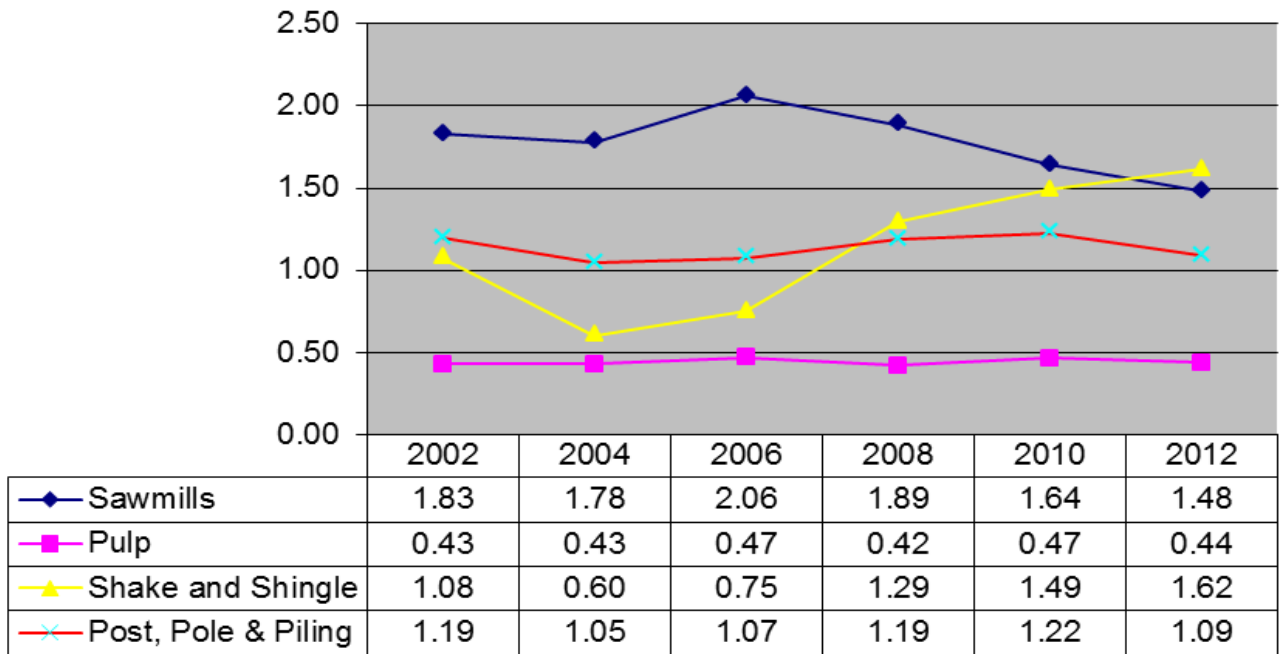
Graph 7b
(millions of tons)



Graph 8 Efficiency

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Efficiency is the volume of wood products divided by the volume of logs consumed. Pulp and Post-pole and piling sectors remained at similar levels throughout the past 10 years. According to previous mill surveys, lumber mills consumed far more logs before 2006. However, lumber production totals varied little. The change in the ratio suggests that during the recession, lumber mills improved efficiency, which explains the dramatic drop in log consumption even while production totals dropped at a slower rate. No new shake mills opened but average productivity rose, meaning that the remaining mills were more efficient.



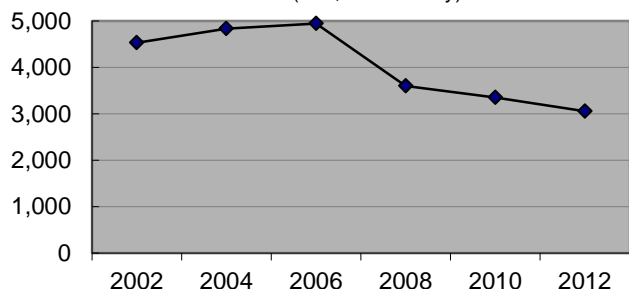
Graph 9 Sawmills

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Total sawmill production (9a) decreased from 4.5 billion board feet in 2002 to 3.2 billion board feet in 2012. However, productivity per mill improved. These statistics underscore the fact fewer new mills have replaced closed mills and that the remaining mills are larger and more efficient (9e). The average lumber production per mill has increased by a third, from 57.2 million board feet to 76.4 million board feet,

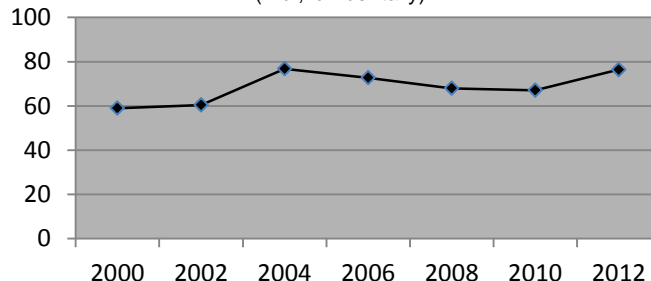
Total Annual Sawmills' Production

Graph 9a
(mbf, lumber tally)



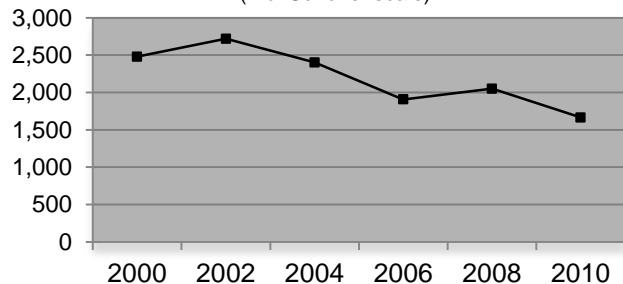
Average Production per Mill

Graph 9d
(mbf, lumber tally)



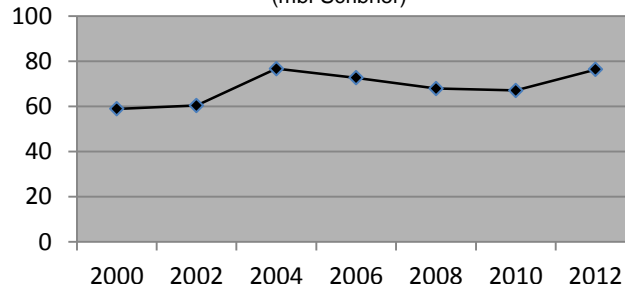
Total Log Consumption

Graph 9c
(mbf Scribner scale)



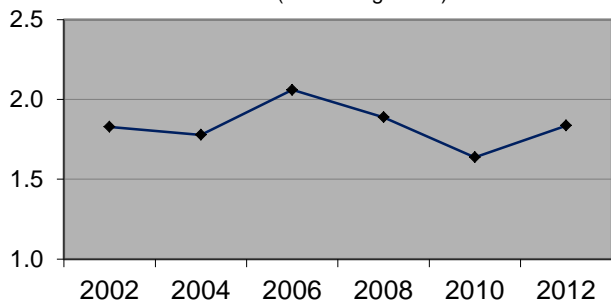
Average Production per Mill

Graph 9c
(mbf Scribner)



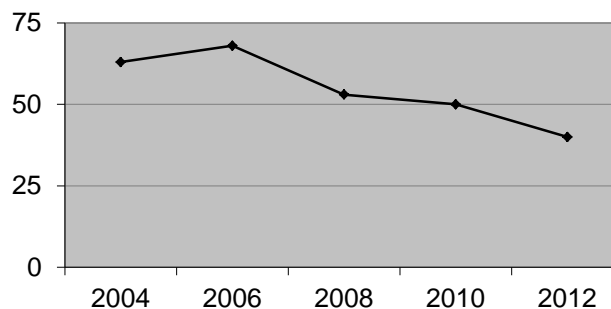
Productivity of Sawmills

Graph 9e
(lumber/logs ratio)



Number of sawmills

Graph 9f



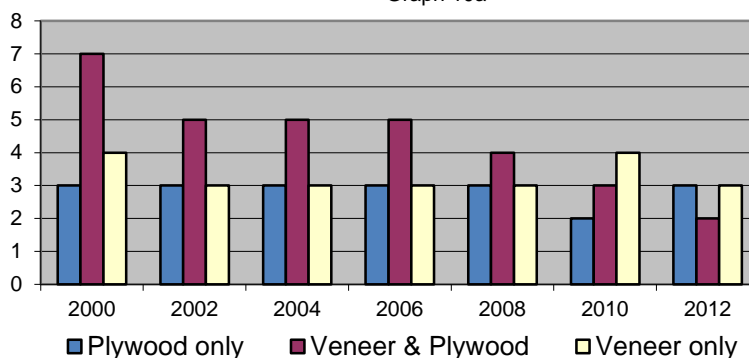
Graph 10 Veneer and plywood mills

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Over the past 12 years much of the state's plywood industry separated into veneer-only and plywood-only operations. The economic disruption halted much production. Since then, the mill activity has been returning to pre-recession levels. For the most part, plywood and veneer operations are no longer combined. Softwood plywood has lost market share to oriented strand board (OSB or particle board) and is moving toward a niche market that uses hardwood veneer. As the market transformed, plywood mills sought other opportunities in sanded, textured, siding, and overlay products. In Washington, the production capacity of each plywood-only mill rocketed from just over 200,000 square feet to more than 350,000 square feet per day. Veneer, on the other hand, sees a bright future with another partner: engineered wood is a range of derivative wood products made of particles, fiber, or veneer bonded with adhesives. Some veneer plants already devote most of their production to engineered wood.

