

SUBJECT: Update on non-forest biomass sustainability guidelines

FOR: SEPTEMBER 2011 BOARD MEETING

TO BE PRESENTED BY / TITLE: Scott Hull, Research Scientist & Sara Walling, Bioenergy Advisor (DATCP)

SUMMARY:

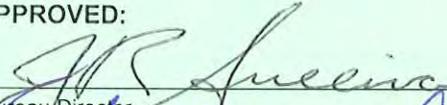
Development of Wisconsin Sustainable Planting and Harvest Guidelines for Nonforest Biomass was a joint effort among DNR, DATCP, and UW-Madison that began in early 2010 under the direction of DNR Secretary Frank and DATCP Secretary Nilstestuen. The development of science-based guidelines in advance of widespread biomass planting and harvesting in Wisconsin is intended to help ensure sustainability of and, whenever possible, benefit the natural resources of the state. These voluntary guidelines may be used in making policy, land management, research and natural resources decisions and will help make informed decisions for bioenergy production on both public and private lands throughout Wisconsin. The guideline document provides general guidance for site and crop selection and more specific management guidelines for biomass projects within the categories: perennial grasslands, non-forest tree and shrub, wetlands, and crop residue. These guidelines were written using current scientific knowledge and have gone through an independent scientific peer review. The guidelines also underwent a stakeholder review through the Bioenergy Council, a 15-member council created under 2009 Wisconsin Act 401 and served by DATCP. On July 27th, 2011 the Bioenergy Council unanimously endorsed the nonforest guidelines document. This presentation will briefly review the development of the nonforest biomass guideline document, the proposed use of the guidelines in Wisconsin's growing biomass and bioenergy arena, and the outreach and extension plan for potential users of these guidelines.

RECOMMENDATION: Informational item

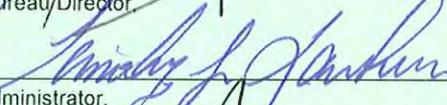
LIST OF ATTACHED MATERIALS:

- | | | | | | |
|----|-------------------------------------|---|-----|-------------------------------------|----------|
| No | <input checked="" type="checkbox"/> | Fiscal Estimate Required | Yes | <input type="checkbox"/> | Attached |
| No | <input checked="" type="checkbox"/> | Environmental Assessment or Impact Statement Required | Yes | <input type="checkbox"/> | Attached |
| No | <input type="checkbox"/> | Background Memo | Yes | <input checked="" type="checkbox"/> | Attached |

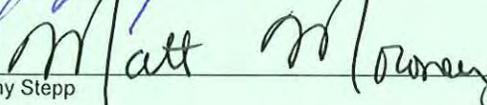
APPROVED:


Bureau Director

8/10/11
Date


Administrator

8/17/11
Date


Secretary, Cathy Stepp

9/9/11
Date

cc: NRB Liaison
DNR Rules Coordinator

Karl Martin SS/RC
Dave Siebert OE/7
Sara Walling DATCP
Jack Sullivan SS/7

DATE: August 10, 2011

TO: Natural Resources Board

FROM: Cathy Stepp, Secretary

SUBJECT: Update on nonforest biomass sustainability guidelines

At the September meeting we will present an update on *Wisconsin's Sustainable Planting and Harvesting Guidelines for Nonforest Biomass*. Jane Wiley requested this update at the April 2011 Board meeting. These guidelines are the culmination of over 1.5 years worth of work in partnership with DATCP and UW-Madison along with the legislatively created Bioenergy Council. Development of these guidelines was initiated under the direction of former DNR Secretary Frank and former DATCP Secretary Nilstestuen and led by the Bureau of Science Services.

These guidelines were written using current scientific knowledge and have gone through an independent scientific peer review. The guidelines also underwent a stakeholder review through the Bioenergy Council, a 15-member council created under 2009 Wisconsin Act 401 and served by DATCP. The Bioenergy Council includes representatives from agricultural, forest, environmental and biofuels stakeholder groups. On July 27th, 2011 the Bioenergy Council unanimously endorsed the nonforest biomass guidelines document.

The development of science-based guidelines in advance of widespread biomass planting and harvesting in Wisconsin is intended to help ensure sustainability of and, whenever possible, benefit the natural resources of the state. These voluntary guidelines may be used in making policy, land management, research, and natural resources decisions and will help make informed decisions for bioenergy production on both public and private lands throughout Wisconsin.

The document provides 1) an overview of the implications and issues surrounding future bioenergy/biomass programs in Wisconsin, 2) a summary of the science and rationale behind the specific guidelines, and 3) an overview of guidelines for site level implementation of biomass crop production and harvest. The guidelines cover 4 main nonforest biomass categories: Grasses, nonforest trees and shrubs including short-rotation woody crops, crop residues, and wetlands. The Guidelines do not address woody biomass from forested systems, as such voluntary guidelines already exist (<http://council.wisconsinforestry.org/biomass/>).

Chapter 1 describes the purpose, scope and organization of the report along with a broad overview of biomass and bioenergy programs and policies within the U.S. and Wisconsin. This chapter serves as the foundation of the document and sets the stage for specific planting and harvesting guidelines.

Chapter 2 contains an overview of the potential impacts of biomass production, sensitive resources and areas within Wisconsin, and other fundamental concepts that build the framework

for sustainable biomass production. The information in Chapter 2 should be useful for addressing the questions: What biomass crop should I grow or harvest? Where should I grow or harvest this biomass? What information do I need to make sustainable and ecologically sound decisions?

