FOREST INDUSTRY RESEARCH PROGRAM
UNIVERSITY OF MONTANA

Timber Use, Processing Capacity and Capability of Mills to Utilize Timber by Diameter Size Class Within the Beaverhead-Deerlodge National Forest Timber-Processing Area

Prepared by:

Amy R. Beagles, Forestry Research Associate
amy.beagles@mso.umt.edu

Todd A. Morgan, Director of Forest Industry Research
todd.morgan@mso.umt.edu

Clayton Dutton, Database Administrator
clayton.dutton@mso.umt.edu

Lauren Sampson, Forestry Research Associate
lauren.sampson@mso.umt.edu

Forest Industry Research Program
Bureau of Business and Economic Research
University of Montana

Submitted to:
Colin Sorenson, USDA Forest Service, Northern Region
Agreement No. 21-CS-11015600-005

May 13, 2025

Introduction

The Beaverhead-Deerlodge National Forest (B-D) contain portions of Beaverhead, Deer Lodge, Granite, Jefferson, Madison, Powell and Silver Bow counties in Montana. Together, the total combined area of these seven counties constitutes the “Study Area” referred to in this report. Analysis of area timber flow indicates that timber harvested in the B-D study area is processed by facilities located both inside and outside the study area. All counties that contain one or more facilities that process timber harvested in the study area constitute the “Timber Processing Area” or TPA. The TPA includes Beaverhead, Flathead, Gallatin, Granite, Jefferson, Lewis and Clark, Madison, Missoula, Park, Powell, and Ravalli counties in Montana, and Jefferson County in Idaho (figure 1). Deer Lodge and Silver Bow counties from the study area are excluded from the TPA as they do not have any primary wood processing facilities.

This report is intended to help land managers better understand the availability of timber-processing capacity within the TPA. This information can help managers utilize timber removals in commercial timber harvests, forest restoration, or hazardous fuels reduction treatments and should enable them to better plan, appraise, advertise, and accomplish stated land management goals.

In what follows, “capacity” refers to the maximum total volume of timber (excluding pulpwood and fuelwood) that existing timber processors could utilize annually, given firm market demand for products, sufficient raw material, and ordinary downtime for maintenance. Also known as “timber-processing capacity”, it is a measure of a timber-processing facility’s timber *input* capacity and is expressed in thousand board feet (MBF) Scribner and hundred cubic feet (CCF) per year. Input capacity is a useful measure when attempting to express the capacity of multiple types of facilities in a common unit of measure. It is estimated from production (output) capacity information provided by the facilities. Capacity estimates in this report include the capacity of active facilities as well as idle (inactive) facilities with equipment still in place. Facilities that are permanently closed are not included.

This analysis focuses on facilities that exclusively use timber in round form; this includes sawmills, veneer mills, and facilities processing timber into house logs/log homes, posts, small poles, and log furniture. Facilities (e.g., pulp mills, MDF facilities, and biomass energy facilities) that use a mix of roundwood and non-roundwood inputs (i.e., mill residuals such as chips, sawdust, shavings, and bark) are not included in the capacity analysis because the combination of roundwood and non-roundwood inputs can vary widely from year to year, potentially over- or under-estimating capacity and use of roundwood by substantial margins. Though mixed-input facilities are excluded from the analysis, they are included in the list of timber-processing facilities and in the map of facilities in the TPA.

“Capability” refers to the volume of trees of a certain size class, measured as diameter at breast height (dbh), that existing timber processors can economically process annually. Some facilities are designed to operate using only trees of a given size class (e.g., veneer/ plywood plants typically only use trees ≥10 inches dbh, and post manufacturers primarily use trees <10 inches dbh). Capability at these facilities is readily classified in just one of the size classes. Many facilities can and do use timber from a variety of size (dbh) classes. The three dbh classes used in this report are <7”, 7 to 9.9”, and ≥10”. It is important to point out that capability in the ≥10” dbh class represents the portion of a mill’s overall capacity that cannot process smaller trees, and it is calculated as total capacity minus the sum of the two small-log capability classes.

“Use” refers to the volume of timber, both in total and by tree dbh class, that facilities are currently using.

This report is a follow-up to a similar analysis performed for the B-D for 2004; however, comparisons between these should not be made as both the TPA and the underlying methodology have changed somewhat in the intervening years.

The data used to develop these summary tables were collected and processed by the University of Montana's Forest Industry Research Program within the Bureau of Business and Economic Research (BBER). Mill- or company -level data are confidential and cannot be released.

