Capacity and Capability of Mills in the Lolo National Forest Timber-Processing Area

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Introduction

This report was prepared as a forest planning support document for the Lolo National Forests 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 1 timber harvest. The broader 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 Lolo National Forest:

1. Examines the harvest of timber from the counties containing non-reserved timberland for the Lolo National Forest;
2. Analyzes the flow of that timber harvest and identifies the location of mills receiving that timber harvest; and
3. Describes the kind of mills, 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 included 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 quantities 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 Lolo National Forest Non-reserved Timberland

Lolo National Forest non-reserved timberland is located in five Montana counties: Granite, Mineral, Missoula, Powell, and Sanders. The total harvest from all lands in these five counties was 27.7 million cubic feet (MMCF) in 2009 (McIver and others, in preparation). Twenty-three percent (6.4 MMCF) of the timber harvest in this five-county area originated from the Lolo National Forest. Most (70 percent) of the timber harvested from these counties consisted of green (live) trees. The species composition of the harvested volume in this five-county area was: lodgepole pine 43 percent, Douglas-fir approximately 28 percent, ponderosa pine 16 percent, while spruce and western larch accounted for 5 and 4 percent, respectively. True firs accounted for about 3 percent, and western redcedar, western hemlock, and western white pine combined accounted for less than 1 percent. Sawmills and veneer/plywood plants received about 84 percent of the timber harvested from these counties. House logs, posts and small poles, and other mills received 2 percent of the timber harvest volume. Pulp and paper mills utilized 14 percent of the 2009 harvest from the five-county region.

The 2011 harvest in the five-county area was estimated to be approximately 32.4 MMCF. Given the mill closures that have occurred in the region since 2009, the pulpwood component was closer to the historical average of 5 percent of the total harvest in 2011. The Lolo National Forest was estimated to account for 9 percent of the total 2011 harvest in the five-county area.

Timber-processing area

The following steps were taken to determine the timber-processing area for the Lolo National Forest:

1. Counties containing Lolo National Forest non-reserved timberlands were identified.
2. Using BBER databases, timber harvest and flow from all ownerships within the above counties were analyzed.
3. The five counties containing Lolo National Forest non-reserved timberland were automatically included in the TPA.
4. Counties contiguous to the counties identified in step 1 that received timber from those counties were included unless the volume was a very small proportion of the total timber receipts in that county. If historic (2004 and 1998) timber flow data indicated a substantial flow of timber into a contiguous county, the county would be included in the TPA even if recent (2009) flows were relatively small (see Spoelma and others, 2008 and Keegan and others 2001).

5. Finally, all other counties receiving timber from the five counties identified in step 1 were included if the volume represented more than 10% of the total timber received in that county.

The Lolo National Forest Timber Processing Area (TPA) was defined by the BBER as the 12-county area including Bonner County in Idaho and Broadwater, Flathead, Granite, Jefferson, Lake, Lewis and Clark, Mineral, Missoula, Powell, Ravalli, and Sanders counties in Montana (Figure 1).

