



Wyoming's Forest Products Industry and Timber Harvest, 2014

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Part II: Industry Sectors, Capacity, and Outputs

Chelsea P. McIver, Colin B. Sorenson, Todd A. Morgan, John D. Shaw

Introduction

This Resource Bulletin contains findings from a census of Wyoming's primary forest products industry for calendar year 2014. Part II of the series presents information on the forest products sectors that processed timber and mill residue into finished products, including: sawmills, house log and log home manufacturers, log furniture producers, post and pole manufacturers, commercial firewood operations and wood pellets and animal bedding producers.

This effort is the fifth application of its kind in Wyoming and presents information from primary manufacturers in the State as well as facilities in surrounding States that receive timber harvested from Wyoming. Primary forest product manufacturers are firms that process timber into manufactured products such as lumber, and facilities such as wood pellet 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 2014 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; and
- volume, utilization, and marketing of manufacturing residue.

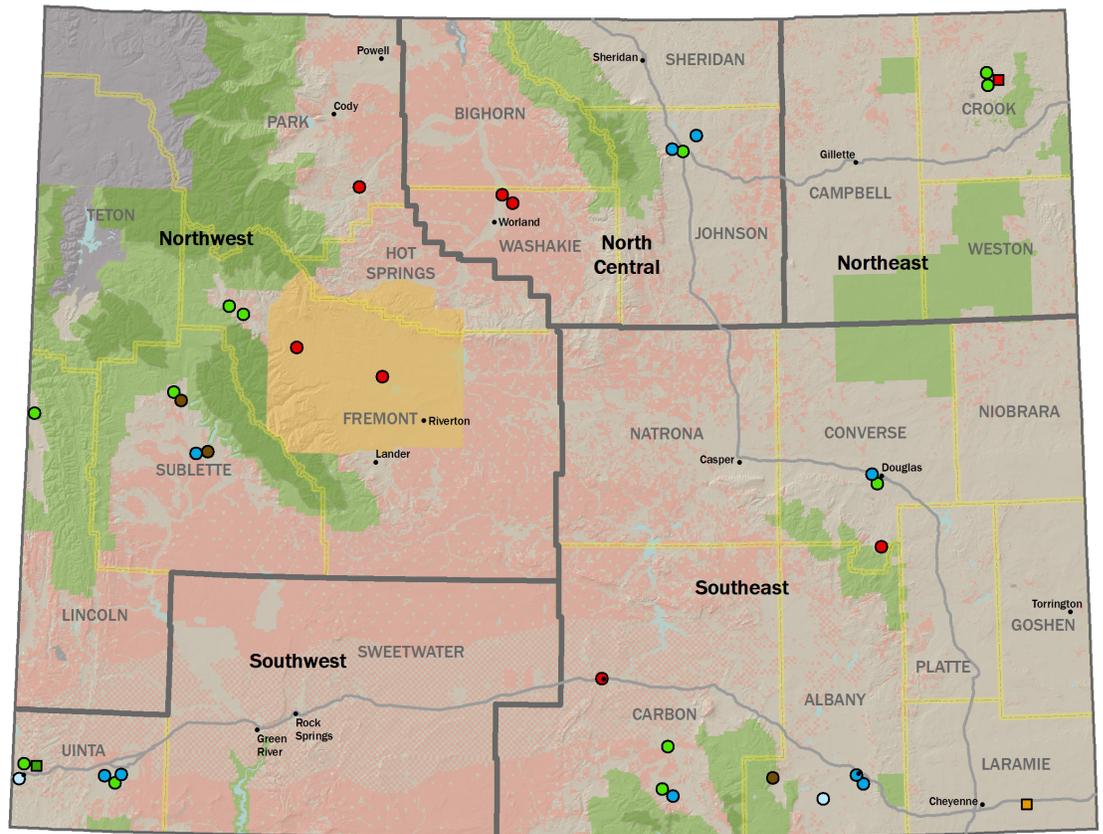
In the event of nonresponse from a facility, data collected in previous surveys were updated using current data collected for facilities of a similar size, product type, and location.

The University of Montana's Bureau of Business and Economic Research (BBER) and the USDA Forest Service's Forest Inventory and Analysis (FIA) Program at the Rocky Mountain Research Station (Ogden, Utah) cooperated in the analysis and preparation of this report. With the 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 is available on our website www.bber.umt.edu/FIR/S_WY.asp and upon request. However, individual firm-level data are confidential and will not be released.