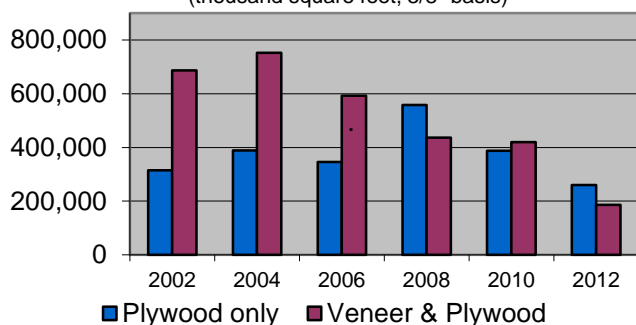
Numbers of Plywood and Veneer Mills

Graph 10a



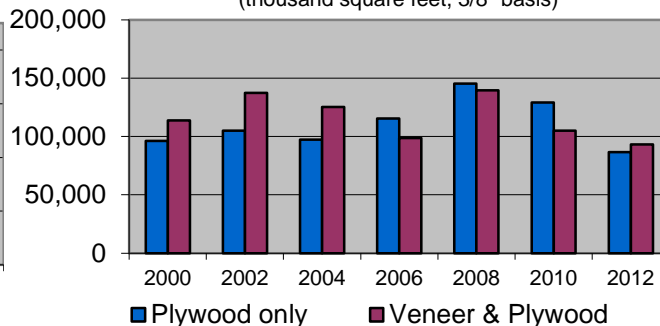
Total Plywood Production

Graph 10b
(thousand square feet, 3/8" basis)



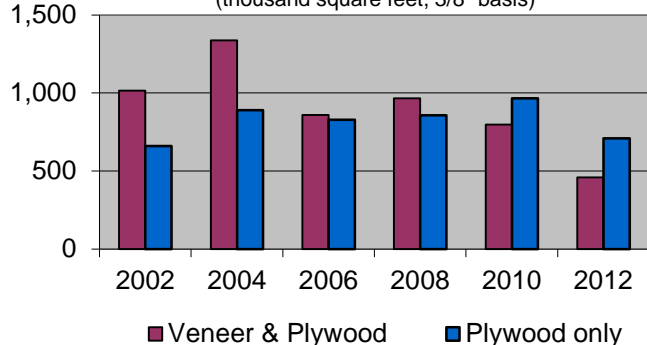
Average Plywood Production per Mill

Graph 10c
(thousand square feet, 3/8" basis)



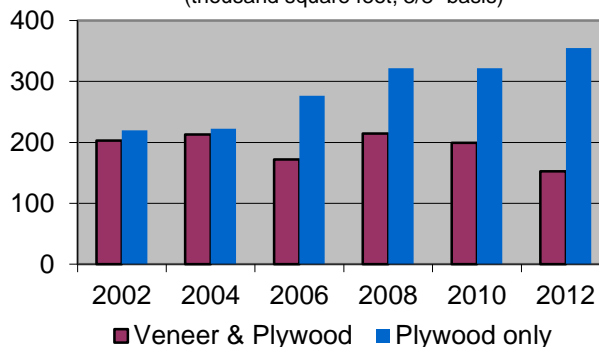
Total Annual Plywood Capacity

Graph 10d
(thousand square feet, 3/8" basis)



Average Plywood Capacity per Mill

Graph 10e
(thousand square feet, 3/8" basis)

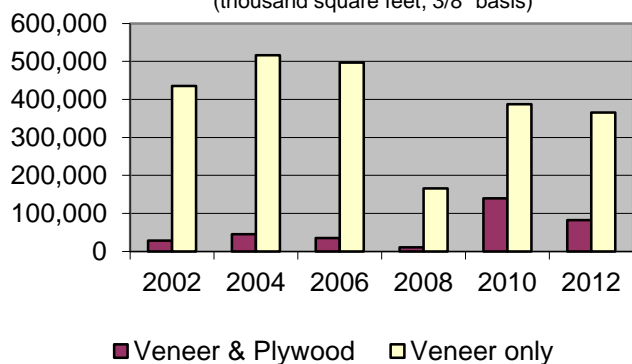


Veneer and plywood mills continued

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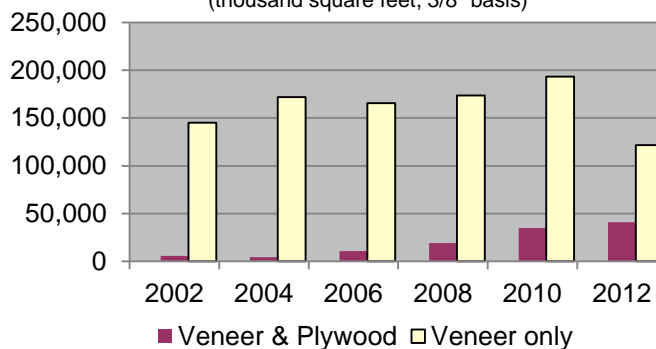
Total veneer production

Graph 10f
(thousand square feet, 3/8" basis)



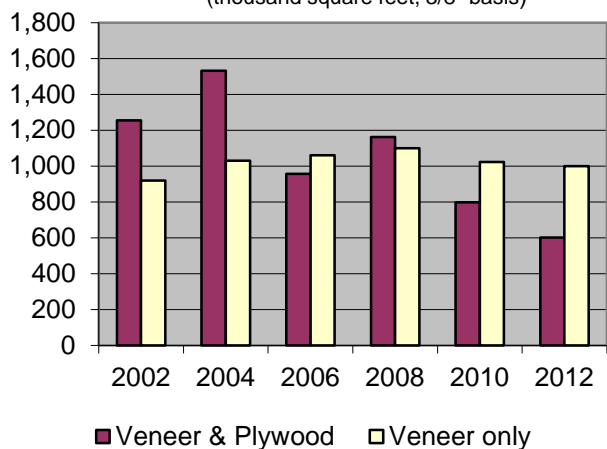
Avg. Annual Veneer Production per Mill

Graph 10g
(thousand square feet, 3/8" basis)



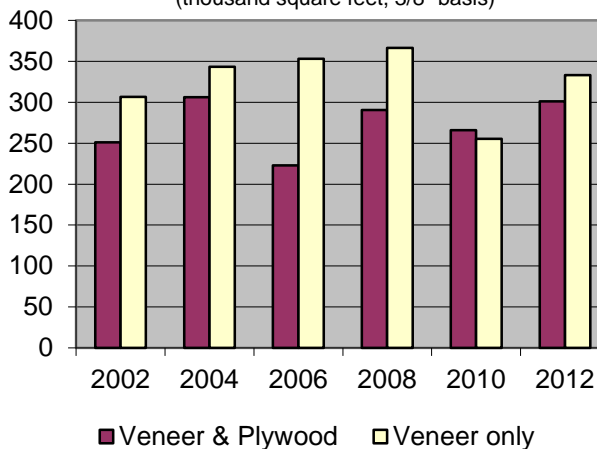
Total Daily Veneer Capacity

Graph 10h
(thousand square feet, 3/8" basis)



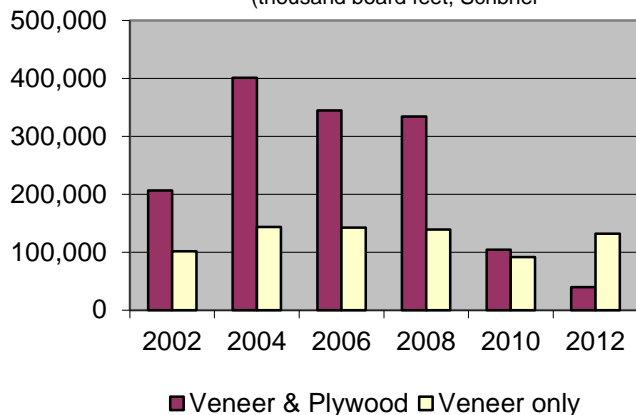
Average Daily Veneer capacity per Mill

Graph 10i
(thousand square feet, 3/8" basis)



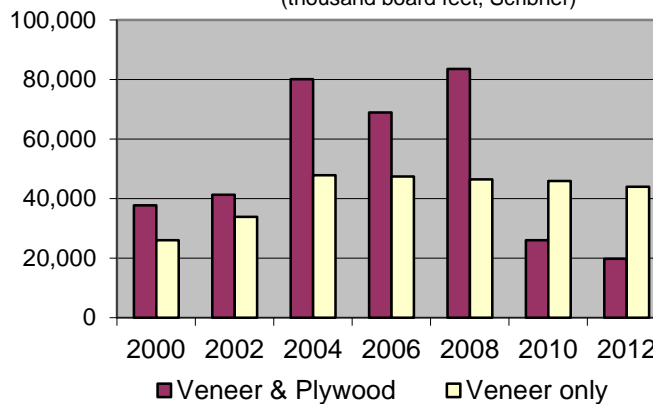
Total Annual Log Consumption

Graph 10j
(thousand board feet, Scribner)



Average Log Consumption per Mill

Graph 10k
(thousand board feet, Scribner)

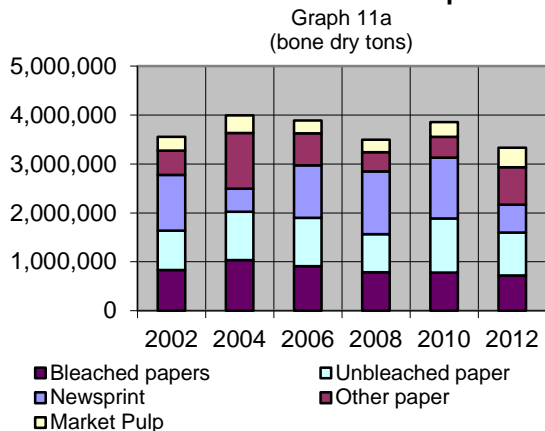


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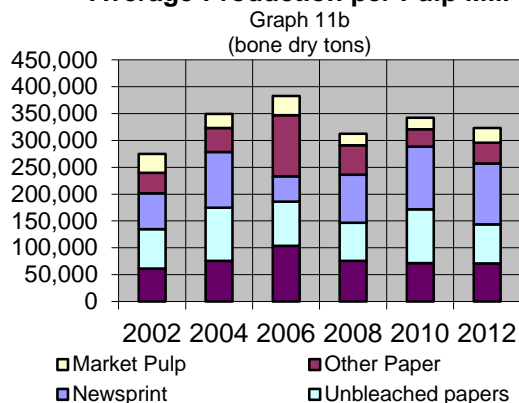
Graph 11 Pulp mills

Even though pulp mills gross more revenue than all other Washington primary wood sectors combined, it has enjoyed only a few moments of peaceful prosperity without struggle. Pulp mills were among the first industries required to spend billions to comply with clean air and water legislation. Currently, they compete with biofuels and other green industries for supplies of mill residues that are declining as sawmills are upgraded and more efficient. Global pulp mill investments in China and Europe are adding high-tech competition. To offset its status as the the fifth largest consumer of energy, the pulp industry has installed large power generators that contribute surplus power to local power grids. And finally, all mills are searching for new product opportunities as old markets dry up.

