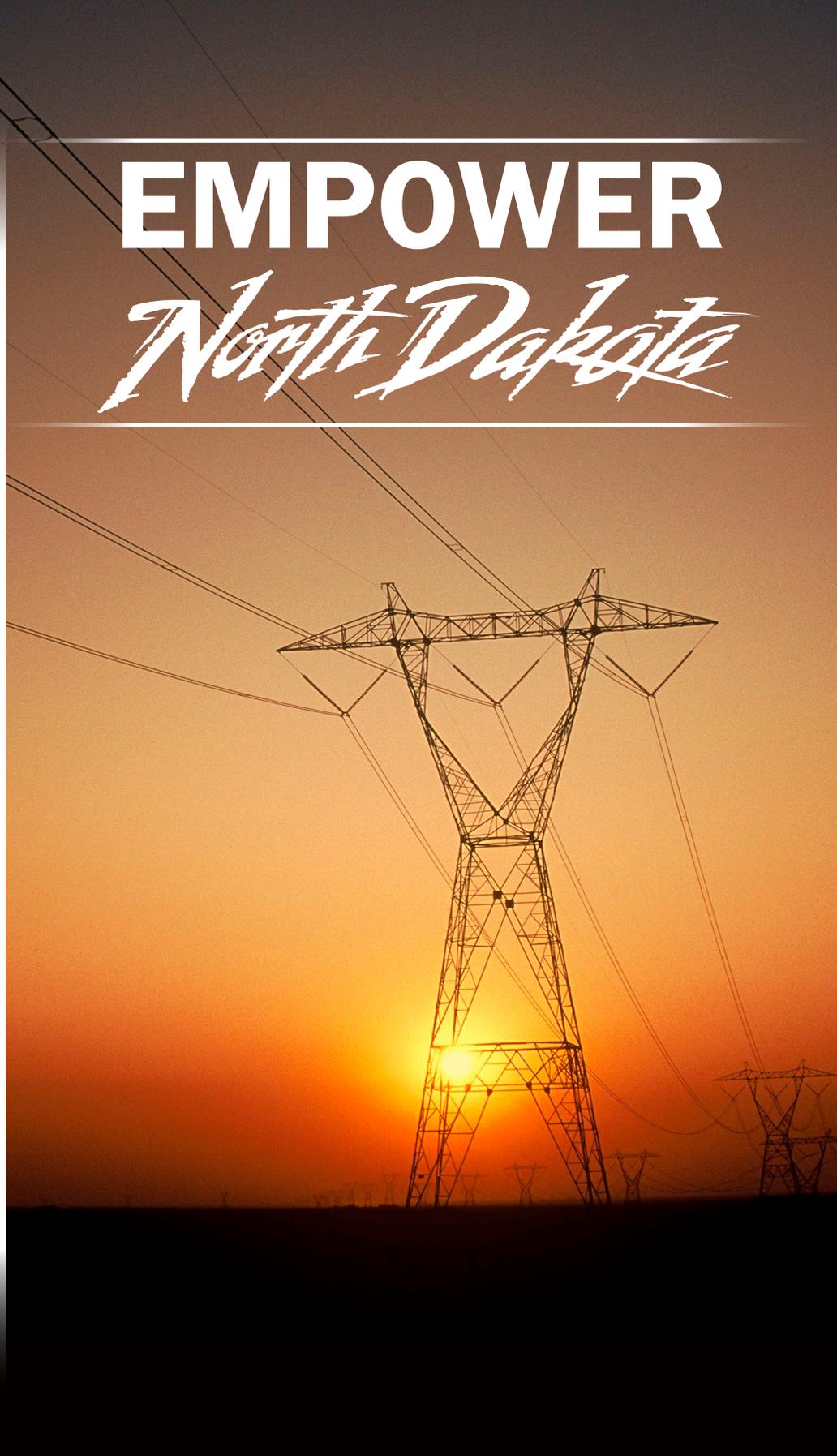
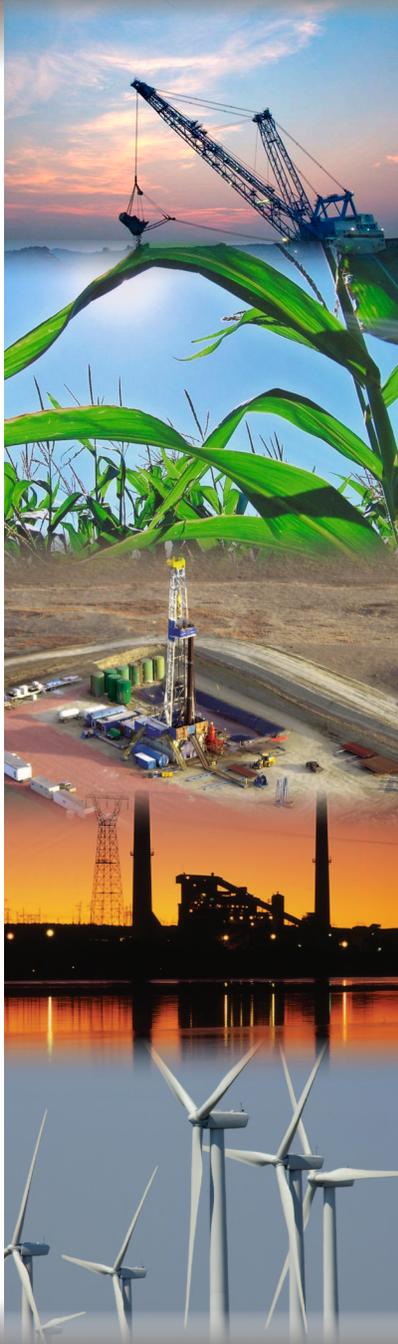


