

# **Capacity and Capability of Mills in the Kootenai National Forest Impact Zone**

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## Introduction

This report was prepared as a forest planning support document for the Kootenai National Forest as part of Purchase Order No. AG-03R6-P-12-0157 between the USDA Forest Service, Region One and The University of Montana's Bureau of Business and Economic Research (BBER). The report is part of a series of documents intended to be used in conjunction with a broader analysis of the geographic area and forest products facilities impacted by USFS Region One timber harvest. The region-wide report contains an expanded methods section and further interpretation and will be available from the Bureau of Business and Economic Research at The University of Montana in January 2013.

This individual report for the Kootenai National Forest:

1. Examines the harvest of timber from the counties containing non-reserved timberland for the Kootenai National Forest;
2. Analyzes the flow of that timber harvest and identifies the location of mills receiving that timber harvest; and
3. Describes the kinds of mills receiving timber, their capacity to process timber, as well as their capability to use timber of various sizes.

In this report, "capacity" refers to the total volume of timber (excluding pulpwood) that existing timber processors could utilize annually, and "capability" refers to the volume of trees of a certain size (diameter at breast height—dbh) class that existing timber processors can efficiently process annually. This analysis focuses on facilities that exclusively use timber in round form; this includes sawmills, plywood and veneer plants, and facilities processing timber into house logs/log homes, utility poles, posts and small poles, log furniture, and cedar products. Because the pulp and paper industry and industrial fuel users generally prefer mill residue as their primary raw material, typically use large volumes of roundwood only when mill residue is in short supply, and because the pulp and paper industry in the Region can draw from a very large area, the potential use of timber for pulpwood and fuelwood is analyzed separately in the broader Region One report.

### **Harvest from Counties Containing Kootenai National Forest Non-reserved Timberland**

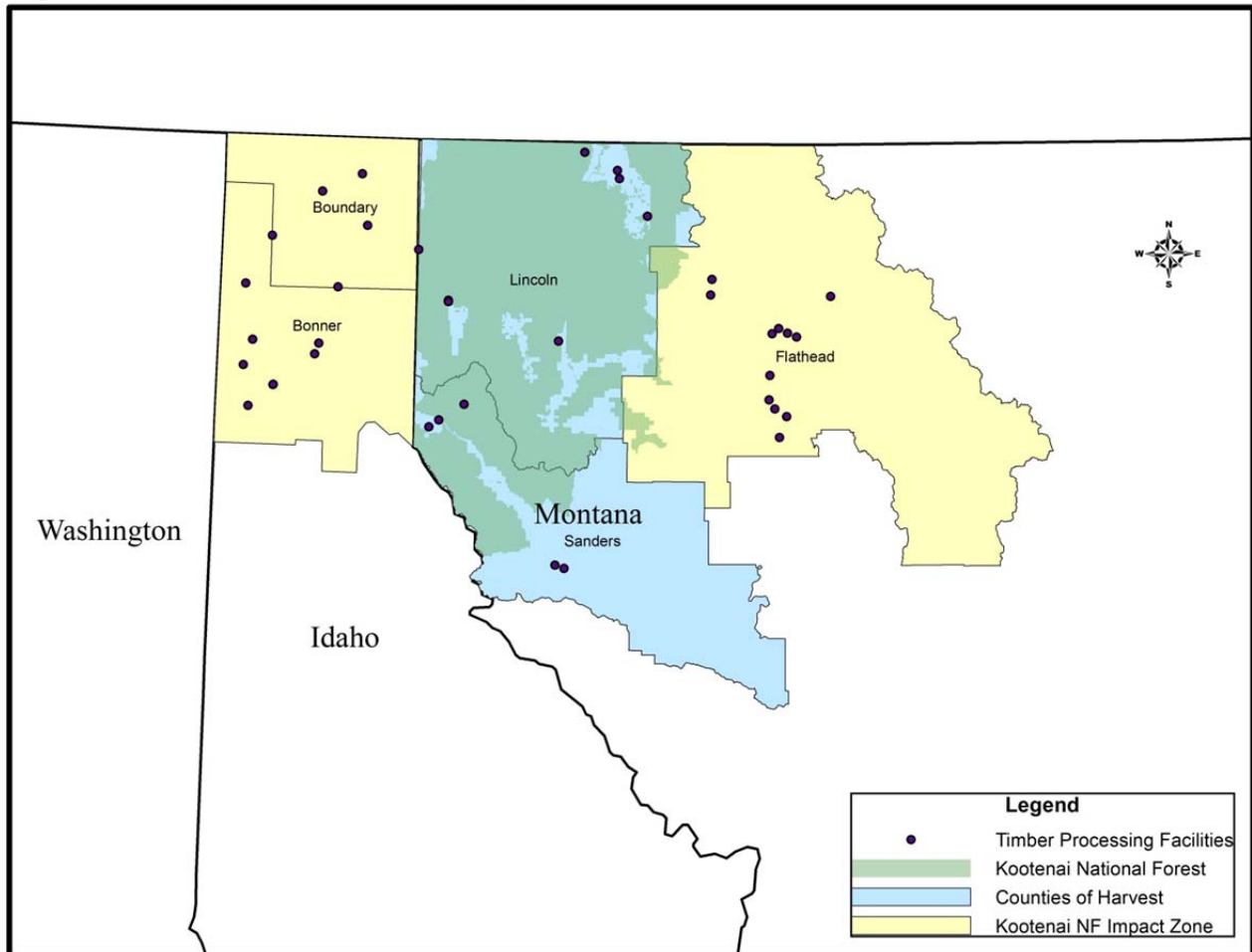
The majority of Kootenai National Forest non-reserved timberland is located in two Montana counties: Lincoln and Sanders. The total harvest from all lands in these two counties was 17.3 million cubic feet (MMCF) in 2009 (McIver and others, in preparation). The National Forest system accounts for 63 percent of the non-reserved timberland in the two-county area. More than 20 percent (3.5 MMCF) of the recent (2009) timber harvest in this two-county area originated from the Kootenai National Forest. Most (96 percent) of the timber harvested from these counties consisted of green (live) trees. The species composition of the harvested volume in this two-county area was: 40 percent Douglas-fir, 22 percent ponderosa pine, 21 percent lodgepole pine, 10 percent western larch, and 4 percent true firs. Engelmann spruce, western redcedar, western hemlock, and western white pine combined accounted for the remaining 3 percent. Sawmills and veneer/plywood plants received about 90 percent of the timber harvested from these counties. House logs, posts and small poles, and other mills received less than 1 percent of the timber harvest volume. Pulp and paper mills utilized 9 percent of the 2009 harvest from the two-county region.

