



# Washington Mill Survey 2012

Series Report #22

Plywood  
Veneer  
Pulp  
Shake & Shingle

PUBLISHED SEPTEMBER 2014



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**

# Acknowledgements

The Department of Natural Resources (DNR) appreciates the support of the major forest industry associations, mill owners, mill operators, and log exporters who provided data for this survey.

**Prepared by:**

Dorian Smith, Economic Analyst

**WA DNR Office of Budget and Economics**

**Economist Group**

Lisa Largent, Budget Director

David Chertudi, Lead Economist

Meagan Gillum, Executive Assistant (editing)

Kristoffer Larsen, Economist (editing and ACCESS Programming)

**ACCESS Database Programming:** Hsien-chih B. Lu, Ph.D., DNR Data Scientist; Bruce Hiserote, USDA

**GIS map:** Jeff Holden, DNR Proprietary Transportation Manager (GIS) and Don Hiller, DNR Cartographer

**Cover design:** Luis Prado, DNR Communications

**Cover** —In this 2006 photo, tall stacks of veneer are stored in front of the Hardel Mutual Plywood mill in Chehalis. Veneer mills now provide more veneer for engineered wood products than plywood.

**Dorian Smith/DNR Photo**

**Send requests regarding this report to:**

Dorian Smith

Office of Budget and Economics

WA Department of Natural Resources

PO Box 47041

Olympia, WA 98504-7041

Phone: 360-902-1026

E-mail: [dorian.smith@dnr.wa.gov](mailto:dorian.smith@dnr.wa.gov)

**Website:**

[http://www.dnr.wa.gov/BusinessPermits/Topics/EconomicReports/Pages/obe\\_washington\\_state\\_millsurvey.aspx](http://www.dnr.wa.gov/BusinessPermits/Topics/EconomicReports/Pages/obe_washington_state_millsurvey.aspx)

People who need this information in an alternate format may call: 360-902-1120 or Dial 7-1-1

# Washington Mill Survey 2012

Series Report #22

Plywood, Veneer, Pulp and Shake Edition

Published September 2014



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



## Introduction

Past readers of the Washington Mill Survey may be surprised to see this third edition covering 2012 statistics for the wood products industry. By the end of 2014, four total editions of the 2012 report will have been published. This new publication timetable will enable us to reduce the time to gather and analyze vital data.

For the past 46 years, the Mill Survey has been published as a single volume covering all sectors of the primary wood products industry. The Mill Survey is undergoing modifications to accommodate the needs of the public and forestry professionals when reporting about the forest products markets.

Here is the publishing schedule for this year.

**February**—Statewide totals and 10 year analyses

**May**—Lumber mills

**September**—Plywood, veneer, pulp, and shake-and-shingle mills

**December**—Log exports, poles, and chip mills

The initial 2012 report -- covering statewide and 10 year statistics and analyses — was a prologue for the story that the industry is rapidly adapting to increasing demands for logs and lumber. Some economists predict that the U.S. housing construction resurgence could last several years. Export markets are also increasing with the growth of global trade.

Other changes in the Mill Survey are expected. Some sectors are modifying their manufacturing process so much that they are barely recognizable from their original organization. For instance, the original Mill Survey only featured operations that bought logs and produced wood products. Then some plywood mills by-passed log processing and now buy veneer to manufacture plywood. Other mills are introducing new construction products from processed wood.

The only constant in the wood products industry is it continues to be a viable economic

[Link to Mill Surveys and Timber Harvest Reports](#)

### 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

mfs 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

# Table of Contents

Page

<b>Acknowledgments</b>	i
<b>Leaf</b> .....	ii
<b>Introduction</b> .....	iii
<b>Map: Economic areas used in this report</b> .....	iv
<b>Abbreviations and conversions</b> .....	iv
<b>Table of Contents</b> .....	vi