# EMPOWER

# *North Dakota*



COMPREHENSIVE STATE ENERGY POLICY

2010-2025



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## EXECUTIVE SUMMARY

**N**orth Dakota is poised to be a model for America in the development of innovative, long-term energy resources to meet our nation's growing demand for energy produced in a clean, environmentally friendly, and sustainable way.

North Dakota's energy resources are more diverse than any other state in the nation. North Dakota:

- Is home to the largest deposit of lignite coal in the world.
- Is the fourth largest oil-producing state in the nation.
- Is the top producer of 14 different agricultural commodities.
- Has great wind energy potential.
- Boasts the nation's only National Center for Hydrogen Technology and National Energy Center of Excellence.
- Has a university system with world-class energy research and training programs.
- Has a positive business climate and fair regulatory environment for energy development.
- Has a talented workforce with a strong work ethic.

Recognizing the incredible potential of these energy assets, in 2001 Gov. John Hoeven initiated the development of the state's first multi-resource state energy policy as part of his statewide economic development strategy.

The foundation of the governor's energy policy has been to grow North Dakota's diverse energy resources in tandem. State policy makers have promoted growth in this industry by creating an attractive business climate, providing targeted incentives for each energy sector, and investing in research and development to generate new ideas and technologies for the future.



## A New Approach

Partnerships between traditional energy industries and the emerging renewable industries are a central component of North Dakota's approach to energy development. This strategy recognizes that meeting our nation's long-term energy needs in an environmentally and sustainable way requires all players in the energy industry to be engaged and successful.

Examples abound of these partnerships at work in North Dakota. Blue Flint Ethanol joined forces with Great River Energy to use waste energy from a coal-fired power plant to produce ethanol. There is potential for North Dakota oil companies to use captured CO<sub>2</sub> from facilities such as coal-fired power plants, coal gasification and liquefaction facilities, and ethanol plants to enhance oil recovery.

North Dakota's broad-based energy policies have helped trigger more than \$12 billion in new energy-related investments since 2005.

- In May 2010, oil production hit an all-time record high of nearly 291,000 barrels per day. At the same time there were 4,905 producing wells, another all-time record.
- As of May 2010, North Dakota had five ethanol plants with a rated capacity of 350 million gallons of ethanol per year.
- Wind production capacity is greater than 1,200 megawatts with another 6,000 megawatts in planning.
- Three major projects are under construction or being planned as a result of the state's Lignite Vision 21 program. Construction is underway on a combined-use energy plant in Spiritwood and planning is occurring for a coal-to-hydrogen plant near South Heart and a coal liquefaction facility in McLean County.
- Great River Energy recently completed a coal-drying system at its Coal Creek Station power plant that will significantly increase the efficiency of lignite and reduce emissions.
- Basin Electric is undertaking a major CO<sub>2</sub> capture and sequestration front end engineering and design study in North Dakota at its Antelope Valley Station.
- Thirteen natural gas processing plants are operating in western North Dakota, located near Arnegard, Ambrose, Killdeer, Knudson, Lignite, Marmarth, Midway, New Town, Ray, Rhame, Stanley, Tioga, and Trotters.
- From 2006 to 2010, natural gas processing companies have more than doubled their ability to turn North Dakota's valuable natural gas resources into a safe and clean energy source for America.
- Crude oil transporters have proposed and planned new expansion projects that will increase takeaway capacity from the United States Williston Basin to meet oil production forecasts.
- A feasibility study regarding a potential biomass supply for the Spiritwood Energy Park has been completed.
- More than 150 blender pumps have been or are being installed statewide.

