

Capacity and Capability of Mills in the Clearwater and Nez Perce National Forests Timber Processing Area

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Introduction

This report was prepared as a forest planning support document for the Clearwater and Nez Perce 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 One 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 Clearwater and Nez Perce National Forests:

1. Examines the harvest of timber from the counties containing non-reserved timberland for the Clearwater and Nez Perce National Forests;
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 Clearwater and Nez Perce National Forest Non-reserved Timberland

Clearwater and Nez Perce National Forest non-reserved timberland is located in three Idaho counties: Clearwater, Idaho and Latah. The total harvest from all lands in these three counties was 84.3 million cubic feet (MMCF) in 2006 (Brandt and others 2012). Six percent (4.8 MMCF) of the timber harvest in this three-county area originated from the Clearwater and Nez Perce National Forests. Most (98 percent) of the timber harvested from these counties consisted of green (live) trees. The species composition of the harvested volume in this three-county area was: true firs 40 percent, Douglas-fir 25 percent, western redcedar 19 percent, and ponderosa pine 5 percent. Western hemlock was 4 percent of the harvest, while western larch, lodgepole pine, western white pine, Engelmann spruce, and other species combined accounted for the remaining 7 percent. Sawmills and veneer/plywood plants received about 91 percent of the timber harvested from these counties. House logs, posts and small poles, and other mills received less than 2 percent of the timber harvest volume. Pulp and paper mills utilized 7 percent of the 2006 harvest from the three-county region (Brandt and others 2012).

The 2011 harvest in the three-county area was estimated to be approximately 60.7 MMCF. The Clearwater and Nez Perce National Forest contribution was estimated to be approximately 16 percent of the total harvest by all ownerships.

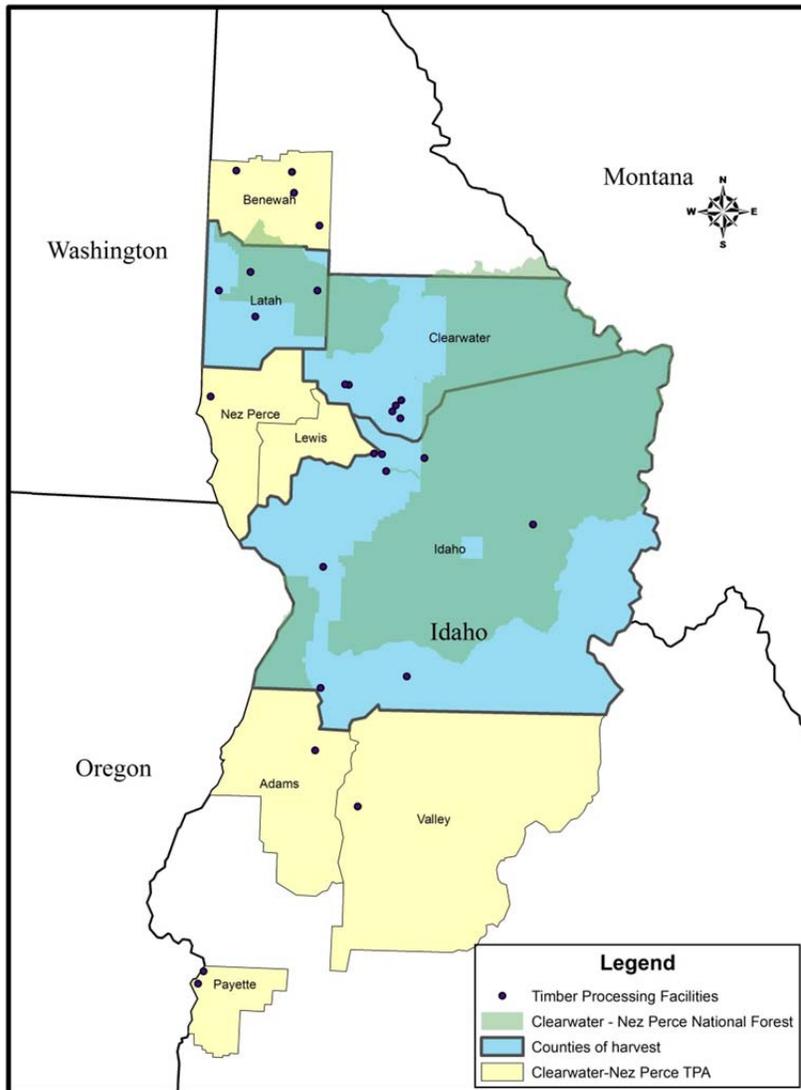
Timber-processing area

The following steps were taken to determine the timber-processing area for the Clearwater and Nez Perce National Forests:

1. Counties containing Clearwater and Nez Perce 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 three counties containing Clearwater and Nez Perce 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 (2001) timber flow data indicated a substantial flow of timber into a contiguous county, the county would be included in the TPA even if recent (2006) flows were relatively small (see Morgan and others 2004).
5. Finally, all other counties receiving timber from the three counties identified in Step 1 were included if the volume represented more than 10% of the total timber received in that county.

