



**FOREST INDUSTRY
RESEARCH PROGRAM**
UNIVERSITY OF MONTANA

Timber Processing Capacity and Capability: Western Klamath Collaborative Forest Landscape Restoration Project

Prepared by:

Ben Irely,
Research Social Scientist

Thale Dillon,
Forest Researcher

Todd A. Morgan,
Director

Lauren Sampson,
Research Associate

Clayton Dutton,
Database Administrator

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

Submitted to:

Lindsay Buchanan, USDA Forest Service
Agreement No. 22-CS-11132400-472

October 2025

Introduction

The Western Klamath Collaborative Forest Landscape Restoration Project (CFLRP) covers 1.2 million acres in northern California. The landscape boundaries encompass the area traditionally inhabited and managed by the Karuk Tribe, expanded to the watershed boundaries (Western Klamath Restoration Partnership CFLRP Proposal, 2020). The landscape is comprised of national forest lands, including the Klamath and Six Rivers national forests.

According to the Western Klamath Restoration Partnership CFLRP Proposal:

The proposed treatments protect communities and critical transportation routes, improve habitat for key threatened/endangered and culturally significant species, and prepare for the return of ceremonial burning on Offield Mountain and cultural burning throughout Karuk aboriginal territory.

The Western Klamath CFLRP contains portions of Humboldt County, Siskiyou County, small portions of Del Norte County in California and Josephine County in Oregon (figure 1). Humboldt and Siskiyou counties make up the “Study Area” in this report. Del Norte County, California and Josephine County, Oregon have been excluded from the Study Area because such a small portion of the county is included in the CFLRP landscape and no CFLRP timber harvests are being planned there (Western Klamath Restoration Partnership CFLRP Proposal, 2020). The Study Area covers nearly 6.4 million acres. Analysis of timber flow indicates that timber harvested in the Western Klamath Study Area is processed by facilities located 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 for the Western Klamath CFLRP includes the two counties within the Study Area, as well as Butte, Shasta, Sonoma, and Trinity counties in California and Douglas, Jackson, and Klamath counties in Oregon.

The data used to develop the information presented in this report were collected from timber-processing facilities by the University of Montana’s Forest Industry Research Program (FIRP) within the Bureau of Business and Economic Research. FIRP would like to thank the timber-processing facilities for their participation, without which, analyses such as this one would not be possible.

The data were collected and processed by FIRP under joint venture agreements with the USDA Forest Service’s Pacific Northwest Research Station. FIRP conducted a periodic census of timber-processing facilities in California in 2000, 2006, 2012, 2016, and 2021 and in Oregon 2003, 2008, 2013, 2017, and 2022. In 2018 FIRP began conducting annual sampling of timber-processing facilities in California. All but one of the tables in this report summarize data from the periodic census. Table 6 summarizes data from both the periodic census and from annual sampling.

FIRP makes every effort to identify and collect data from all commercial timber-processing facilities that buy logs and sell output products across the West. Hobbyists and timber processors that supply their own logs or saw for hire may not be included in FIRP’s database. If the reader identifies facilities in the TPA counties that are missing from this analysis, please let FIRP know.

Additional information from FIRP is available upon request; however, mill- or company-level data are confidential and will not be released.

Irey et al.

There are 63 timber processing facilities in the Western Klamath TPA, including 31 sawmills, 9 plywood, 8 biomass energy, 4 particleboard/MDF/hardboard, 2 log home, 2 bark products, 2 roundwood pulp-chip conversion, 1 post/pole/piling, 1 engineered wood products, 1 firewood, 1 log furniture facility, and 1 concentration/export yard (table 1).

Table 1. Western Klamath TPA timber-processing facilities.