The 2011 harvest in the two-county area was estimated to be approximately 20.2 MMCF. Given the mill closures that have occurred in the region since 2009, the pulpwood component was close to the historical average of 5 percent of the total harvest in 2011. The Kootenai National Forest contribution was estimated to be approximately 30 percent of the total harvest by all ownerships.

### **Impact Zone**

The Kootenai National Forest identified a five-county area as the Kootenai National Forest Impact Zone. The counties comprising the Impact Zone are: Bonner and Boundary Counties in Idaho and Flathead, Lincoln, and Sanders Counties in Montana (Figure 1).

Figure 1. Kootenai National Forest Impact Zone



Map created by Chelsea P. McIver, Bureau of Business and Economic Research.  
 Data courtesy of ESRI, Inc.; Montana Natural Resource Information System (NRIS); Bureau of Business and Economic Research.  
 Created June 5, 2012.

Within the five-county Kootenai National Forest Impact Zone, there were 39 timber-processing facilities operating as of 2011: 19 sawmills, 9 log home manufacturers, 6 log furniture manufacturers, 2 veneer and plywood facilities, 2 cedar products manufacturers, and 1 post and pole plant (Table 1).

<b>Table 1.—</b> Timber processing facilities in the Kootenai National Forest Impact Zone, selected years.		
<b>Type</b>	<b>2005</b>	<b>2011</b>
Sawmills	25	19
Log home	17	9
Log Furniture	6	6
Plywood	3	2
Cedar Products	2	2
Post and Pole	8	1
Utility Pole	2	0
<b>Total</b>	<b>63</b>	<b>39</b>
Sources: Spoelma and others 2008; McIver and others, In preparation)		