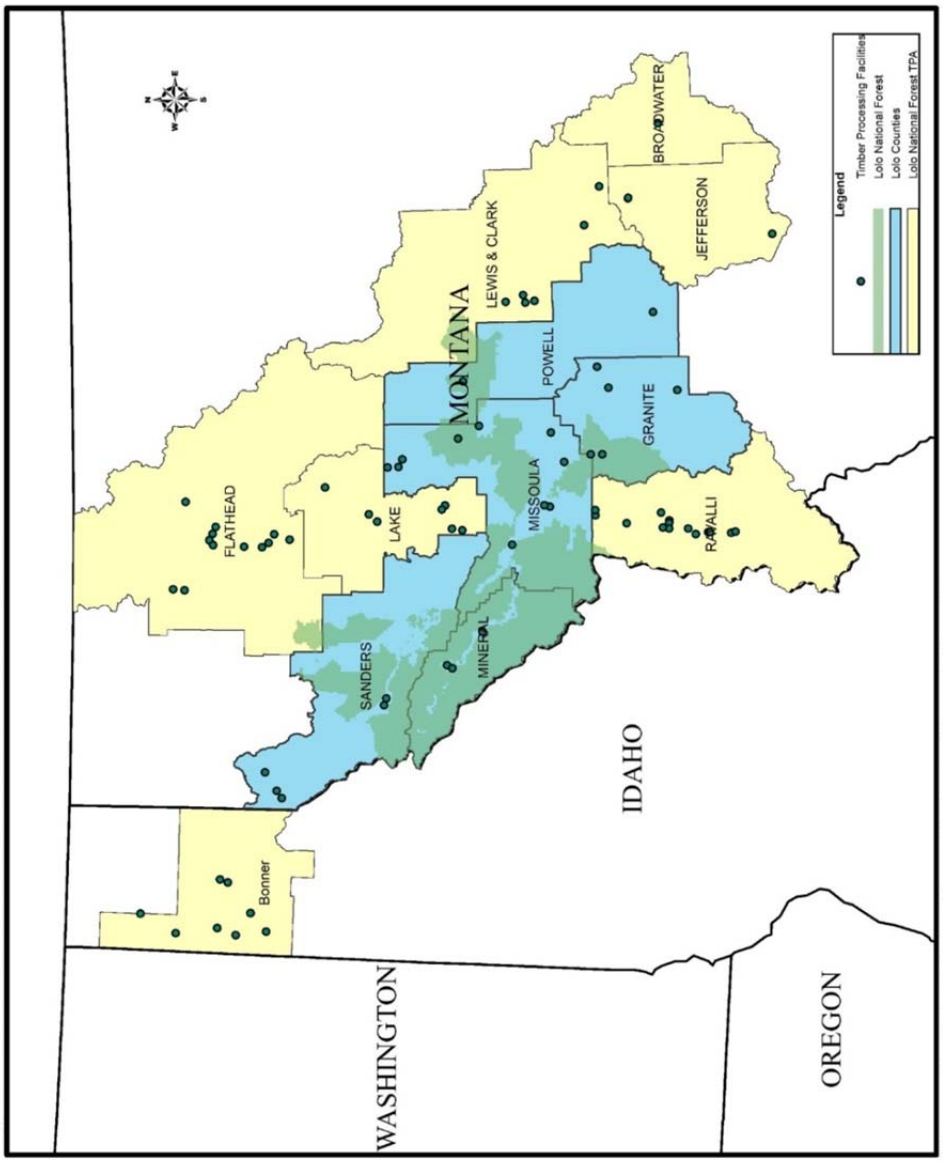


Figure 1. Lolo National Forest Timber Processing Area

Within the Lolo National Forest TPA there were 80 facilities currently operating as of 2011: 33 sawmills, 22 log home manufacturers, 12 post and small pole plants, 11 log furniture manufacturers, and two veneer and plywood facilities (Table 1).

Table 1 - Timber processing facilities in the 2011 Lolo National Forest TPA, selected years (excluding pulpwood).

Type	2006	2011
Sawmills	46	33
Log home	54	22
Post and Pole	19	12
Log Furniture	23	11
Plywood	4	2
Total	**146**	**80**

Sources: Spoelma and others 2008; Brandt and others 2012; McIver and others, In preparation)

Timber Flow

Of the 27.7 MCF of timber harvested in the five-county area, 33 percent was processed within the counties of harvest. Furthermore, 84 percent was processed within the TPA and the remaining 16 percent was processed outside the TPA. Missoula and Powell counties processed the largest proportion of the harvest originating within their borders, accounting for 50 and 46 percent, respectively (Table 2). Nearly all (97%) of the harvest from Missoula County was processed within the 12-county Lolo TPA, and over 70 percent of the timber harvested from the other four counties containing Lolo National Forest non-reserved timberland was processed within the Lolo TPA. Conversely, a very small portion of the harvest from Granite and Sanders counties was processed within their own borders.

