

# Logging Capacity Utilization in Wisconsin

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## Objectives:

1. Estimate logging capacity utilization in Wisconsin,
2. Estimate logging efficiency in Wisconsin, and
3. Identify causes of lost production.

## Findings:

- **Logging capacity utilization averaged 71% during the study when spring break-up shut-downs are excluded (Table 1).** This is lower than past studies, and approximately 10% below what is considered the maximum sustainable level. In addition, logging capacity utilization fell to 64% when spring break-up shut-downs were included.
- **The primary causes of lost production were weather (woods condition and forest roads) and equipment breakdowns.** Weather-related downtime reduced production by 1.8 loads per week (11.8%). Weather-related production losses were much higher than in past studies. Equipment breakdowns reduced production by 0.8 loads per week (5.1%). Mill quotas had minimal impact during the study.
- **On average, loggers operated 10% above their break-even production level, 26% below their production target, and 43% below their maximum capability.** Since they operated above their break-even production level on average, presumably most loggers were profitable during the study period. However, loggers reported achieving their break-even production level only 37% of the time. Loggers achieved their production goal only 21% of the time.
- **Logging capacity is estimated to be 346 million cubic feet per year.** This is 30% above the volume processed by mills in 2008, but 5% less than what was processed in 2003.
- **Logging efficiency averaged 64.8% during the study (Table 2).** Efficiency measures how effectively loggers converted labor and capital into loads of timber delivered to the mill. This efficiency level is comparable to past studies. Fully mechanized crews were more efficient than chainsaw crews.

- **Logging capacity utilization and efficiency were higher during winter than during spring and summer.** Cut-to-length loggers operated at 80% of their capacity and achieved 73% efficiency during winter. These loggers operated at approximately 64% of capacity and 62% efficiency during the spring and summer.

**Table 1: Average weekly production, lost production, capacity utilization, and total loads delivered by system for participating Wisconsin loggers between September 28, 2014 and August 29, 2015. This analysis excludes weeks during spring break-up during which loggers did not harvest timber.**

Harvesting System	Crew-Weeks Reported	Average production (loads wk-1)	Average lost production (loads wk-1)	Average Capacity utilization (%)	Total loads delivered
Cut-to-length	588	11.9 <sup>a</sup>	5.3 <sup>a</sup>	68.8 <sup>a</sup>	6,983
Chainsaw	172	3.2 <sup>b</sup>	1.1 <sup>b</sup>	74.6 <sup>ab</sup>	558
Feller-buncher	76	21.4 <sup>c</sup>	5.7 <sup>a</sup>	81.1 <sup>b</sup>	1,628
Overall	836	11.0	4.5	71.0	9,169

<sup>a,b,c</sup>Means not connected by the same letter are statistically different ( $\alpha=0.05$ )

**Table 2: Minimum, maximum, and average efficiency for the three harvesting systems for production reported between September 28, 2014 and August 29, 2015.**

System	Efficiency		
	Minimum	Maximum	Mean
Cut-to-length	13.1%	91.6%	69.5% <sup>a</sup>
Chainsaw	12.6%	84.5%	43.3% <sup>b</sup>
Feller-buncher	17.6%	92.2%	69.1% <sup>a</sup>
Overall	12.6%	92.2%	64.8%

<sup>a,b</sup>Means not connected by the same letter are statistically different ( $\alpha=0.05$ )