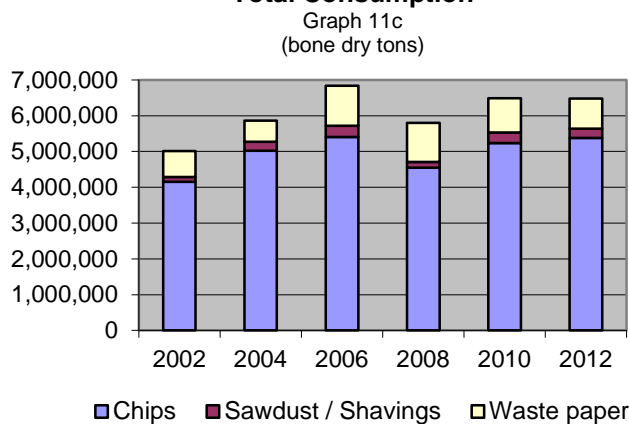
Total Production of Pulp Mills



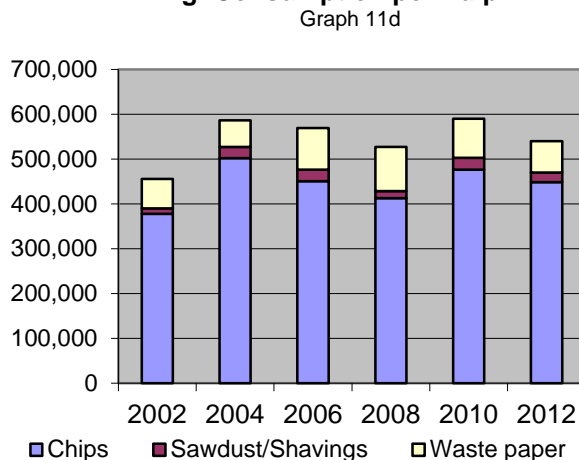
Average Production per Pulp Mill



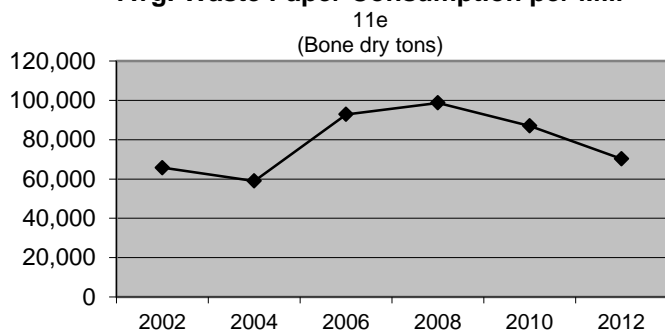
Total Consumption



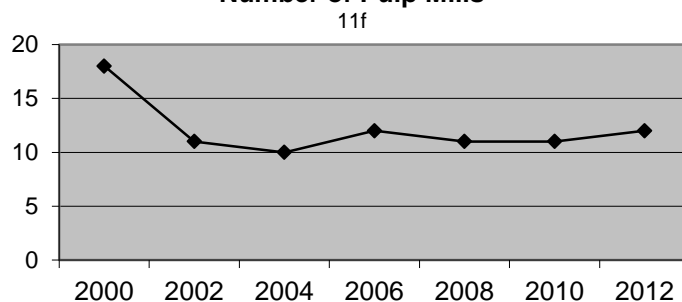
Avg. Consumption per Pulp Mill



Avg. Waste Paper Consumption per Mill



Number of Pulp Mills

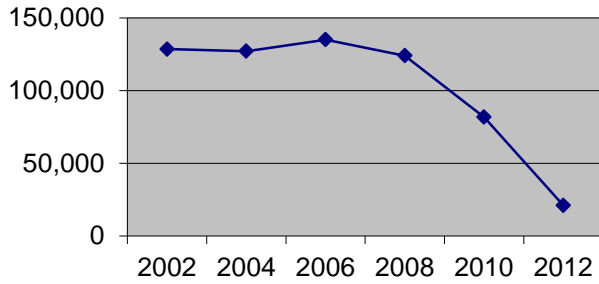


Graph 12 Shake & shingle mills

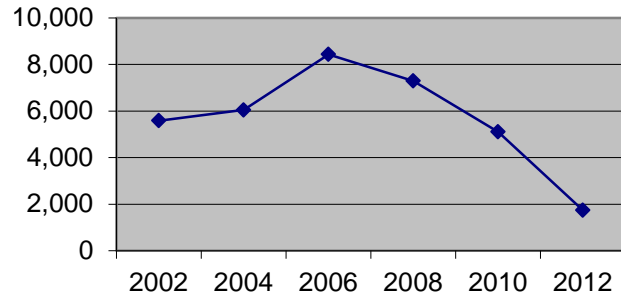
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The statistics for shake & shingle mills mark the ongoing decline in numbers of mills and total production. In the last 10 years half the mills closed. Production has dropped from 130,000 squares of shakes, shingles and other cedar products in 2006 to 20,000 in 2012.

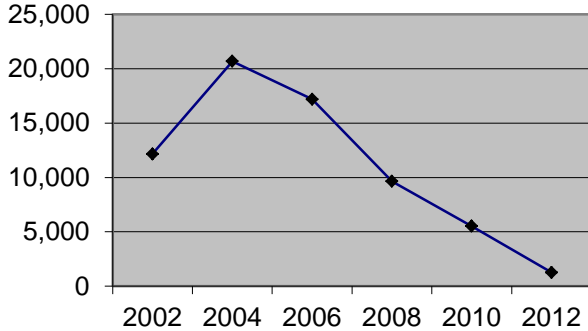
Total Production Shakes, Shingles, etc.
(squares)



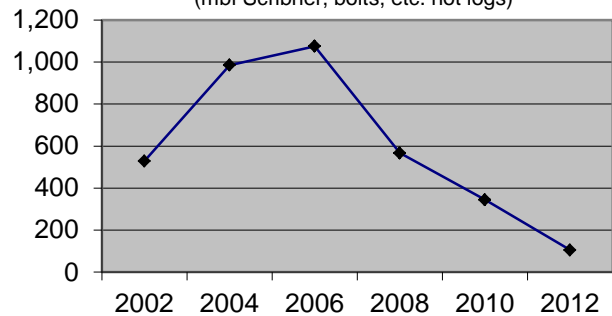
Average Production per Mill
Graph 12b
(squares)



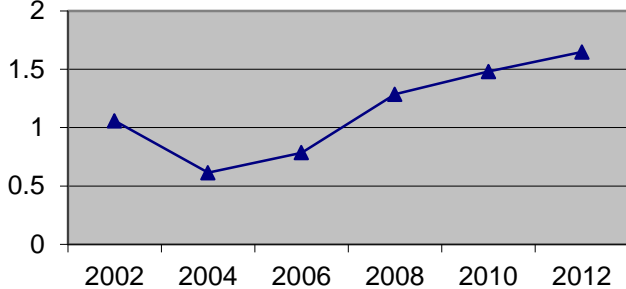
Total wood consumed
Graph 12c
(mbf Scribner scale, bolts etc. not logs)



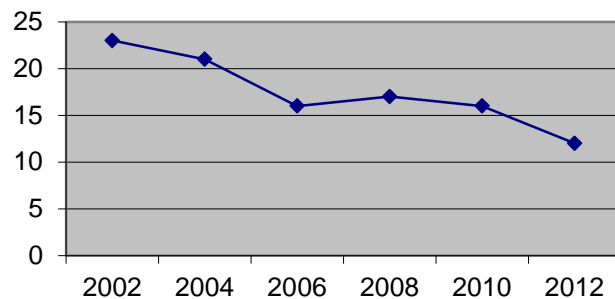
Average wood consumed per mill
Graph 12d
(mbf Scribner, bolts, etc. not logs)



Productivity
Graph 12e
(ratio of wood consumed and lumber produced)



Number of Shake and Shingle Mills
Graph 12f



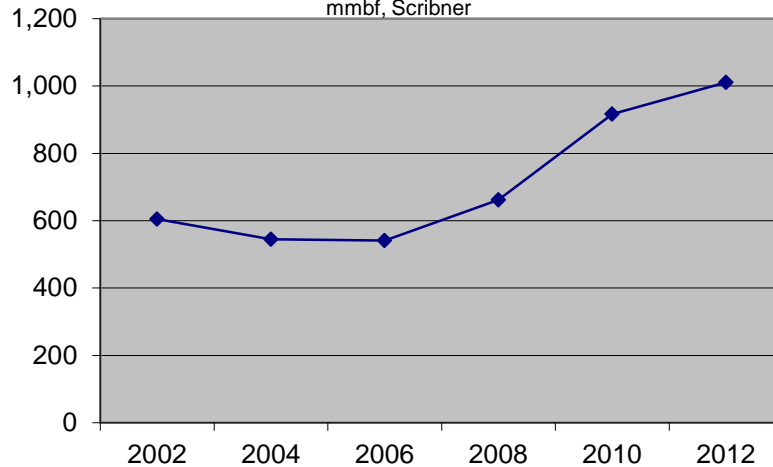
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Graph 13 Log export operations

In 2012, log export business continued to grow after the China-led renewal in 2010. For the first time since the mid 90s, the log export volume in 2012 rose above one billion board feet, two years in a row, according to industry reports. In Washington, only the lumber sector used more logs than log exports. The Port of Seattle, with no facilities for bulk logships, recorded more than 81 million board feet of logs shipped in containers. The port's log exporters included dozens of forest landowners who rushed to harvest trees for the high export prices. According to port records, the logs were shipped primarily to China with a rising volume targeted for Japan.

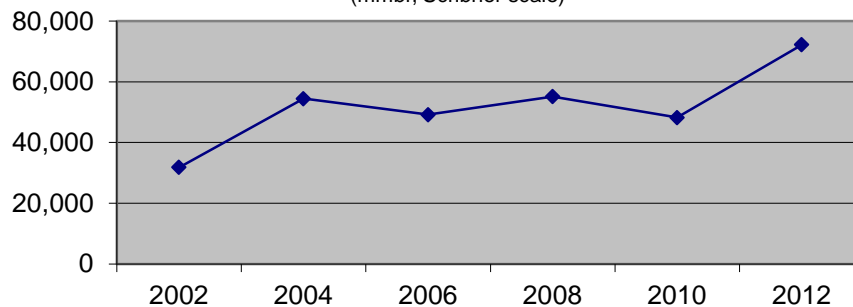
Total volume of Export logs

Graph 13a
mmbf, Scribner



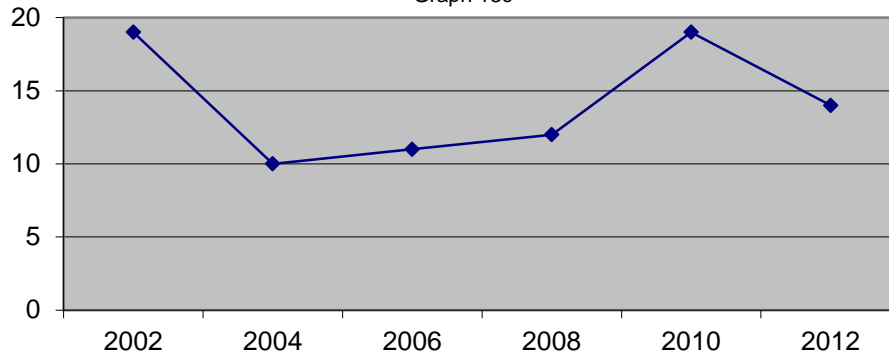
Average Volume per Log Export Operation*

Graph 13b
(mmbf, Scribner scale)



Number of Log Export Operations*

Graph 13c



* Does not include 60 exporters who shipped 81 mmbf of logs in containers

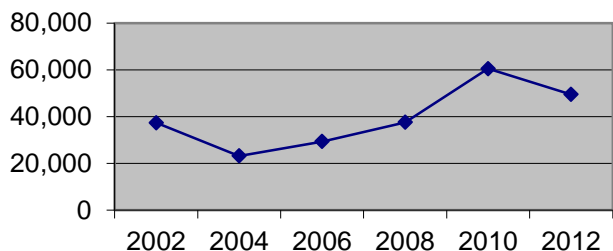
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Graph 14 Post, pole, and piling mills

Telephone and utility poles continued their recovery from the recession. Industry reports observe local governments and public utilities budgeting for long overdue infrastructure upgrades, putting log poles on the fast track. Good telephone and utility poles are usually made from Douglas-fir and western redcedar timber. They must be straight, free of defects and have a sufficient amount of taper. In the last few decades, some companies manufactured laminated poles. More expensive than traditional single-tree poles, laminated poles are made of planks glued together in staggered order. The result is a utility pole taller than an old growth pole with strength comparable to the much more expensive steel poles. (See page 18.)