Wyoming's Forest Products Industry

The 2014 census identified 28 active, primary forest products manufacturers in Wyoming (fig. 1). These plants produced an array of products including lumber and other sawn products, wood pellets, house logs, posts, poles and rails, firewood, log furniture, and animal bedding. Total sales of finished products exceeded \$62 million in 2014, a 100-percent (inflation-adjusted) increase from 2010.





Ownership

- Indian Reservations
- Bureau of Land Management
- Wilderness
- National Parks
- National Forests

Mill Types

Roundwood Users

- Sawmill
- Post/Pole
- House log/Log home
- Log furniture
- Inactive mill - various

Residue Users

- Fuel Pellet
- Wood Shavings
- Inactive - fuel pellet

Figure 1—Wyoming’s primary forest products manufacturers, 2014.

While the total number of mills was one fewer than reported in the 2010 census (McIver et al. 2014), the industry experienced a significant increase in its capacity to process timber. Most of the additional capacity was added in the Southeast Resource Area where two formerly inactive sawmills were restarted. The post and pole sector also added one new and one reactivated facility in southeast Wyoming.

Net losses in the number of mills occurred primarily in the house log, firewood, and fuel pellet sectors. Geographically, many of the mills that were closed or inactive during 2014 were located in the northern half of the State. Park County, which contained the highest

number of facilities in 2005 with 13, had no active facilities in 2014. The Northwest Resource Area had a decline from a high of 28 facilities operating in 2000, to just seven in 2014.

Timber Received by Wyoming Mills

In contrast to the volume of timber harvested in the State, timber receipts are the volume of timber delivered to Wyoming mills from in-State and out-of-State sources (table 1). In 2014, Wyoming mills received 91.4 MMBF Scribner of timber for processing. Over half (54 percent) of the timber processed in Wyoming came from outside the State.

Table 1—Timber received and processed in Wyoming by ownership class and product type, 2014.

Ownership class	Saw logs	Post and pole	Other products ^a	All products
----- Thousand board feet, Scribner -----				
All owners (total)	85,838	3,307	2,255	91,399
Private (total)	19,315	491	452	20,258
Industrial	0	0	0	0
Non-industrial and Tribal	19,315	491	452	20,258
Public (total)	66,523	2,816	1,803	71,141
National Forest	58,089	2,285	1,328	61,702
Other public ^b	8,434	531	475	9,439

^a Other products include logs used for log homes, log furniture, and industrial fuelwood.

^b Other public includes State and BLM lands.

Private timberlands contributed 22 percent (20.3 MMBF) of the 91.4 MMBF processed by Wyoming mills during 2014, down slightly from 24 percent in 2010, but down considerably from 57 percent in 2005. Public timberlands provided the remaining 78 percent (71.1 MMBF), up slightly from 76 percent in 2010.

Wyoming mills relied heavily on out-of-State timber from public lands in 2014, of which 89 percent (43.9 MMBF) came from National Forest System lands in adjacent

States. The distribution of Wyoming’s mills near the State’s borders with South Dakota, Colorado, and Montana contributed to the large proportion of out-of-State timber being used in-State.

Trends and Capacity by Sector

Sawmill Sector

Lumber production in Wyoming peaked in the 1980s and has generally been declining since (fig. 2), following trends similar to those

