The Woody Biomass Resource in Minnesota

2,740,000

In 2023, an estimated 2.7 million green tons of commercially available wood residue/waste was produced in Minnesota.

Sources…..

Mill Residue

57%

1,540,000 green tons

Logging Residue

29%

800,000 green tons

Urban Wood

14%

400,000 green tons

Benefits…..

Carbon

CO_2

Woody biomass is a renewable feedstock that is carbon neutral

Healthy Economy

A healthy forest products economy is important to rural and underserved communities.

Healthy Forests

Active forest management creates vigorous and resilient forests; reducing the impacts of wildfire, insects, disease, and invasive species.

DEPARTMENT OF NATURAL RESOURCES

Minnesota Woody Biomass Fact Sheet

2023 Biomass Availablity Summary (Grn tons)

Mill Residue	Logging Residue	Urban Wood *	Total
1,544,667	796,525	394,900	2,736,092

* Twin Cities Metro Area EAB Wood Waste Study, Partnership on Waste & Energy, October 2022

Biomass Consumed for Commercial and Residential Energy (Grn tons) *

CY	Logging Residue Commercial	Logging Residue Residential	Mill Residue Commercial	Mill Residue Residential	Urban Wood Commercial	Total
2009	879,898	105,800	1,095,732		479,350	**2,560,780**
2010	978,407	105,800	993,579		313,748	**2,391,534**
2011	666,403	105,800	1,063,589		224,360	**2,060,152**
2012	541,445	105,800	1,014,829		369,821	**2,031,895**
2013	786,280	105,800	1,137,710	34,500	288,672	**2,352,962**
2014	874,181	105,800	1,178,768	34,500	240,900	**2,434,149**
2015	804,985	101,200	1,234,988	36,800	329,857	**2,507,830**
2016	789,024	101,200	1,112,888	36,800	433,271	**2,473,183**
2017	739,904	101,200	966,928	36,800	441,219	**2,286,051**
2018	318,944	101,200	1,182,883		296,929	**1,899,956**
2019	127,526	101,200	1,008,825		302,189	**1,539,740**
2020	53,125	79,092	945,026		302,874	**1,380,117**
2021	51,711	79,092	914,347		299,394	**1,344,544**
2022	57,375	79,092	965,842	91,955	300,257	**1,494,521**
2023	61,172	79,092	869,594	113,193	217,538	**1,340,589**
Avg. 2013-2017	**798,875**	**103,040**	**1,126,256**	**35,880**	**346,784**	**2,410,835**

* Data from Biomass Energy Surveys and Residential Firewood Surveys

CY2023 Mill Residue Disposition Estimates (Grn tons) *

Residue Type	External Fuel	Internal Fuel	Residential Fuel	Pulp	Mulch	Bedding	Other	Not Used	Grand Total
Bark	25,136	684,487	32,829		133,621	17,154	544	13,322	**907,094**
Coarse	16,511	87,694	80,364	149,536	35,848	27,694	5,749	22,463	**425,858**
Fine	17,767	55,490			8,071	99,297	2,099	28,992	**211,715**
Grand Total	**59,413**	**827,672**	**113,193**	**149,536**	**177,540**	**144,146**	**8,392**	**64,777**	**1,544,667**

* Data from Timber Product Output Survey

CY2023 Logging Residue Estimate Detail

Species	Avg Tree DBH	Std Cords Harvested	Cds/Grn Ton	Lbs/cd	Total Roundwood (Grn tons)	% Top Addition *	Total Logging Residue (Grn tons)	67% **	55% ***
Aspen/ Balm	11	1,318,651	0.429	4,661	3,073,063	24%	750,823	503,051	**412,953**
Paper Birch	10	95,902	0.402	4,978	238,682	34%	80,683	54,058	**44,376**
Ash	11	92,256	0.433	4,619	213,063	32%	69,121	46,311	**38,017**
Oak	15	182,139	0.344	5,807	528,858	28%	146,739	98,315	**80,707**
Basswood	13	70,133	0.517	3,871	135,733	30%	40,930	27,423	**22,511**
Maple	10	85,742	0.408	4,898	209,998	34%	70,904	47,506	**38,997**
Cottonwood	20	4,051	0.429	4,661	9,440	24%	2,292	1,536	**1,261**
Other Hardwoods	10	29,940	0.394	5,077	76,010	34%	25,664	17,195	**14,115**
Pine Species	13	24,594	0.469	4,266	52,462	11%	5,675	3,802	**3,121**
Red Pine	12	288,707	0.469	4,266	615,843	11%	67,319	45,104	**37,026**
White Pine	17	28,490	0.478	4,187	59,640	10%	6,059	4,059	**3,332**
Jack Pine	11	56,430	0.469	4,266	120,370	11%	13,679	9,165	**7,524**
Spruce	9	138,661	0.501	3,989	276,549	30%	82,543	55,304	**45,398**
Balsam Fir	8	73,571	0.469	4,266	156,936	31%	49,218	32,976	**27,070**
Tamarack	8	33,510	0.469	4,266	71,481	12%	8,770	5,876	**4,824**
White Cedar	11	10,451	0.633	3,160	16,512	27%	4,471	2,995	**2,459**
Other Softwoods	9	2,747	0.469	4,266	5,861	30%	1,749	1,172	**962**
Mixed Species	10	25,185	0.394	5,077	63,938	34%	21,588	14,464	**11,873**
Totals		**2,561,162**			**5,924,438**		**1,448,228**	**970,313**	**796,525**

* Smith, W. Brad. Factors and equations to estimate forest biomass in the North Central Region. Res. Pap. NC-268. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1985. 6p.

** Logging residue available following Forest Management Site-Level Guidelines on biomass retention

*** Realistic estimate of marketable logging residue based on actual residue consumption in the years 2013-2017