

California's Forest Products Industry and Timber Harvest, 2021

This report contains the preliminary findings from a census of California's forest products industry for 2021 in a series of tables and figures that will be used in a final report. This is the fifth such effort by the University of Montana's Bureau of Business and Economic Research (BBER), in cooperation with the Forest Inventory and Analysis (FIA) program at the USDA Forest Service's Pacific Northwest Research Station. The census uses the Forest Industries Data Collection System (FIDACS) to collect, compile, and make available state and county information on the operations and impact of the forest industry. The 2021 FIDACS census attempted to capture every primary forest products manufacturer in California, as well as any out-of-state facilities that receive California timber. A primary forest products manufacturer is defined to be any business that processes timber into a intermediate or final wood product, as well as any facility that processes wood fiber residuals from those timber processors.

Through a combination of mailed surveys, telephone calls, and in-person interviews, the following information was requested from every primary wood products manufacturer in California:

- Facility information
 - Location
 - Production capacity
 - Employment
 - Preferred and accepted log lengths and diameters
- Volume of raw material received by:
 - Material type
 - County of origin
 - Ownership
 - Species
 - Mortality status at time of harvest
- Volume and sales value of finished products by:
 - Product type
 - Market location
- Residuals information
 - Production
 - Utilization

- Sales value

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 2021 California Tables
 Posted Feb. 2024
 Updated Mar. 2024

Table 1 — California timber harvest by ownership class, selected years.

Ownership Class	2012	2016	2021
<i>----- Million board feet Scribner -----</i>			
Private and Tribal timberland	1,193.7	1,250.9	1,426.4
Industrial	1,000.5	1,044.5	1,133.3
Non-industrial private and Tribal	193.2	206.4	293.1
Public timberland	231.7	320.6	195.5
National forest	203.3	265.5	156.2
State lands	27.9	51.4	34.0
Other public ^a	0.5	3.7	5.3
All owners	1,425.4	1,571.5	1,621.9

Source: McIver et al. 2015; Marcille et al. 2020.

^aIncludes Bureau of Land Management, county, and municipal timberland.

Table 2 — California timber harvest by resource area, county, and ownership, 2021.

Resource area	Private and Tribal	National forest	State and other public ^a	Total
County				
----- Thousand board feet Scribner-----				
Central Coast	23,081	—	—	23,081
San Mateo	9,010	—	—	9,010
Santa Cruz	14,071	—	—	14,071
North Coast	365,028	—	14,779	379,807
Del Norte	27,205	—	—	27,205
Humboldt	182,674	—	368	183,042
Mendocino	135,086	—	14,411	125,376
Sonoma	20,063	—	—	20,063
North Interior	436,155	83,720	1,950	521,825
Lassen	81,515	12,110	275	93,900
Modoc	15,416	4,626	100	20,142
Shasta	151,946	9,150	725	161,821
Siskiyou	168,971	19,047	600	188,618
Trinity	18,307	38,787	250	57,344
Sacramento	501,652	50,510	6,276	558,439
Butte	233,002	3,366	200	236,568
El Dorado	41,882	3,872	132	45,886
Lake	3,000	—	5,000	8,000
Nevada	4,559	1,698	—	6,257
Placer	6,638	2,881	125	9,644
Plumas	190,807	34,362	325	225,494
Sierra	218	2,082	219	2,519
Tehama	17,447	2,250	175	19,872
Yuba	4,099	—	100	4,199
San Joaquin	99,456	22,019	9,010	130,485
Amador	7,927	694	—	8,621
Calaveras	13,858	4,100	125	18,083
Fresno	33,205	5,912	4,100	43,217
Madera	4,200	2,289	—	6,489
Mariposa	4,643	—	—	4,643
Stanislaus	1,276	—	—	1,276
Tulare	2,944	878	4,660	8,482
Tuolumne	31,403	8,146	125	39,674
Southern	1,000	—	7,290	8,290
Riverside	—	—	7,290	7,290
San Bernardino	1,000	—	—	1,000
Total	1,426,372	156,249	39,305	1,621,926

— no harvest reported

^aIncludes Bureau of Land Management, county, and municipal timberland.

Table 3 — California timber harvest by species, 2021.

Species	Volume	Percent
	<i>Thousand board feet Scribner</i>	
Pines ^a	455,075	28
Douglas-fir	421,624	26
True firs ^b	394,904	24
Cedars ^c	56,816	4
Other species ^d	293,507	18
All species	1,621,926	100

^aIncludes ponderosa pine, sugar pine, Jeffrey pine, lodgepole pine, western white pine, and knobcone pine.