In 2007, the North Dakota Legislature approved legislation to formalize energy policy development. Gov. John Hoeven appointed the 14-member EmPower ND Commission, which includes representatives from all sectors of the energy industry. Shane Goettle, Commissioner of Commerce, chairs the commission.

The commission conducted work on its first EmPower ND policy prior to the 2009 Legislative session. This provided the framework for strategic policy changes

and initiatives that have helped drive substantial growth throughout the state's energy sector.

The 2009 Legislature also extended the work of the EmPower ND Commission, making it a permanent policy development body in the state (North Dakota Century Code Chapter 17-07). The commission met throughout 2010 and re-examined every energy sector. The findings provide the substance for this updated EmPower ND Comprehensive State Energy Policy.

## EmPower ND Commission Members



**Chairman**  
Shane Goettle,  
*Commissioner of Commerce*



**Refining Industry**  
Ron Day,  
*Tesoro*



**Agriculture Industry**  
Terry Goerger,  
*Farmer*



**Petroleum Marketers**  
Mike Rud,  
*North Dakota Petroleum Marketers Association*



**Biodiesel Industry**  
Eric Mack,  
*Archer Daniels Midland*



**Oil and Gas Industry**  
Ron Ness,  
*North Dakota Petroleum Council*



**Generation/Transmission Electric Coops**  
Curtis Jabs,  
*Basin Electric Power Cooperative*



**Wind Industry**  
Mark Nisbet,  
*Xcel Energy*



**Ethanol Industry**  
Randy Schneider,  
*North Dakota Ethanol Producer's Association*



**Investor-Owned Utilities**  
Andrea Stomberg,  
*MDU*



**Lignite Coal Industry**  
David Straley,  
*North American Coal Corporation*



**Transmission**  
Sandi Tabor,  
*North Dakota Transmission Authority*



**Biomass Industry**  
John Weeda,  
*Great River Energy*



**Ex officio member**  
Chuck MacFarlane,  
*Ottertail Power Company*

# EMPOWER ND GOALS

**T**he EmPower ND Energy Policy includes 20 goals, 51 policy statements and 98 action items. The policy offers a balanced approach to encourage growth in all energy sectors. It strongly supports research and development of cleaner technologies and includes energy efficiency initiatives and environmentally friendly policies and practices.

In this document, the EmPower ND Commission outlines 51 policy statements that reflect positions the state needs to take in order to achieve these 20 energy goals. Action items provide a roadmap for getting there and include items that require immediate attention, issues that should be addressed in the next legislative session and long-term initiatives that may require further policy development and/or study. The EmPower ND Commission also makes recommendations for actions at the federal level that will require attention from our state's Congressional delegation.

## Overall Goals

1. Double North Dakota's energy production from all sources by the year 2025 in an environmentally friendly way to drive economic growth and help the nation achieve greater energy independence. (Baseline figure 2007)
2. Support the nation's 25 X 25 initiative to derive at least 25 percent of all energy produced in America from renewable sources by 2025.
3. Provide a fair and responsible regulatory environment that promotes energy development.

## Wind

4. Develop an export market to increase installed capacity of wind generation to 5,000 megawatts by 2020 conditioned upon a prior commensurate increase in North Dakota transmission export capacity and cost-effective and equitable allocation of the associated cost to North Dakota customers.

## Transmission

5. Increase North Dakota's energy export capacity to 7,500 megawatts in coordination with other states and regional planning entities to facilitate permitting, construction and upgrading transmission systems by 2020 provided acceptable cost allocation methodology is developed and approved by FERC.

## Lignite and Coal Conversion Facilities

6. Support the retrofit of existing electric generation units in an economically feasible manner to meet new environmental standards.
7. Build clean-coal electric generation plants in North Dakota.
8. Build lignite gasification and liquefaction facilities in North Dakota to produce synthetic natural gas, lignite-to-liquid fuels, hydrogen, and other chemicals and co-products.