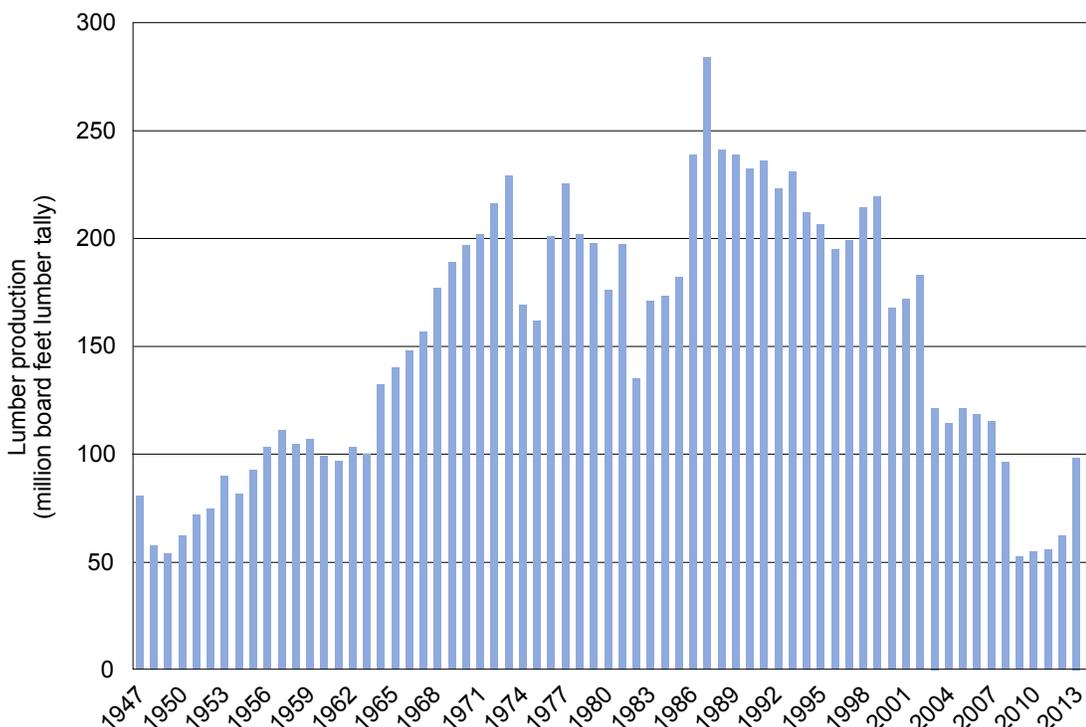


Figure 2—Wyoming lumber production, 1947–2014. (Source: Western Wood Products Association, 1964–2015. Note: WWPA began combining Wyoming and South Dakota lumber production in 2006. The data after 2006 are BBER estimates.)

Table 2—Sales value of Wyoming's primary wood products, selected years (sources: Brandt et al. 2009; Keegan and White 1979; Keegan et al. 1979; McLain 1987; Morgan et al. 2005; Setzer 1971).

Product	2000	2005	2010	2014
----- Thousand dollars ^a -----				
Lumber, timbers and sawn products	89,220	69,518	25,974	53,025
House logs and log homes	9,284	10,916	1,209	1,426
Posts and poles	5,086	4,250	2,026	5,052
All other products ^b	1,870	5,059	2,079	2,966
All primary wood products	105,460	89,743	31,288	62,469

^a Constant 2014 dollars.

^b Other products include firewood, wood pellets, and bagged shavings.

experienced in several other western States (McIver et al. 2013, 2015; Sorenson et al. 2016). Lumber production declines continued into the first decade of the 21st century despite very strong housing and lumber markets in 2004 and 2005. The housing and lumber markets bottomed out in 2009, seriously impacting the remaining forest products industry in Wyoming. The industry began a slow recovery in 2010 and 2011, and by 2014 timber harvest and lumber production had exceeded pre-recession levels, while sales lagged from relatively lower prices.

Wyoming's 12 sawmills processed 82.2 MMBF Scribner, 129 percent of the volume of sawlogs harvested in Wyoming, making Wyoming a net importer of timber. These sawmills produced about 125 million board feet (MMBF lumber tally) of lumber, timbers, and other sawn products. This represented a 127 percent increase over the 2010 production of 55 MMBF.

Sales from the sawmill sector were just over \$53 million, still shy of the 2005 sales value of \$69.5 million (inflation-adjusted) even though lumber production in 2014 exceeded that of 2005 (table 2).

The 12 sawmills active in 2014 had a combined annual production capacity of 225.7 MMBF lumber tally, of which only 55 percent was utilized. The five sawmills with annual output capacity greater than 1 MMBF accounted for 96 percent of Wyoming's

lumber-producing capacity and 98 percent of lumber production.

Post and Pole Sector

The post and pole sector consists of manufacturers of fence posts, small poles, and rails used in fence construction. These products are often treated with wood preservatives, but untreated products are available as well. Since 2000, the number of post and pole producers has been relatively stable. In 2014, 11 post and pole manufacturers were identified and 9 were confirmed to be active, up from 7 in 2010. Total sales from the sector were also up to highs not seen since 2000, at slightly more than \$5 million (table 2). The combined annual output capacity of the active producers was 2.2 million pieces, with more than 1.8 million pieces produced during 2014.

