

Biomass Projects Today and Tomorrow

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North Dakota: A Diverse Portfolio of Energy Resources

- Home to the largest deposit of lignite coal in the world.
- The 5th largest oil producing state in the nation.
- Leads the nation in biomass production potential (top producer of 16 different commodities).
- Leads the nation in wind energy potential.
- Home to the nation's only National Center for Hydrogen Technology.



Empower ND: Develop these Energy Resources in Tandem

- Governor Hoeven initiated a multi-resource energy strategy in 2001 generating the original “EmPower ND” policy.
- This initiative was enhanced in 2007 with an statewide energy policy commission to build on the comprehensive energy policy for the state.



EmPower ND Commission

- Shane Goettle – Commissioner of Commerce
- Ron Day, Tesoro - Refining Industry
- Terry Goerger, Farmer from Mantador - Agriculture industry
- Paul Goulding, Goulding's Oil - Petroleum marketers
- Curtis Jabs, Basin Electric Power Cooperative - Generation and transmission electric cooperatives
- Eric Mack, Archer Daniels Midland - Biodiesel industry
- Ron Ness, North Dakota Petroleum Council
- Mark Nisbet, Xcel Energy - Wind industry
- Randy Schneider, North Dakota Ethanol Producer's Association
- Andrea Stomberg, Montana Dakota Utilities - Investor-owned utilities
- David Straley, North American Coal Corporation - Lignite coal industry
- Sandi Tabor, Lignite Energy Council
- John Weeda, Great River Energy - Biomass industry
- Chuck MacFarlane, Ottertail Power Company - Ex officio member



EmPower ND General Principles

- Grow all energy industries, traditional and renewable.
- Base policy decisions on sound science and economics.
- Support R&D of new technologies.
- Support incentives over mandates.
- Build a fair regulatory and business climate.
- Support environmentally responsible policies.



EmPower ND Policy

- EmPower process included:
 - Statewide public meetings
 - Industry-based presentation and SWOT analysis
- Policy includes:
 - 21 Goals
 - 40 Policy Statements
 - 98 Action Items
- Recommended Action Items Include:
 - Federal Action
 - State Legislative Action
 - Executive Branch Action



EmPower ND Goals

Goal: Double North Dakota's energy production from all sources by the year 2025 to drive economic growth and help the nation achieve greater energy independence.



EmPower ND Goals

Goal: Increase installed capacity of wind generation to 5,000 megawatts by 2020 assuming it is cost effective to do so.

Goal: Increase North Dakota's export capacity to 7,500 megawatts.



EmPower ND Goals

- **Goal:** Build one, and possibly more, clean-coal electric generation plants in North Dakota.
- **Goal:** Facilitate the development of new lignite gasification/liquefaction facilities in North Dakota to produce lignite-to-liquid fuels, hydrogen, and other chemicals or natural gas.



EmPower ND Goals

Goal: Be recognized as the 6th largest oil producing state nationally, up from current position as the 8th largest oil producing state.

Goal: Increase the amount of natural gas processed in North Dakota by 64% to 75 billion cubic feet per year by 2012.



EmPower ND Goals

Goal: Produce 450 million gallons of ethanol by 2011 and develop both in-state and out-of-state markets for ethanol and associated byproducts.

Goal: Become a national leader in the development of economically viable, production-scale cellulosic ethanol production facilities.



EmPower ND Legislation

2009 Legislature passed 9 pieces of energy legislation supported by EmPower including:

- Tax breaks for renewable energy devices.
- Income tax credits for soybean and canola crushing equipment costs.
- Combined Renewable Energy and Biomass Incentive and Research programs with \$3 million in funding.
- Biofuels Blender Pump incentive program with up to \$2 million in funding.
- A \$400 million comprehensive tax relief package.



Renewable Energy and Biomass Incentive and Research Program

- **Purpose:** To promote the growth of North Dakota's renewable energy industries through research, development, marketing, and education.
- First initiated by the Legislature in 2007.
- \$3 million authorized to support projects in the current (2009-11) biennium.



Project: Developing a Biomaterials Industry in North Dakota

- **Purpose:** complete a front-end engineering and design study to determine the technical and economic requirements for commercializing technology to produce bio-based cellulose nanowhiskers.
- **Status:** Final report due by year end.



Project: Biomass Supply at Spiritwood Industrial Park

- **Purpose:** Evaluate the prospects for integrating a 10 percent biomass supply into Great River Energy's Spiritwood Station to reduce CO₂ emissions.
- **Status:** Study completed this summer.
- **Findings:** Co-firing can be cost effective. There is significant potential for supplying biomass feedstock to cellulosic biofuels or industrial biochemical plants in North Dakota.



Project: Fischer-Tropsch Fuels Development

- **Purpose:** To prepare testing equipment and perform testing in the areas of Fischer-Tropsch (FT) liquid production, catalyst development, catalyst testing, product upgrade, and process simulation using biomass-derived syngases.
- FT technologies to produce liquid transportation fuels from biomass, waste and coal will provide a new industry for North Dakota.
- **Status:** Final report due by year end.



Project: Evaluation of Perennial Herbaceous Biomass Crops

- **Purpose:** Determine the best practices of producing biomass including the most productive grass species, optimal harvest methods including dates and frequency, and best practices to maintain productive perennial biomass stands in North Dakota.
- **Status:** Funding approved in June.



Project: Biomass Enhanced Refined Lignite Demonstration Project

- **Purpose:** To optimize the design and operation of the ComPAKer in blending lignite with biomass to produce a high value solid fuel for home and commercial furnaces.
- The ComPAKer is a machine that makes biomass pellets. This study seeks to combine beneficiated coal, biomass, and additives into pellets.
- **Status:** Final report due by year end.



For More Information on these projects or potential
funding opportunities, contact:

North Dakota Industrial Commission

70/328-3722

www.nd.gov/ndic/renew-infopage.htm

or

North Dakota Department of Commerce

701/328-5300

www.ndcommerce.com