Chapter 3 contains specific and voluntary planting, harvesting, and management guidelines broken into 5 sections: 1) General guidelines applicable to any nonforest biomass production, 2) Perennial grasses (including dedicated grass crops and lands with existing grass cover), 3) Nonforest trees and shrubs (including dedicated woody crops and lands with existing tree and shrub cover that are not considered forest), 4) Crop residues, and 5) Wetland harvests.

This presentation will briefly review the development of the nonforest biomass guideline document, the proposed use of the guidelines in Wisconsin's growing biomass and bioenergy arena, and the outreach and extension plan for the potential users of these guidelines.

The 2-page Executive Summary is attached. The complete 98-page report is available upon request pending final copy-editing.

Wisconsin Sustainable Planting and Harvest Guidelines for Nonforest Biomass

Prepared by

Scott Hull¹, Julianna Arntzen¹,
Cathy Bleser¹, Alan Crossley¹, Randy Jackson², Eric Lobner¹, Laura Paine³, Gary Radloff²,
Chris Ribic^{2,4}, Dave Sample¹, Jim Vandenbrook³, Steve Ventura², Sara Walling³, Julie Widholm¹, and
Carol Williams²

¹Wisconsin Department of Natural Resources

²University of Wisconsin-Madison

³Wisconsin Department of Agriculture, Trade, and Consumer Protection

⁴U.S. Geological Survey

EXECUTIVE SUMMARY

Interest in bioenergy is increasing in response to concerns about energy security, energy independence, and environmental and climate impacts associated with use of non-renewable energy resources. Wisconsin has the potential to expand and develop a nonforest biomass industry. Energy products made from biomass include: biodiesel, gas, ethanol, charcoal, syngas, bio-coal, and power and heat from direct combustion. Increased planting and harvesting of nonforest biomass, such as switchgrass or hybrid poplar, has the potential to affect Wisconsin's water quality, emissions, soil quality, wildlife habitats, and economy. If managed correctly, nonforest biomass projects can reduce erosion, improve water quality and promote healthy wildlife populations. Understanding potential impacts and assuring that the production of nonforest biomass is completed within the framework of sustainable resource management is a priority of the Wisconsin Department of Natural Resources (DNR), the Department of Agriculture, Trade and Consumer Protection (DATCP) and the University of Wisconsin (UW).

The Guidelines provide general guidance for site and crop selection and more specific management guidelines for biomass projects within the categories: perennial grasslands, non-forest tree and shrub, wetlands, and crop residue. The guidelines focus on perennial and/or diverse plantings that promote environmental benefits. These guidelines were written using current scientific knowledge and have gone through scientific review and public comment. The guidelines will need to be revised as new information becomes available

The development of science-based guidelines in advance of widespread biomass planting and harvesting in Wisconsin is intended to help ensure sustainability of and, whenever possible, benefit the natural resources of the state. These voluntary guidelines may be used in making policy, land management, research and natural resources decisions and will



Non-Forest Biomass: non-woody cellulosic plant materials including leaves, stems, stalks and seeds of native and non-native perennial and annual grasses, forbs and legumes (e.g., switchgrass, cattails, orchard grass, reed canary grass, and native prairie plants); woody material from non-forested systems such as shrublands, non-merchantable woody material (e.g., materials removed in habitat management); woody material harvested from short-rotation hybrid poplar, willow, and other plantations; and crop residues (e.g., corn stover, wheat straw).

Sustainability: The stewardship of lands and resources dedicated to non-forest biomass production in ways that are environmentally, socially and economically sound across a broad range of scales, that do not negatively impact other ecosystems, and that can meet future needs.

help make informed decisions for bioenergy production on both public and private lands throughout Wisconsin.

The guidelines do not directly address the economics and feasibility of nonforest biomass production. Currently, markets for biomass and bioenergy are new or in development. To the extent feasible, the guidelines accommodate common Wisconsin production practices, existing programs and regulations, and community and individual interests. We believe the result will be the economically viable and environmentally sound growth of Wisconsin's bioeconomy.

The bioeconomy is evolving rapidly so guidelines must be adaptable as new information becomes available. Guidelines for production and harvest of nonforest biomass reflect the following principles:

- Soil quality should be maintained or improved by minimizing erosion, enhancing carbon sequestration, promoting healthy biological systems, and protecting chemical and physical properties.
- Surface and ground water quality and quantity should be maintained or improved.
- Habitat quantity and quality for game, non-game, rare, declining and endangered species of fish and wildlife should be maintained or improved.
- Conservation of biological diversity, in particular relatively intact natural communities, native plants, insects and wildlife (game and nongame), should be maintained or improved.
- Conversion of native or sensitive species' habitats and/or the introduction of invasive or non-native species should be avoided.
- Consideration should be given to the impact of biomass programs on landscape scale land use changes and ecosystem services.

In addition, it is our intention that the Guidelines:

- Be complementary with other applicable guidelines and best management practices (BMPs) addressing planting and harvest of grassland, short-rotation woody crops or crop residue.
- Be compliant with and complementary to existing rules and regulations addressing planting and harvest of grassland, short-rotation woody crops or crop residue, such as those defined in Federal Farm Bill Policy and state and federal water quality and endangered species laws.
- Recognize that there may be unknown and adverse impacts that result from new biomass programs and attempt to minimize or mitigate those impacts if they arise, and adapt accordingly.