^bIncludes white fir, noble fir, grand fir, and California red fir.

^cIncludes incense-cedar, Port-Orford-Cedar, and western redcedar.

^dIncludes coast redwood, western hemlock, various oaks, and additional unspecified species.

Table 4 — California timber harvest by species and condition, selected years.

	Live volume	Dead volume	Percent dead
<i>Thousand board feet</i>			
<i>Scribner</i>			
Pines ^a	185,920	269,155	59
Douglas-fir	325,869	95,755	23
True firs ^b	203,924	190,981	48
Cedars ^c	19,570	37,247	66
Other species ^d	277,146	16,360	6
2021 Total	1,012,429	609,498	38
2016 Total	1,364,100	207,400	13
2012 Total	1,390,400	35,000	2
2006 Total	1,550,300	182,800	11
2000 Total	2,120,600	129,100	6

Source: Morgan et al. 2004, 2012; McIver et al. 2015; Marcille et al. 2020.

^aIncludes ponderosa pine, sugar pine, Jeffrey pine, lodgepole pine, western white pine, and knobcone pine.

^bIncludes white fir, noble fir, grand fir, and California red fir.

^cIncludes incense-cedar, Port-Orford-Cedar, and western redcedar.

^dIncludes coast redwood, western hemlock, various oaks, and additional unspecified species.

Table 5 — California timber harvest by ownership class and product type, 2021.

Ownership class	Sawlogs	Other^a	All products
<i>-----Thousand board feet Scribner-----</i>			
Private and Tribal timberlands	1,217,895	208,477	1,426,372
Industrial	959,042	174,278	1,133,320
Non-Industrial and Tribal	258,853	34,199	293,052
Public timberlands	173,607	21,947	195,554
National forest	143,713	12,536	156,249
Other public ^b	29,894	9,411	39,305
All owners	1,391,502	230,424	1,621,926

^aIncludes veneer logs, house logs, fiber logs, firewood, furniture logs, energywood logs, and utility pole logs.

^bIncludes Bureau of Land Management, county, and municipal timberland.

Table 6 — California timber harvest by species and product type, 2021.

Species	Sawlogs	Other^a	All products
<i>-----Thousand board feet Scribner-----</i>			
Pines ^b	393,985	61,090	455,075
Douglas-fir	341,847	79,777	421,624
True firs ^c	325,959	68,945	394,904
"Cedars" ^d	56,006	810	56,816
Other species ^e	266,415	27,092	293,507
All species	1,384,212	237,714	1,621,926

^aIncludes veneer logs, house logs, fiber logs, firewood, furniture logs, energywood logs, and utility pole logs.

^bIncludes ponderosa pine, sugar pine, Jeffrey pine, lodgepole pine, western white pine, and knobcone pine.

^cIncludes white fir, noble fir, grand fir, and California red fir.

^dIncludes incense-cedar, Port-Orford-Cedar, and western redcedar.

^eIncludes coast redwood, western hemlock, various oaks, and additional unspecified species.

Table 7 — Timber volume received in California by ownership class and product type, 2021.

Ownership class	Sawlogs	Other^a	All products
<i>-----Thousand board feet Scribner-----</i>			
Private timberlands	1,243,178	200,343	1,443,521
Industrial	981,289	174,778	1,156,067
Non-Industrial and tribal	261,889	25,565	287,454
Public timberlands	166,966	30,045	197,011
National forests	144,362	12,536	156,898
Other public ^b	22,604	17,509	40,113
All owners	1,410,144	230,388	1,640,532

^aIncludes veneer logs, house logs, fiber logs, firewood, furniture logs, energywood logs, and utility pole logs.

^bIncludes Bureau of Land Management, county, and municipal timberland.

Table 8 — Domestic and international timber flow into and out of California, 2021.

Timber product	Log flow into California	Log flow out of California	Net inflow (net outflow)
<i>-----Thousand board feet Scribner-----</i>			
Sawlogs	51,404	20,488	30,916
Other ^a	1,915	14,225	(12,310)
All products	53,319	34,713	18,606

^aIncludes veneer logs, house logs, fiber logs, firewood, furniture logs, energywood logs, and utility pole logs.

Table 9 — Active California primary wood products facilities by resource area, county and mill type, selected years.