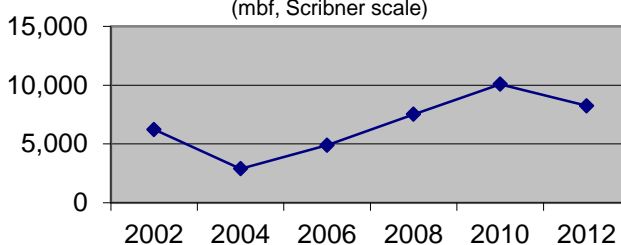
Total Production

Graph 14a
(mbf, Scribner scale)



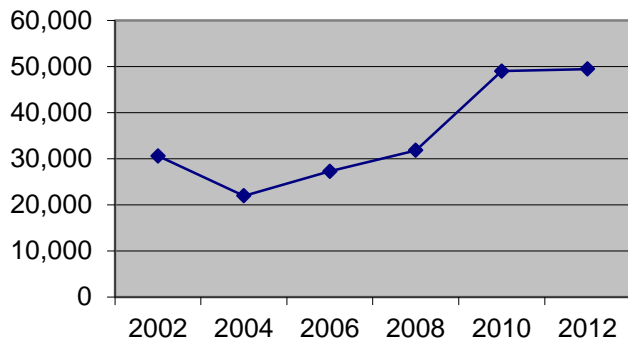
Average Production per Mill

Graph 14b
(mbf, Scribner scale)



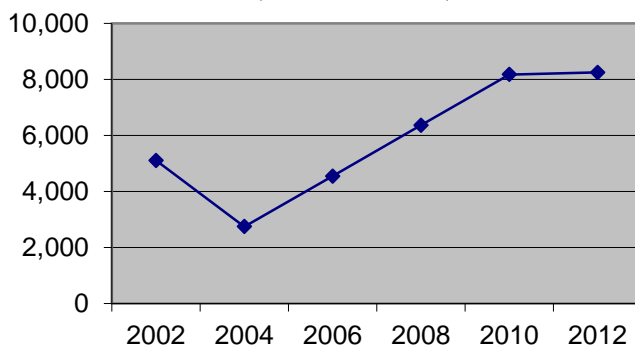
Total Log Consumption

Graph 14c
(mbf, Scribner scale)



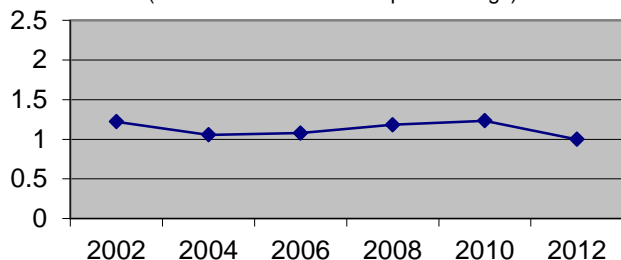
Average Log Consumption per Mill

Graph 14d
(mbf, Scribner scale)



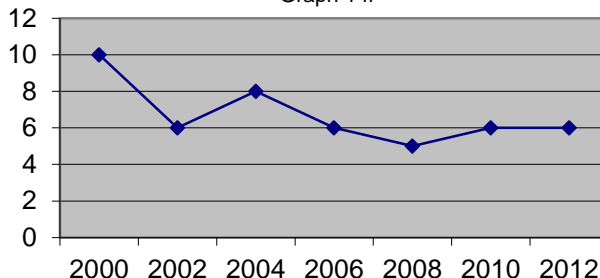
PPP Productivity

Graph 14e
(volume ratios of finished poles to logs)



Number of Post, Pole and Piling Mills

Graph 14f



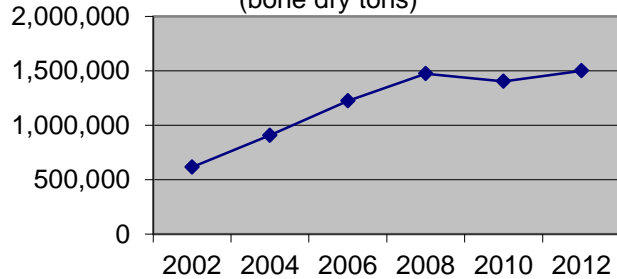
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Graph 15 Chipping mills

The chip mill sector was not as affected by the recession. In 2002 chip mills consumed 191 mbf of timber. In 2012, they consumed 355 mbf, a trajectory that barely wavered during the recession. Chipping mills grind logs into chips which are most often sold to pulp mills. As lumber mills were re-tooled with more efficient equipment that produced less residue. Chip mills increased chip production such that by 2012 roundwood chips accounted for 40% of the total wood fiber consumed by pulp mills. (Note: Preliminary data on lumber production indicate that in 2013 sawmills produced more lumber than they had in several years. This could mean that even more efficient sawmills are producing more residues for pulp mills, threatening to out-compete chip mill production.)

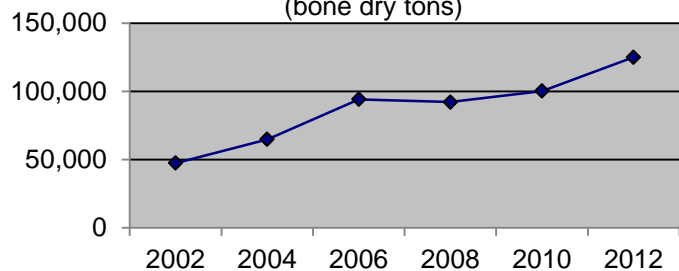
Total Production

Graph 15a
(bone dry tons)



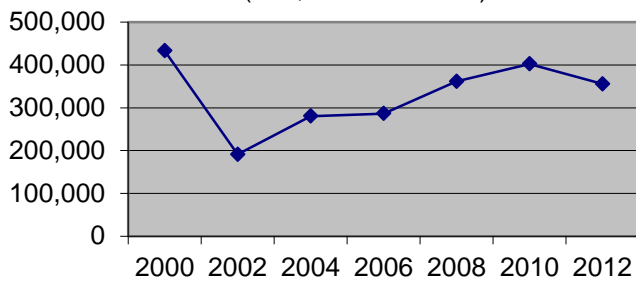
Average Production

Graph 15b
(bone dry tons)



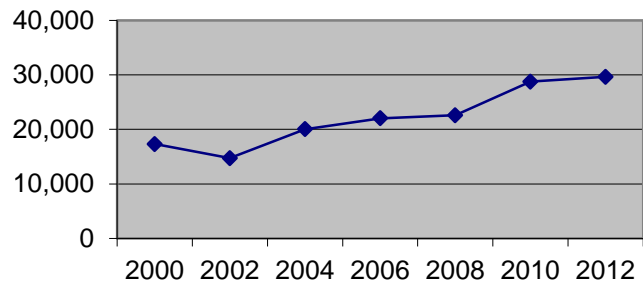
Total Log Consumption

Graph 15c
(mbf, Scribner scale)



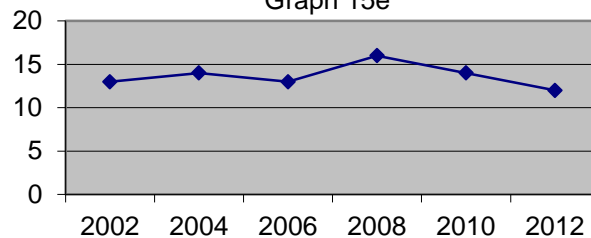
Average Log Consumption

Graph 15d
(mbf, Scribner scale)



Number of Chipping Mills

Graph 15e



Rectangle is the new round

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Laminated wood poles compete favorably with steel

In today's world nothing escapes technological improvement, even the stalwart neighborhood telephone pole. Single-tree poles were overwhelmed by the emergence of bulky power and multi-media wire cables. Only steel 'utility poles' could handle the weight and long distance strength that these cables required, especially on corners.

After years of being relegated to block-to-block service, wood poles returned with a laminated design and a new rectangular look. Instead of relying on the natural girth of a tree, laminated poles are made of successively glued planks to increase diameter for strength and length. Laminated wood is also a popular option in flooring and exposed beams.

Dennis Olsen with Stella Jones Inc., a Canadian-based firm that recently purchased three pole mills in Washington, answered a series of questions about the use and benefits of laminated poles:

When were laminated poles first used? In the early '80s.

What are the benefits? The ability to build extremely strong structures, durability, flexibility and aesthetics.

What are the costs? Higher than round wood, but competitive with steel.

Is there a manufacturing advantage to using several pieces of wood instead of one long perfect pole? You can make a laminated pole stronger than a natural round pole will grow.

Are laminated poles expected to compete with single piece utility poles? Yes, but the niche is really heavy load structures which mean they typically compete with steel.

Besides other wood-based poles, how do laminated poles compete with steel or



Photo by Stella Jones. Inc.

How do laminated poles rank in the list of materials used for making utility poles? It's a niche product. It's used throughout North America but less than 5 percent of all structures.

How many have you sold in Washington? There are hundreds if not thousands in use in Washington State.

Do they satisfy certain needs that traditional poles don't? (Laminated poles are) unguyed (not supported by ground lines) structures and can be used where load is heavier than round wood poles can support.

Statewide Mills Summary

2

2002-2012

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Table 1 shows the number of operations by sector and the counties in which the mills operated in 2012.

