



THE FOREST PRODUCTS INDUSTRY IN IDAHO

PART 2: INDUSTRY SECTORS, CAPACITY AND OUTPUTS

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INTRODUCTION

This Forest Industry Brief is part of a series of reports presenting findings from a Bureau of Business and Economic Research (BBER) study of Idaho's primary forest products industry. Part 2 of this series presents information on the forest products industry sectors that processed timber and mill residue into finished products in 2015.

IDAHO'S FOREST PRODUCTS INDUSTRY

During 2015, 88 primary forest products facilities were active in Idaho with the majority located near forest resources in the northern and western portions of the state (Figure 1). These plants produced a variety of products, including lumber and other sawn products, veneer and plywood, house logs, posts, poles, utility poles, fence boards, cedar shakes and shingles, log furniture, firewood, and residue related products like particle board, pulp and paper, fuel pellets, bark, animal bedding and mulch. The industry generated more than \$1.65 billion in sales during 2015, including mill residue and residue related products. Sales were up approximately 12 percent (in constant 2015 dollars) from 2011, but still below prerecession levels of \$1.9 to \$2.2 billion (Simmons and others 2014).

Although the total number of active facilities (88) was unchanged from 2011 (Simmons and others 2014), four facilities that were active in 2011 closed permanently: a small sawmill, a utility pole yard, a log home facility and a bark and mulch plant. Five other facilities were inactive during 2015. Five new facilities

operated during 2015: two post and pole facilities, two wood pellet plants and a log home facility. One log home facility and three sawmills, inactive during 2011, also resumed operations bringing the total number of active sawmills to 28 during 2015.

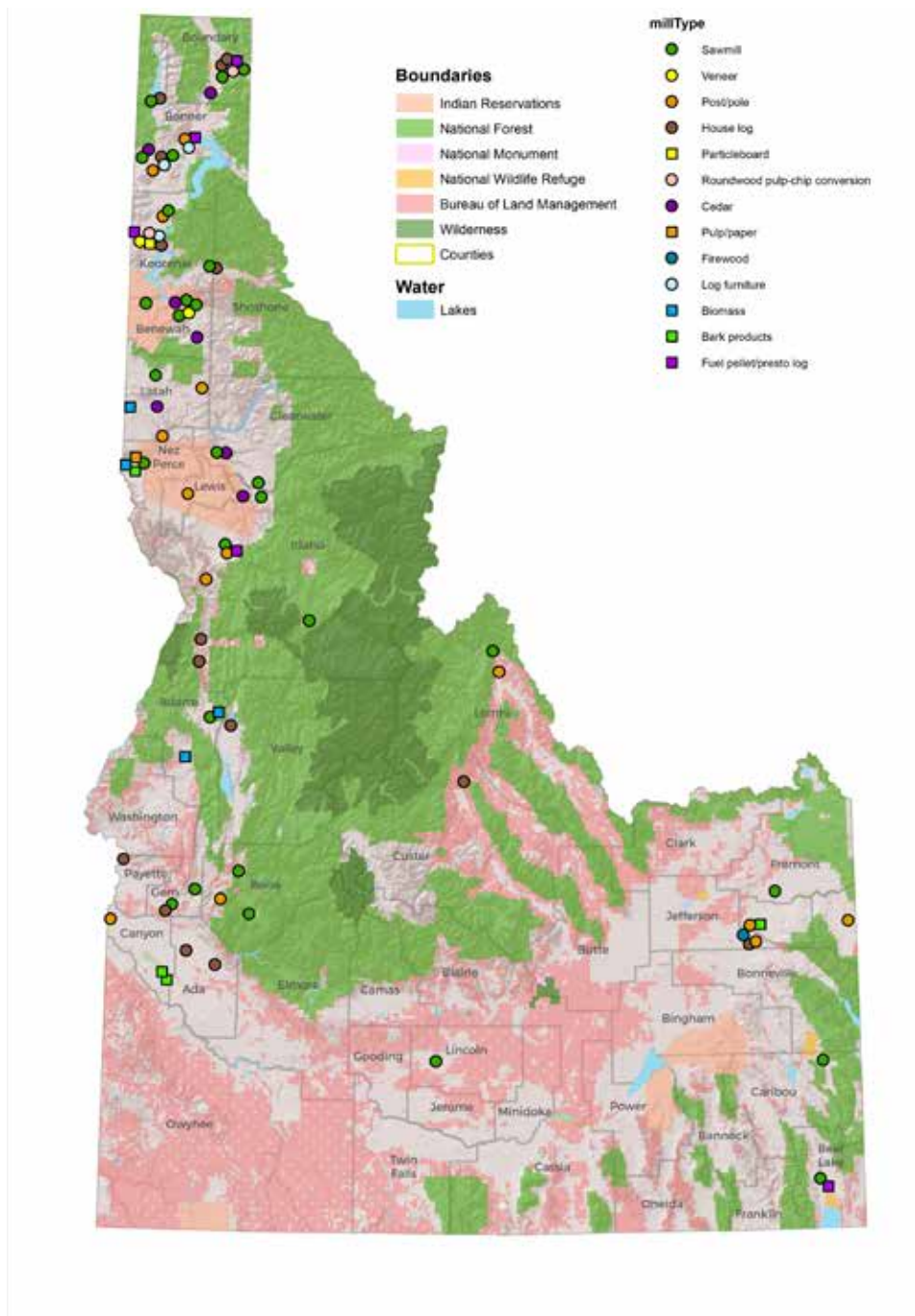
The largest impact on the forest products industry in Idaho since the 2011 mill census was the overall improvement in markets for wood products with the major sectors approaching prerecession levels, as measured by production and sales. The log home industry was still substantially depressed compared to prerecession levels, but made modest gains in 2015.