Resource area						Other
County	Sawmill	Veneer	Bioenergy	Bark products	facilities ^a	Total
San Joaquin	5	—	3	4	2	14
Amador	—	—	—	—	1	1
Fresno	1	—	1	—	—	2
Kern	—	—	—	1	—	1
San Joaquin	—	—	—	2	—	2
Tulare	1	—	—	—	—	1
Tuolumne	3	—	2	1	1	7
Sacramento	7	—	5	3	5	20
Butte	2	—	—	—	2	4
Glenn	—	—	—	1	—	1
Nevada	1	—	—	—	—	1
Placer	1	—	2	1	2	6
Plumas	2	—	2	—	—	4
Sutter	1	—	—	—	—	1
Tehama	—	—	—	1	—	1
Yolo	—	—	1	—	1	2
North Coast	11	—	2	1	3	17
Humboldt	5	—	2	—	3	10
Mendocino	2	—	—	—	—	2
Sonoma	4	—	—	1	—	5
North Interior	5	2	6	1	1	15
Lassen	—	—	1	—	—	1
Shasta	4	—	4	—	1	9
Siskiyou	—	2	1	1	—	4
Trinity	1	—	—	—	—	1
Southern	2	—	1	2	—	5
Riverside	1	—	1	1	—	3
San Bernardino	1	—	—	1	—	2
Central Coast	1	—	—	—	—	1
Santa Cruz	1	—	—	—	—	1
2021 Total	31	2	17	11	11	72
2016 Total	32	2	23	12	11	80
2012 Total	30	2	26	11	8	77
2006 Total	33	2	25	10	7	77
2000 Total	47	2	25	10	9	93

Source: Morgan et al. 2004, 2012; McIver et al. 2015; Marcille et al. 2020.

^aIncludes facilities that produce posts, poles, log homes, fiberboard, chips from roundwood, firewood, log furniture, logs for export, fuel pellets, and animal bedding.

Table 10 — Number of California sawmills and average lumber production, selected years.

Year	Number of sawmills	Average lumber production
		<i>Thousand board feet lumber tally</i>
2021	31	77,156
2016	32	63,202
2012	30	63,899
2006	33	74,803
2000	47	64,894

Source: Morgan et al. 2004, 2012; McIver et al. 2015; Marcille et al. 2020.

Table 11 — California lumber production by mill size class, 2021.

Size class^a	Number of sawmills	Volume	Percentage of total	Average per mill
		<i>MBF lumber tally</i>		<i>MBF lumber tally</i>
10,000 MBF or less	9	14,078	1	1,564
10,001 to 50,000 MBF	7	178,427	7	25,490
50,001 to 100,000 MBF	6	509,688	21	84,948
More than 100,000 MBF	9	1,689,634	71	187,737
Total	31	2,391,827	100	77,156

^aSize class is based on reported lumber production.

Table 12 — California sawmill productivity, selected years.

Year	Lumber production	Lumber overrun	Lumber recovery
	<i>Thousand board feet lumber tally</i>	<i>Board foot lumber tally per board foot Scribner</i>	<i>Board foot lumber tally per cubic foot</i>
2021	2,391,827	1.72	8.58
2016	2,022,455	1.64	8.72
2012	1,916,971	1.63	8.87
2006	2,468,489	1.64	8.30
2000	3,050,000	1.53	7.96

Source: Morgan et al. 2004, 2012; McIver et al. 2015;
 Marcille et al. 2020.

Table 13 — California sawmill residual factors, selected years.

Type of residue	2000	2006	2012	2016	2021
<i>--Bone-dry units per MBF Lumber Tally--</i>					
Coarse	0.41	0.37	0.33	0.33	0.31
Sawdust	0.15	0.15	0.14	0.14	0.15
Shavings	0.13	0.11	0.08	0.10	0.13
Bark	0.23	0.21	0.22	0.21	0.20
Total	0.92	0.84	0.77	0.78	0.79

Source: Morgan et al. 2004, 2012; McIver et al. 2015;
 Marcille et al. 2020.

Table 14 — California production and disposition of wood products residuals, 2021.

Type of residue	Total utilized	Pulp and board	Energy	Other products ^a	Unutilized	Total produced
<i>-----Bone-dry units-----</i>						
Coarse	830,346	174,864	536,987	118,495	61	830,407
Fine	674,458	37,921	373,232	263,305	258	674,716
Sawdust	360,827	28,558	257,806	74,463	258	361,085
Shavings	313,631	9,363	115,426	188,842	—	313,631
Bark	543,052	789	261,216	281,046	—	543,052
Total	2,047,856	213,574	1,171,435	662,847	319	2,048,175

^aIncludes landscape products, mulch, soil additives, and animal bedding.