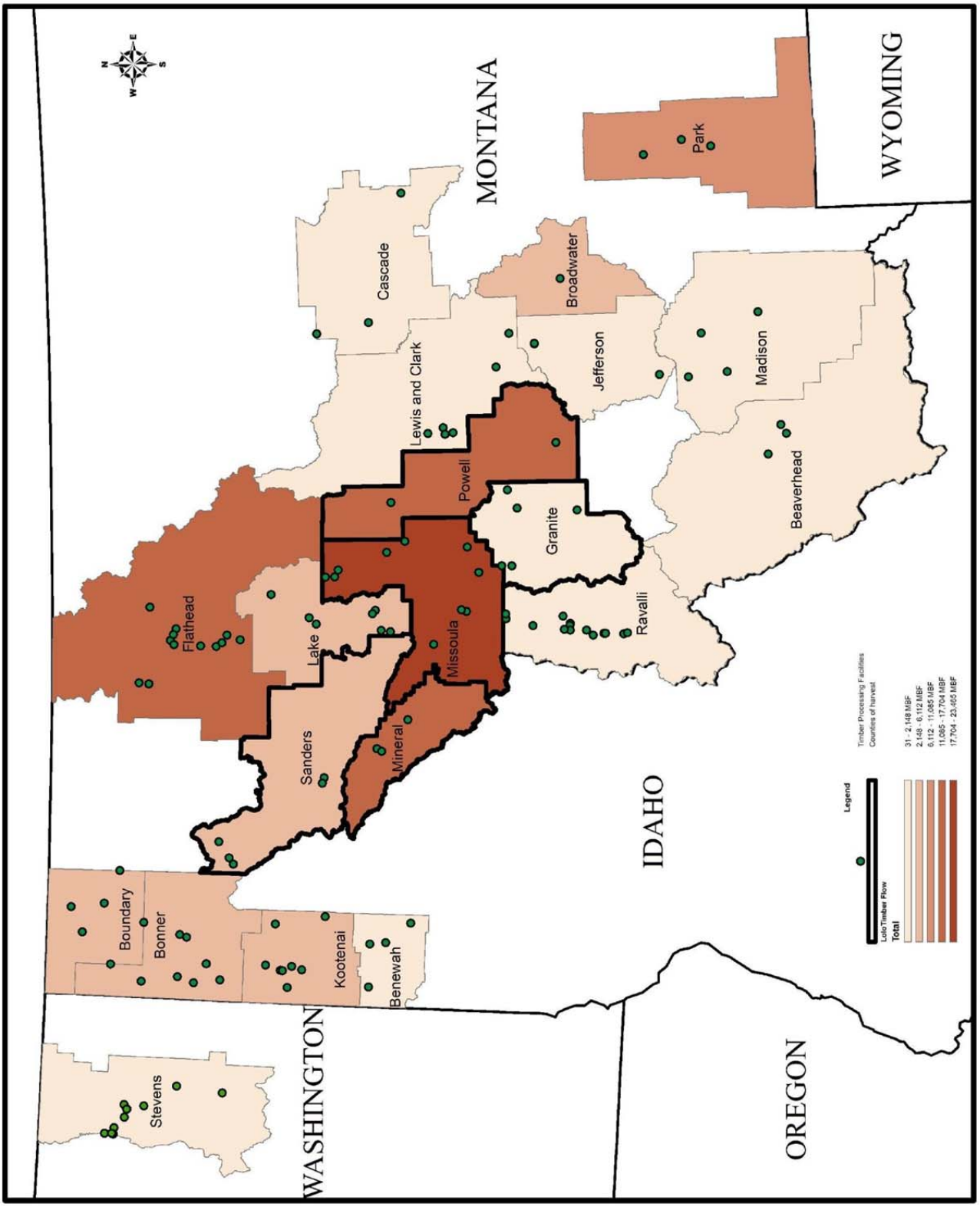
Table 2 - Timber flow from the Lolo National Forest five-county area to county of processing facility (excluding pulpwood), 2009.