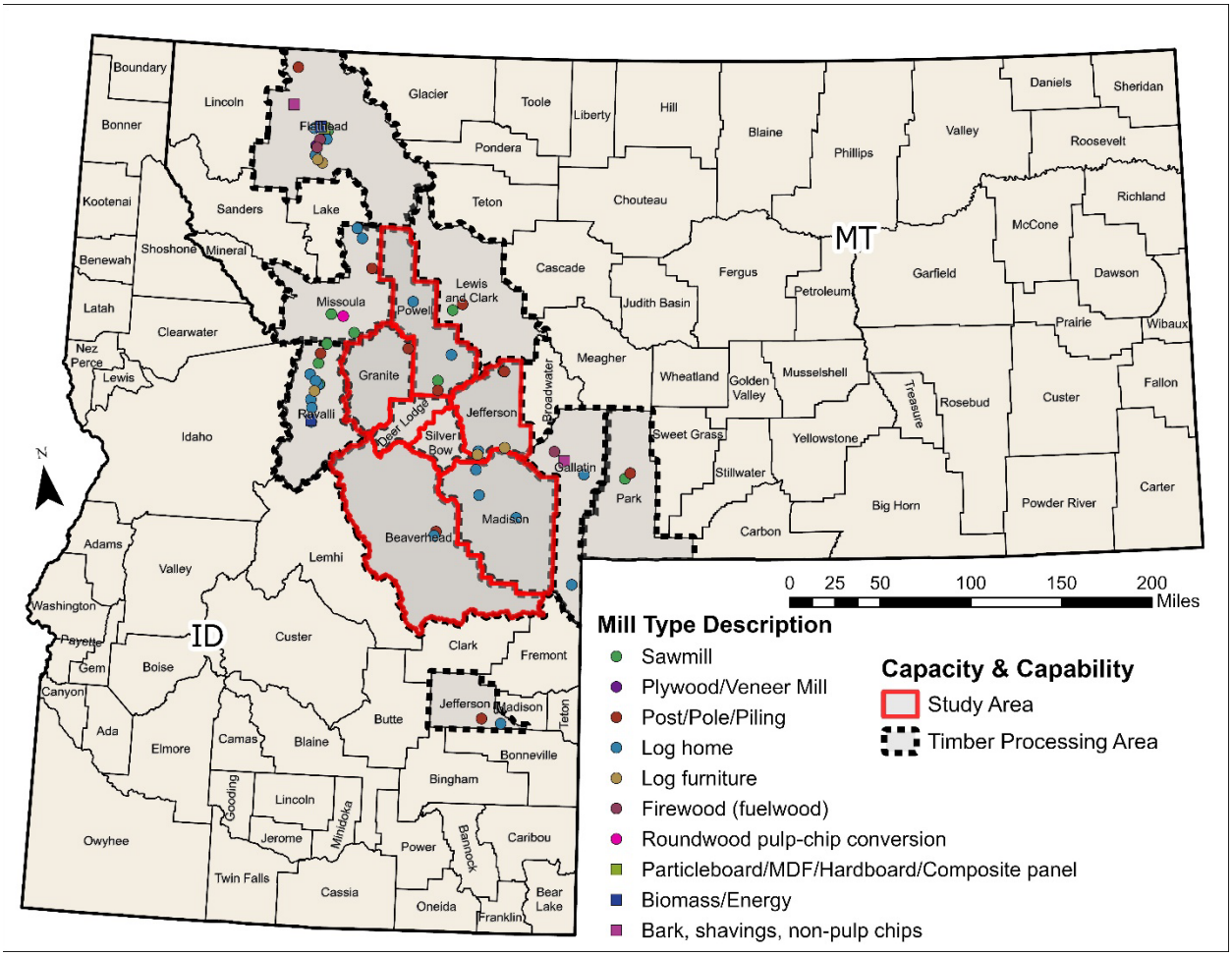

Figure 1 Map of the Beaverhead-Deerlodge National Forest study area, timber-processing area, and timber-processing facilities.

Study Area

The 2022 volume of timber harvested from all ownerships in the study area was estimated at 123,173 CCF (45,328 MBF) (table 1). National forests contributed 36 percent of the 2023 timber harvest in the study area's seven counties (table 2). Of the other ownerships contributing to the harvest, private and tribal timberlands accounted for 26 percent, and state and other public lands contributed 37 percent. Timber from the B-D accounted for the majority (83 percent) of the national forest timber harvested from the study area, with the remaining volumes coming from the Helena-Lewis and Clark, and Lolo national forests. The majority (85 percent) of the timber harvested was live standing volume (table 3).