The Clearwater and Nez Perce National Forest Timber-Processing Area (TPA) was defined by the BBER as the nine-county area including: Adams, Benewah, Clearwater, Idaho, Latah, Lewis, Nez Perce, Payette and Valley Counties in the state of Idaho (Figure 1). Within the TPA there were 31 facilities operating as of 2011: 16 sawmills, 5 cedar products manufacturers, 7 log home, manufacturers, one post and small pole plant, one plywood plant, one utility pole plant and one furniture manufacturer.

Figure 1. Clearwater and Nez Perce National Forest Timber Processing Area



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 8, 2012.

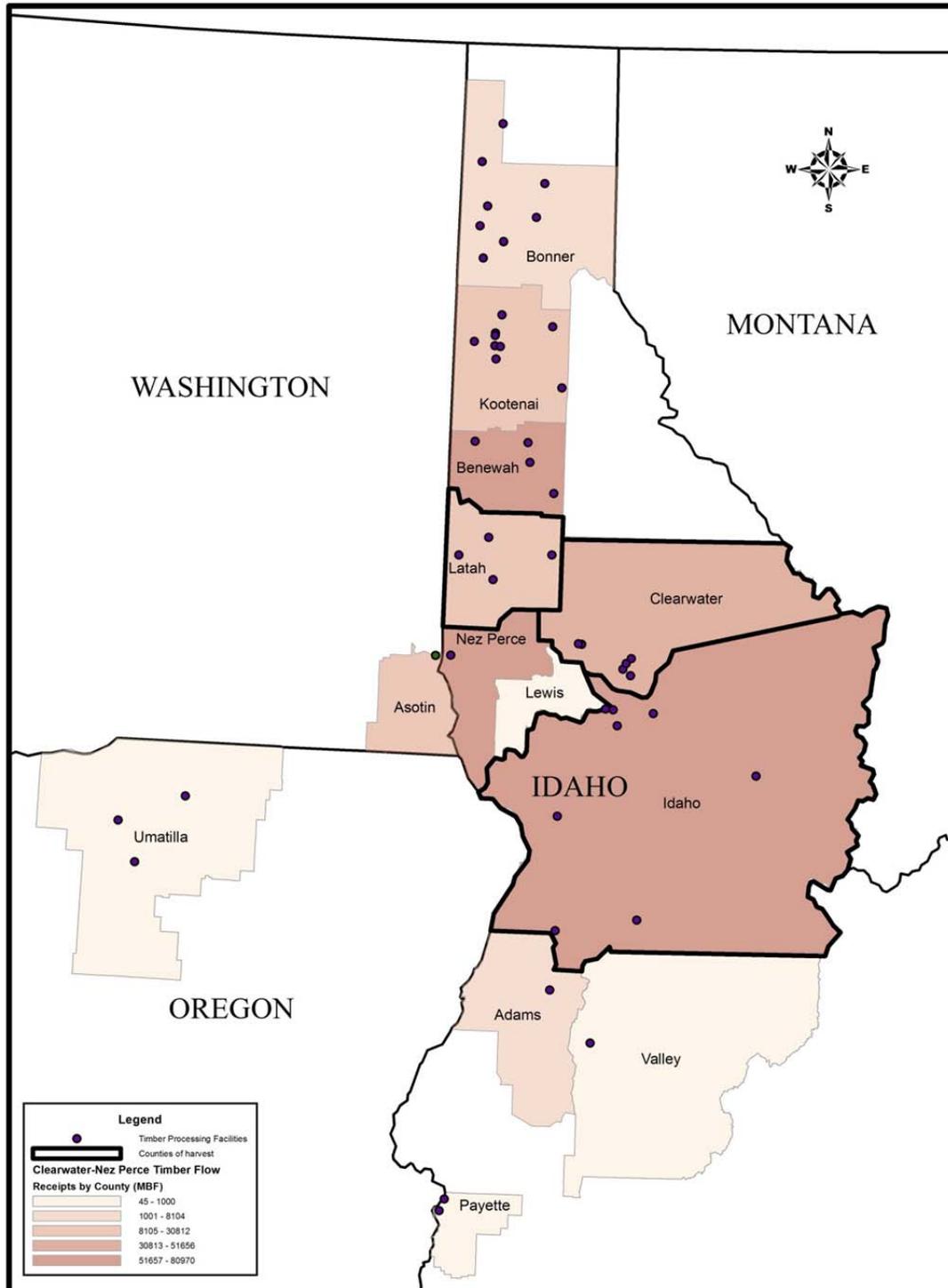
Timber Flow

Of the 84.3 MMCF of timber harvested in the three-county area containing Clearwater and Nez Perce National Forest non-reserved timberland, 31 percent was processed within the three counties of harvest. Furthermore, 89 percent was processed within the nine-county TPA and 11 percent was processed outside the TPA. Over half of the total harvest from Idaho County was processed within the county of origin, while Clearwater and Latah counties only processed 24 and 27 percent, respectively, of the harvest originating within their borders (Table 2). However, 94 percent of the harvest from Clearwater County was processed within the nine-county Clearwater-Nez Perce TPA, while 81 percent of the harvest from Latah County and 89 percent of the harvest from Idaho County was processed within the Clearwater-Nez Perce TPA.

| Table 1. Timber flow from the Clearwater-Nez Perce National Forest three-county area to county of processing facility (excluding pulpwood), 2006. | | | |
|--|---|---------------------------------|----------------------------------|
| County of Harvest | Processed within the county of harvest | Processed within the TPA | Processed outside the TPA |
| <i>-----percentage of harvest by county-----</i> | | | |
| Clearwater | 24% | 94% | 6% |
| Idaho | 57% | 89% | 11% |
| Latah | 27% | 81% | 19% |
| Source: Brandt and others 2012 | | | |

An additional two counties in Idaho, one county in Oregon and one county in Washington received 11 percent of the combined harvest from the three-county area (Figure 2). Bonner and Kootenai Counties in Idaho, Umatilla County in Oregon and Asotin County in Washington did receive timber from the Clearwater-Nez Perce three-county area, but were excluded from the Clearwater and Nez Perce TPA 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.

Figure 2. Clearwater-Nez Perce 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 July 23, 2012.

Timber Processing Capacity and Capability