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Table 1 Number of operations – by county and industry

(mills and export businesses)

Economic area and county	All industries	Industry						
		Lumber	Veneer and plywood	Pulp	Shake and shingle	Log export	Post, pole, and piling	Roundwood chipping
Puget Sound								
King	2	1	0	0	0	1	0	0
Pierce	7	3	1	2	0	0	0	1
Skagit	2	2	0	0	0	0	0	0
Snohomish	9	3	0	0	1	3	1	1
Whatcom	3	1	1	0	0	0	1	0
Total	23	10	2	2	1	4	2	2
Olympic Peninsula								
Clallam	15	6	0	1	4	3	0	1
Grays Harbor	14	3	3	1	4	1	0	2
Jefferson	2	1	0	1	0	0	0	0
Lewis	13	7	1	0	2	0	2	1
Mason	6	2	1	0	0	0	1	2
Pacific	2	2	0	0	0	0	0	0
Thurston	3	0	0	0	0	2	1	0
Total	55	21	5	3	10	6	4	6
Lower Columbia								
Clark	4	2	0	1	0	1	0	0
Cowlitz	9	1	0	4	0	3	0	1
Klickitat	2	1	1	0	0	0	0	0
Skamania	1	1	0	0	0	0	0	0
Wahkiakum	1	0	0	0	1	0	0	0
Total	17	5	1	5	1	4	0	1
Central Washington								
Kittitas	1	0	0	0	0	0	0	1
Yakima	1	1	1	1	1	1	1	1
Total	2	1	0	0	0	0	0	1
Inland Empire								
Ferry	1	1	0	0	0	0	0	0
Spokane	1	0	0	1	0	0	0	0
Stevens	4	3	0	0	0	0	0	1
Walla Walla	1	0	0	1	0	0	0	0
Whitman	1	0	0	0	0	0	0	1
Total	8	4	0	2	0	0	0	2
State total	105	41	8	12	12	14	6	12

Table 2 shows the total volume of logs and lumber residues used by all wood product mills. In [Table of Contents](#) 2012 mills produced 6.47 million bone dry tons of mill residues, which was used almost exclusively by pulp mills.

Table 2 Log (logs and residues) consumption – by industry
(thousand board feet, Scribner)

Economic area	All roundwood	Sound logs	Utility logs	Other	Residue (bone dry tons)
Puget Sound					
Lumber	459,740	453,473	6,267	0	0
Log export	122,253	122,253	0	0	0
Others	82,164	81,734	430	15	698,878
Total	664,157	657,460	6,697	15	698,878
Olympic Peninsula					
Lumber	871,543	833,774	37,769	8,571	0
Veneer & plywood	111,017	107,585	3,432	0	0
Shake & shingle	244	184	60	684	0
Log export	219,309	219,309	0	0	0
Post, pole & piling	35,218	35,218	0	0	0
Roundwood chipping	130,863	124,463	6,400	0	0
Others	31	0	31	0	1,143,836
Total	1,368,225	1,320,533	47,692	9,255	1,143,836
Lower Columbia					
Lumber	238,363	238,363	0	0	0
Pulp & board	0	0	0	0	3,749,013
Log export	669,359	669,359	0	0	0
Others	134,443	134,443	0	322	0
Total	1,042,165	1,042,165	0	322	3,749,013
Central Washington	57,178	57,178	0	0	0
Inland Empire					
Lumber	146,486	130,209	16,277	0	0
Others	52,666	5,267	47,399	0	878,550
Total	199,152	135,476	63,676	0	878,550
State total					
Veneer & plywood	171,505	167,643	3,862	0	0
Log export	1,010,921	1,010,921	0	0	0
Lumber	1,764,452	1,704,139	60,313	8,571	0
Post, pole & piling	44,582	44,582	0	0	0
Pulp & board	31	0	31	0	6,470,277
Roundwood chipping	339,142	285,343	53,799	0	0
Shake & shingle	244	184	60	1,021	0
Total	3,330,877	3,212,812	118,065	9,592	6,470,277

Table 3 shows the total volume of logs consumed by each sector and the states where they were harvested. A third of the billion board feet of timber exported through Washington state ports was harvested in Oregon.

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Table 3 Log consumption — by industry and state of origin

(thousand board feet, Scribner)

Economic area	All sources	Washington	Oregon	Idaho	Montana	British Columbia	Other state
Puget Sound							
Lumber	459,740	432,186	0	0	0	27,554	0
Log export	122,253	122,253	0	0	0	0	0
Others	82,164	81,604	560	0	0	0	0
Total	664,157	636,043	560	0	0	27,554	0
Olympic Peninsula							
Lumber	871,543	797,556	25,996	0	0	44,791	3,200
Veneer & plywood	111,017	109,923	1,094	0	0	0	0
Shake & shingle	244	244	0	0	0	0	0
Log export	219,309	216,899	2,411	0	0	0	0
Post, pole & piling	35,218	33,925	1,293	0	0	0	0
Roundwood chipping	130,863	130,863	0	0	0	0	0
Others	31	31	0	0	0	0	0
Total	1,368,225	1,289,440	30,794	0	0	44,791	3,200
Lower Columbia							
Lumber	238,363	202,225	36,138	0	0	0	0
Pulp & board	0	0	0	0	0	0	0
Log export	669,359	328,820	340,539	0	0	0	0
Others	134,443	104,505	29,938	0	0	0	0
Total	1,042,165	635,550	406,615	0	0	0	0
Central Washington							
	57,178	57,178	0	0	0	0	0
Inland Empire							
Lumber	146,486	143,226	0	3,260	0	0	0
Others	52,666	2,633	5,267	44,766	0	0	0
Total	199,152	145,859	5,267	48,026	0	0	0
State total							
Veneer & plywood	171,505	169,712	1,793	0	0	0	0
Log export	1,010,921	667,972	342,949	0	0	0	0
Lumber	1,764,452	1,623,513	62,134	3,260	0	72,345	3,200
Post, pole & piling	44,582	42,729	1,853	0	0	0	0
Pulp & board	31	31	0	0	0	0	0
Roundwood chipping	339,142	259,871	34,505	44,766	0	0	0
Shake & shingle	244	244	0	0	0	0	0
Total	3,330,877	2,764,070	443,236	48,026	0	72,345	3,200

Tables 4 a-e show the volumes of logs harvested from each county and the counties where the timber was processed. This is a significant factor since transportation cost is a major expense in wood markets.

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Table 4a Log consumption – by mill location and county of harvest

Logs harvested in Washington (thousand board feet, Scribner scale)

Economic area and county of operation	Total Washington logs	Puget Sound Economic Area						
		Island	King	Kitsap	Pierce	Skagit	Snohomish	Whatcom
Puget Sound								
Pierce	194,517	0	17,385	8,680	54,507	0	3,014	0
Snohomish	198,145	1,889	618	644	425	39,597	78,432	26,954
Others	241,319	2,405	23,797	8,238	122	68,895	61,832	37,053
Total	633,981	4,294	41,801	17,562	55,054	108,492	143,278	64,008
Olympic Peninsula								
Clallam	263,220	0	0	2,924	0	2,558	2,558	2,558
Grays Harbor	352,532	0	2,680	0	0	3,000	4,000	2,000
Mason	154,205	0	330	6,408	6,999	0	1,420	0
Lewis	225,531	0	0	3,566	16,363	6,720	0	2,240
Others	293,953	0	2,910	2,770	9,420	0	0	0
Total	1,289,440	0	5,920	15,668	32,782	12,278	7,978	6,798
Lower Columbia								
Clark	89,460	0	2,485	0	0	0	0	0
Cowlitz	375,924	0	0	0	1,481	0	0	0
Others	73,396	0	0	0	0	0	0	0
Total	538,780	0	2,485	0	1,481	0	0	0
Central Washington	57,178	0	354	0	0	0	0	0
Inland Empire								
Stevens	133,326	0	0	0	0	0	0	0
Others	12,533	0	0	0	0	0	0	0
Total	145,859	0	0	0	0	0	0	0
State total	2,665,238	4,294	50,560	33,230	89,316	120,770	151,256	70,806

Continued

[Table of Contents](#)**Table 4b Log consumption – by mill location and county of harvest**

Logs harvested in Washington (thousand board feet, Scribner scale)

Olympic Peninsula Economic Area							
Economic area and county of operation	Clallam	Grays Harbor	Jefferson	Lewis	Mason	Pacific	Thurston
Puget Sound							
Pierce	0	26,938	0	30,923	23,296	15,152	14,271
Snohomish	11,948	4,250	0	4,658	5,190	2,125	3,949
Others	27,165	0	8,238	284	74	47	169
Total	39,113	31,188	8,238	35,865	28,561	17,325	18,390
Olympic Peninsula							
Clallam	199,798	4,750	36,447	4,366	0	1,085	2,558
Grays Harbor	19,250	221,221	13,646	8,594	13,064	39,095	20,688
Mason	3,861	18,778	4,755	3,630	87,408	0	19,958
Lewis	0	17,963	348	93,006	7,251	12,677	32,875
Others	3,401	65,149	9,416	71,908	2,770	75,968	37,249
Total	226,311	327,861	64,613	181,504	110,492	128,825	113,328
Lower Columbia							
Clark	0	2,485	0	16,898	2,485	0	4,473
Cowlitz	0	0	0	88,213	0	15,561	4,200
Others	0	0	0	0	0	0	0
Total	0	2,485	0	105,111	2,485	15,561	8,673
Central Washington	0	0	0	0	0	0	0
Inland Empire							
Stevens	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
State Total	265,424	361,533	72,851	322,480	141,538	161,711	140,391

Continued

[Table of Contents](#)**Table 4c Log consumption — by mill location and county of harvest**

Logs harvested in Washington (thousand board feet, Scribner scale)

Lower Columbia Economic Area

Economic area and county of operation	Clark	Cowlitz	Klickitat	Skamania	Wahkiakum
Puget Sound					
Pierce	0	0	0	0	0
Snohomish	1,159	0	0	0	0
Others	260	260	0	0	0
Total	1,419	260	0	0	0
Olympic Peninsula					
Clallam	1,446	1,446	0	362	362
Grays Harbor	0	4,758	0	536	0
Mason	0	330	0	0	330
Lewis	2,444	22,962	185	297	1,819
Others	1,496	1,496	0	0	10,000
Total	5,387	30,991	185	1,194	12,510
Lower Columbia					
Clark	31,013	23,160	0	4,473	1,988
Cowlitz	59,141	168,730	0	7,403	29,512
Others	10,800	0	43,290	17,436	0
Total	100,954	191,890	43,290	29,312	31,500
Central Washington	0	0	1,933	0	0
Inland Empire					
Stevens	0	0	0	0	0
Others	0	0	0	0	0
Total	0	0	0	0	0
State total	107,760	223,141	45,407	30,506	44,010