Table 1. All ownership timber harvest by county in the Beaverhead-Deerlodge National Forest study area, ID 2015, 2019, 2023 and MT 2014, 2018, 2022.

	2014			2018			2022		
Study area	**MBF**	**CCF**	**Percent**	**MBF**	**CCF**	**Percent**	**MBF**	**CCF**	**Percent**
Beaverhead	4,815	12,765	12%	8,413	22,519	15%	13,318	36,301	29%
Deer Lodge	1,556	4,076	4%	648	1,651	1%	308	734	1%
Granite	6,904	18,582	17%	13,635	35,592	24%	2,943	9,098	7%
Jefferson	4,699	12,629	12%	4,200	10,607	7%	12,330	34,041	28%
Madison	9,435	24,308	22%	4,904	12,339	8%	4	7	0%
Powell	13,501	35,860	33%	24,675	64,705	43%	16,285	42,866	35%
Silver Bow	585	1,550	1%	1,143	2,865	2%	50	125	0%
Study area total	**41,495**	**109,770**	**100%**	**57,617**	**150,276**	**100%**	**45,238**	**123,173**	**100%**

Table 2. Beaverhead-Deerlodge National Forest harvest by ownership and product type, 2020 through 2023.

	2020			2021			2022			2023		
Timber product group	**Private**	**National Forest**	**Other public & State**	**Private**	**National Forest**	**Other public & State**	**Private**	**National Forest**	**Other public & State**	**Private**	**National Forest**	**Other public & State**
Saw/veneer logs	16%	74%	10%	26%	50%	24%	19%	49%	32%	27%	34%	39%
Post/pole	20%	47%	33%	3%	97%	0%	6%	77%	17%	12%	65%	23%
House log	85%	15%	0%	82%	18%	0%	1%	99%	0%	3%	49%	49%
Fiber log	100%	0%	0%	100%	0%	0%	0%	100%	0%	n/a	n/a	n/a
Pulpwood log	38%	37%	25%	9%	0%	90%	4%	64%	32%	5%	32%	63%
Firewood log	100%	0%	0%	100%	0%	0%	23%	77%	0%	33%	46%	21%
Furniture log	100%	0%	0%	100%	0%	0%	0%	100%	0%	n/a	n/a	n/a
Energywood log	100%	0%	0%	100%	0%	0%	n/a	n/a	n/a	n/a	n/a	n/a
Study area total	**21%**	**67%**	**11%**	**26%**	**50%**	**25%**	**17%**	**54%**	**29%**	**26%**	**36%**	**37%**

Table 3. Percent harvested dead in the Beaverhead-Deerlodge National Forest study area, 2020 through 2023.

Study Area	**2020**	**2021**	**2022**	**2023**
Beaverhead	35%	20%	20%	10%
Deer Lodge	n/a	n/a	25%	10%
Granite	33%	13%	19%	3%
Jefferson	20%	7%	31%	27%
Madison	20%	0%	85%	n/a
Powell	13%	8%	16%	14%
Silver Bow	18%	n/a	10%	0%
Study area total	**20%**	**10%**	**22%**	**15%**

The species received by facilities in the study area were predominantly Douglas-fir, lodgepole pine, and western larch (88 percent) (table 4). The remaining volume was a mix of other pines, true firs, spruce, hemlock, and aspen.

Table 4. Species composition of harvest in the Beaverhead-Deerlodge National Forest study area, 2020 through 2023.

Species Group	2020	2021	2022	2023
Douglas-fir	42%	38%	50%	37%
Lodgepole pine	43%	45%	35%	34%
Western larch	3%	4%	1%	17%
Ponderosa pine	6%	6%	9%	7%
True firs	2%	3%	1%	3%
Other species[a]	4%	4%	4%	2%
Study area total	**100%**	**100%**	**100%**	**100%**

[a]Other species include Engelmann spruce, western white pine, western hemlock, and aspen

Timber-Processing Area (TPA)

A total of 59 primary wood products facilities operate within the TPA, 54 of which receive only roundwood (table 5), and 27 of which reported receiving timber from the study area over the last four years. Fifteen of the 27 facilities receiving timber from the TPA were located within the seven-county study area.

Table 5. Beaverhead-Deerlodge National Forest TPA facilities.