### Timber Flow

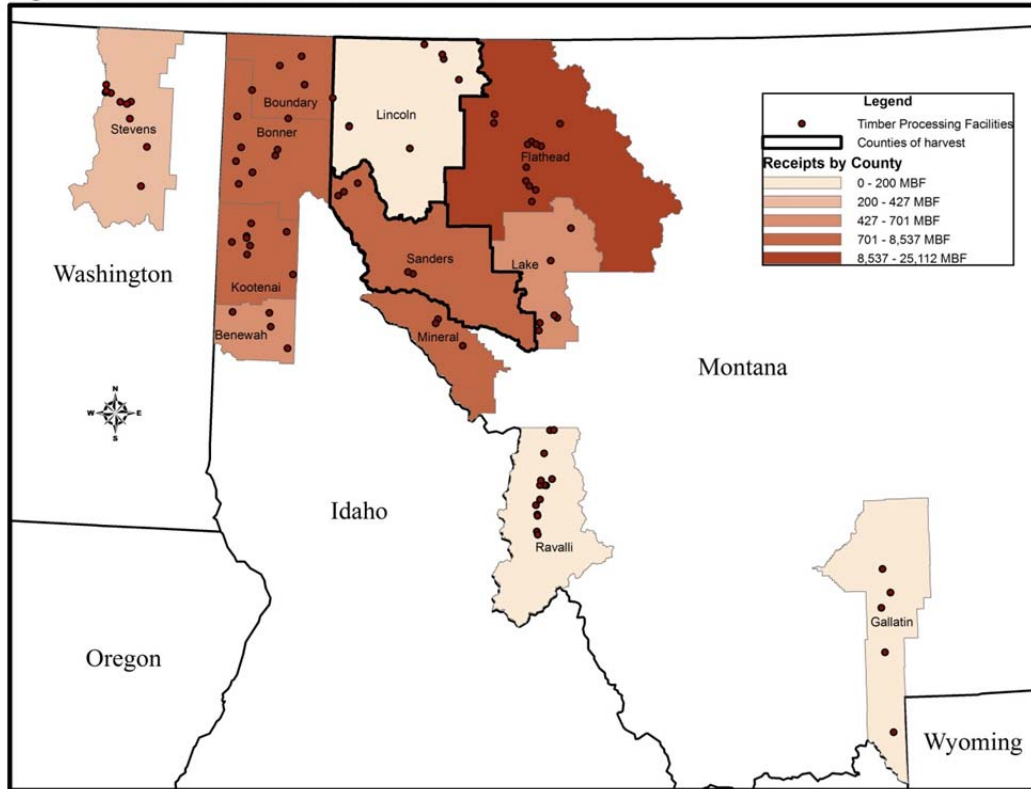
Of the 17.3 MMCF of timber harvested in the two-county area containing Kootenai National Forest non-reserved timberland, virtually none of the timber was processed within the two counties of harvest. Most (76 percent) was processed within the Impact Zone and the remaining 24 percent was processed outside the Impact Zone. Approximately 90 percent of the harvest from Lincoln County and 57 percent from Sanders County was processed within the five-county Kootenai Impact Zone, respectively (Table 2).

<b>Table 2.—</b> Timber flow from the Kootenai National Forest two-county area to county of processing facility (excluding pulpwood), 2009.			
<b>County of Harvest</b>	<b>Processed within the County of Harvest</b>	<b>Processed within the Impact Zone</b>	<b>Processed outside the Impact Zone</b>
-----percentage of harvest by county-----			
Lincoln	0.2%	89.6%	10.4%
Sanders	0.2%	56.5%	43.5%
Source: McIver and others, In preparation.			

An additional four counties in Montana, two counties in Idaho, and one county in Washington received 24 percent of the timber harvest from the three counties containing Kootenai National Forest non-reserved timberland (Figure 2). Gallatin, Lake, Mineral and

Ravalli counties in Montana, Benewah and Kootenai counties in Idaho, and Stevens County in Washington did receive timber from the Kootenai two-county area, but were not included in the Impact Zone.

Figure 2. Kootenai National Forest Timber Flow



Map created by Chelsea P. McIver, Bureau of Business and Economic Research.  
 Data courtesy of ESRI, Inc.; Montana Natural Resource Information System (NRIS); Bureau of Business and Economic Research.  
 Created August 9, 2012.

**Current Conditions and Capacity**

The tables in this section are labeled 2011 and represent 2006 (Idaho) and 2009 (Montana) timber-flow and timber-use data adjusted to account for 2011 timber harvest and lumber and plywood production levels, as well as mill closures and openings since 2006 and 2009 respectively.

Capacity to process timber in the Impact Zone is estimated at 142 million cubic feet (MMCF), with 55 percent of capacity being used. Capacity utilization by mills in the Impact Zone is down from 78 percent as documented in the 2005 capacity and capability report (Keegan and others 2005). Mills in the Impact Zone are currently using about 77 MMCF of timber

annually (Table 3). Approximately 90 percent (69.6 MMCF) of the volume processed in the Impact Zone is composed of trees with diameter at breast height (dbh)  $\geq 10''$ . Nearly 9 percent (6.6 MMCF) of the volume processed comes from trees 7.0 - 9.9'' dbh, while slightly over 1 percent (1.1 MMCF) of processed volume comes from trees  $< 7''$  dbh.

