

Wood Biomass Inventories

How much wood grows in Michigan?

It's a good question when thinking about wood-based energy, especially proposals that intend to consume large quantities of wood, such as the proposal to build a large cellulosic ethanol plant in the eastern Upper Peninsula. Is there enough wood?

A recent research study looked at the Michigan forest inventory within 150 miles of Kinross, Michigan. The study area included all or part of 29 counties and from inventory data gathered from 2004 to 2008. The report did not assess timber resources from Ontario or that which might be delivered beyond the 150 mile radius through less conventional transportation means.

Frontier Renewable Resources expects to need about a million green tons of hardwood pulpwood to produce 40 million gallons of ethanol per year in the plant proposed for Kinross. The 150 mile radius for the inventory study was chosen as it reflects the distance that wood might be affordably transported. The report broke the distances into 30 mile zones for both the Upper Peninsula and the Lower Peninsula. Wood closer to the facility would presumably be more economical to procure.

The standing volume of wood (on land open to timber harvest) came to about 274 million green tons. Hardwood species, those with broad leaves, account for 176 million tons. The remainder consists of softwood species (conifers).

Standing timber volumes suggest that there would be enough hardwood to harvest for 176 years, if all the growing stock was cut and there was no growth or mortality. More realistically and generally-speaking, harvested volumes should not exceed volumes grown across a large landscape and through time.

For decades, the statewide forest inventory has been growing about twice the volume of wood harvested. Each year from 2004 through 2008, about 4.2 million green tons of hardwood volumes were grown within 150 miles of Kinross. Of that, 2.4 million green tons were annually harvested, leaving about 1.8 million green tons added to the forest inventory each year.

The fact that volume and growth in the forest exists does not necessarily mean that the volume will be made available for harvest and subsequent use by a wood-using facility. The difficult question to answer is how much of the 1.8 million green tons of annual growth will forest owners allow to be harvested?

Forest ownership, willingness to sell, distance from a road, forest and site conditions, forest product markets, and parcel size are examples of characteristics that must be considered. Often, these factors are at least partly dependent upon one or more additional factors. And then, some of these characteristics continually change, making an analysis more difficult.

Both public and private lands have forest areas that are unlikely to be harvested for one reason or another. Sites may be too wet, access too difficult, or the timber may simply not be mature enough or

well-enough stocked. On public lands, some portions are designated for uses that may not include timber harvest. These designations do not include areas such as park and wilderness areas where harvest has already been disallowed by law or regulation. On private land, owners may have no interest in either forest management or harvest. Ownership has been changing and parcels are becoming more numerous and smaller. This makes management and harvest more difficult.

During the five year study period, three major pulpwood-using mills closed in the Lower Peninsula. Together they consumed about 1.2 million green tons. The impact of these market closures were not fully incorporated into the five year inventory period from the report. Statewide pulpwood production in 2007 was about 1.1 million cords per year less than in 1997. Historical trends suggest much of this wood will be made available to the market if a new market emerges.

Hardwood forest types occupy two-thirds of the study area. Over half of that is privately owned and supplies nearly three-quarters of the current hardwood harvest. Each 30 mile zone has different sets of inventory numbers, reflecting regional differences in forest, ownership, and recent history.

Throughout the study area, three-quarters of the forest lies within a half-mile of a road. Access is fairly easy and cost efficient. About half the forest area consists of fully or over stocked stands, meaning the forest contains about as many trees as possible. Forest that is not fully stocked is less likely to be harvested in the immediate future but does represent a source of additional timber volumes over time.

The inventory study is titled; [Timber Resources and Factors Affecting Timber Availability and Sustainability for Kinross, Michigan](#), by Larry Leefers and Michael Vasievich, January 2011. It can be found on the Michigan Biofuels website at [www.michiganforestbiofuels.org]. It is part of the Feedstock Supply Chain Center of Energy Excellence.

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*As an MSU Extension forester, I provide educational programming for the entire Upper Peninsula. My office is located at the MSU Forest Biomass Innovation Center near Escanaba. The Center is the headquarters for three MSU Forestry properties in the U.P., with a combined area of about 8,000 acres. A collection of these newspaper articles, back to July 1997, can be viewed on the following website: <http://michigansaf.org/ForestInfo/Newspaper/0000-Directory.htm> or under the "Forest Info" button of <http://michigansaf.org>.*

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*Bill Cook, Forester & Biologist, MSU Extension, Upper Peninsula  
6005 J Road, Escanaba, MI 49829  
906-786-1575, voice 906-786-9370, fax  
Email: [cookwi@msu.edu](mailto:cookwi@msu.edu)*