### **Ethanol**

9. Produce 450 million gallons of ethanol by 2015 and develop in-state and out-of-state markets for ethanol and associated co-products while continuing to provide a healthy business environment for existing facilities.

### **Biodiesel**

10. Promote the retention and expansion of existing production facilities while working to expand the industry in the state with new facilities by the year 2015. Develop in-state and out-of-state markets for biodiesel while continuing to provide a healthy business environment for all biodiesel facilities.

### **Biomass**

11. Develop commercial biomass production and use in North Dakota and become a national leader in the development of economically viable, production-scale cellulosic ethanol production facilities.

### **Energy Efficiency**

12. Increase energy efficiency in North Dakota through education and promotion of energy savings best practices and programs, as well as conservation measures.

### **Refining**

13. Encourage the development of economically feasible oil refining and processing projects in North Dakota.

### **Natural Gas Processing**

14. Expand oil and gas gathering, processing, and export capacity infrastructure to minimize flaring while ensuring industry has adequate time to evaluate and plan infrastructure needs.

### **Oil and Gas**

15. Provide a responsible regulatory environment that promotes oil and gas development and maintains the industry's ability to access resources.

### **Petroleum Marketing**

16. Support the marketing of transportation fuels based on consumer demand.

### **Solar, Geothermal, Hydrogen and Hydropower**

17. Support commercial-scale research and development programs for solar, geothermal, hydrogen, hydropower, pumped storage and other alternative energy resources.

### **Workforce**

18. Train more students for energy industry and energy research jobs by building stronger connections between industry and education and improving awareness of energy career opportunities among teachers and career counselors.

19. Attract a sufficient number of workers to fill energy-related jobs due to retirements, attrition and growth within the industry.

### **Infrastructure**

20. Ensure adequate water, power, and infrastructure for energy development and for the communities in which energy development exists.





# OVERALL POLICY GOALS AND INITIATIVES

**Goal:** Double North Dakota's energy production from all sources by the year 2025 in an environmentally friendly way to drive economic growth and help the nation achieve greater energy independence. (Baseline figure 2007)

**Policy:** Ensure adequate resources for state agencies directly involved in energy development including the Department of Health, the Department of Mineral Resources, and the Public Service Commission.

- Determine the requirement for additional resources needed and communicate that to the Legislature.

**Policy:** Encourage state and federal policies that ensure the state business climate is predictable and stable.

- Avoid laws and regulations that place new barriers on investment and development.
- Enact and preserve state laws and regulations that facilitate investment and avoid uncertainty.
- *(Federal)* Structure federal energy policy on a long-term versus short-term basis.
- *(Federal)* Encourage Congress to base any legislation impacting North Dakota's energy industries on sound science and sound economics.

- *(Federal)* Provide sufficient lead time for industry to adapt to new statutory requirements and regulatory standards affecting production or products.

**Goal:** Support the nation's 25 X 25 initiative to derive at least 25 percent of all energy produced in America from renewable sources by 2025.

**Policy:** Educate the people of North Dakota and their representatives on the impact of the state's energy industry.

- Develop aggregate impacts of each sector and the industry as a whole to serve as an education, marketing and recruitment tool for North Dakota.

**Policy:** The EmPower ND Commission does not support state energy mandates.

**Goal:** Provide a fair and responsible regulatory environment that promotes energy development.

**Policy:** Maintain state and federal laws that encourage responsible energy development.





## ENERGY FACT: North Dakota's wind resources are among the most abundant in the nation.

### Accomplishments:

In the last eight years, North Dakota's wind generation capacity has grown to 1,200 megawatts, with another 6,000 megawatts in the planning stage. State policies have helped drive this growth, including a comprehensive package of tax incentives. Several of the EmPower Commission's wind policy recommendations were approved in the 2009 session including:

- Improving siting standards for transmission lines to encourage growth of transmission infrastructure. Today, North Dakota has one of the most progressive policies in the nation.
- Legislation to allow for taxation of wind farms based on installed capacity and production.
- Improvements to the tax structure and extension of some key tax credits.