Log Home and Log Furniture Sector

As in 2010, Wyoming had three log home and two log furniture manufacturers operating in 2014. The sector's peak was in 2005, when 18 log home and 8 log furniture businesses were active. This severe contraction was largely a response to the 2006 housing collapse and recession. These products tend to be luxury goods, resulting in an industry highly tied to regional and national economic influences. However, with relatively low capital costs, many inactive facilities could once again produce house logs and log furniture, as demand increases.

Combined sales for the log home and log furniture sectors was \$1.4 million, a 20 percent increase over 2010 sales (table 2).

Other Sectors

The remaining Wyoming primary forest products firms include two wood pellet plants (one of which was inactive), a commercial firewood operation (co-located with a post and pole plant), and a producer of bagged wood shavings for animal bedding. The combined 2014 sales value for these firms was \$3 million (table 2).

Input and Output Capacity

This section focuses on two measures of capacity—input (timber-processing) and output (production) capacity—from 1976 through 2014 and the utilized proportion of that capacity. Output capacity is the most commonly used measure of capacity, measuring the volume of finished product a mill could produce in a given timeframe—generally per shift or per year. However, finished products are measured in a variety of units: board feet lumber tally (lumber), lineal feet (house logs), and pieces (posts and poles, log furniture), etc., making it difficult to express the total capacity of the industry as a whole. Another way of expressing capacity is in input capacity, often measured as timber-processing capacity, which is the measure of the volume of timber (i.e., logs) that a mill could process in a given timeframe—generally per year—measured in board feet Scribner.

Timber-Processing Capacity

Wyoming timber processors provided their 8-hour shift and annual production capacities, based on sufficient supplies of raw materials and firm market demand for their products. To estimate the industry's total capacity to process timber, production capacity was divided by recovery factors for each facility and expressed in units of timber input (i.e.,

MMBF Scribner). For example, sawmill capacity figures were calculated by dividing lumber production capacity by the mill's calculated lumber recovery (board feet of lumber per board foot Scribner of timber).

Wyoming's timber-processing capacity in 2014 was 156 MMBF Scribner, of which 58 percent was utilized (fig. 3). There has been a 48 percent drop in capacity to process timber in Wyoming since 1986, when capacity was estimated to be nearly 308 MMBF. Wyoming capacity utilization has historically not exceeded 50 percent, but dropped to an all-time low of 32 percent in 2010. Declines in capacity and utilization, which started in the mid-1980s, have been attributed in part to decreases in the volume of timber offered from Federal lands (Keegan et al. 2006). The housing bust and recession drove capacity and utilization to the 2010 low. Improving wood products markets and rising timber harvest on private and State lands in the region have enabled facilities to resume operation and increase operating levels over the past few years.

Lumber-Production Capacity

Capacity to produce lumber varies considerably among Wyoming's 12 sawmills from less than 1 MMBF to over 10 MMBF. Total lumber production capacity in 2014 was 225.7 MMBF lumber tally, of which 55 percent was utilized.

Lumber Recovery Factors and Overrun

In 2014, Wyoming's sawmills used approximately 18.7 million cubic feet of sawtimber to produce 125 million board feet, lumber tally. Thus the Statewide lumber recovery factor (LRF) for Wyoming sawmills in 2014 was 6.69 board feet of lumber output per cubic foot of log input, up from 6.10 in 2010, but a decline from the recovery achieved in 2000 and 2005 of 7.28 and 7.48, respectively. While increases in LRF tend to be attributed to improvements in technology, the high recovery factors achieved in 2000 and