TIMBER RECEIVED BY IDAHO MILLS

Idaho mills received 1,123 million board feet (MMBF) Scribner of timber for processing during 2015 (Table 1). Timber volume received at Idaho mills differed from the state's timber harvest because some timber harvested in Idaho was processed in other states and some of the timber processed in Idaho was harvested outside the state. Almost 84.3 MMBF (7.5 percent) of the timber used by Idaho facilities during 2015 came from out-of-state. Over 39 MMBF (47 percent) of out-of-state timber came from Washington with an additional 22 MMBF (26 percent) from Montana. About 15 MMBF (18 percent) came from Canada with small volumes from Oregon, Wyoming and Utah.

Private timberlands supplied 66 percent (743.7 MMBF) of the total volume processed by Idaho mills during 2015, up slightly from 55 percent (647.9 MMBF) in 2011, but down considerably from the 74 percent (851.5 MMBF) reported in 2006 (Brandt

Figure 1. Idaho's primary forest products manufacturers, 2015.



and others 2012). Public timberlands led by state lands provided the remaining 34 percent (364.4 MMBF), down from 38 percent (408.7 MMBF) in 2011. State lands provided almost 23 percent of the saw and veneer logs received by Idaho mills in 2015 and almost 30 percent of the timber volume for other products. Industrial lands provided the majority of every product category, except house logs, which was led by non-industrial private lands.

As in previous years, sawlog and veneer logs constituted the vast majority (almost 90 percent) of timber received by Idaho facilities. Timber volume received by Idaho's log home (2 MMBF

and cedar products (34.5 MMBF) manufacturers were higher in 2015 than in 2011, up by 16 and 4 percent, respectively. Logs used for other products, including pulp and paper, particle board, posts and poles, log furniture, and bioenergy accounted for nearly 80 MMBF (7 percent) of the total volume received during 2015, similar to the nearly 83 MMBF (8 percent) in 2011. The drop in timber volume received for other products was mostly in pulpwood with residue related facilities using somewhat less roundwood and more sawmill residue during 2015.

Table 1. Timber received by Idaho facilities by ownership class and product, 2015.