Table 15 — California biomass energy capacity and production, selected years.

Year	Number of facilities ^a	Total capacity	Average capacity	Total production	Average production
		<i>-----Megawatts-----</i>		<i>-----Megawatt hours-----</i>	
2021	17	383	22.6	2,628,546	154,620
2016	23	510	22.2	3,152,501	137,065
2012	26	551	21.2	3,790,696	145,796
2006	25	485	19.4	3,641,335	145,653
2000	25	470	18.8	3,100,000	124,000

Source: Morgan et al. 2004, 2012; McIver et al. 2015; Marcille et al. 2020.

^aIncludes biomass energy and co-generation plants that produce electricity, at least partially, from forest-sourced woody biomass.

Table 16 — Employment and labor income contributions from California's forest products industry, 2021.

Sector	Direct employment	Indirect and induced employment	Total employment contribution ^a	Direct labor income	Indirect and induced labor income	Total income contribution
	-----full- and part-time workers-----			-----thousand 2021 dollars-----		
Forestry and logging	4,774	5,770	10,544	\$ 424,370	\$ 377,350	\$ 801,720
Forestry support activities	2,683	840	3,523	\$ 84,886	\$ 41,518	\$ 126,404
Wood product manufacturing	30,261	37,911	68,172	\$1,962,010	\$2,677,555	\$4,639,565
Primary wood product mfg	4,730	7,816	12,546	\$ 364,693	\$ 603,420	\$ 968,113
Secondary wood product mfg	25,531	25,843	51,374	\$1,597,317	\$2,035,941	\$3,633,258
Biomass power generation	381	1,178	1,559	\$ 257,318	\$ 312,178	\$ 569,496
Pulp and paper manufacturing	20,274	28,347	48,621	\$1,933,690	\$2,763,243	\$4,696,933
Secondary paper mfg	20,274	28,347	48,621	\$1,933,690	\$2,763,243	\$4,696,933
Total forest industry	58,373	a	a	\$4,662,274	a	a

Source: USDC BEA 2021a; USDC BEA 2021b; USDC BEA 2023; USDC CB 2021; USDL BLS 2021.

^aIndirect and induced employment and labor income should not be summed for multiple sectors due to some employment and income showing up as both direct contributions to their sector and indirect contributions to other sectors.