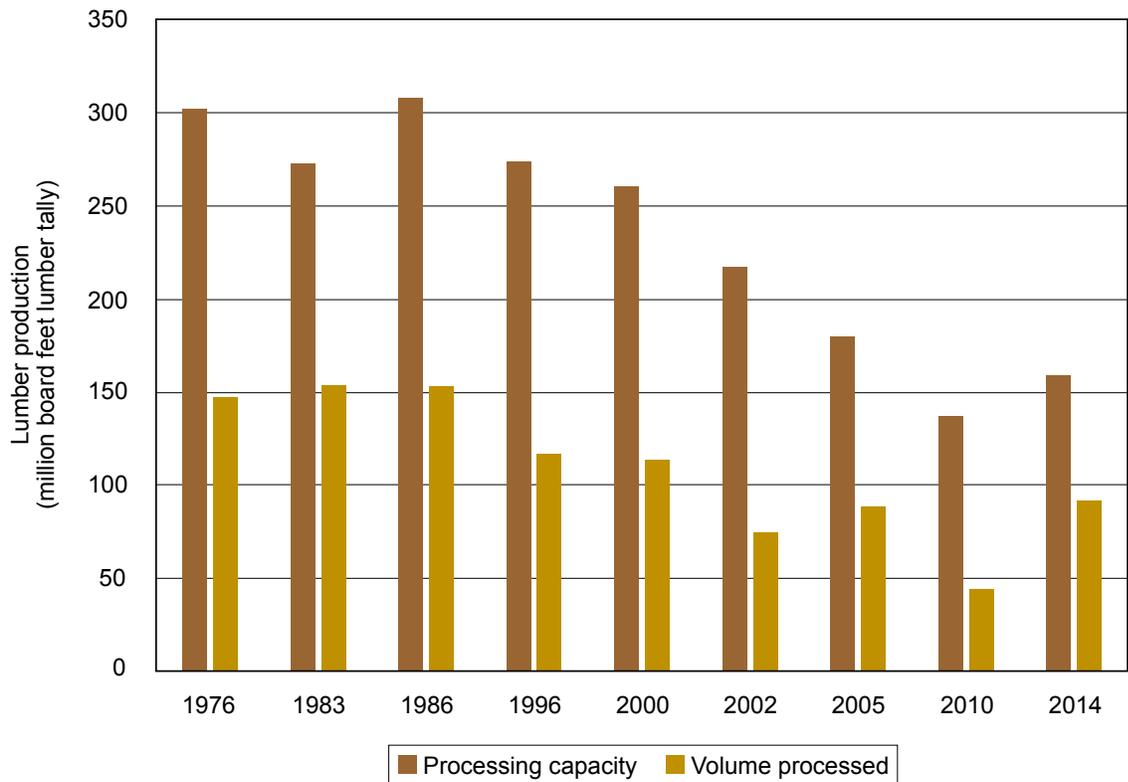


Figure 3—Wyoming timber-processing capacity, selected years (source: Keegan and White 1979; McLain 1987; Morgan et al. 2005; Brandt et al. 2009; Big Book 2013).

2005 were most likely due to the existence of a large sawmill with high recovery rates that closed between 2005 and 2010.

Similarly, overrun declined between 2000 and 2010 from 1.60 to 1.29 and then increased in 2014 to 1.45. Unlike the lumber recovery factor, overrun is influenced by the size of logs processed and mill specifications. As log diameters decrease, the Scribner log rule underestimates, by an increasing amount, the volume of lumber that can be recovered from a log, thus leading to increased overrun (Keegan et al 2010).

Mill Residue

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

residues include: course residue—chips, slabs, edging, trim and log ends; fine residue—planer shavings and sawdust; and bark.

Wyoming primary forest product manufacturers generated 176,871 bone dry units (BDU) of mill residue in 2014; 96 percent of which was utilized, down from 97 percent utilization in 2010. Some of the decline in residue utilization can be attributed to the sharp (189 percent) increase in the total volume of residue generated and the inability of market demand to keep pace with supply.

Over half (65 percent) of Wyoming’s mill residue was used for energy in the form of firewood and raw material used to manufacture wood pellets, burned to generate electricity, or burned in a boiler system onsite at mills. Another 17 percent (30,646 BDU) of residue was used for animal bedding, mulch, and decorative bark. About 13 percent went to pulp and reconstituted board plants, and the remaining 4 percent (7,156 BDU) was not used.

See also, Part I: Timber Harvest, Products, and Flow (RMRS-RB-27-1), Part III: Sales, Employment and Economic Contribution (RMRS-RB-27-3), and Part IV, Supplemental Tables (RMRS-RB-27-4).

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*Log deck in an Engelmann spruce-subalpine fir (*Picea engelmannii*-*Abies lasiocarpa*) forest.
Photo: Dave Powell, USDA Forest Service (retired), Bugwood.org*

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CONTACT INFORMATION

Chelsea P. McIver
Bureau of Business & Economic Research
University of Montana
Gallagher Business Building, Suite 231
Missoula, MT 59812
chelsea.mciver@business.umt.edu
www.bber.umt.edu/fir
fia.fs.fed.us

Todd A. Morgan
Bureau of Business & Economic Research
University of Montana
Gallagher Business Building, Suite 231
Missoula, MT 59812
todd.morgan@business.umt.edu
www.bber.umt.edu/fir
fia.fs.fed.us

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