Ownership class	Saw and veneer logs ^a	Cedar products	House logs	Other products ^b	All products
----- Thousand board feet, Scribner -----					
Private	670,540	23,733	1,595	47,867	743,734
Industrial	503,887	13,296	748	29,684	547,615
Non-industrial private ^c	166,653	10,437	847	18,182	196,119
Public	323,479	8,567	498	31,825	364,368
National forest	92,667	2,362	205	8,302	103,536
State	230,372	6,205	228	23,523	260,328
Other ^d	440	--	65	--	505
Canadian and unspecified^e	12,668	2,220	59	255	15,182
All owners	1,006,687	34,500	2,152	79,946	1,123,285

^a Saw and veneer logs combined to prevent disclosure of firm level data.

^b Other products include logs used for pulpwood, posts and poles, utility poles, cants, log furniture and bioenergy.

^c Non-industrial private includes tribal harvest.

^d Other owners include Bureau of Land Management, other public ownerships and unspecified ownerships.

-- Less than 0.5 MBF.

TRENDS BY SECTOR

LUMBER AND PLYWOOD

The lumber sector is the largest sector of Idaho's primary forest products industry in terms of the number of facilities, employment and the volume of timber processed. Because there are only two veneer/plywood facilities and they use similar log inputs, they are combined with the lumber sector for reporting purposes – to avoid disclosure of firm level information. Idaho's 28 sawmills produced about 1,690 MMBF (lumber tally) of lumber and other sawn products in 2015, roughly 5.3 percent of U.S. softwood lumber production (WWPA 2016). Sales from the combined sawmill and veneer/plywood sectors were about \$746.7 million (excluding mill residue sales), 45 percent of the total sales value of Idaho's primary wood products industry. This is a 39 percent increase over 2011 when inflation adjusted sales were about \$538 million (Table 2).

Lumber production in Idaho peaked in 1989 at more than 2.1 billion board feet (BBF) lumber tally and topped 2 BBF again during the housing boom in 2005 (Figure 2). Lumber production declined sharply during the poor housing and lumber markets of the Great Recession and bottomed out in 2009. The industry began recovering in 2010 and 2011, but by 2015 lumber production had not returned to prerecession levels.

Lumber production varied considerably among Idaho's sawmills. The 13 smallest sawmills, each with annual production capacity less than 10 MMBF, had a combined production of about 9 MMBF, about 0.5 percent of the state's 2015 lumber output. The state's

10 largest sawmills, each with an annual production capacity over 100 MMBF, accounted for 86 percent (1,449 MMBF) of lumber output in 2014. Capacity utilization varied in line with mill size - the state's smallest sawmills using just 42 percent of capacity while the largest mills utilized about 71 percent of capacity.

The 2015 statewide lumber recovery factor (LRF) for Idaho sawmills was 8.26 board feet of lumber output per cubic foot of log input, down very slightly from 8.33 in 2011 (Figure 3). The substantial increases in LRF since the 1980s was associated primarily with improvements in technology (Keegan and others 2010). Lumber overrun (LO), the amount of board feet lumber tally produced per board foot Scribner of log volume, averaged 1.84 for sawmills in Idaho during 2015, an increase of 10 percent from 2011. The 2011 decline in LO and rebound in 2015 were attributable to Idaho sawmills using less small-diameter material during the poor lumber markets of 2011 and using more small logs during the better markets of 2006 and 2015. While LO is the most commonly used measure of sawmill efficiency, it is heavily impacted by changes in log size because the Scribner log rule increasingly underestimates log volume (and correspondingly inflates LO) as log diameters decrease (Keegan and others 2010). Since LRF provides a more accurate measure of input volume, production volumes tend to increase as larger logs are processed and decrease when smaller logs are processed. Thus, the relationship between LO and LRF is inverse when influenced by the size of logs processed.

The amount of wood and bark residue generated per unit of lumber produced has generally decreased as sawmills have improved their recovery using log scanning and optimizing,

Table 2. Sales value of Idaho’s primary wood products including mill residue and residue-related products, selected years. Sources: Keegan and others 1982, 1988, 1992, 1997; Morgan and others 2004; Brandt and others 2012; Simmons and others 2014.