<a href="#">Table 32</a>	Veneer-producing mills—by lathe log diameter .....	1
<a href="#">Table 33</a>	Veneer-producing mills—by minimum core size .....	1
<a href="#">Table 34</a>	Veneer and plywood mills—by 8-hour single shift production capacity .....	1
<a href="#">Table 35</a>	Logs consumed by veneer and plywood mills—by diameter .....	2
<a href="#">Table 36</a>	Veneer and plywood production .....	2
<a href="#">Table 37</a>	Number of veneer and plywood mills—by selected equipment .....	2
<a href="#">Table 38</a>	Wood residues from veneer and plywood mills .....	3
<a href="#">Table 39</a>	Average number of operating days—veneer and plywood mills .....	3
<a href="#">Table 40</a>	Number of pulp mills-by processing type .....	5
<a href="#">Table 41</a>	Pulp mills' capacity (single 8-hour shift)-by mill type .....	5
<a href="#">Table 42</a>	Average operating days of pulp mills .....	5
<a href="#">Table 43</a>	Pulp mill production-by product, area and type of operation .....	6
<a href="#">Table 44</a>	Wood fiber consumption by pulp mills-by fiber type .....	6
<a href="#">Table 45</a>	Roundwood chip consumption by pulp mills-by species .....	7
<a href="#">Table 46</a>	Logs, sawdust and roundwood chip use by pulp mills-by state .....	7
<a href="#">Table 47</a>	Shake-and-shingle mills' capacity and operating days .....	8
<a href="#">Table 48</a>	Shake-and-shingle mills with selected equipment .....	8
<a href="#">Table 49</a>	Log consumption by shake-and-shingle mills-by type .....	8
<a href="#">Table 50</a>	Log consumption by sawmills – by species and county .....	9
<a href="#">Table 51</a>	Wood and bark residues - by county .....	9
<a href="#">Table 52 a-b</a>	Wood residues (all types) from sawmills – mill size and use .....	9
<a href="#">Table 53</a>	Wood residues (all types) from sawmills – mill size and use .....	10

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**Table 32 Veneer-producing mills—by lathe log diameter**

Lathe log diameter limit in inches

Economic area	Total	Layup								
		only	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+
Puget Sound	2	1	0	0	1	0	0	0	0	0
Olympic Peninsula	5	2	0	0	3	0	0	0	0	0
Lower Columbia	1	0	0	0	1	0	0	0	0	0
<b>State Total</b>	<b>8</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**TABLE 32** displays the number of mills that produce veneer by maximum lathe diameter. (A lathe peels veneer by spinning a log on its axis against a blade.) For instance, no mills can handle logs more than 40 inches in diameter.

**Table 33 Number of veneer and plywood mills – by minimum core size**

Lathe log diameter limit in inches

Economic area	Total	Lathe log diameter limit in inches									No Lathe 11 or core
		3	4	5	6	7	8	9	10		
Puget Sound	2	1	0	0	0	0	0	0	0	0	1
Olympic Peninsula	5	0	3	0	0	0	0	0	0	0	2
Lower Columbia	1	0	1	0	0	0	0	0	0	0	0
<b>State total</b>	<b>8</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>3</b>						

**TABLE 33** displays the number of veneer mills by the minimum core size -- the thinnest log that can be peeled with the mill's equipment. For instance, in Washington, only one mill can peel veneer from a log as narrow as three inches.

**Table 34 Veneer and plywood mills – total 8-Hour single shift capacity**

(thousand square feet, 3/8-inch )

Economic area and county	Veneer	Plywood	Veneer and Plywood	
	only	only	Veneer	Plywood
Puget Sound	360	200	0	0
Olympic Peninsula	640	510	280	250
Lower Columbia	0	0	322	208
<b>State Total</b>	<b>1,000</b>	<b>710</b>	<b>602</b>	<b>458</b>

**TABLE 34** shows the 8-hour capacity (thousand square feet) of mills that produce veneer and plywood. For instance, Washington's mills could totally produce nearly 1.2 million square feet of plywood (3/8-inch basis) per 8-hour shift. (In 2010 the capacity was 1.8 million square feet.) The state's mills decreased their veneer production capacity by 22%. However, the total veneer production capacity from veneer and plywood mills decreased by 41%, while production from veneer-only mills increased by 33%.