### Opportunities:

North Dakota's wind resources have been documented as the most abundant in the nation. Advantages for growing this industry include:

- Wind offers an unlimited energy source.
- North Dakota is home to experienced manufacturers of wind generation equipment and has the potential to expand this manufacturing niche.
- North Dakota has experienced wind farm construction companies.
- Opportunities exist to form diverse coalitions by combining wind development with other energy or economic development projects.
- The state has a comprehensive package of attractive incentives.
- Spin-off industries offer potential for industrial growth and new jobs.

### Challenges:

Despite all the opportunities and strengths of wind energy development, the industry faces investment hurdles, transmission and export challenges, and questions concerning the economic viability of the industry without government support. Other challenges include:

- Potential resistance from landowners to large-scale wind development threatens the availability of suitable locations.
- There is a short window of opportunity (three to four years) to take advantage of market conditions to secure a wind generation equipment manufacturing base in North Dakota.
- The resource is variable and difficult to store, which creates challenges for dispatching.
- The long distance to markets where demand is strong requires costly high-voltage transmission infrastructure, which is challenged by current cost allocation and economic business models.
- Inconsistent federal incentives affect the demand and development rate.
- A number of complicated siting issues exist including: aesthetics, environmental impacts, equity among landowners, microwave corridors, migratory bird flyways and cultural issues.

**Goal:** Develop an export market to increase installed capacity of wind generation to 5,000 megawatts by 2020 conditioned upon a prior commensurate increase in North Dakota transmission export capacity and cost-effective and equitable allocation of the associated cost to North Dakota customers that:

- Maintains grid stability.
- Preserves affordability for North Dakota electric rate payers.
- Maintains and expands opportunities for North Dakota lignite coal and natural gas industries, including offering base-load, peaking, and other services for large-scale export of energy.

**Policy:** Maintain a fair regulatory environment for wind development that encourages companies to transform the state's extensive wind resources into energy in a way that protects the state's scenic beauty and the rights of property owners.

- Develop separate provisions in the North Dakota Century Code for siting commercial-scale wind facilities.

**Policy:** Maximize the availability of research and development funding to be a leader in cutting edge wind harnessing and storage technology.

- Support sufficient funding for the Industrial Commission Renewable Energy Program to leverage private sector dollars for wind research and development.
- Support applied technology research efforts for storage technology.

**Policy:** Maintain existing federal and state incentives to encourage investment in renewable wind resources that can play a vital role in addressing our nation's energy needs.

- Study the use and effectiveness of existing incentives and the costs associated with proposed tax incentives.
- Make permanent the sales and use tax exemptions for building materials, production equipment, and other tangible personal property used in the construction of a wind-powered facility. Current exemption sunsets in 2015.
- (Federal) Support the extension of the wind energy production tax credit.





# TRANSMISSION

**ENERGY FACT:** Constructing new high voltage transmission facilities is estimated to cost \$1 million per mile.

### Accomplishments:

Gov. John Hoeven and the 2005 state Legislature created a North Dakota Transmission Authority to promote new investments in transmission lines. To incentivize construction, the state also offers property tax exemptions for new or expanded-capacity electric transmission lines. There are 250 miles of transmission either under construction or recently completed at an estimated investment of \$81.8 million. Overall, the estimated investment in planned, under construction, and completed transmission projects is \$463 million.

### Opportunities:

Despite the significant needs and challenges surrounding the transmission in our state and nation, North Dakota has some positive factors working in its favor.

- The state has a reliable and adequate transmission system for serving current load.
- A favorable regulatory environment, favorable terrain for new transmission lines, and reasonable landowners are conducive to the construction of new transmission lines.
- Renewable Energy Portfolio Standards in neighboring states are increasing demand.
- The state has the capability to fund projects through tax-exempt bonds.

### Challenges:

Exporting additional energy demands enhancements and/or expansion of transmission systems across a complicated network of multijurisdictional authorities including North Dakota, South Dakota, Montana, Minnesota, and Wisconsin. Challenges include:

- Renewable energy development is occurring in areas with limited access to markets.
- Strategies for addressing the intermittent and largely uncontrollable nature of wind generation are evolving.
- Cost recovery for transmission expansion is in flux.
- Renewable project developers must consider the cost or timing of interconnection to transmission infrastructure.

- The presence of two independent transmission systems increases the complexity of the transfer of electricity.
- Access to Western Interconnection load centers is extremely limited.
- Public policy in other states may inhibit the ability to build new transmission facilities.