Product	1979	1985	1990	1995	2001	2006	2011	2015
----- Million 2015 dollars -----								
Lumber, timbers, other sawn products	1,506.6	846.2	918.5	1,044.5	897.8	908.4	538.4	746.7
Residue-related products ^a	726.7	764.5	943.1	1,008.1	1,061.0	892.7	830.4	783.6
Plywood and veneer	255.4	160.1	177.8	251.6	91.3	^b	^b	^b
Cedar products	39.2	15.9	23.9	20.5	39.7	39.0	55.6	69.8
Posts, poles and log furniture	49.4	24.9	44.7	38.3	29.0	38.6	40.5	45.3
House logs and log homes	23.4	6.5	17.2	30.6	33.3	44.1	8.4	9.6
All products	2,600.6	1,818.1	2,125.2	2,393.5	2,152.0	1,922.7^c	1,473.3	1,655.0

^a Residue-related products include particle board, chips, pulp and paper products, bioenergy products, decorative bark, and mill residues sold within and outside the state.
^b Plywood and veneer sales included with lumber to prevent disclosure of firm level data.
^c Revised.

thinner kerf saws, curved sawing and other technology. Idaho sawmills generated about 2.4 percent less residue per MBF of lumber production during 2015 compared to 2011.

RESIDUE RELATED PRODUCTS

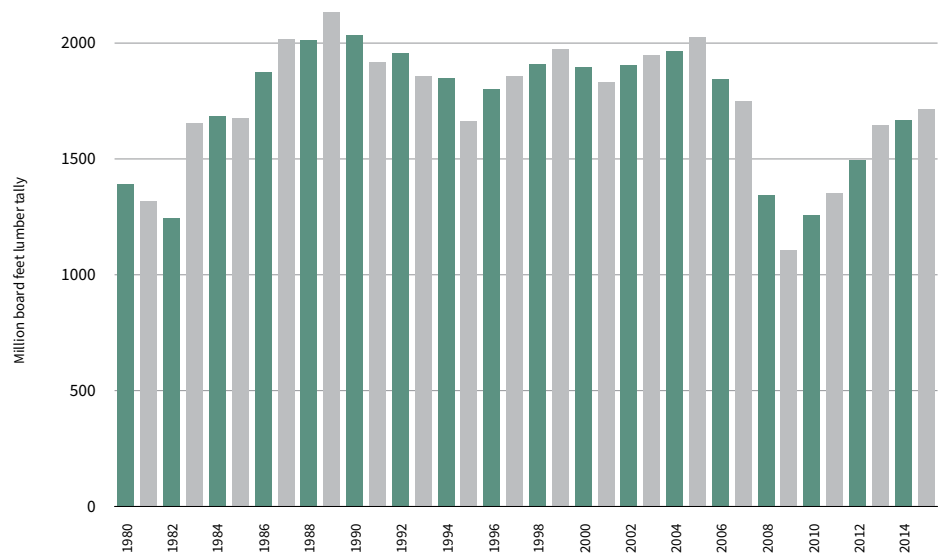
During 2015, 18 facilities operated in this sector, the same as in 2011. These facilities consumed nearly 2.4 million bone dry tons of mill residue and chipped roundwood to produce pulp, paper, particle board, mulch, decorative bark, animal bedding and bioenergy products (i.e., wood pellets, energy logs and steam for energy). Sales from the sector were about \$784 million in 2015,

down about 6 percent from 2011, but still accounting for 47 percent of total sales from the primary wood products industry.

CEDAR PRODUCTS

Seven cedar products facilities operated in 2015 and two have since closed or become inactive due to the owner’s retirement. The volume of timber received by facilities in the sector increased 4 percent to 34.5 MMBF in 2015 and the ownership source of cedar logs shifted somewhat from public to private timberlands compared to 2011. Products in this sector included split rail fencing, shakes and fence boards. Inflation adjusted sales values for these

Figure 2. Idaho lumber production, 1980-2015. Source: WWPA various years.