Facility Name	Status	Facility Type	State	County	Size Class
Tash T-Diamond Post Co.	Active	post/pole/piling	MT	Beaverhead	<250 MCF
Summit Log Products	Active	log home	MT	Beaverhead	<250 MCF
F H Stoltze Land & Lumber Co	Active	sawmill	MT	Flathead	5000 MCF or more
Montana Timberline Firewood Co.	Active	firewood (fuelwood)	MT	Flathead	500 TO 999 MCF
Conkle's Custom Cuts	Active	sawmill	MT	Flathead	<250 MCF
Frontier Log Furniture	Active	log furniture	MT	Flathead	<250 MCF
Glacier Gold, LLC	Active	bark, shavings, non-pulp chips	MT	Flathead	No Roundwood
Kalispell Montana Log Homes, Inc.	Active	log home	MT	Flathead	<250 MCF
F.H. Stoltze-co-gen facility	Active	biomass/energy	MT	Flathead	No Roundwood
Wild Montana Wood	Active	firewood (fuelwood)	MT	Flathead	500 TO 999 MCF
Glacier Log Mill / Lazarus Log Homes	Active	log home	MT	Flathead	<250 MCF
Stillwater Post & Pole	Active	post/pole/piling	MT	Flathead	500 TO 999 MCF
Old Style Log Works, Inc.	Active	log home	MT	Flathead	<250 MCF
Weyerhaeuser - Columbia Falls MDF	Active	particleboard/MDF/hardboard/composite panel	MT	Flathead	1000 TO 4999 MCF
Weyerhaeuser Kalispell Plywood	Active	plywood/Veneer Mill	MT	Flathead	5000 MCF or more
Weyerhaeuser Kalispell Lumber	Active	sawmill	MT	Flathead	5000 MCF or more
RBM Logging & Lumber	Active	sawmill	MT	Flathead	250 TO 499 MCF
Simonson's Log Furniture	Active	log furniture	MT	Flathead	<250 MCF
Gone Beaver Handcrafted Logs	Active	log home	MT	Gallatin	<250 MCF
Hilgard Log Builders, Inc.	Active	log home	MT	Gallatin	<250 MCF
S & D Firewood	Active	firewood (fuelwood)	MT	Gallatin	250 TO 499 MCF
Western Pines	Active	bark, shavings, non-pulp chips	MT	Gallatin	No Roundwood
Pfendler Post & Pole	Active	post/pole/piling	MT	Granite	250 TO 499 MCF
Marks-Miller Post & Pole Inc	Active	post/pole/piling	MT	Jefferson	<250 MCF
Wilbur's Custom Woodworks	Active	log furniture	MT	Jefferson	<250 MCF
Montana Mobile Cabin	Active	log home	MT	Jefferson	<250 MCF
Marks Lumber	Active	sawmill	MT	Jefferson	500 TO 999 MCF
Huckaba Custom Desings	Active	log furniture	MT	Jefferson	<250 MCF
Bouma Post Yard	Active	post/pole/piling	MT	Lewis and Clark	250 TO 499 MCF
L & L Custom Sawing	Active	sawmill	MT	Lewis and Clark	<250 MCF
Goodman House Logs	Active	log home	MT	Madison	<250 MCF
Ashcraft Log Homes	Inactive	log home	MT	Madison	<250 MCF
Terry's Custom Log Railings	Active	log home	MT	Madison	<250 MCF
Nordique Systems Log Homes	Active	log home	MT	Missoula	<250 MCF
Advantage Milling	Active	sawmill	MT	Missoula	<250 MCF
Bad Goat	Active	sawmill	MT	Missoula	<250 MCF
Willis Entrprises, Inc.-Bonner Chip Plant	Active	roundwood pulp-chip conversion	MT	Missoula	1000 TO 4999 MCF
Roundwood West Corporation	Active	post/pole/piling	MT	Missoula	<250 MCF
The Rustics Of Montana	Active	log home	MT	Missoula	<250 MCF
Myrstol Post and Pole Company	Active	post/pole/piling	MT	Park	<250 MCF
Sun Mountain - Livingston	Active	sawmill	MT	Park	500 TO 999 MCF
Sun Mountain - Deer Lodge	Active	sawmill	MT	Powell	5000 MCF or more
Whispering Pines Pole Co. LLC	Active	post/pole/piling	MT	Powell	<250 MCF
Bard Log Homes	Active	log home	MT	Powell	<250 MCF
Trout Creek Log Homes	Active	log home	MT	Powell	<250 MCF
R & S Milling	Active	sawmill	MT	Ravalli	250 TO 499 MCF
Finlay Lumber	Active	sawmill	MT	Ravalli	<250 MCF
Small Diameter Logs Company	Active	log home	MT	Ravalli	<250 MCF
Valley Board & Beam	Active	sawmill	MT	Ravalli	<250 MCF
Darby Public Schools	Active	biomass/energy	MT	Ravalli	<250 MCF
Montana Timber Structures	Active	log home	MT	Ravalli	<250 MCF
Master Log Homes	Active	log home	MT	Ravalli	<250 MCF
Montana Custom Log Homes Inc	Active	log home	MT	Ravalli	<250 MCF
Frontier Posts, LLC	Active	post/pole/piling	MT	Ravalli	250 TO 499 MCF
Rocky Mountain Log Homes - Victor	Active	log home	MT	Ravalli	<250 MCF
Rocky Mountain Log Homes	Active	log home	MT	Ravalli	250 TO 499 MCF
Bearly Making It	Active	log furniture	MT	Ravalli	<250 MCF
Cooley Brothers, Inc.	Active	post/pole/piling	ID	Jefferson	<250 MCF
Yellowstone Log Homes	Active	log home	ID	Jefferson	250 TO 499 MCF