**Table 35 Logs consumed by veneer and plywood mills – by diameter**  
(thousand board feet, Scribner)

Minimum log diameter	Volume	Percent
Less than 5 inches	0	0
5.0 to 10.9 inches	76,784	45
11.0 to 20.9 inches	89,757	52
21 inches or more	4,964	3
<b>State total</b>	<b>171,505</b>	<b>100</b>

**TABLE 35** displays the volume of logs processed to make veneer (from veneer-only and plywood and veneer mills) by log diameter. For instance, 97% of all logs processed to make veneer were between 5 and 21 inches in diameter.

**Table 36 Veneer and plywood production**  
(thousand square feet, 3/8-inch basis)

Veneer	<b>447,470</b>
Plywood	<b>471,666</b>

**TABLE 36** displays the total volume of veneer and plywood from veneer-only, plywood-only and veneer-plywood mills, on thousand square feet, 3/8-inch basis. For instance, Washington's mills produced 471.7 million square feet of plywood in 2012, a 42% decrease from 2010.

**Table 37 Number of veneer and plywood mills—by selected equipment**

Economic area and county	Total Mills	4-foot lathe	8-foot lathe	Slicer	Veneer chipper	Core chipper	Cold press	Hot press	Burner
Olympic Peninsula	5	0	3	0	4	3	0	2	1
Others*	3	1	2	0	1	2	1	1	1
<b>State total</b>	<b>8</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>1</b>	<b>4</b>	<b>2</b>

**TABLE 37** displays the number of veneer and plywood mills which possess a variety of production equipment. For instance, half of the mills use a hot press, which simultaneously heats and presses together three or more layers of veneer. The heated glue is better spread and bonds to the layers of veneer.

**Table 38 Wood residues from veneer and plywood mills – by use**  
(bone dry tons)

Economic area	Total	Used					Unused
		Total used	Pulp	Board	Fuel	Other	
<b>Puget Sound</b>							
Coarse	80	80	42	0	10	28	0
Medium	0	0	0	0	0	0	0
Fine	2	2	0	0	2	0	0
<b>Total</b>	<b>82</b>	<b>82</b>	<b>42</b>	<b>0</b>	<b>12</b>	<b>28</b>	<b>0</b>
<b>Olympic Peninsula</b>							
Coarse	209,970	209,970	154,728	0	12,424	42,818	0
Medium	0	0	0	0	0	0	0
Fine	3,106	3,106	0	0	3,106	0	0
<b>Total</b>	<b>213,076</b>	<b>213,076</b>	<b>154,728</b>	<b>0</b>	<b>15,530</b>	<b>42,818</b>	<b>0</b>
<b>Lower Columbia</b>							
Coarse	66,241	66,241	48,119	0	6,460	11,662	0
Medium	0	0	0	0	0	0	0
Fine	1,615	1,615	0	0	1,615	0	0
<b>Total</b>	<b>67,856</b>	<b>67,856</b>	<b>48,119</b>	<b>0</b>	<b>8,075</b>	<b>11,662</b>	<b>0</b>
<b>State total</b>							
Coarse	276,291	276,291	202,889	0	18,894	54,508	0
Medium	0	0	0	0	0	0	0
Fine	4,723	4,723	0	0	4,723	0	0
<b>Total</b>	<b>281,014</b>	<b>281,014</b>	<b>202,889</b>	<b>0</b>	<b>23,617</b>	<b>54,508</b>	<b>0</b>

**TABLE 38** shows the volume in bone dry tons of the use of bark and mill residues produced by plywood and veneer mills. For instance, about 70% (202,889 tons) of the total wood residues (281,014 tons) was sold to pulp mills.

**Table 39 Average number of operating days – veneer and plywood mills**

Mill type	Average days	
	statewide	Mills
Veneer only	251	3
Plywood only	266	3
Veneer and plywood	220	2
<b>State average</b>	<b>246</b>	<b>8</b>

**TABLE 39** shows the average number of mills and average annual operating days of three categories of production: veneer only, plywood only, and both plywood and veneer. For instance, in 2012 there were two mills that produce both veneer and plywood. In 2010 there were four.