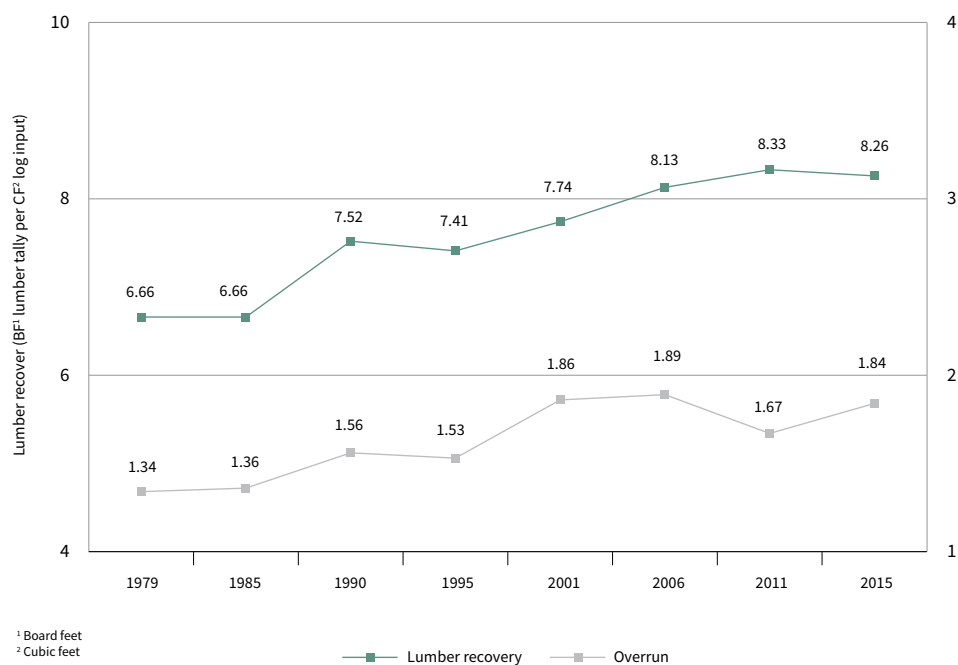


Figure 3. Idaho lumber recovery and overrun, selected years. Sources: Keegan and others 1982, 1988, 1992, 1997; Morgan and others 2004; Brandt and others 2012; Simmons and others 2014.

products were \$69.8 million in 2015, up 25 percent from 2011. Prices for cedar products increased 28 to 30 percent (Random Lengths 2011, 2015) over the period. Sales from Idaho’s cedar products sector have been increasing since the 1980s, in both real dollars and as a proportion of total industry sales (Table 2).

LOG HOMES

Log homes tend to be specialized items resulting in an industry highly tied to regional and national economic influences. However, with relatively low capital costs, inactive or new facilities could begin producing house logs and homes as demand increases. The Great Recession (2007-09) and the related collapse in the U.S. housing market impacted Idaho’s log home industry more severely than any other sector of the state’s wood products industry. Idaho had 26 log home facilities operating in 2006 with inflation-adjusted sales of \$44.1 million and timber use of 17 MMBF Scribner. By 2011, sales were just \$8.4 million with timber use and the number of facilities in sharp decline. The 15 log home facilities operating in 2015 reported somewhat better conditions than 2011 with sales up to \$9.6 million and timber use at 2.1 MMBF Scribner.

OTHER SECTORS

There were 18 facilities operating in the other products sector during 2015, one more than in 2011. These included manufacturers of posts, poles (including utility poles), log furniture, firewood and chipping facilities. The volume of