Facility name	Facility type	State	County	Current Facility Status	Included in log-processing capacity analysis
SPI - Oroville Sawmill	Sawmill	CA	Butte	Active	Yes
Apex Lumber Co	Sawmill	CA	Butte	Active	Yes
Sierra Log Homes	Log home	CA	Butte	Active	Yes
Hot Wood - California	Firewood (fuelwood)	CA	Butte	Active	Yes
TRL - North Fork Lumber Co	Sawmill	CA	Humboldt	Active	Yes
TRL - Schmidbauer Lumber Inc	Sawmill	CA	Humboldt	Active	Yes
Humboldt Sawmill Company	Sawmill	CA	Humboldt	Active	Yes
Arcata Forest Products	Sawmill	CA	Humboldt	Active	Yes
Mad River Lumber	Sawmill	CA	Humboldt	Active	Yes
Hoopla Forest Industries	sawmill	CA	Humboldt	Active	No
Green Diamond – Samoa Chipping	Roundwood pulp-chip conversion	CA	Humboldt	Active	Yes
Redwood Burl	Log furniture	CA	Humboldt	Active	Yes
Green Diamond - Fairhaven Export	Concentration yard/export yard	CA	Humboldt	Active	No
DG Fairhaven Power Company	Biomass/energy	CA	Humboldt	Active	No
Humboldt Sawmill Company - Cogen	Biomass/energy	CA	Humboldt	Active	No
Shasta Green Inc.	Sawmill	CA	Shasta	Active	Yes
SPI - Burney Sawmill	Sawmill	CA	Shasta	Active	Yes
SPI - Anderson Sawmill	Sawmill	CA	Shasta	Active	Yes
SPI - Shasta Lake Sawmill	Sawmill	CA	Shasta	Active	Yes
Rath Industries, Inc	sawmill	CA	Shasta	Active	No
Hat Creek Lumber	sawmill	CA	Shasta	Active	No
West Biofuels - Hat Creek Bioenergy, LLC	Roundwood pulp-chip conversion	CA	Shasta	Active	No
Burney Forest Products	Biomass/energy	CA	Shasta	Active	No
Shasta-Sustainable Resource Management, Inc.	Biomass/energy	CA	Shasta	Active	No
SPI - Burney Cogen	Biomass/energy	CA	Shasta	Active	No
SPI - Anderson Cogen	Biomass/energy	CA	Shasta	Active	No
Timber Products Company - Yreka	Plywood	CA	Siskiyou	Active	Yes
Roseburg Forest Products - Weed Veneer	Plywood	CA	Siskiyou	Active	Yes
Roseburg Forest Products - Weed Cogen	Biomass/energy	CA	Siskiyou	Active	No
Shasta Forest Products Inc	Bark products	CA	Siskiyou	Active	No
Agwood Mill & Lumber	Sawmill	CA	Sonoma	Active	Yes
Redwood Empire - Cloverdale	Sawmill	CA	Sonoma	Active	Yes
Berry's Sawmill Inc	Sawmill	CA	Sonoma	Active	Yes
Falk Forestry Services	Sawmill	CA	Sonoma	Active	Yes
Redwood Empire - Asti Fence Plant	Sawmill	CA	Sonoma	Active	Yes
Forestree Collective	sawmill	CA	Sonoma	Active	No
Reuser Inc	Bark products	CA	Sonoma	Active	No
TRL - Trinity River Lumber Co	Sawmill	CA	Trinity	Active	Yes

^aThe highlighted facilities are not included in capacity calculations as BBER does not have the necessary capacity data for them.

Table 1. Western Klamath TPA timber-processing facilities, continued.