**Table 40 Numbers of Pulp Mills by processing type**

Economic area and county	All mills	Sulfite	Sulfate	Groundwood	Semi-chemical
Puget Sound	1	0	1	0	0
Olympic Peninsula	3	1	1	1	0
Lower Columbia	5	1	3	1	0
Inland Empire	2	0	1	1	0
<b>State total</b>	<b>11</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>0</b>

**TABLE 40** shows the number of pulp mills based on their method of production. Methods include chemical (sulphate and sulphite), groundwood (mechanical grinding) and semi-chemical (chemical and mechanical). Kraft mills (sulfate) is the most common type of pulp mill in Washington.

**Table 41 Pulp mills' capacity (single 8-hour shift) – by type of mill**

(bone dry tons)

Pulp mill type	Capacity	Number
Sulfite	800	2
Sulfate	6,575	6
Groundwood and Semichemical	2,228	3
<b>State total</b>	<b>9,603</b>	<b>11</b>

**TABLE 41** shows the average 8-hour shift capacity of the state's pulp mills, by manufacturing process. The total average 8-hour shift capacity for all pulp mills in Washington was 9,600 bone dry tons.

**Table 42 Pulp mill production — by product, area and type of operation**  
(bone dry tons)

Economic area	Products					
	All products	Newsprint	Bleached paper	Unbleached paper	Other paper	Market pulp
Puget Sound	478,377	0	283,946	127,570	0	66,861
Olympic Peninsula	617,645	100	10	239,954	160,000	217,581
Lower Columbia	2,187,594	371,849	279,252	933,813	602,680	0
Inland Empire	614,297	199,533	159,279	135,296	0	120,189
<b>State total</b>	<b>3,897,913</b>	<b>571,482</b>	<b>722,487</b>	<b>1,436,633</b>	<b>762,680</b>	<b>404,631</b>
<b>Type of Operation</b>						
Sulfite	194,030	0	0	54,030	0	140,000
Sulfate	2,502,379	100	722,487	1,382,603	132,558	264,631
Groundwood	1,201,504	571,382	0	0	630,122	0
<b>State total</b>	<b>3,897,913</b>	<b>571,482</b>	<b>722,487</b>	<b>1,436,633</b>	<b>762,680</b>	<b>404,631</b>

**TABLE 42** shows the volumes of products (types of paper, market pulp, etc.) in bone dry tons that were produced by pulp mills. For instance, in 2012 unbleached paper was produced in the greatest volumes (1.4 million tons) of all pulp mill products (3.9 million tons). In 2010 the greatest product volume was 1.25 million tons for newsprint (newspapers).

**Table 43 Wood fiber consumption by pulp mills — by fiber type**  
(bone dry tons)

Economic area	Chips						Waste paper
	Total	Total Chips	From mill residues	From roundwood chipping mill	From logs	Sawdust and shavings	
Puget Sound	698,878	654,566	498,393	156,173	0	0	44,312
Olympic Peninsula	1,375,144	1,182,371	405,073	478,648	231,308	67,342	192,773
Lower Columbia	3,749,013	3,300,437	1,957,488	1,204,145	0	138,804	448,576
Inland Empire	878,550	721,130	380,272	286,258	0	54,600	157,420
<b>State total</b>	<b>6,701,585</b>	<b>5,597,758</b>	<b>3,241,226</b>	<b>2,125,224</b>	<b>231,308</b>	<b>260,746</b>	<b>843,081</b>

**TABLE 43** shows the volume and wood fiber type used by pulp mills. For instance, in 2012 pulp mills statewide used a total of 6.7 million tons of chips, mill residues, sawdust, shavings and recycled paper. Pulp mills used 6.9 million tons in 2010.