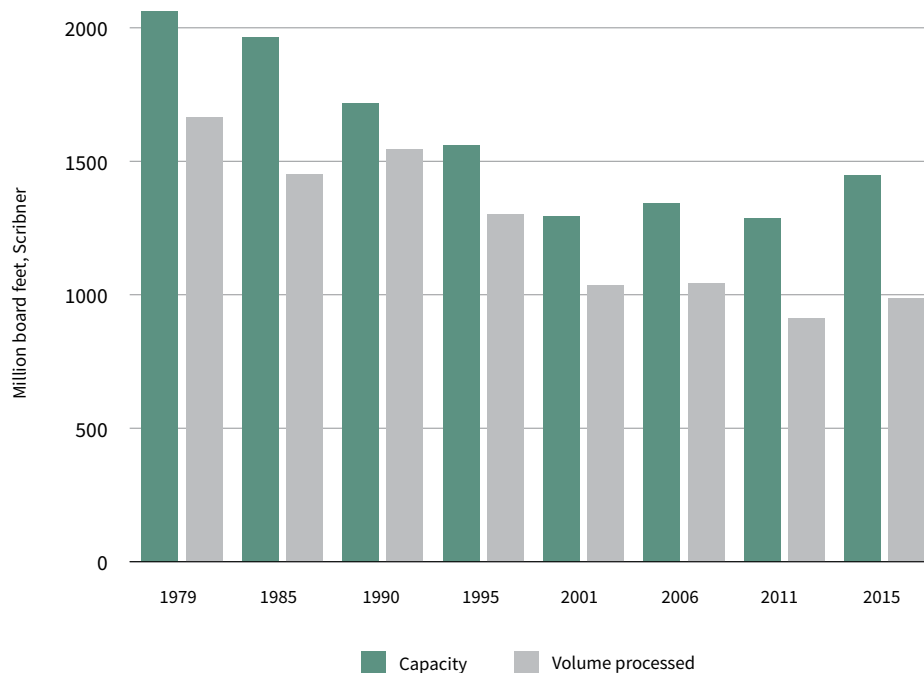
timber received by these facilities was nearly 80 MMBF, about 5 percent less than in 2011. Combined sales for facilities in this group was \$45 million in 2015, 12 percent higher than in 2011. The majority of facilities, volume received and sales in this sector, were for posts, poles and utility poles.

SAWTIMBER-PROCESSING CAPACITY

In Idaho, sawtimber-processing capacity is reported for sawmills and producers of veneer/plywood, utility poles and log homes sectors. Although capacity to process sawtimber resides in other sectors, capacity for the reported sectors have tended to account for the majority of overall sawtimber-processing capacity – 96 percent of total processing capacity (1,499 MMBF) in 2015. These facilities provided their shift and annual production (output) capacities, given sufficient supplies of raw materials and firm market demand for their products. To estimate sawtimber-processing capacity, production capacity was divided by the overrun/recovery for each facility and expressed in units of timber input (MBF Scribner). For example, if a sawmill’s production capacity were 1,000 MBF lumber tally and their overrun (LO) were 2.0 they would have a sawtimber-processing capacity of 500 MBF Scribner.

Idaho’s sawtimber-processing capacity in 2015 was 1,447 MMBF Scribner, of which 68 percent was utilized (Figure 3). Sawmills and plywood/veneer facilities accounted for almost 97 percent of capacity and processed 973 MMBF Scribner of timber. Both the number of facilities and capacity have declined considerably, however, the average capacity

Figure 4. Idaho sawtimber-processing capacity and volume processed, selected years. Sources: Keegan and others 1982, 1988, 1992, 1997; Morgan and others 2004; Brandt and others 2012; Simmons and others 2014.



per facility has grown. In 1979, there were 141 sawmills and plywood/veneer plants operating with an average capacity of 14.4 MMBF Scribner. In 2015, 29 facilities operated with an average capacity of 48.5 MMBF. Over the same period, the average capacity among utility pole and log home manufacturers increased from 0.6 MMBF Scribner to 2.4 MMBF per facility.

Declines in capacity, utilization and the number of facilities operating during the 1990s reflects the decrease in timber volume offered from federal lands (Keegan and others 2006; Brandt and others 2012). Declines in utilization since 1995 may be attributed to a combination of wood products markets, timber supply, as well as technological improvements and upgrades at facilities. Sawtimber-processing capacity and capacity utilization in 2015

indicated substantial reserve capacity available to respond to improving market conditions. However, in 2016, one sawmill closed permanently and a second sawmill ceased to operate as a primary processor of roundwood. The loss of these two facilities further decreased Idaho’s sawtimber-processing capacity.