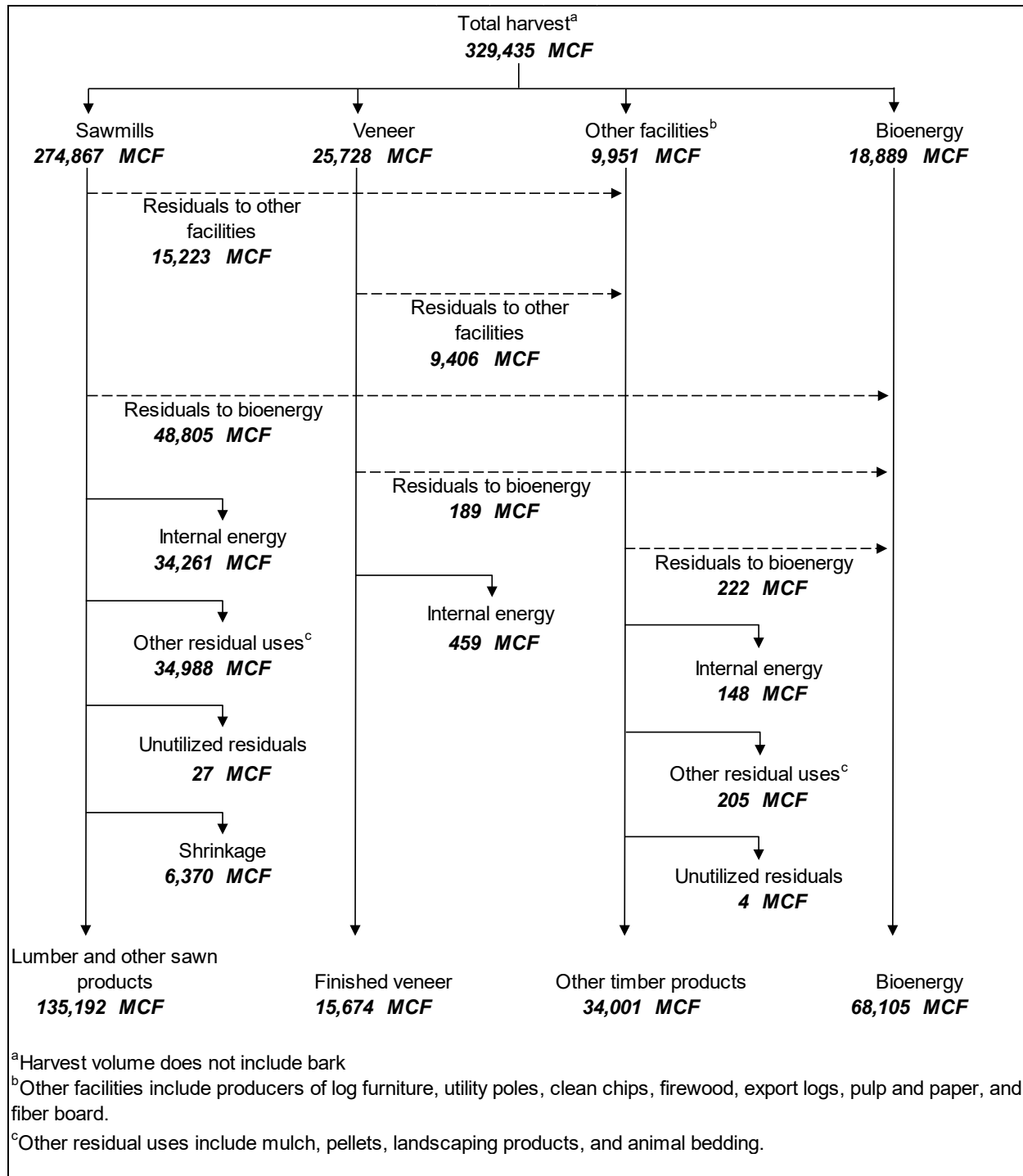


Figure 1: Utilization of California's timber harvest, 2021. See pp. 15 for conversions.

The following conversion factors were developed using log size specifications as well as product and residue recovery information developed from the 2021 mill survey in California:

- Sawlogs: 5.05 board feet per cubic foot
- Veneer logs: 4.92 board feet per cubic foot
- All other log types:
 - Maximum: 5.20 board feet per cubic foot
 - Minimum: 3.05 board feet per cubic foot
 - Weighted average: 3.51 board feet per cubic foot
- State total, all log types: 4.92 board feet per cubic foot

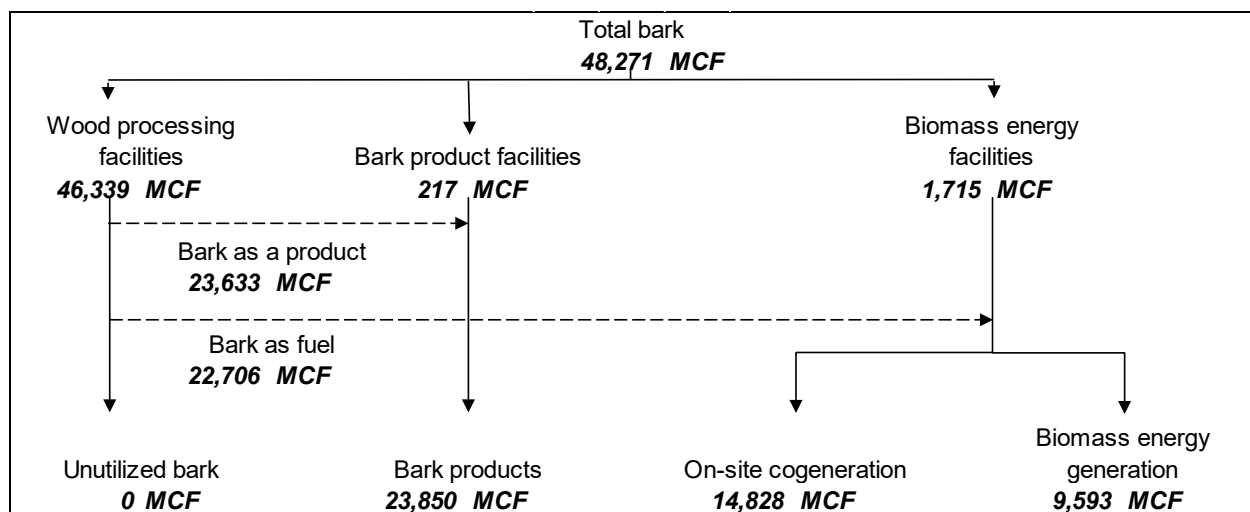


Figure 2: Utilization of bark generated through timber harvest and processing in California, 2021.

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