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[Table of Contents](#)**Table 4d Log consumption — by mill location and county of harvest**

Logs harvested in Washington (thousand board feet, Scribner scale)

Central Washington Economic Area

Economic area and county	Chelan	Douglas	Kittitas	Lincoln	Okanogan	Yakima
Puget Sound						
Pierce	0	0	350	0	0	0
Snohomish	8,541	0	0	0	7,765	0
Others	74	0	0	0	2,405	0
Total	8,616	0	350	0	10,170	0
Olympic Peninsula						
Clallam	0	0	0	0	0	0
Grays Harbor	0	0	0	0	0	0
Mason	0	0	0	0	0	0
Lewis	0	0	1,185	0	0	3,629
Others	0	0	0	0	0	0
Total	0	0	1,185	0	0	3,629
Lower Columbia						
Clark	0	0	0	0	0	0
Cowlitz	0	0	0	0	0	0
Others	0	0	0	0	0	1,870
Total	0	0	0	0	0	1,870
Central Washington	3,189	0	4,912	0	0	46,790
Inland Empire						
Stevens	518	0	0	518	13,768	0
Others	0	0	0	0	0	0
Total	518	0	0	518	13,768	0
State total	12,323	0	6,447	518	23,938	52,289

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[Table of Contents](#)**Table 4e Log consumption — by mill location and county of harvest**

Logs harvested in Washington (thousand board feet, Scribner scale)

Economic area and county of operation	Inland Empire Economic Area							
	Asotin	Columbia	Ferry	Garfield	Orielle	Spokane	Stevens	Whitman
Puget Sound								
Pierce	0	0	0	0	0	0	0	0
Snohomish	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Olympic Peninsula								
Clallam	0	0	0	0	0	0	0	0
Grays Harbor	0	0	0	0	0	0	0	0
Mason	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Lower Columbia								
Clark	0	0	0	0	0	0	0	0
Cowlitz	0	1,685	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0
Total	0	1,685	0	0	0	0	0	0
Central Washington	0	0	0	0	0	0	0	0
Inland Empire								
Stevens	0	0	22,083	0	0	12,882	71,198	0
Others	0	263	990	658	0	2,570	5,940	132
Total	0	263	23,073	658	0	15,452	77,138	132
State total	0	1,948	23,073	658	0	15,452	77,138	132

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[Table of Contents](#)**Table 4f Log consumption by state or province of log harvest**

Logs not harvested in Washington (thousand board feet, Scribner)

Economic area and county of operation	State or province of log harvest				
	Oregon	Idaho	Montana	British Columbia	Other state
Puget Sound					
Pierce	0	0	0	5,727	0
Snohomish	560	0	0	7,500	0
Others	0	0	0	14,327	0
Total	560	0	0	27,554	0
Olympic Peninsula					
Clallam	2,411	0	0	3,049	0
Grays Harbor	2,414	0	0	0	0
Mason	0	0	0	35,907	0
Lewis	24,913	0	0	5,835	3,200
Others	1,056	0	0	0	0
Total	30,794	0	0	44,791	3,200
Lower Columbia					
Clark	9,940	0	0	0	0
Cowlitz	379,688	0	0	0	0
Others	16,987	0	0	0	0
Total	406,615	0	0	0	0
Inland Empire					
Stevens	0	2,160	0	0	0
Others	5,267	45,866	0	0	0
Total	5,267	48,026	0	0	0
Central Washington	0	0	0	0	0
State Total	443,236	48,026	0	72,345	3,200

Table 5 offers two views of logs harvested from national forests: mill sector and economic area.

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Table 5 Logs harvested from National Forests

(thousand board feet, Scribner scale)

Economic area of operation	All		Gifford Pinchot	Mount Baker/ Snoqualmie	Mount Baker/ Wenatchee	Okanogan	Colville	Umatilla	Other
	national forests	Olympic							
Puget Sound	8,443	538	1,613	2,136	0	4,157	0	0	0
Olympic Peninsula	15,805	10,578	4,924	0	16	0	0	0	288
Lower Columbia	5,640	0	4,097	0	0	0	0	0	1,543
Central Washington	1,506	0	0	0	1,506	0	0	0	0
Inland Empire	18,467	0	0	0	0	3,768	14,699	0	0
State total	49,862	11,115	10,633	2,136	1,522	7,926	14,699	0	1,831
Industry									
Lumber	36,928	2,964	7,357	2,136	16	7,926	14,699	0	1,831
Veneer & plywood	4,011	2,398	1,613	0	0	0	0	0	0
Log export	0	0	0	0	0	0	0	0	0
Roundwood chipping	8,923	5,753	1,664	0	1,506	0	0	0	0
State total	49,862	11,115	10,633	2,136	1,522	7,926	14,699	0	1,831

Tables 6 a-c show the number of mills by economic area and sector, with percentages of log volume by economic area and landowners.

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Table 6a Operations – by percentage of logs from original owners

Economic area and industry of operation	National forest				State				Bureau of Land Management			
	Percentage of log dependency											
	0	1-33	34-66	67-100	0	1-33	34-66	67-100				
Puget Sound												
Lumber	7	3	0	0	1	5	4	0	10	0	0	0
Log export	4	0	0	0	4	0	0	0	4	0	0	0
Others	7	2	0	0	4	2	2	1	9	0	0	0
Total	18	5	0	0	9	7	6	1	23	0	0	0
Olympic Peninsula												
Lumber	13	8	0	0	2	12	5	2	20	1	0	0
Veneer & plywood	2	3	0	0	2	1	2	0	5	0	0	0
Shake & shingle	10	0	0	0	8	1	1	0	10	0	0	0
Log export	6	0	0	0	6	0	0	0	6	0	0	0
Post, pole & piling	4	0	0	0	0	0	2	2	4	0	0	0
Roundwood chipping	1	5	0	0	1	5	0	0	6	0	0	0
Others	1	2	0	0	1	2	0	0	3	0	0	0
Total	37	18	0	0	20	21	10	4	54	1	0	0
Lower Columbia												
Lumber	3	2	0	0	2	1	2	0	2	3	0	0
Pulp & board	5	0	0	0	5	0	0	0	5	0	0	0
Log export	4	0	0	0	4	0	0	0	4	0	0	0
Others	3	0	0	0	2	1	0	0	3	0	0	0
Total	15	2	0	0	13	2	2	0	14	3	0	0
Central Washington	1	1	0	0	1	1	0	0	2	0	0	0
Inland Empire												
Lumber	1	3	0	0	0	4	0	0	2	2	0	0
Others	3	1	0	0	3	1	0	0	4	0	0	0
Total	4	4	0	0	3	5	0	0	6	2	0	0
State total												
Lumber	25	16	0	0	6	22	11	2	35	6	0	0
Veneer & plywood	4	4	0	0	4	1	3	0	8	0	0	0
Pulp & board	11	2	0	0	11	2	0	0	13	0	0	0
Shake & shingle	12	0	0	0	10	1	1	0	12	0	0	0
Log export	15	0	0	0	15	0	0	0	15	0	0	0
Post, pole & piling	6	0	0	0	0	0	3	3	6	0	0	0
Roundwood chipping	4	8	0	0	2	10	0	0	12	0	0	0
Total	77	30	0	0	48	36	18	5	101	6	0	0

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Table 6b Operations – by percentage of logs from original owners

Economic area and industry	Other public				Own wood supply				Other wood supply			
	Percentage of log											
	0	1-33	34-66	67-100	0	1-33	34-66	67-100	0	1-33	34-66	67-100
Puget Sound												
Lumber	7	3	0	0	6	4	0	0	2	3	3	2
Log export	4	0	0	0	3	0	1	0	0	0	1	3
Others	7	2	0	0	8	1	0	0	5	2	1	1
Total	18	5	0	0	17	5	1	0	7	5	5	6
Olympic Peninsula												
Lumber	15	5	1	0	17	3	1	0	6	3	6	6
Veneer & plywood	3	2	0	0	5	0	0	0	2	2	1	0
Shake & shingle	10	0	0	0	9	0	0	1	7	1	1	1
Log export	6	0	0	0	3	2	0	1	0	1	2	3
Post, pole & piling	3	1	0	0	4	0	0	0	0	3	1	0
Roundwood chipping	5	1	0	0	6	0	0	0	0	0	3	3
Others	2	1	0	0	2	0	1	0	1	1	0	1
Total	44	10	1	0	46	5	2	2	16	11	14	14
Lower Columbia												
Lumber	1	4	0	0	4	1	0	0	0	2	2	1
Pulp & board	5	0	0	0	5	0	0	0	5	0	0	0
Log export	4	0	0	0	0	1	1	2	2	1	0	1
Others	3	0	0	0	2	1	0	0	1	0	2	0
Total	13	4	0	0	11	3	1	2	8	3	4	2
Central Washington												
Others	2	0	0	0	2	0	0	0	0	1	0	1
Total	2	0	0	0	2	0	0	0	0	1	0	1
Inland Empire												
Lumber	2	2	0	0	2	2	0	0	0	2	1	1
Others	4	0	0	0	4	0	0	0	3	0	0	1
Total	6	2	0	0	6	2	0	0	3	2	1	2
State total												
Lumber	26	14	1	0	30	10	1	0	8	11	12	10
Veneer & plywood	5	3	0	0	7	1	0	0	3	3	2	0
Pulp & board	12	1	0	0	12	0	1	0	11	1	0	1
Shake & shingle	12	0	0	0	11	0	0	1	9	1	1	1
Log export	15	0	0	0	7	3	2	3	3	2	3	7
Post, pole & piling	4	2	0	0	5	1	0	0	1	4	1	0
Roundwood chipping	11	1	0	0	12	0	0	0	1	0	5	6
Total	85	21	1	0	84	15	4	4	36	22	24	25

Continued

Table 6c Operations — by percentage of logs from original owners

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Economic area and industry	Native American				Farmer and misc. private			
	Percentage of log dependency							
	0	1-33	34-66	67-100	0	1-33	34-66	67-100
Puget Sound								
Lumber	6	4	0	0	2	3	4	1
Log export	1	3	0	0	1	3	0	0
Others	7	2	0	0	4	5	0	0
Total	14	9	0	0	7	11	4	1
Olympic Peninsula								
Lumber	11	10	0	0	5	12	3	1
Veneer & plywood	4	1	0	0	2	3	0	0
Shake & shingle	10	0	0	0	10	0	0	0
Log export	4	1	1	0	0	5	1	0
Post, pole & piling	4	0	0	0	0	4	0	0
Roundwood chipping	1	5	0	0	0	6	0	0
Others	1	2	0	0	1	2	0	0
Total	35	19	1	0	18	32	4	1
Lower Columbia								
Lumber	3	2	0	0	1	4	0	0
Pulp & board	5	0	0	0	5	0	0	0
Log export	3	1	0	0	2	2	0	0
Others	2	1	0	0	1	1	1	0
Total	13	4	0	0	9	7	1	0
Central Washington	1	0	0	1	0	2	0	0
Inland Empire								
Lumber	1	3	0	0	1	2	1	0
Others	4	0	0	0	3	1	0	0
Total	5	3	0	0	4	3	1	0
State total								
Lumber	21	19	0	1	9	22	8	2
Veneer & plywood	6	2	0	0	3	5	0	0
Pulp & board	11	2	0	0	11	2	0	0
Shake & shingle	12	0	0	0	12	0	0	0
Log export	9	5	1	0	4	10	1	0
Post, pole & piling	6	0	0	0	0	6	0	0
Roundwood chipping	5	7	0	0	2	9	1	0
Total	70	35	1	1	41	54	10	2

Tables 7 a-c show the number of operations by sector and economic area and their percentage of log volume by landowners.