MILL RESIDUE

As indicated in Part 1 of this series, nearly half of the wood fiber processed by primary forest products manufacturers ends up as mill residue. This residue presents a difficult and expensive disposal problem or it can be used to produce products and generate additional revenue. The three types of wood residues

Table 3. Production and disposition of residues from Idaho’s primary wood products sectors, 2015.

Sector	Total utilized	Pulp and particle board	Energy	Mulch or animal bedding	Pellets or other products	Unutilized	Total produced
----- Bone dry units ^a -----							
Sawmills and plywood/veneer mills	1,428,509	956,945	439,482	7,108	24,975	740	1,429,249
Log home facilities	1,927	--	1,129	771	28	834	2,761
Cedar products facilities	69,723	38,880	16,500	12,025	2,317	--	69,723
Other sectors ^b	88,819	--	81,059	7,700	59	4,791	93,610
All sectors	1,588,978	995,825	538,170	27,605	27,378	6,365	1,595,343

^a Bone dry unit=2,400 lb. oven-dry wood.

^b Other sectors include log chipping, producers of posts, poles, utility poles, log furniture and bioenergy.

include: course residue (chips, slabs, edging, trim and log ends), fine residue (planer shavings and sawdust) and bark.

Idaho's primary forest product manufacturers generated 1,595,343 bone dry units (BDU) (Table 3) of mill residue in 2015, a 16 percent increase from 2011. In 2015, 99.6 percent of this residue was utilized, a small change from the 99.4 percent utilization in 2011. This change in residue utilization can be attributed to a 22 percent increase in residues used for energy on site or sold as hog fuel.

About 62 percent of Idaho's mill residue went to pulp and reconstituted board plants. Another 34 percent was used for energy, including firewood, burned to generate electricity or burned in a boiler system on-site at mills, schools or other facilities. About 1.7 percent of residue was used for animal bedding, mulch and decorative bark. Another 1.7 percent was used to produce wood pellets or other unspecified uses and the remaining 0.4 percent (6,365 BDU) was not used.

See also, **Part 1: Timber Harvest, Products and Flow** (BBER-FIB-10) and **Part 3: Sales, Employment and Contribution to the State's Economy** (BBER-FIB-12) and **Idaho 2015 Data Tables and Figures**.

ABOUT THE DATA

This survey effort is the ninth application of its kind in Idaho and presents information collected from primary manufacturers in the state that receive timber harvested from Idaho and neighboring states. Primary forest product manufacturers are firms that process timber into manufactured products, such as lumber, plywood, log homes and facilities like particle board plants that use the wood fiber residue directly from timber processors. Through a written questionnaire, phone or in-person interview, timber-processing and residue utilizing facilities provided information about their 2015 operations, including:

- Plant location, production, capacity and employment.
- Volume of raw material received, by county and ownership.
- Species of timber received and live/dead proportions.
- Finished product volumes, types, sales value and market locations.
- Volume, utilization and marketing of manufacturing residue.

In the event of nonresponse from a facility, data collected in previous surveys were updated using current data collected for facilities of a similar size, product type and location. For the 2015 Idaho mill survey, data were received for 47 of the 88 active, in-state facilities, accounting for 81 percent of facilities processing more than 5 MMBF Scribner of timber. While some estimation was required, responding firms accounted for 79 percent of the statewide harvest and 78 percent of the timber volume processed in Idaho during calendar year 2015.

In cooperation with the Forest Inventory and Analysis (FIA) programs at the Rocky Mountain and Pacific Northwest Research Stations, BBER has developed the Forest Industries Data Collection System (FIDACS) to collect, compile and make available state and county information on the operations of the forest products industry. Information collected from manufacturers is stored at the BBER.

Additional information not presented here, including the full set of data tables, is available on the BBER website www.bber.umt.edu/FIR/S_ID.asp and upon request. Individual firm-level data is confidential and will not be released.

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A full set of data tables are also available at: <http://www.bber.umt.edu/pubs/forest/fidacs/ID2015Tables.pdf>