Facility name	Facility type	State	County	Current Facility Status	Included in log-processing capacity analysis
Herbert Lumber Company	Sawmill	OR	Douglas	Active	Yes
Keller Lumber	Sawmill	OR	Douglas	Active	Yes
Swanson Group - Roseburg Sawmill	Sawmill	OR	Douglas	Active	Yes
Umpqua Lumber Company	Sawmill	OR	Douglas	Active	Yes
DR Johnson Lumber Company	Sawmill	OR	Douglas	Active	Yes
Douglas County Forest Products	Sawmill	OR	Douglas	Active	Yes
Roseburg Forest Products - Dillard Studmill	Sawmill	OR	Douglas	Active	Yes
McFarland Cascade - Wilbur Pole Facility	Post/pole/piling	OR	Douglas	Active	Yes
Swanson Group - Glendale Plywood	Plywood	OR	Douglas	Active	Yes
Nordic Veneer, Inc. (Veneer)	Plywood	OR	Douglas	Active	Yes
Roseburg Forest Products - Riddle Plywood	Plywood	OR	Douglas	Active	Yes
Murphy- Southerlin EWP	Engineered wood products	OR	Douglas	Active	Yes
Boise Cascade - White City Veneer	Plywood	OR	Jackson	Active	Yes
Murphy Plywood - Veneer	Plywood	OR	Jackson	Active	Yes
Murphy Plywood - Rogue River	Plywood	OR	Jackson	Active	Yes
Timber Products Company - Medford Particleboard	Particleboard/MDF/hardboard	OR	Jackson	Active	No
Roseburg - SierraPine - Medite (MDF)	Particleboard/MDF/hardboard	OR	Jackson	Active	No
Homestead Log home Inc.	Log home	OR	Jackson	Active	Yes
Biomass One, LP	Biomass/energy	OR	Jackson	Active	No
Cook Woods	Sawmill	OR	Klamath	Active	Yes
Gilchrist Forest Products (Neiman Enterprises)	Sawmill	OR	Klamath	Active	Yes
Thomas Lumber Company - Division of Jeld Wen	Sawmill	OR	Klamath	Active	Yes
Columbia Forest Products - Columbia Plywood	Plywood	OR	Klamath	Active	Yes
Collins Products LCC	Particleboard/MDF/hardboard	OR	Klamath	Inactive	No
Collins Products LCC - Hardboard	Particleboard/MDF/hardboard	OR	Klamath	Active	No

Timber harvest within the Western Klamath CFLRP Study Area

The total volume of timber harvested from the Western Klamath Study Area and processed into commercial products in 2021 was estimated at 754,997 hundred cubic feet (CCF) or 374,015 thousand board feet (MBF), Scribner (table 2). In 2012, 2016, and 2021, Siskiyou County harvested the greatest volume of timber within the Study Area. Humboldt County’s harvests was a few percent smaller than Siskiyou’s in 2012 and 2021 and 14 percent lower than Siskiyou’s in 2016.

Table 2. Timber harvested in the Western Klamath Study Area, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), 2012, 2016 and 2021.

Study Area	2012			2016			2021		
	MBF	CCF	Percent	MBF	CCF	Percent	MBF	CCF	Percent
Humboldt County	215,112	396,543	48%	177,889	374,155	43%	185,016	372,477	49%
Siskiyou County	151,641	423,177	52%	170,785	505,457	57%	188,999	382,519	51%
Total	366,753	819,721	100%	348,674	879,612	100%	374,015	754,997	100%

The majority of timber harvested in the Western Klamath Study Area in 2012, 2016, and 2021 were saw logs, at 62 percent, 50 percent, and 72 percent of the total harvest, respectively (table 3). Veneer logs made up 19 percent, 21 percent, and 25 percent of the harvest, respectively, across the three census years while energywood chipped in the woods made up 18 percent, 28 percent, and zero percent.

Table 3. Timber harvested by timber product type in the Western Klamath Study Area, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), 2012, 2016 and 2021.