**Goal:** Increase North Dakota's energy export capacity to 7,500 megawatts in coordination with other states and regional planning entities to facilitate permitting, construction, and upgrading transmission systems by 2020 provided acceptable cost allocation methodology is developed and approved by the Federal Energy Regulatory Commission (FERC).

**Policy:** The Transmission Authority will facilitate and coordinate new transmission initiatives to benefit North Dakota.

- The Transmission Authority will continue to take an active role in working with regional transmission owners, state and federal regulatory agencies and regional transmission operators.
- The Transmission Authority will assess the value of any regional transmission initiative and support those that will actually benefit North Dakota.
- The Transmission Authority will continue to participate in regional and national transmission planning initiatives.
- *(Federal)* The state needs to encourage Congress to support a tax exempt status for revenue bonds issued by the North Dakota Transmission Authority.

**Policy:** The Transmission Authority shall serve as a resource to help state policy makers understand transmission issues, including cost allocation, planning, and impacts on system reliability.

- The Transmission Authority will continue to work with regional transmission owners, state and federal regulatory agencies, and regional transmission operators on cost allocation and planning issues.
- The Transmission Authority should encourage cooperation between energy producers and transmission owners about the future of transmission.





# LIGNITE AND COAL CONVERSION FACILITIES

**ENERGY FACT:** North Dakota has an 800-year supply of lignite reserves.

## Accomplishments:

North Dakota's lignite industry is an innovative and vital part of the state's economy. Three major projects are under construction or being planned as a result of the state's Lignite Vision 21 program. These include a combined-use energy plant in Spiritwood, a coal-to-hydrogen plant near South Heart, and a coal liquefaction facility in McLean County. Other innovative projects include:

- Great River Energy recently completed a coal-drying system at its Coal Creek Station power plant that will significantly increase the efficiency of lignite and reduce emissions.
- Basin Electric is undertaking a major CO<sub>2</sub> capture and sequestration front end engineering and design study in North Dakota at its Antelope Valley Station.

During the 2009 Legislative session, lawmakers approved six of the EmPower ND Commission's lignite policy recommendations. These include:

- Making permanent the tertiary extraction tax exemption for any projects using CO<sub>2</sub> for enhanced oil recovery.
- Long-term sequestration proposals developed by the North Dakota CO<sub>2</sub> Storage Workgroup.
- Legislation to clarify the definition of coal in statute and to amend the current coal severance tax exemption to include beneficiated coal.
- Legislation to address tax issues for repowering generation facilities due to new environmental changes.

In addition, the North Dakota Tax Department completed an evaluation of the traditional tax framework for lignite and electric generation projects, which was another recommendation of the EmPowerND Commission.

## Opportunities:

North Dakota has an 800-year supply of lignite reserves, the largest in the world, offering an economical and reliable domestic source of energy and fuel.

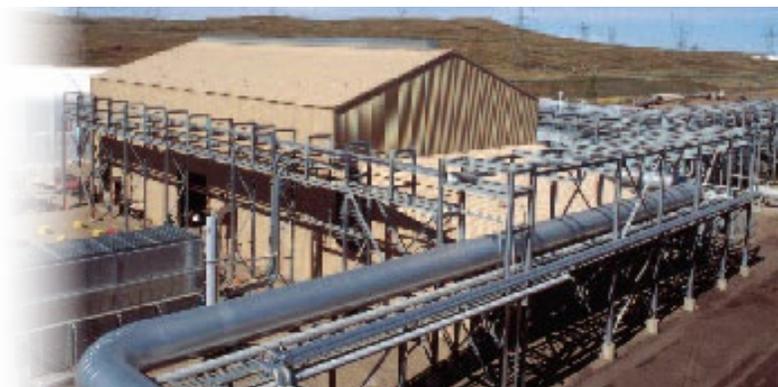
- The industry has a positive environmental record and history of developing clean coal technologies.
- Research and development (beneficiated coal, CO<sub>2</sub> sequestration, saline aquifer storage, etc.) is reducing the environmental footprint, improving efficiency, and creating new uses for lignite and its byproducts.
- The North Dakota Transmission Authority, North Dakota Pipeline Authority, the Lignite Research Council (public-private partnership) and cooperation between lignite and oil and gas industries provide unlimited potential for collaboration and innovation.
- Geologic formations in North Dakota offer strategic advantages for CO<sub>2</sub> storage and are a short distance from CO<sub>2</sub> producers.
- Enhanced oil recovery offers a strong, in-state market for captured CO<sub>2</sub>.

