

# Biomass Harvesting Guidance for Michigan



Cara A. Boucher  
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# Why Now?

“We’ve been harvesting biomass for ages!”



# Why Now ?

- New industries
- New technologies
- Energy policies federal & state
- Markets and forest certification standards
- The neighbors have them 😊
  - Minnesota, Wisconsin, Pennsylvania....



# Why Biomass Harvesting Guidance?

Obligation to manage forest resources  
sustainably

The conservation and development of the natural resources of the state are hereby declared to be of paramount public concern in the interest of the health, safety and general welfare of the people. Michigan State Constitution of 1963 Article IV § 52



# Process

- Convened a committee
  - 25+ individuals from diverse organizations
- Reviewed other guidance
  - neighbors 😊
- Develop & finalize recommendations
- Public review
- Final document planned for October 2009



# Woody Biomass Harvesting Group (WBHG)

## Supported by Michigan Forest Finance Authority

Maria	Janowiak	MTU
Jim	Gries	Hiawatha
Marilyn	Shy	UP RC&D
Tina	Hall	TNC
Jerry	Grossman	Consultant
George	Berghorn	MFPC/FMAC
Bob	Aschbacher	NewPage
Marv	Roberson	Sierra Club/FMAC
Gary	Wyckoff	Plum Creek
Shawn	Hagan	Forestland/FFA
Sherry	MacKinnon	DNR/Wildlife
Dan	Kennedy	DNR/Wildlife
Dan	Keathley	MSU/FMAC
Tom	Barnes	MAT/FMAC
Bill	Botti	FMAC
Warren	Suchovsky	FMAC/FFA
David	Neumann	DNR/FMFM
Steve	Shine	MDA/FMAC
Cara	Boucher	DNR/FMFM
Donna	LaCourt	MEDC
Tim	Flynn	Mackinaw Forest Council
Don	Peterson	MAT/ Renewable Resource Solutions
Monica	Patel	Ecology Center, Ann Arbor
Gary	Melow	MIBiomass
Andy	Henriksen	NRCS Forester
Marty	Jurgensen	MTU



# Concerns

- Ecological and biological
  - Conserving soil, water, biodiversity, nutrients habitat, ecological processes
- Economic and social
  - Sustaining communities and industries
  - Maintaining forest recreation, aesthetics, other forest-based activities



# Common Elements of Woody Biomass Guidance

- **Dead Wood**
- **Wildlife & Biodiversity**
- **Water Quality & Riparian Zones**
- **Soil Productivity**
- **Silviculture**
- **Disturbance regimes**

*An Assessment of Biomass Harvesting Guidelines*  
Evans & Perchel, Forest Guild, 2009



# Michigan approach

- Provide guidance that supports generally accepted sustainable forest management principles
- Focus on the site, not how the biomass is being used
- Provide direction that is fairly easy to apply
- Review and update within 2 years



# Guidance:

- Focuses on the forest environment
- Does not address
  - Resource availability
  - Short rotation energy crops
  - Economics of harvest, transportation, and processing



# Guidance is still in development

- Current information as of March 2009
- Recommendations have not been completed
- Opportunities for discussion and change
  - Contact [Boucherc@michigan.gov](mailto:Boucherc@michigan.gov)



# Recommendation

Landowners and natural resource professionals are encouraged to apply sustainable forest management principles in all phases of management from the development of forest management plans to implementation on the ground



# Recommendation

Landowners and natural resource professionals should consider which recommendations are appropriate for their specific site, goals, objectives and planned management activities



# Definition of woody biomass

The trees and woody plants, including limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, or rangeland environment

Modified from the Federal Regulation 48 C.F.R. § 1437.7203



# Sources of Forest Biomass

- Bole or trunk to 4" diameter top
- Limbs > 4" diameter
- Tops and branches < 4" top
- Vines and shrubs
- Standing dead (snags)
- Leaves, needles, cones
- Seedlings/saplings <4" diameter
- Downed and dead <4" diameter (FWD)
- Downed and dead >4" diameter (CWD)
- Below ground stumps and roots
- On or below forest floor/litter



# Considerations

- Bole or trunk to 4" diameter top
  - Same as roundwood removals
- Tops and branches < 4" top
  - Contribute to nutrient cycling, provide habitat and fine woody debris
- Standing dead (snags)
  - Provides habitat, nutrients and are important to ecological processes
- Below ground stumps and roots
  - Contribute to soil structure, stabilization and other below ground ecological processes



# Recommendations

- Use an appropriate silvicultural system for the stand that is being managed
  - Forest Management Guidelines for Michigan by the Michigan Society of American Foresters
  - USDA Northeastern Area's Forest Landowner's Guide <http://na.fs.fed.us/pubs/misc/flg/>
  - Silvicultural guidelines used by Michigan DNR (<http://www.michigan.gov/dnr/>)



# Recommendations

- Retain tops from a portion of the harvested trees
  - Between 1 out of 3 and 1 out of 6 tops

For example:

- 1 out of 3 tops on nutrient poor and semi-organic soil
- 1 out of 6 tops for a thinning treatment



# Recommendations

- Avoid woody biomass harvesting in high quality natural communities (Natural Features Inventory)
- Avoid woody biomass harvesting near known occurrences of state and federally listed Threatened, Endangered Species and Species of Conservation Concern (WAP) unless removal will improve habitat for the species
- Avoid woody biomass harvesting beyond traditional round wood harvests on very shallow soils (8" inches or less to bedrock)



# Recommendations

- Retain existing coarse woody debris (CWD) to the extent possible
- On roads, skid trails and landings:
  - CWD can be moved to allow for safe operations
  - Tops and limbs from harvested trees used to stabilize skid trails should be left in place
- Consider augmenting CWD by felling and leaving 2 to 5 trees per acre



# Site or Situation Specific

- Riparian Management Zones follow precautions in the 2009 Sustainable Soil and Water Quality Practices on Forest Land (IC 4011) manual
- Severely disturbed or damaged (e.g. fires, blowdowns, and insect/disease infestations) modify to address forest health and safety risks



# Site or Situation Specific

- Modify if retention itself may be a threat or risk to human health and safety
- May reduce retention for Jack pine stands
- May reduce retention elements for intermediate harvests (thinning and selection) based on the structure, nutrients and habitat of the remaining stand



# Additional Guidance

## 2009 Sustainable Soil and Water Quality Practices on Forest Land (IC 4011)

- Legal requirements and related regulations
  - Soil & sedimentation
  - Stream crossings
  - Wetlands
  - Threatened and endangered species
  - Cultural & archaeological resources
  - Spills
- Riparian Management Zones (RMZ):
  - Michigan's standard RMZ minimum width is 100 feet or 30 meters measured from the top of the bank or the ordinary high water mark of a lake or each side of a stream. The recommended minimum width increases where there is a slope of 10% or greater
- Forest road placement and management
- Recommendations related to skidding and landings
- Guidance relative to soil rutting
- Information regarding vernal pools, seeps, intermittent streams, fens and bogs



# Additional Guidance

## Within-Stand Retention Guidance (IC 4110)

Retain a combination of up to 10 standing live (cull) and dead (snag) trees per acre for habitat (dens and cavities), food sources and nutrient cycling

When choosing trees for retention:

- Where possible retain at least 3 large (>10" dbh) mast producing trees per acre (beech, ironwood, oak etc.)
- Where possible retain at least one large/super-canopy tree per 10 acre
- Leave trees in clumps, strips, or islands when possible.
- Leave a mix of hardwood and conifer species in varying sizes if possible
- Leave tree species that are under-represented in the stand for additional diversity



# Thank you



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