

Superior National Forest

The Superior National Forest is located in the Arrowhead Region of northern Minnesota along the Canadian border and the north shore of Lake Superior. The forest comprises nearly 4 million acres of woods and water with an abundance of pine, fir and spruce trees and numerous wildlife species including deer, moose, gray wolf, and black bear. The forest is also important to the regional economy for the production of wood products, recreation and tourism, and the protection of unique forest features within the Boundary Waters Canoe Area Wilderness.

Biomass utilization is an important management tool to accomplish wildfire risk reduction, forest restoration, and also to increase productivity of forests for local pulp and solid wood markets. The Superior National Forest was chosen for the Joint Fire Science Program assessment because of the unique coordination of federal, state, county, and local efforts related to biomass harvesting. The northern forests also represent the convergence of several ecological biomes that are under stress.

Harvesting biomass for energy purposes is not a new proposition in Minnesota, but the proposed scale and speculation has increased in recent years. This is in part due to the high price of fossil fuels increasing demand for renewable energy sources and also because of a new state mandate to procure 25 percent of energy from renewable sources by the year 2025. As a result, a number of new biomass electric plants, biofuel refineries, and pellet manufactures have announced plans to build new processing capacity in the state, which is creating a rush to secure permits and lock in supply contracts. On the one hand, the use of forest residues and precommercially-thinning trees for biomass production are considered important for energy independence, creation of jobs in rural areas, and as a way to increase the health and productivity of forests. On the other, there is growing concern that biomass removal may impair soil productivity by removing too much material or encourage harvesting in sensitive areas like riparian zones.

From a market competition standpoint, there is also concern that expanding biomass production will increase demand for wood chips, which will lead to greater use of roundwood for energy or other low-value applications. This in turn could increase stumpage prices and availability of biomass for traditional pulp and sold wood markets. Also, as more roundwood is chipped for energy or biofuels purposes, the stumpage price received could in effect decrease because of lower-value applications, which could significantly decrease revenue and operating budgets for counties and the state. Several individuals interviewed expressed the need for biomass utilization strategies that are sensitive to using merchantable roundwood primarily for high-value markets. There is also interest in procuring more biomass from the Superior National Forest but processors expressed frustration with the lack of timber sales on federal lands and as a result rely more on state and county forests.



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Currently, most biomass production is for energy and pellet manufacturing and despite the speculation most producers are not able to pay the full cost of removal based on existing market prices. In fact there is growing concern that logging contractors are going out of business, which will decrease capacity at a critical time. As a result, most forest residues are left in the woods to be scattered or pile burned as opposed to being utilized as an added component to timber contracts. Until market prices improve, biomass utilization will likely remain low and the use of sawmill residues will continue as the primary source of raw material. The following strategies are being employed by the Superior National Forest and partners to overcome these challenges:

- Numerous partners including the Minnesota Forest Resources Council, University of Minnesota, Minnesota Forest Industries, county land commissioners, and conservation groups have worked together to develop the first known forest biomass harvesting guidelines in the United States. The guidelines, which are voluntary, identify appropriate biomass retention for different sites conditions. Efforts are also underway to monitor the implementation and use of the guidelines and which producers procure biomass from qualifying contractors who have adopted the guidelines. Several states are considering aspects of the guidelines as part of their forest management practices.
- Minnesota Loggers Education Program educates logging contractors about the biomass harvesting guidelines including how to best harvest biomass in an integrated logging system, minimizing soil and water impacts in riparian areas, and retention of biomass for nutrient recycling. The training program has been used as a way to recruit industry specialists and encourage new enterprises.
- Forest scientists are seeking to identify the volume of biomass that is available for utilization by quantifying the environmental, economic, and social parameters that affects project feasibility for different product markets. Studies have also been conducted on the Superior National Forest to assess the cost to contractors and also the federal government for removing small diameter trees and brush using different types of harvesting systems. The findings indicate that biomass removal is only feasible where integrated into an otherwise viable timber harvesting program.
- Several initiatives are underway to encourage integrated timber harvesting practices in which the roundwood is harvested for high value markets and residual biomass from limbs and tops is used for energy or pellet markets. The Minnesota Forest Resources Council and the Minnesota Department of Natural Resources meets regularly with the Superior National Forest, Blandin Foundation, Iron Ranger Resources, and local county land commissions and industry representatives to monitor market uses, costs of procurement, and technologies used.

Biomass utilization on the Superior National Forests and surrounding state and county lands will depend most on integrating biomass removal with timber harvesting activities. It will also depend on continued development of renewable energy markets and biofuels applications are able to fully pay for the cost of removal. If that is accomplished, precommercial thinning could become financially viable and used to enhance forest health and productivity. The biomass harvest guidelines will also continue to be refined, which could lead to greater acceptance of biomass harvesting among conservation groups and as well by traditional forest products industries.

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