Product	2012			2016			2021		
	MBF	CCF	Percent	MBF	CCF	Percent	MBF	CCF	Percent
Saw log	275,200	510,117	62%	229,518	441,722	50%	274,730	546,035	72%
Veneer log	74,583	159,725	19%	91,432	186,882	21%	91,242	186,979	25%
Post or pole	2,154	3,047	0%	-	-	0%	-	-	0%
House log	15	30	0%	-	-	0%	-	-	0%
Pulpwood log	-	-	0%	-	-	0%	6,958	19,879	3%
Furniture log	151	302	0%	151	302	0%	151	307	0%
Piling or utility pole	-	-	0%	3,128	6,256	1%	934	1,796	0%
Energywood chipped in woods	14,650	146,500	18%	24,445	244,450	28%	-	-	0%
Total	366,753	819,721	100%	348,674	879,612	100%	374,015	754,997	100%

Douglas-fir constituted the greatest portion of timber harvested within the Western Klamath Study Area in 2012, 2016, and 2021, at 43 percent, 35 percent, and 46 percent, respectively (table 4). Redwood made up 22, 17, and 27 percent during these same years, and white fir made up 21, 30, and 17 percent.

Table 4. Timber harvest by species in the Western Klamath Study Area, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), 2012, 2016 and 2021.

Species	2012			2016			2021		
	MBF	CCF	Percent	MBF	CCF	Percent	MBF	CCF	Percent
White fir	56,230	169,336	21%	86,578	266,232	30%	64,683	129,980	17%
Grand fir	-	-	0%	-	-	0%	449	1,282	0%
Subalpine fir	5,544	11,795	1%	850	1,728	0%	1,048	2,130	0%
Shasta red fir	150	319	0%	-	-	0%	-	-	0%
Port-Orford-cedar	-	-	0%	0	0	0%	218	431	0%
Incense-cedar	3,328	6,131	1%	1,634	3,930	0%	732	1,448	0%
Sitka spruce	-	-	0%	19	36	0%	-	-	0%
Knobcone pine	-	-	0%	0	1	0%	69	137	0%
Lodgepole pine	2,934	19,960	2%	4,756	38,395	4%	1,212	2,495	0%
Sugar pine	5,302	10,986	1%	6,370	26,322	3%	18,353	37,129	5%
Western white pine	-	-	0%	1	2	0%	69	137	0%
Ponderosa pine	25,417	66,608	8%	32,249	83,511	9%	12,513	25,162	3%
Douglas-fir	167,954	350,929	43%	135,459	307,638	35%	168,352	343,615	46%
Redwood	96,568	177,541	22%	78,572	147,709	17%	103,884	205,805	27%
Giant sequoia	2	3	0%	-	-	0%	-	-	0%
Western redcedar	2	5	0%	92	173	0%	235	478	0%
Western hemlock	3,291	6,049	1%	1,984	3,729	0%	2,107	4,565	1%
Pacific madrone	-	-	0%	28	52	0%	-	-	0%
Paper birch	32	58	0%	-	-	0%	-	-	0%
Tanoak	-	-	0%	28	52	0%	-	-	0%
California black oak	-	-	0%	28	52	0%	-	-	0%
California-laurel	-	-	0%	28	52	0%	-	-	0%
Other trees	-	-	0%	-	-	0%	92	203	0%
Total	366,753	819,721	100%	348,674	879,612	100%	374,015	754,997	100%

The vast majority of the timber harvested in the Western Klamath Study Area in 2012, 2016, and 2021 was harvested on private lands (table 5). Harvests on national forest lands made up 16 percent in 2012, followed by 9 percent in 2016, and 5 percent in 2021.

Table 5. Timber harvest by ownership in the Western Klamath Study Area, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), 2012, 2016 and 2021.

Ownership	2012			2016			2021		
	MBF	CCF	Percent	MBF	CCF	Percent	MBF	CCF	Percent
National forest	34,569	128,295	16%	38,945	82,987	9%	19,047	38,048	5%
Private	332,084	691,242	84%	309,429	796,061	91%	354,000	715,032	95%
Other public	100	184	0%	300	564	0%	968	1,917	0%
Total	366,753	819,721	100%	348,674	879,612	100%	374,015	754,997	100%

The vast majority of timber harvested in the Western Klamath Study Area was harvested live from 2019 through 2023. Sawlogs made up the most consistent percentage of standing dead timber harvested during this period (table 6).