County of Harvest	Processed within the county of harvest	Processed within the TPA	Processed outside the TPA
	percentage of harvest by county		
Granite	5%	80%	20%
Mineral	21%	83%	17%
Missoula	54%	97%	3%
Powell	46%	79%	21%
Sanders	0%	73%	27%

Source: McIver and others, In preparation.

An additional four counties in Montana, three counties in Idaho, and one county in Washington received 16 percent of the combined harvest from the five-county area (Figure 2). Beaverhead, Cascade, Madison and Park counties in Montana, Benewah, Boundary and Kootenai Counties in Idaho and Stevens County in Washington did receive timber from the Lolo area, but were excluded from the Lolo Timber Processing Area because the volumes received from the three county harvest area accounted for less than 10 percent of total mill receipts in each of the receiving counties. The extent of the region impacted by the timber harvest originating from the five counties containing Lolo National Forest non-reserved timberland is remarkable. The size of this impact area is likely influenced by the transportation corridors in the region as well as existing milling infrastructure and local timber harvest levels.

Figure 1. Lolo 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.
Map created July 25, 2012.

Current conditions and capacity

The tables in this section are labeled 2011 and represent 2009 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 during 2010 and 2011.

Capacity to process timber in the Lolo National Forest TPA during 2011 was 168 million cubic feet (MMCF), with mills utilizing approximately 95 MMCF or about 56 percent of capacity (Table 3). Slightly more than 90 percent (84.5 MMCF) of the volume processed in the TPA was composed of trees with diameter at breast height (dbh) ≥ 10". Nearly 8 percent (7.2 MMCF) of the volume processed came from trees 7.0 - 9.9" dbh, while just over 3 percent (2.9 MMCF) of processed volume came from trees < 7" dbh.

Table 3. Annual Volume of Timber Processed by Tree Size Class (Excluding Pulpwood) for the Lolo National Forest Timber Processing Area, 2011.

Thousand Cubic Feet of Timber		Thousand Board Feet Scribner of Timber	
Tree dbh	**Volume Used**	**Tree dbh**	**Volume Used**
< 7 in.	2,957	< 7 in.	2,957
7 - 9.9 in.	7,245	7 - 9.9 in.	27,820
10+ in.	84,544	10+ in.	376,053
Total	94,746	Total	406,831

Most facilities are designed to operate using trees of a given size class (e.g., veneer/ plywood plants typically use trees ≥ 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 ≥ 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 ≥ 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 59 percent (99.7 MMCF) of the 168 MMCF of existing capacity in the Lolo National Forest TPA was not capable of efficiently utilizing trees < 10" dbh and nearly 71 percent of the capacity capable of utilizing trees < 10" dbh was in the 7 - 9.9" dbh class (Table 4).

Table 4. Annual Total Capacity and Capability* to Process Trees by Size Class (Excluding Pulpwood) for the Lolo National Forest Timber Processing Area, 2011.

Thousand Cubic Feet of Timber		Thousand Board Feet Scribner of Timber	
Tree dbh	**Capability**	**Tree dbh**	**Capability**
< 7 in.	19,865	< 7 in.	19,865
7 - 9.9 in.	48,222	7 - 9.9 in.	185,171
10+ in.	99,706	10+ in.	423,750
Total Capacity	167,792	Total Capacity	628,786

* 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 was being used to process larger trees or going unused. Slightly less than 15 percent of capacity in the < 7" dbh category was utilized to process trees < 7" dbh, and slightly more than 15 percent of capacity in the 7 - 9.9" dbh category was being used to process trees 7 - 9.9" dbh. More than 7.6 MMCF of capacity capable of using trees 7 - 9.9" dbh was used annually to process trees ≥ 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 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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