**Table 44 Roundwood chip consumption by pulp mills – by species**  
(bone dry tons)

Economic area	All species	Douglas-fir	Hemlock	TRUE fir	Spruce	Ponderosa pine	Lodgepole pine	Western redcedar	Other conifer	Red alder	Other hardwood
Puget Sound	156,173	124,938	23,426	3,123	0	0	0	4,685	0	0	0
Olympic Peninsula	478,648	41,748	435,324	0	1,576	0	0	0	0	0	0
Lower Columbia	1,204,145	579,174	223,767	17,612	0	72,324	183,243	5,871	0	95,413	26,743
Inland Empire	286,258	106,844	0	11,070	615	142,458	615	0	24,656	0	0
<b>State total</b>	<b>2,125,224</b>	<b>852,704</b>	<b>682,516</b>	<b>31,805</b>	<b>2,191</b>	<b>214,782</b>	<b>183,858</b>	<b>10,556</b>	<b>24,656</b>	<b>95,413</b>	<b>26,743</b>

**TABLE 44** shows the volume and species of (roundwood) chips. For instance, in 2012 pulp mills statewide used 852,704 tons of Douglas-fir chips, a decrease of 10% from 2010.

**Table 45 Logs, sawdust and roundwood chip use by pulp mills – by state**  
(bone dry tons)

Economic area	Total volume	Washington	Oregon	Idaho	Montana	British Columbia	Other States
<b>Puget Sound</b>							
Roundwood chips	156,173	156,173	0	0	0	0	0
Sawdust	0	0	0	0	0	0	0
Logs	0	0	0	0	0	0	0
<b>Total</b>	<b>156,173</b>	<b>156,173</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Olympic Peninsula</b>							
Roundwood chips	478,648	477,597	0	0	0	1,051	0
Sawdust	67,342	65,322	0	0	0	2,020	0
Logs	231,308	231,308	0	0	0	0	0
<b>Total</b>	<b>777,298</b>	<b>774,226</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,071</b>	<b>0</b>
<b>Lower Columbia</b>							
Roundwood chips	1,204,145	629,979	482,353	0	9,768	3,898	78,146
Sawdust	79,877	79,877	0	0	0	0	0
Logs	0	0	0	0	0	0	0
<b>Total</b>	<b>1,284,022</b>	<b>709,856</b>	<b>482,353</b>	<b>0</b>	<b>9,768</b>	<b>3,898</b>	<b>78,146</b>
<b>Inland Empire</b>							
Roundwood chips	286,258	109,706	110,690	7,011	55,038	3,813	0
Sawdust	54,600	49,140	5,460	0	0	0	0
Logs	0	0	0	0	0	0	0
<b>Total</b>	<b>340,858</b>	<b>158,846</b>	<b>116,150</b>	<b>7,011</b>	<b>55,038</b>	<b>3,813</b>	<b>0</b>
<b>State total</b>							
Roundwood chips	2,125,224	1,373,456	593,043	7,011	64,806	8,762	78,146
Sawdust	201,819	194,339	5,460	0	0	2,020	0
Logs	231,308	231,308	0	0	0	0	0
<b>Total</b>	<b>2,558,351</b>	<b>1,799,102</b>	<b>598,503</b>	<b>7,011</b>	<b>64,806</b>	<b>10,782</b>	<b>78,146</b>

**TABLE 45** shows the volume and wood fiber types from Pacific Northwest states and British Columbia that were used by Washington pulp mills, not including recycled paper or chips from mill residues. For instance, in 2012 the percentage of wood fiber used by pulp mills that came from out of state was 30%, down from 37%

These totals do not include waste paper or chips from mill residues

**Table 46 Shake-and-shingle mills' capacity and operating days**  
Total single shift capacity (Squares)

Economic area	Number	Shake	Shingle	Other	Average number of operating days / year
Puget Sound	1	0	2	0	100
Olympic Peninsula	10	65	132	121	134
Lower Columbia	1	0	30	0	220
<b>State total</b>	<b>12</b>	<b>65</b>	<b>164</b>	<b>121</b>	<b>139</b>

**TABLE 46** shows the average number of operating days, mill capacities and product volumes of shake-and-shingle mills. For instance, Washington's 12 shake-and-shingle mills operated an average of 139 days in 2012. In 2010 the average was 151. Between 2008 and 2012 the average number of days operated by shake-and-shingle mills has declined 23%.