Table 6. Percentage of timber harvested live and dead in the Western Klamath Study Area, 2019-2023.

Study Area	2019		2020		2021		2022		2023	
	Live percent	Dead percent								
Saw logs	93%	7%	95%	5%	91%	9%	86%	14%	88%	12%
Veneer logs	100%	0%	83%	17%	100%	0%	100%	0%	90%	10%
Pulpwood logs	100%	0%	0%	0%	100%	0%	100%	0%	100%	0%
Furniture logs	0%	100%	0%	100%	100%	0%	100%	0%	100%	0%
Piling or utility poles	85%	15%	100%	0%	100%	0%	100%	0%	0%	0%
Energywood chipped in woods	100%	0%	94%	6%	0%	0%	0%	0%	0%	0%
Average	97%	3%	93%	7%	93%	7%	90%	10%	88%	12%

Timber-processing within the Western Klamath Timber Processing Area

Sixty-one percent of the timber harvested in the Western Klamath Study Area was processed within the county of harvest in 2021, with Humboldt County processing 79 percent of its own harvest and Siskiyou County processing 44 percent of its own harvest (table 7). Fourteen percent of the timber harvested in Siskiyou County was processed in Humboldt County. Thirty two percent of the Study Area harvest in 2021 was processed in the TPA outside the Study Area.

Table 7. Processing location for timber harvested in the Western Klamath Study Area, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), 2021.

Study Area harvest	Processed within the county of harvest	Processed elsewhere within the Study Area	Processed outside the Study Area and inside the Timber Processing Area
Humboldt County	79%	0%	21%
Siskiyou County	44%	14%	43%
Total	61%	7%	32%

Of the total timber processed by facilities in the Western Klamath TPA in 2021, 67 percent came from within the TPA and 33 percent came from other California or Oregon counties (table 8).

Table 8. Origin of timber processed within the Western Klamath TPA, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), 2021.

Origin of timber	Volume (MBF)	Volume (CCF)	Proportion of the total timber received
From Study Area	374,015	754,997	21%
From TPA outside Study Area	771,818	1,693,271	46%
From other California counties	311,172	626,525	17%
From other Oregon counties	251,463	577,090	16%
From Washington counties	2,244	5,372	0%
From British Columbia	1,122	2,686	0%
Total	1,711,834	3,657,254	100%

Irey et al.

Timber-processing capacity and capability

The purpose of this report is to provide the Western Klamath CFLRP and its stakeholders with information on 1) The current use of timber by primary wood-processing facilities in the vicinity of the Western Klamath CFLRP, and 2) The maximum amount of timber these facilities could economically use in their current configuration. This information is intended to help stakeholders understand the available milling capacity within the TPA.

The term “capacity” refers to the maximum total volume of timber that existing timber processors within the TPA could use 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 mills’ timber *input* capacity and is expressed in MBF Scribner and CCF per year. Input capacity is a useful measure when attempting to express the capacity of multiple types of mills in a common unit of measure. It is estimated from production (output) capacity information provided by facilities. 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, including sawmills and plywood mills, among others. Facilities that use a mix of roundwood and non-roundwood inputs, such as chips, sawdust, shavings, and bark (e.g., biomass facilities) 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.

The term “capability” refers to the volume of trees of a certain size class that existing timber processors can economically process annually. This report uses three diameter at breast height (dbh) classes: <7”, 7 to 9.9”, and ≥10”. These size classes were chosen to focus analysis on the smallest log sizes that are merchantable in the western U.S. and that are often harvested in restoration treatments conducted on national forest lands. Some facilities are designed to operate using only trees of a given size class. Capability at these facilities is readily classified in just one of the size classes (e.g., plywood plants typically only use trees ≥10” dbh, and post manufacturers primarily use trees <10” dbh). Many facilities can and do use timber from a variety of size classes, especially sawmills, which often process logs that are larger than the smallest tree size they are capable of processing due to greater profitability. However, some sawmills that process larger logs are not capable of processing smaller-diameter timber due to the configuration of their equipment.