- The public and political leaders support CO<sub>2</sub> research and development.
- Progress is being made on CO<sub>2</sub> management and joint projects through Plains CO<sub>2</sub> Reduction Partnership (PCOR).
- Favorable tax incentives, proactive state CO<sub>2</sub> regulations, favorable state regulatory environment, and cooperative state officials create a positive environment for business.

## Challenges:

North Dakota's lignite industry faces pressures from environmental and emission standards that will increase costs and jeopardize existing and future coal-based power generation.

- North Dakota lignite has low BTU value and high moisture content resulting in higher CO<sub>2</sub> emissions per kilowatt hour than higher grade coals.
- The timing of climate change legislation is not synchronized with the availability of technology to meet the new standards.
- North Dakota has limited growth for in-state electric demand.
- Construction of new coal-powered plants or retrofitting of existing plants is expensive and subject to legal challenges.
- The federal regulatory environment is focusing on significantly more stringent air quality standards and the elimination of coal-based generation.
- The Environmental Protection Agency (EPA) is considering regulating coal combustion byproducts as hazardous waste.
- Production costs will increase due to parasitic power requirements associated with pollution control technology.
- CO<sub>2</sub> capture and storage technologies for power generation are not mature or ready for commercial deployment and the cost to sequester, transport or capture are significant.
- Commercially viable and economically feasible technologies to capture CO<sub>2</sub> are lacking as are infrastructure to transport it and federal CO<sub>2</sub> sequestration regulations.
- The public is uninformed about CO<sub>2</sub> uses and the risks and potential liabilities of long-term storage are unknown.



# LIGNITE AND COAL CONVERSION FACILITIES

**Goal:** Support the retrofit of existing electric generation units in an economically feasible manner to meet new environmental standards.

**Goal:** Build clean-coal electric generation plants in North Dakota.

**Goal:** Build lignite gasification and liquefaction facilities in North Dakota to produce synthetic natural gas, lignite-to-liquid fuels, hydrogen, and other chemicals and co-products.

**Policy:** Promote public education on energy policy including CO<sub>2</sub> sequestration.

- Incorporate the tools already created by the Energy and Environmental Research Center (EERC).

**Policy:** Federal environmental regulation and federal legislation should be based on sound science and the capacity of current technology.

- The state, through the state Department of Health, should support reasonable federal air quality standards.
- (Federal) Encourage Congress to oppose any cap and trade legislation that fails to recognize the need to time the implementation of law with the development of cost-effective and deployable CO<sub>2</sub> capture and sequestration technology.
- (Federal) Encourage Congress to support pre-emption of EPA, state and local regulation of CO<sub>2</sub> emissions.
- (Federal) Encourage Congress to support equitable funding for each coal type to encourage research, development, demonstration, and deployment of CO<sub>2</sub> capture and sequestration technologies.
- (Federal) Support allocating federal funds derived from climate legislation to clean coal technology development.
- (Federal) Encourage the passage of federal legislation requiring the federal government to assume long-term stewardship of CO<sub>2</sub> sequestration projects.

- (Federal) Encourage the EPA to adopt rules allowing the states to regulate coal combustion byproducts as nonhazardous wastes.

**Policy:** Promote the balanced development of power generation in the state.

- The impact of the state's wind generation goal on existing base-load generation should be evaluated.

**Policy:** Support legislation for programs that encourage the long-term sequestration of CO<sub>2</sub>.

- Support efforts of PCOR to expedite research efforts on the long-term impacts associated with CO<sub>2</sub> sequestration.
- Continue to engage political leaders in other states in discussions regarding the regional economic impact of generation standards on the North Dakota lignite industry and consumers of lignite-based electric generation.
- (Federal) Support a regional demonstration approach to CO<sub>2</sub> sequestration that can help prove the viability of CO<sub>2</sub> sequestration across multiple states.

**Policy:** Incorporate coal-to-liquids and other emerging technologies into the tax code.

- Ensure the coal conversion tax addresses hybrid plants (plants that may be comprised of more than one type of coal conversion facility).
- Initiate legislation to provide tax certainty for new facilities using new technologies. Current statutes need to clarify how new processes will be taxed so they can build business plans and provide a clear financial picture to potential investors.