County grouped with others to prevent disclosure of facility-specific confidential information

The species received by facilities in the TPA were predominantly Douglas-fir, followed by lodgepole pine, western larch, ponderosa pine, Englemann spruce, and true firs (99 percent). The remaining species mix consisted of other pines, western hemlock, western redcedar, black cottonwood, and aspen (table 6).

Table 6. Species composition of volume received from all ownership classes by facilities in the Beaverhead-Deerlodge National Forest TPA, 2020 through 2023.

Species group	2020	2021	2022	2023
Douglas fir	45%	42%	47%	38%
Lodgepole pine	23%	24%	25%	26%
Western larch	11%	11%	8%	15%
Ponderosa pine	7%	8%	9%	9%
Englemann Spruce	9%	8%	6%	6%
True firs	5%	5%	4%	5%
Other species[a]	0%	2%	0%	1%
All species	**100%**	**100%**	**100%**	**100%**

[a]Other species include western white pine, western redcedar, western hemlock, black cottonwood, and aspen.

National forests provided on average 47 percent of the timber received by mills in the B-D TPA and were the primary source of almost all log types (table 7).

Table 7. Percentage of volume received from national forests by facilities in the Beaverhead and Deerlodge national forests TPA by timber product group, 2020 through 2023.

Timber product group	2020	2021	2022	2023
Saw/veneer logs	37%	45%	49%	50%
House log	40%	40%	87%	62%
Post/Pole/furniture logs	57%	89%	69%	78%
Fiberlogs/pulp/energy logs	33%	34%	38%	48%
Firewood	56%	56%	78%	83%
TPA total	**38%**	**46%**	**50%**	**52%**

TPA Timber-Processing Capacity and Use

The timber-processing capacity of facilities in the B-D TPA was estimated as 928,006 CCF (348,205 MBF) (table 8). Capacity within the study area was 191,247 CCF (74,523 MBF), 20 percent of the total capacity in the TPA. Fifty-one percent (476,433 CCF or 196,672 MBF) of timber-processing capacity in the B-D TPA is not capable of efficiently utilizing trees with dbh less than 10 inches (table 9). Capability to efficiently utilize trees 7 to 9.9 inches dbh accounts for 37 percent of total timber-processing capacity, while 12 percent of total capacity in the TPA can efficiently utilize trees smaller than 7 inches dbh. Facilities in the TPA were estimated to process 520,162 CCF (202,126 MBF) of timber, indicating that approximately 56 percent of total capacity, within the TPA was used.

Table 8. Most recent timber-processing capacity and use in the Beaverhead-Deerlodge National Forest TPA.

	Capacity to process timber		Timber Consumption		
Tree dbh	*Thousand board feet, Scribner (MBF)*	*Hundred cubic feet (CCF)*	*Thousand board feet, Scribner (MBF)*	*Hundred cubic feet (CCF)*	**Most recent utilization**
<7 in.	31,517	107,438	10,924	42,658	**40%**
7-9.9 in.	120,016	344,135	54,592	146,311	**43%**
≥10 in.	196,672	476,433	136,610	331,193	**70%**
TPA total	**348,205**	**928,006**	**202,126**	**520,162**	**56%**

Table 9. Most recent annual timber-processing capacity in the Beaverhead-Deerlodge National Forest TPA by dbh size class and county.