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

Annual processing capacity, capability, and utilization

The estimated annual timber-processing capacity of facilities in the Western Klamath TPA was 4,826,844 CCF or 2,218,739 MBF, Scribner (table 9). Of this volume, 91 percent (4,383,699 CCF or 2,020,390 MBF, Scribner) was in the ≥10” dbh size class, 8 percent (419,625 CCF or 187,707 MBF, Scribner) was in the 7-9.9” dbh size class and less than 1 percent was in the <7” dbh size class. As such, the vast majority of the Western Klamath TPA timber-processing capacity (91 percent) is for larger logs and may not be able to process smaller ones, either due to their equipment or because such processing would have a profit margin too small to be economical.

Irey et al.

Table 9. Annual timber processing capacity and capability, by dbh size class, of facilities within the Western Klamath TPA, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), California 2021 and Oregon 2022.

Tree dbh	Thousand board feet, Scribner (MBF)	Hundred cubic feet (CCF)	Percent
< 7 in.	10,642	23,519	0%
7 - 9.9 in.	187,707	419,625	8%
≥ 10 in.	2,020,390	4,383,699	91%
Total	2,218,739	4,826,844	100%

Irey et al.

Timber-processing facilities in the Western Klamath TPA most recently used 78 percent of their timber-processing capacity (table 10). Facilities in Sonoma County collectively used 95 percent of their timber-processing capacity while Klamath County used 68 percent, though Klamath County’s timber-processing capacity is about three times the capacity of Sonoma County. The county with the highest timber-processing capacity and the highest timber use in the TPA is Douglas County, OR at 1,946,616 CCF of capacity and 1,400,137 CCF of timber use.

Table 10. Annual timber processing capacity and utilization, by county group, for facilities within the Western Klamath TPA, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), California 2021 and Oregon 2022.

Timber Processing Area	-----Capacity to process timber-----		-----Actual timber consumption-----		Most recent utilization
	<i>Thousand board feet, Scribner (MBF)</i>	<i>Hundred cubic feet (CCF)</i>	<i>Thousand board feet, Scribner (MBF)</i>	<i>Hundred cubic feet (CCF)</i>	
Butte County, CA	39,687	80,813	27,716	56,737	70%
Humboldt County, CA	342,528	686,913	258,450	517,891	75%
Shasta, Siskiyou, and Trinity counties, CA	633,146	1,261,398	565,641	1,126,693	89%
Sonoma County, CA	65,045	128,601	61,854	122,473	95%
Douglas County, OR	821,807	1,946,616	592,401	1,400,137	72%
Jackson County, OR	142,365	302,700	131,944	280,668	93%
Klamath County, OR	174,162	419,804	118,788	283,520	68%
Total	2,218,740	4,826,843	1,756,794	3,788,119	78%

Sonoma County is the only county/county group in the Western Klamath TPA to have overused their given capacity to process trees $\geq 10''$ dbh, at 3,774 CCF (table 11). This is likely due to a facility, or facilities, substituting larger logs for smaller whenever they are available as larger logs are more economical to process. Douglas County has the most unused capacity to process trees $\geq 10''$ dbh at 512,788 CCF. The county with the next-greatest unused timber-processing capacity for trees $\geq 10''$ dbh is Humboldt County, at 132,675 CCF. Klamath County has the greatest unused timber-processing capacity for trees in the 7-9.9'' dbh size class with 85,599 CCF of capacity going unused.

Table 11. Annual timber processing capability and unused capability by county group for facilities within the Western Klamath TPA, in hundred cubic feet (CCF), California 2021 and Oregon 2022.