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Table 7a **Operations — by percentage of logs from original owners**

Industry and economic area	National forest				State				Other wood supply			
	Percentage of log dependency											
	0	1-33	34-66	67-100	0	1-33	34-66	67-100	0	1-33	34-66	67-100
Log export												
Puget Sound	4	0	0	0	4	0	0	0	4	0	0	0
Olympic Peninsula	6	0	0	0	6	0	0	0	6	0	0	0
Lower Columbia	4	0	0	0	4	0	0	0	4	0	0	0
Total	14	0	0	0	14	0	0	0	14	0	0	0
Lumber												
Puget Sound	7	3	0	0	1	5	4	0	10	0	0	0
Olympic Peninsula	13	8	0	0	2	12	5	2	20	1	0	0
Lower Columbia	3	2	0	0	2	1	2	0	2	3	0	0
Inland Empire	1	3	0	0	0	4	0	0	2	2	0	0
Others	1	0	0	0	1	0	0	0	1	0	0	0
Total	25	16	0	0	6	22	11	2	35	6	0	0
Post, pole & piling												
Olympic Peninsula	4	0	0	0	0	0	2	2	4	0	0	0
Others	2	0	0	0	0	0	1	1	2	0	0	0
Total	6	0	0	0	0	0	3	3	6	0	0	0
Pulp & board												
Lower Columbia	5	0	0	0	5	0	0	0	5	0	0	0
Others	5	2	0	0	5	2	0	0	7	0	0	0
Total	10	2	0	0	10	2	0	0	12	0	0	0
Roundwood chipping												
Olympic Peninsula	1	5	0	0	1	5	0	0	6	0	0	0
Others	3	3	0	0	1	5	0	0	6	0	0	0
Total	4	8	0	0	2	10	0	0	12	0	0	0
Shake & shingle												
Olympic Peninsula	10	0	0	0	8	1	1	0	10	0	0	0
Others	2	0	0	0	2	0	0	0	2	0	0	0
Total	12	0	0	0	10	1	1	0	12	0	0	0
Veneer & plywood												
Olympic Peninsula	2	3	0	0	2	1	2	0	5	0	0	0
Others	2	1	0	0	2	0	1	0	3	0	0	0
Total	4	4	0	0	4	1	3	0	8	0	0	0
State total	75	30	0	0	46	36	18	5	99	6	0	0

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Table 7b Operations – by percentage of logs from original owners

Industry and economic area	Percentage of log dependency											
	Other Public				Own wood supply				Other wood supply			
	0	1-33	34-66	67-100	0	1-33	34-66	67-100	0	1-33	34-66	67-100
Log export												
Puget Sound	4	0	0	0	3	0	1	0	0	0	1	3
Olympic Peninsula	6	0	0	0	3	2	0	1	0	1	2	3
Lower Columbia	4	0	0	0	0	1	1	2	2	1	0	1
Total	14	0	0	0	6	3	2	3	2	2	3	7
Lumber												
Puget Sound	7	3	0	0	6	4	0	0	2	3	3	2
Olympic Peninsula	15	5	1	0	17	3	1	0	6	3	6	6
Lower Columbia	1	4	0	0	4	1	0	0	0	2	2	1
Inland Empire	2	2	0	0	2	2	0	0	0	2	1	1
Others	1	0	0	0	1	0	0	0	0	1	0	0
Total	26	14	1	0	30	10	1	0	8	11	12	10
Post, pole & piling												
Olympic Peninsula	3	1	0	0	4	0	0	0	0	3	1	0
Others	1	1	0	0	1	1	0	0	1	1	0	0
Total	4	2	0	0	5	1	0	0	1	4	1	0
Pulp & board												
Lower Columbia	5	0	0	0	5	0	0	0	5	0	0	0
Others	6	1	0	0	6	0	1	0	5	1	0	1
Total	11	1	0	0	11	0	1	0	10	1	0	1
Roundwood												
Olympic Peninsula	5	1	0	0	6	0	0	0	0	0	3	3
Others	6	0	0	0	6	0	0	0	1	0	2	3
Total	11	1	0	0	12	0	0	0	1	0	5	6
Shake & shingle												
Olympic Peninsula	10	0	0	0	9	0	0	1	7	1	1	1
Others	2	0	0	0	2	0	0	0	2	0	0	0
Total	12	0	0	0	11	0	0	1	9	1	1	1
Veneer & plywood												
Olympic Peninsula	3	2	0	0	5	0	0	0	2	2	1	0
Others	2	1	0	0	2	1	0	0	1	1	1	0
Total	5	3	0	0	7	1	0	0	3	3	2	0
State Total	83	21	1	0	82	15	4	4	34	22	24	25

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Table 7c Operations — percentage of logs from original owners

Economic area and industry	Native American				Farmer and misc. private			
	Percentage of log dependency							
	0	1-33	34-66	67-100	0	1-33	34-66	67-100
Log export								
Puget Sound	1	3	0	0	1	3	0	0
Olympic Peninsula	4	1	1	0	0	5	1	0
Lower Columbia	3	1	0	0	2	2	0	0
Total	8	5	1	0	3	10	1	0
Lumber								
Puget Sound	6	4	0	0	2	3	4	1
Olympic Peninsula	11	10	0	0	5	12	3	1
Lower Columbia	3	2	0	0	1	4	0	0
Inland Empire	1	3	0	0	1	2	1	0
Others	0	0	0	1	0	1	0	0
Total	21	19	0	1	9	22	8	2
Post, pole & piling								
Olympic Peninsula	4	0	0	0	0	4	0	0
Others	2	0	0	0	0	2	0	0
Total	6	0	0	0	0	6	0	0
Pulp & board								
Lower Columbia	5	0	0	0	5	0	0	0
Others	5	2	0	0	5	2	0	0
Total	10	2	0	0	10	2	0	0
Roundwood								
Olympic Peninsula	1	5	0	0	0	6	0	0
Others	4	2	0	0	2	3	1	0
Total	5	7	0	0	2	9	1	0
Shake & shingle								
Olympic Peninsula	10	0	0	0	10	0	0	0
Others	2	0	0	0	2	0	0	0
Total	12	0	0	0	12	0	0	0
Veneer & plywood								
Olympic Peninsula	4	1	0	0	2	3	0	0
Others	2	1	0	0	1	2	0	0
Total	6	2	0	0	3	5	0	0
State total	68	35	1	1	39	54	10	2

Tables 8 a-b show the total volume of logs that were used by each sector and ownership category.

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Table 8a Log consumption — by sector and original log owners
(thousand board feet, Scribner scale)

Economic area and industry	All			Bureau of Land Management	Other Public
	Owners	State	National		
Puget Sound					
Lumber	459,740	116,082	6,793	0	7,617
Log export	122,253	0	0	0	0
Others	82,164	24,644	4,605	0	2,990
Total	664,157	140,726	11,399	0	10,607
Olympic Peninsula					
Lumber	871,543	248,562	6,527	231	24,861
Veneer & plywood	111,017	49,053	3,577	0	5,073
Shake & shingle	244	9	0	0	0
Log export	219,309	0	0	0	0
Post, pole & piling	35,218	22,114	0	0	1,185
Roundwood chipping	130,863	12,237	7,417	0	2,840
Others	31	4	0	0	0
Total	1,368,225	331,979	17,522	231	33,959
Lower Columbia					
Lumber	238,363	78,151	5,640	6,634	25,036
Pulp & board	0	0	0	0	0
Log export	669,359	0	0	0	0
Others	134,443	29,239	0	0	0
Total	1,042,165	107,390	5,640	6,634	25,036
Central Washington					
	57,178	266	1,506	0	0
Inland Empire					
Lumber	146,486	30,354	18,467	8,679	2,708
Others	52,666	10,533	1,053	0	0
Total	199,152	40,888	19,521	8,679	2,708
State total					
Veneer & plywood	171,505	64,963	5,727	0	7,223
Log export	1,010,921	0	0	0	0
Lumber	1,764,452	473,149	37,428	15,543	60,221
Post, pole & piling	44,582	28,065	0	0	2,025
Pulp & board	31	4	0	0	0
Roundwood chipping	339,142	55,057	12,432	0	2,840
Shake & shingle	244	9	0	0	0
Total	3,330,877	621,248	55,587	15,543	72,309

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Table 8b Log consumption — by sector original log owners
(thousand board feet, Scribner rule)

Economic area of operation	Forest Industry *		Native American	Farmer and miscellaneous private
	Own Wood Supply	Other Wood Supply		
Puget Sound				
Lumber	22,416	169,190	6,564	131,078
Log export	41,189	77,077	1,994	1,994
Others	236	31,715	2,594	15,379
Total	63,841	277,982	11,152	148,451
Olympic Peninsula				
Lumber	48,613	431,192	19,793	91,764
Veneer & plywood	0	35,246	6,864	11,204
Shake & shingle	180	55	0	0
Log export	80,672	98,666	19,626	20,346
Post, pole & piling	0	7,212	0	4,707
Roundwood chipping	0	89,445	9,309	9,616
Others	15	9	1	1
Total	129,480	661,824	55,593	137,637
Lower Columbia				
Lumber	6,225	96,904	3,558	16,215
Pulp & board	0	0	0	0
Log export	395,309	182,600	12,690	78,760
Others	5,072	54,826	874	44,432
Total	406,605	334,331	17,123	139,407
Central Washington	0	8,576	45,904	926
Inland Empire				
Lumber	8,249	20,189	28,472	29,369
Others	834	43,667	1,667	2,413
Total	9,082	63,856	30,139	31,783
State total				
Veneer & plywood	5,072	57,480	7,738	23,302
Log export	517,169	358,343	34,309	101,099
Lumber	85,502	719,407	104,291	268,909
Post, pole & piling	236	7,982	0	6,274
Pulp & board	15	9	1	1
Roundwood chipping	834	203,292	13,570	58,619
Shake & shingle	180	55	0	0
Total	608,175	1,342,401	158,243	455,104

* Primarily, "industry" forests are owned by large landowners. "Own" means trees were harvested by owners.