	Thousand board feet, Scribner (MBF)			Hundred cubic feet (CCF)		
Timber Processing Area	<7 in. dbh	7-9.9 in. dbh	≥10 in. dbh	<7 in. dbh	7-9.9 in. dbh	≥10 in. dbh
Beaverhead MT & Jefferson ID	296	277	10,277	1,826	1,058	23,127
Flathead	7,925	49,057	117,058	21,986	126,118	270,051
Gallatin, Madison & Park	720	12,594	21,208	2,540	32,145	52,805
Granite, Lewis & Clark & Powell	8,212	30,327	29,988	22,409	76,730	75,043
Jefferson MT	1,578	1,520	2,303	5,890	4,974	5,728
Missoula	10,684	22,929	8,757	45,178	97,092	36,213
Ravalli	2,104	3,311	7,081	7,610	6,018	13,465
TPA total	**31,517**	**120,016**	**196,672**	**107,438**	**344,135**	**476,433**

There was 407,843 CCF (146,079 MBF) of unutilized capacity in the B-D TPA (table 10). Unused capacity occurred in all dbh size classes, with the plurality of the unused capacity residing in the 7-9.9 inches dbh size class (table 11).

Table 10. Most recent unused timber-processing capacity in the Beaverhead and Deerlodge national forest TPA by dbh size class.

	Unused timber-processing capacity	
Tree dbh	*Thousand board feet, Scribner (MBF)*	*Hundred cubic feet (CCF)*
<7 in.	20,593	64,780
7-9.9 in	65,424	197,823
≥10 in.	60,062	145,240
TPA total	**146,079**	**407,843**

Table 11. Most recent unused timber-processing capacity by the county and dbh size class in the Beaverhead-Deerlodge National Forest TPA.

	Thousand board feet, Scribner (MBF)			Hundred cubic feet (CCF)		
Timber Processing Area	<7 in. dbh	7-9.9 in. dbh	≥10 in dbh	<7 in. dbh	7-9.9 in. dbh	≥10 in dbh
Beaverhead MT & Jefferson ID	123	(50)	7,988	877	(54)	18,085
Flathead	6,446	11,186	41,536	18,231	27,030	93,989
Gallatin, Madison & Park	592	4,633	6,736	2,080	11,112	16,354
Granite, Lewis & Clark & Powell	7,628	25,069	(4,717)	20,301	62,951	(12,445)
Jefferson MT	1,569	63	(477)	5,800	188	(2,530)
Missoula	3,820	21,797	6,559	15,986	92,427	27,250
Ravalli	416	2,726	2,438	1,506	4,169	4,537
TPA total	**20,593**	**65,424**	**60,062**	**64,780**	**197,823**	**145,240**

Capability to process trees less than 7 inches dbh tends to be concentrated among facilities that produce pulp chips, studs, and posts and poles. Generally, it is less capital intensive (i.e. less expensive) to increase chipping or post and pole capacity than to re-fit a larger sawmill to process smaller diameter logs into lumber. However, demand for roundwood pulpwood tends to move counter-cyclically with demand for lumber since roundwood pulp-chips are a substitute for mill residuals as a raw material input for pulp and paper mills. Thus, when demand for lumber is strong, sawmills may not be able to increase their utilization of small diameter trees to the same degree that roundwood pulp-chip facilities can when lumber demand is weak.

Conclusion

Many of the facilities throughout the Northern Region are included in the timber processing areas of more than one national forest and the sum of the capacity and capability of all the individual national forests is greater than the total for the region. The region-wide report (forthcoming) provides information on total capacity and capability for the entire region. Therefore, the timber planning staff at the regional, forest, and district levels should coordinate and share information about prospective projects and potential buyers to prevent offering more timber, particularly in the small size classes, than can be processed.

Resources

Bureau of Business and Economic Research. 2025. *Forest Industries Data Collection System.* Forest Industry Research Program, Bureau of Business and Economic Research.

Hayes, Steven W.; Townsend, Lucas; Dillon, Thale; Morgan, Todd A.; Shaw, John D. 2021. Montana's forest products industry and timber harvest, 2018. Resour. Bull. RMRS-RB-35. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 54 p.

Sampson, Lauren E.; Scott, Samuel G.; Morgan, Todd A.; Hayes, Steven W.; Shaw, John D. In prep. Montana's forest products industry and timber harvest, 2022. Resour. Bull. RMRS-RB-XX. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. XX p.