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

Capacity to process timber in the Clearwater and Nez Perce National Forest TPA was 207 million cubic feet (MMCF). Mills in the TPA are currently using about 115 MMCF of timber annually, or about 56 percent of their total capacity (Table 2). Capacity utilized by mills in the TPA is down significantly since 2006 when mills were reported to be operating at 96 percent capacity. Total capacity to process timber is also down from over 400 MMCF in 2006 to slightly more than 200 MMCF in 2011, even though the TPA increased from five to nine counties (Keegan and others 2006).

About 87 percent (99.9 MMCF) of the volume processed in the TPA is composed of trees with diameter at breast height (dbh) $\geq 10''$. Slightly more than 12 percent (14 MMCF) of the volume processed comes from trees 7 - 9.9'' dbh, while just over 1 percent (1,381 MCF) of processed volume comes from trees $< 7''$ dbh.

Table 2. Annual Volume of Timber Processed by Tree Size Class (Excluding Pulpwood) for the Clearwater and Nez Perce National Forests 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. | 1,381 | < 7 in. | 1,381 |
| 7 - 9.9 in. | 14,107 | 7 - 9.9 in. | 54,171 |
| 10+ in. | 99,902 | 10+ in. | 450,417 |
| Total | 115,390 | Total | 505,969 |

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 75 percent (156 MMCF) of the 207 MMCF of existing capacity in the TPA is not capable of efficiently utilizing trees $< 10''$ dbh (Table 3). Approximately 51 MMCF of timber-processing capacity is capable of utilizing trees $< 10''$ dbh, and nearly 63 percent of the capacity capable of utilizing trees $< 10''$ dbh is in the $7 - 9.9''$ dbh class (Table 3).

| Thousand Cubic Feet of Timber | | Thousand Board Feet Scribner of Timber | |
|-------------------------------|------------|--|------------|
| Tree dbh | Capability | Tree dbh | Capability |
| < 7 in. | 18,633 | < 7 in. | 18,633 |
| 7 - 9.9 in. | 32,081 | 7 - 9.9 in. | 123,193 |
| 10+ in. | 156,157 | 10+ in. | 765,273 |
| Total Capacity | 206,871 | Total Capacity | 907,098 |

* 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 7 percent of capacity in the $< 7''$ dbh category is currently utilized to process trees $< 7''$ dbh, and slightly more than 44 percent of capacity in the $7 - 9.9''$ dbh category is being used to process trees $7 - 9.9''$ dbh. More than 2.2 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 Inland Northwest 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 in over 50 years (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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