Tables 9a-b show the volume of logs by species consumed by each sector.

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Table 9a Log consumption — by species

(thousand board feet, Scribner scale)

Economic area and industry	All species	Douglas-fir	Hemlock	True firs	Spruce	Ponderosa pine
Puget Sound						
Lumber	459,740	304,257	125,270	712	0	372
Log export	122,253	69,181	40,169	8,027	4,329	105
Others	82,164	45,290	24,483	1,290	430	430
Total	664,157	418,728	189,922	10,028	4,759	908
Olympic Peninsula						
Lumber	871,543	362,199	358,329	560	9,722	1,325
Veneer & plywood	111,017	78,182	29,478	343	2,671	343
Shake & shingle	244	0	0	0	0	0
Log export	219,309	130,841	73,281	3,937	11,250	0
Post, pole & piling	35,218	35,218	0	0	0	0
Roundwood chipping	130,863	52,398	56,169	0	1,867	0
Others	31	9	22	0	0	0
Total	1,368,225	658,847	517,279	4,840	25,509	1,668
Lower Columbia						
Lumber	238,363	208,784	20,572	3,864	0	5,143
Pulp & board	0	0	0	0	0	0
Log export	669,359	519,391	112,768	27,937	9,262	0
Others	134,443	78,152	24,561	3,148	0	4,022
Total	1,042,165	806,327	157,901	34,949	9,262	9,165
Central Washington	57,178	13,852	886	16,284	0	25,271
Inland Empire						
Lumber	146,486	57,854	0	8,952	4,069	54,025
Others	52,666	2,633	0	44,766	0	2,633
Total	199,152	60,487	0	53,719	4,069	56,658
State total						
Veneer & plywood	171,505	116,880	40,228	4,781	3,101	4,795
Log export	1,010,921	719,413	226,218	39,901	24,841	105
Lumber	1,764,452	945,175	504,171	26,651	13,791	84,542
Post, pole & piling	44,582	42,349	0	0	0	0
Pulp & board	31	9	22	0	0	0
Roundwood chipping	339,142	134,416	95,349	48,486	1,867	4,228
Shake & shingle	244	0	0	0	0	0
Total	3,330,877	1,958,242	865,988	119,820	43,599	93,670

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Table 9b Log consumption by species

(thousand board feet, Scribner rule)

Economic area and industry	Lodgepole pine	Western redcedar	Other softwoods	Red alder	Other hardwoods
Puget Sound					
Lumber	0	3,476	0	21,526	4,127
Log export	0	0	354	0	89
Others	0	2,451	109	4,869	2,811
Total	0	5,927	463	26,394	7,027
Olympic Peninsula					
Lumber	662	54,700	2,650	76,973	4,423
Veneer & plywood	0	0	0	0	0
Shake & shingle	0	244	0	0	0
Log export	0	0	0	0	0
Post, pole & piling	0	0	0	0	0
Roundwood chipping	0	3,200	1,420	12,789	3,020
Others	0	0	0	0	0
Total	662	58,144	4,070	89,762	7,443
Lower Columbia					
Lumber	0	0	0	0	0
Pulp & board	0	0	0	0	0
Log export	0	0	0	0	0
Others	0	0	0	24,561	0
Total	0	0	0	24,561	0
Central Washington	886	0	0	0	0
Inland Empire					
Lumber	9,766	11,819	0	0	0
Others	6,801	0	2,501	0	0
Total	16,567	11,819	2,501	0	0
State total					
Veneer & plywood	0	0	0	0	1,720
Log export	0	0	354	0	89
Lumber	10,429	69,995	2,650	98,498	8,550
Post, pole & piling	0	2,233	0	0	0
Pulp & board	0	0	0	0	0
Roundwood chipping	7,687	3,418	4,030	42,219	4,111
Shake & shingle	0	244	0	0	0
Total	18,115	75,890	7,034	140,717	14,470

Tables 10a-b show the total volume of wood and bark residues produced in the sawmill, veneer & plywood, and shake and shingle sectors. The tables also show the volumes of residue used for different purposes. **Board:** Oriented strand board, sheathing panels, particle board. **Pulp:** paper products. **Fuel:** mill site boilers for the manufacturing process or drying wood products. **Other:** garden mulch, barn shavings.

Table 10a Wood and bark residues – by industry and use
(dry weight tons)

Economic area and industry	Wood Residue							Unused
	All residues	All Wood	Used Total	Pulp	Board	Fuel	Other	
Puget Sound								
Lumber	652,816	499,391	499,391	334,553	0	72,870	91,968	0
Log export	0	0	0	0	0	0	0	0
Others	278	276	276	42	0	12	222	0
Total	653,094	499,667	499,667	334,595	0	72,882	92,190	0
Olympic Peninsula								
Lumber	2,217,949	1,706,533	1,706,533	1,135,626	52,559	361,666	156,682	0
Veneer & plywood	303,111	210,297	210,297	154,728	0	12,751	42,818	0
Shake & shingle	13,440	12,190	4,609	0	0	4,360	249	7,581
Log export	0	0	0	0	0	0	0	0
Post, pole & piling	0	0	0	0	0	0	0	0
Roundwood chipping	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0
Total	2,534,500	1,929,020	1,921,439	1,290,354	52,559	378,777	199,749	7,581
Lower Columbia								
Lumber	539,404	419,237	419,237	317,095	10,881	65,197	26,064	0
Pulp & board	0	0	0	0	0	0	0	0
Log export	0	0	0	0	0	0	0	0
Others	72,230	72,230	72,230	48,119	0	8,075	16,036	0
Total	611,634	491,467	491,467	365,214	10,881	73,272	42,100	0
Central Washington								
	74,420	58,643	58,643	37,509	10,567	9,246	1,321	0
Inland Empire								
	238,554	179,948	179,948	81,764	45,177	19,522	33,485	0
State total								
Veneer & plywood	371,051	278,235	278,235	202,889	0	20,838	54,508	0
Log export	0	0	0	0	0	0	0	0
Lumber	3,723,143	2,863,752	2,863,752	1,906,547	119,184	528,501	309,520	0
Post, pole & piling	0	0	0	0	0	0	0	0
Pulp & board	0	0	0	0	0	0	0	0
Roundwood chipping	0	0	0	0	0	0	0	0
Shake & shingle	18,008	16,758	9,177	0	0	4,360	4,817	7,581
Total	4,112,202	3,158,745	3,151,164	2,109,436	119,184	553,699	368,845	7,581

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Table 10b Wood and bark residues — production and use
(dry weight tons)

Economic area and industry	All	Used	Pulp	Board	Fuel	Other	Unused
	Bark	Total					
Puget Sound							
Lumber	153,425	153,425	0	0	81,895	71,530	0
Log expo	0	0	0	0	0	0	0
Others	2	2	0	0	0	2	0
Total	153,427	153,427	0	0	81,895	71,532	0
Olympic Peninsula							
Lumber	511,416	509,017	0	0	420,884	88,133	2,399
Veneer &	92,814	92,814	0	0	92,814	0	0
Shake &	1,250	130	0	0	130	0	1,120
Log expo	0	0	0	0	0	0	0
Post, pole	0	0	0	0	0	0	0
Roundwood	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0
Total	605,480	601,961	0	0	513,828	88,133	3,519
Lower Columbia							
Lumber	120,167	120,167	0	0	75,283	44,884	0
Pulp & bark	0	0	0	0	0	0	0
Log expo	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0
Total	120,167	120,167	0	0	75,283	44,884	0
Central Washington	15,777	15,777	0	0	11,044	4,733	0
Inland Empire	58,606	58,606	0	0	53,962	4,644	0
State total							
Veneer &	92,816	92,816	0	0	92,814	2	0
Log expo	0	0	0	0	0	0	0
Lumber	859,391	856,992	0	0	643,068	213,924	2,399
Post, pole	0	0	0	0	0	0	0
Pulp & bark	0	0	0	0	0	0	0
Roundwood	0	0	0	0	0	0	0
Shake &	1,250	130	0	0	130	0	1,120
Total	953,457	949,938	0	0	736,012	213,926	3,519

Table 11 shows the total number of mills by sector and volume that use hardwoods.

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Table 11 Hardwoods consumed—by volume (mbf)
(thousand board feet Scribner)

	Number of mills	Hardwood
Sawmills	7	107,049
Veneer & Plywood	2	1,720
Export	1	89
Chip	10	21,769
State Total	20	130,627

Table 12 shows the total volume by diameter of logs used by each sector, indicating which log sizes are most economically viable.

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Table 12 Log consumption—by diameter in inches

(thousand board feet, Scribner)

Economic area and industry of operation	Log diameter in inches				
	Total	less than 5	5 to 10	10 to 20	21 or more
Puget Sound					
Lumber	459,740	245	229,861	177,297	52,337
Log export	122,253	0	36,488	73,345	12,420
Others	82,164	8,940	35,719	31,776	5,729
Total	664,157	9,185	302,068	282,419	70,485
Olympic Peninsula					
Lumber	871,543	2,826	551,007	281,365	36,345
Veneer & plywood	111,017	0	54,381	53,406	3,230
Shake & shingle	244	0	20	160	64
Log export	219,309	0	81,917	125,233	12,159
Post, pole & piling	35,218	0	28,021	7,197	0
Roundwood chipping	130,863	39,172	51,619	23,599	16,473
Others	31	16	16	0	0
Total	1,368,225	42,014	766,981	490,960	68,270
Lower Columbia					
Lumber	238,363	6,039	85,842	136,873	9,609
Pulp & board	0	0	0	0	0
Log export	669,359	0	138,874	481,182	49,303
Others	134,443	52,630	66,948	13,990	874
Total	1,042,165	58,669	291,664	632,046	59,786
Central Washington	57,178	2,657	8,456	36,562	9,503
Inland Empire					
Lumber	146,486	8,139	91,953	43,074	3,320
Others	52,666	2,633	10,533	31,600	7,900
Total	199,152	10,772	102,486	74,674	11,220
State total					
Veneer & plywood	171,505	0	76,784	89,757	4,964
Log export	1,010,921	0	257,279	679,760	73,882
Lumber	1,764,452	17,249	964,461	673,400	109,342
Post, pole & piling	44,582	0	33,929	10,653	0
Pulp & board	31	16	16	0	0
Roundwood chipping	339,142	106,033	139,166	62,930	31,013
Shake & shingle	244	0	20	160	64
Total	3,330,877	123,297	1,471,655	1,516,661	219,265