Thousand Cubic Feet of Timber		Thousand Board Feet Scribner of Timber	
Tree dbh	Volume Used	Tree dbh	Volume Used
< 7 in.	1,122	< 7 in.	1,122
7 - 9.9 in.	6,583	7 - 9.9 in.	25,280
10+ in.	69,594	10+ in.	302,147
Total	77,299	Total	328,549

Most facilities are designed to operate using trees of a given size class (e.g., veneer/plywood plants typically use trees  $\geq 10''$  dbh, and post manufacturers use trees  $< 7''$  dbh). Capacity at these facilities was readily classified as being capable of processing timber of just one of the size classes. This was true for some sawmills, but sawmills vary greatly in equipment, product output, and ability to process timber of various sizes.

Mills often process trees that are larger than the smallest tree sizes they are capable of processing. In other words, most mills capable of efficiently processing trees 7 – 9.9'' dbh are also capable of and prefer processing trees  $\geq 10''$  dbh; thus, these mills tend to process substantially more of the larger trees. However, some mills that process larger trees are not capable of processing smaller-diameter trees. For this reason, this report presents capability to process trees  $\geq 10''$  dbh as the proportion of total capacity *not* capable of efficiently using trees  $< 10''$  dbh. Whereas, capability to process trees  $< 7''$  dbh and 7 – 9.9'' dbh are presented as maximum volumes of trees of these size classes that can be processed efficiently.

About 68 percent (96 MMCF) of existing capacity in the Impact Zone is not capable of efficiently utilizing trees  $< 10''$  dbh (Table 4). Slightly over 45 MMCF of timber-processing capacity is capable of utilizing trees  $< 10''$  dbh, and the majority of this capacity (36.7 MMCF) is in the 7 - 9.9'' dbh class. While overall capacity has decreased since 2005 from 191 MMCF to 142 MMCF, the capability of mills to efficiently utilize trees  $< 10''$  dbh in the Impact Zone has increased from 26 to 32 percent of total capacity.

Thousand Cubic Feet of Timber		Thousand Board Feet Scribner of Timber	
Tree dbh	Capability	Tree dbh	Capability
< 7 in.	8,563	< 7 in.	8,563
7 - 9.9 in.	36,723	7 - 9.9 in.	141,018
10+ in.	96,418	10+ in.	442,323
Total Capacity	141,705	Total Capacity	591,904

\* Note: Capability in < 7 and 7 - 9.9 in. classes is maximum volume capable of being used efficiently; capability in 10+ in. class is portion of total capacity NOT capable of efficiently using trees with dbh < 10 in.

A substantial amount of the capacity capable of utilizing smaller diameter trees is being used to process larger trees or going unused. About 13 percent of capacity in the < 7" dbh category is currently utilized to process trees < 7" dbh, and slightly more than 18 percent of capacity in the 7 - 9.9" dbh category is being used to process trees 7 - 9.9" dbh. More than 12.8 MMCF of capacity capable of using trees 7 - 9.9" dbh is used annually to process trees  $\geq$  10" dbh. Recent (2007-2011) poor market conditions for lumber have reduced mill demand for smaller diameter logs used to make studs. When markets are poor it becomes more difficult to profitably produce lumber from small and low quality logs. The price of stud grade lumber—which is predominantly made from small logs—fell by a much higher percentage during the recent recession than many other dimensions and board and shop lumber grades (Random Lengths 2010). This reduced the profitability of sawing lower grades of lumber from small and lower quality logs. As lumber markets recover, increased capacity utilization can be expected across all the size classes.

### **Future Outlook**

The period of 2007 – 2011 represents the worst operating environment experienced by the North American and Montana forest products industry since the Great Depression. It involved a two-year recession from 2007 – 2009, the related financial crisis, and a housing collapse with the lowest levels of new home construction since the Second World War (Keegan et al. 2012). Very low prices for lumber and other wood products have accompanied this broad economic downturn.



As of August 2012, there has been only a small increase in U.S. housing construction. Modest upticks are expected in domestic lumber markets during the remainder of 2012 and 2013, with substantial improvements not likely until 2014 or beyond, if U.S. home building recovers and global demand continues to increase.

Given the continued difficult conditions, additional mill closures are possible. However, with slightly over half of capacity utilized in recent years—versus a historic level of over 80 percent during good markets—the industry would be expected to process substantially more timber when markets improve, provided adequate timber supply is available.

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