Timber Processing Area	Capability to process timber by dbh size class (CCF)			Unused capability to process timber by dbh size class (CCF)		
	<7" dbh	7-9.9" dbh	$\geq 10''$ dbh	<7" dbh	7-9.9" dbh	$\geq 10''$ dbh
Butte County, CA	724	13,927	66,162	724	5,446	17,906
Humboldt County, CA	8,846	51,542	626,524	6,160	30,186	132,675
Shasta, Siskiyou, and Trinity counties, CA	13,640	126,151	1,121,607	11,799	88,120	34,787
Sonoma County, CA	-	12,710	115,891	-	9,902	(3,774)
Douglas County, OR	284	100,986	1,845,346	284	33,405	512,788
Jackson County, OR	-	1,688	301,011	-	1,688	20,343
Klamath County, OR	25	112,622	307,157	25	85,599	50,659
Total	23,519	419,625	4,383,699	18,994	254,347	765,384

Recent timber use by facilities in the Western Klamath TPA in the $\geq 10''$ dbh size class was at a rate 23 times greater than the rate of use of the 7-9.9'' dbh size class (table 12). The facilities in the TPA used timber in the 7-9.9'' dbh size class at a rate 38 times greater than the <7'' dbh size class.

Table 12. Timber use, by dbh size class, for facilities within the Western Klamath TPA, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), California 2021 and Oregon 2022.

Tree dbh	Thousand board feet, Scribner (MBF)	Hundred cubic feet (CCF)	Percent
<7 in.	1,904	4,526	0%
7 - 9.9 in.	72,287	165,279	4%
≥ 10 in.	1,682,601	3,618,316	96%
Total	1,756,793	3,788,120	100%

There was 1,038,724 CCF (461,946 MBF, Scribner) of unused timber processing capacity in the West Klamath TPA, 74 percent of which was for trees $\geq 10''$ dbh (table 13). The unused timber processing capacity in the two smaller size classes combined is about one-third of what is available in the largest size class.

Table 13. Unused timber processing capacity by dbh size class for facilities within the West Klamath TPA, in thousand board feet, Scribner (MBF) and hundred cubic feet (CCF), California 2021 and Oregon 2022.

Tree dbh	Thousand board feet, Scribner (MBF)	Hundred cubic feet (CCF)	Percent
<7 in.	8,737	18,994	2%
7 - 9.9 in.	115,420	254,347	24%
≥10 in.	337,789	765,384	74%
Total	461,946	1,038,724	100%

Discussion

The capacity utilization levels presented in this report indicate that the forest products industry in the Western Klamath TPA has capacity available to process an increased yield of timber resulting from mechanized fuels reduction (table 13). However, the size and quality of timber available, as well as prevailing market prices and the availability of qualified labor, also affect the level of capacity at which primary processors are able to operate and in what size class(es) capability is concentrated. Fuels reduction treatments frequently involve the harvesting of smaller-diameter timber, the profitability of which diminishes as tree diameter decreases (Stewart et al. 2004). Harvesting salvage (standing dead) timber can become similarly unprofitable, especially if logs are less than 10" dbh, due to the lower grade recovery for these logs (Fahey et al. 1986).

While some operators have configurations capable of accommodating the processing of large and small logs, not all processors are able to do so. Processing a greater volume of logs from smaller trees, that typically yield lower recovery, could reduce profit margins to the point of a mill becoming unprofitable, especially in a weak lumber market.

Irey et al.

Sources

Fahey, Thomas D.; Snellgrove, Thomas A.; Plank, Marlin E. 1986. "Changes in Product Recovery Between Live and Dead Lodgepole Pine: A Compendium." Research Paper PNW-RP-353. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Rangeland Experiment Station. 32p.

Stewart, Hayden G.; Blatner, Keith A.; Wagner, Francis G.; Keegan, Charles E. 2004. "Risk and feasibility of processing small-diameter material in the U.S. West, Part I: Structural lumber." *Forest Products Journal* 54(12): 97-103.

Western Klamath Restoration Partnership, 2020. Western Klamath Restoration Partnership Collaborative Forest Landscape Restoration Program Proposal.