

# Linking Fuels Reduction and Wood Energy

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Heating the Midwest  
Large Commercial/Institutional Real World Projects – Success  
Stories

3:15 pm to 5:00 pm, April 26, 2012

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## Wisconsin State Energy Office (SEO)

**SEO's Mission is to invest in Wisconsin by:**

- Increasing energy efficiency;
- Developing renewable and alternative energy sources;
- Promoting energy-related economic development & jobs; and
- Reducing reliance on imported oil.

**SEO manages over \$85 million in federal energy-related grants and loans including:**


- Installation of an 800 Hp biomass cogeneration system at a hospital in La Crosse;
- Upgrading the biomass handling system at paper mill in Fox River Valley; and
- Numerous biogas, bio-CNG and biomass feedstock related initiatives.



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## Presentation Overview

- Wisconsin's Biomass Resources
- Existing Biomass Users and the Biomass Energy Dilemma
- Projects Linking Fuels Reduction and Wood Energy:
  - Gundersen Lutheran
  - Appleton Coated, LLC
- Going Forward  Wisconsin Strategic Bioenergy Feedstock Assessment



Source: State Energy Office

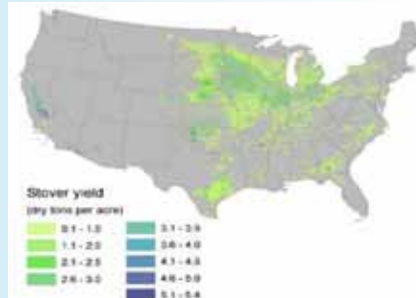
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## Wisconsin Biomass Resources

### Wisconsin's Biomass Landscape

- **North:** Wood cover
- **South:** Agricultural cover
  - Corn Stover
  - Wheat Straw
  - Small Grains



Source: Billion Ton Study Update

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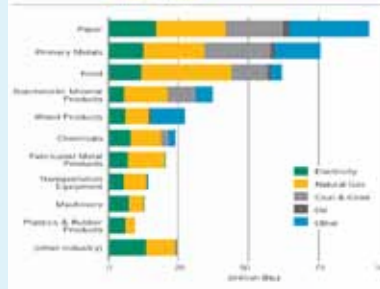
## Wisconsin's Pulp and Paper Industry

- **WI Pulp and Paper Industry:**
  - #1 Pulp and Paper Industry in U.S.
  - 60,899 Employees with Payroll of \$2.7 Billion
- **Energy Intensive Industry**



Source: USGS – Lower Fox River Valley supports one of the largest concentrations of paper mills in the world.

Figure WI-3-1 Wisconsin Manufacturing Fuel Use By Sector, 2008



Sources: MECS; ASM

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## Biomass Energy Potential?

- **Biomass potential:**
  - Energy
  - Manufacturing
- **Very large biomass projects proposed in WI**
  - Encourages development of forest residue supply chains
  - Provides opportunities for forest restoration
  - Impacts fiber supplies for existing industries
- **2 projects that illustrate this tension:**
  - **Bay Front**
    - Utility biomass to electricity
    - +300,000 tons/year
  - **Domtar**
    - Utility and paper company co-generation
    - 370,000+ tons/year



Map: Wisconsin Department of Agriculture, Trade and Consumer Protection 3/24/2009

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## Fuels Reduction



Source: John Deere



Source: USFS



Source: Wausau Daily Herald

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## Linking Fuels Reduction and Wood Energy

- **Funding Source**
  - **USDA – U.S. Forest Service**
    - Wood Education and Resource Center
  - **State Fire Assistance (National Fire Plan)**
  - **Awardees:**
    - Gundersen Lutheran – La Crosse, WI
    - Appleton Coated, LLC – Combined Locks, WI



Source: Wood Education and Resource Center  
USDA Forest Service, 2010

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## Gundersen Lutheran

- Major healthcare provider based in La Crosse with 6,000+ employees
- Commitment to energy independence by 2014



Source: Gundersen Lutheran

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## Gundersen Lutheran

- **Biomass Boiler**
  - 38% of energy independence goal (~150,000 MMBtu and 2,500,000 kWh)
  - Will produce majority of heat/steam used by health system
  - On-site electricity production with back pressure steam turbines
  - Local economic development benefits
  - Targeted production – October 2012



Source: Gundersen Lutheran

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## Appleton Coated: Commitment to Sustainability

- CEO commitment to eliminate fossil fuels
- Paper consumers are beginning to require greater sustainability
  - FSC or SFI certification,
  - Recycled content,
  - Renewable energy
- Focus:
  - Energy Efficiency & Conservation
  - Biomass



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## Appleton Coated Biomass Expansion

**Goal:** Convert largest boiler to 100% biomass by 2015

- Currently burns:
  - coal,
  - woody biomass, and
  - paper pellets



Source: Appleton Coated



Source: Greenwood Fuels

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## Appleton Coated Biomass Expansion

### Several steps to increase biomass utilization:

- Woody biomass feed rate
- Storage space
- Delivery
- Maintain and support biomass suppliers



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## Going Forward: Wisconsin Strategic Bioenergy Feedstock Assessment

- Neutral, Statewide Assessment
- Resource and Cost Projections



Source: Solar Energy

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# Thank you!



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