**Table 47 Shake-and-shingle mills with selected equipment**

Economic area and county	Chipper	Barker	Burner	None
Puget Sound	0	0	0	1
Olympic Peninsula	1	0	1	10
Lower Columbia	0	0	0	1
<b>State Total</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>12</b>

**TABLE 47** shows only one out of 12 shake-and-shingle mills used a burner and one used a chipper in 2012.

**Table 48 Log consumption by shake-and-shingle mills – by type**  
(thousand board feet, Scribner)

Economic area	All types	Sound logs	Utility logs	Other*
Puget Sound	15	0	0	15
Olympic Peninsula	928	184	60	684
Lower Columbia	322	0	0	322
<b>State total</b>	<b>1,265</b>	<b>184</b>	<b>60</b>	<b>1,021</b>

"Other" includes blocks, bolts, lumber, etc.

**TABLE 48** shows the volume of logs and other forms of wood received by the shake-and-shingle sector. The mills only received the equivalent of 1.3 million board feet of logs and bolts (logs cut before delivery to mills). The mills received 80% of their wood in the form of bolts.

**Table 49 Shake-and-shingle mills' production**  
(squares)

Economic area	Total	Product		
		Shakes	Shingles	Other
Puget Sound	200	0	200	0
Olympic Peninsula	16,129	367	10,418	5,344
Lower Columbia	4,510	0	4,510	0
<b>State total</b>	<b>20,839</b>	<b>367</b>	<b>15,128</b>	<b>5,344</b>

**TABLE 49** shows the volume of products (in squares) produced by shake-and-shingle mills in 2012. Production declined 75% between 2010 and 2012 in the traditional shake-and-shingle industry

**Table 50 Log consumption by shake and shingle mills – by original owners**  
(thousand board feet, Scribner)

Economic area	All owners	Forest industry								
		Bureau of				Other public	Own wood supply	Other wood supply	Native American	Farmer, misc. private
		State	National Forest	Land Management	Other					
<b>State total</b>	<b>244</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>180</b>	<b>55</b>	<b>0</b>	<b>0</b>	

**TABLE 50** displays the original ownerships of logs processed into shake-and-shingle products in Washington. About three-quarters of the logs were harvested by the owners of privately owned forests.

**Table 51 Log consumption by shake-and-shingle mills – by diameter (in inches)**  
(thousand board feet, Scribner)

State Total	Log diameter in inches				
	Total ss than 5	5 to 10	10 to 20	21 or more	
<b>State Total</b>	<b>244</b>	<b>0</b>	<b>20</b>	<b>160</b>	<b>64</b>

**TABLE 51** shows the volume logs by diameter that were used to produce shake-and-shingle products in Washington in 2012. For instance, 66% of the logs were between 10 and 20-inches in diameter. About 26% were more than 21 inches in diameter.

Table 52a **Wood and bark residues – production by shake-and-shingle mills**  
(dry weight tons)

Economic area	All residues	Wood Residues				
		Total	Used	Unused	Total	Used
State total	18,009	0	0	16,759	16,759	0

Table 52b  
(dry weight tons)

	Bark residues		
	Total	Used	Unused
State total	1,250	0	0

**TABLES 52 A-B** shows the volumes of wood and bark residues that were produced in shake-and-shingle mills. Only 1.1 percent of all the wood and bark residues from shake-and-shingle mills were not used.

Table 53 **Wood residues – by use and economic area**  
(dry weight tons)

	All Types					
	Total	Total used	Pulp	Fuel	Other	Unused
State Total	16,759	12,771	0	4,360	8,411	3,987

  

	Coarse					
	Total	Total used	Pulp	Fuel	Other	Unused
State total	3,924	2,129	0	1,029	1,980	915

  

	Fine					
	Total	Total used	Pulp	Fuel	Other	Unused
State total	12,834	9,762	0	3,331	6,431	3,072

  

	Bark residues					
	Total	Total used	Pulp	Fuel	Other	Unused
State total	1,250	130	0	130	0	1,120

**TABLE 53** shows the volumes and use of wood and bark residues from shake-and-shingle mills. Total wood residues from shake-and-shingle mills in 2010 was 52,355 bone dry tons. In 2012 the total residues was 16,759 bone dry tons, a 68% decrease.