# ETHANOL

**ENERGY FACT:** North Dakota has 42,000 flexible fuel vehicles, a nearly 50 percent increase since 2008.

## Accomplishments:

As of May 2010, North Dakota has five ethanol plants with a rated capacity of 350 million gallons of ethanol per year. One of the key state initiatives encouraging growth of this industry is the state's Counter-Cyclical Ethanol Production Incentive, which was created in 2003. The state also supports a Biofuels PACE program, which provides interest buy-down for ethanol and biodiesel facilities, livestock operations, renewable fuel pumps, and grain storage.

In the 2009 session, the Legislature approved ethanol policy recommendations advanced by the EmPower Commission. These include:

- Cost-sharing grants for fuel marketers to install blender pumps.
- An ethanol check-off program to fund the North Dakota Ethanol Utilization Council.

## Opportunities:

As the first widely used renewable fuel in the United States, ethanol has created sufficient critical mass to contribute to the energy security of the United States. Advantages for producing ethanol in North Dakota are:

- North Dakota has more than 42,000 flex fuel vehicles. Automakers are looking at providing a wider range and higher concentrations of flex fuel vehicles in their production fleet.
- The Federal Renewable Fuel Standards requiring the production of 36 billion gallons of biofuels by 2022 will provide strong demand for ethanol produced by current North Dakota ethanol plants as well as those under construction.
- State incentives encourage ethanol production, development and diversification.
- Distribution innovations within the industry promise to increase the sale and use of ethanol. These include higher blends of ethanol fuels (E-15, E-20, E-30, E-50, and E-85) and the installation of blender pumps that allow gas stations to blend and sell directly at the pump.
- Through research partnerships with the North Dakota University System and other state entities, facilities are becoming more innovative in producing co-products that provide opportunities for high-value spin-off industries.

- Diversification of feedstock to the ethanol production process promises to lead to additional ethanol production in the state from non-traditional feedstocks.

## Challenges:

In order to take advantage of these opportunities, the ethanol industry faces a number of ongoing challenges both in North Dakota and globally.

- Existing pipeline infrastructure makes it difficult for ethanol to be transported, so ethanol producers in North Dakota and throughout the Midwest struggle to move their product to urban population centers that offer the greatest market potential.
- Potential new ethanol pipelines in the Midwest are too great a distance from North Dakota and will put the local ethanol industry at a logistical disadvantage.
- The federal government does not currently provide effective support for improving the blending and distribution infrastructure.
- Uncertainty of feedstock supply is a challenge facing the future of cellulosic production.
- Public education is needed to improve understanding of the ethanol industry and ethanol's use.



**Goal:** Produce 450 million gallons of ethanol by 2015 and develop both in-state and out-of-state markets for ethanol and associated co-products while continuing to provide a healthy business environment for existing facilities.

**Policy:** Maintain a balanced package of incentives and policies to remain a competitive and attractive location for ethanol production.

- Maintain continuing appropriations and support for the state's innovative Counter-Cyclical Ethanol Production Incentive program that helps producers during adverse times.

**Policy:** Support initiatives to improve the marketing, distribution and use of ethanol.

- Support efforts to educate the public on the use of mid-level ethanol blends.
- *(Federal)* Support the Renewable Fuels Reinvestment Act (RFRA) that provides needed long-term extensions for major federal tax incentives.
- *(Federal)* Support extension of the Volumetric Ethanol Excise Tax Credit (VEETC) of 45 cents per gallon available to oil and gas refiners for each gallon of ethanol blended, which is set to expire the end of 2010.
- *(Federal)* Support streamlining the certification process for flex fuel vehicle conversion kits.

**Policy:** Examine and improve state and federal programs for developing infrastructure to transport and blend ethanol.

- Support studying and improving the state's transportation infrastructure to maintain high quality roadways for transporting feedstock, ethanol and co-products.
- *(Federal)* Encourage the building of blending facilities across the nation to significantly expand the markets for selling ethanol in population-dense areas.
- *(Federal)* Support federal research and tax policy to improve the transportation of ethanol via pipeline and ensure that North Dakota secures access to ethanol pipelines.

**Policy:** Support research to improve the use of ethanol co-products.

- Support increased research into potential products derived from ethanol co-products.
- Study the permitting process for livestock feeding facilities to evaluate ways to streamline it and consider ways to expand the use of ethanol co-products as a feedstock.

**Policy:** Support research for ethanol production technology and feedstocks development.



# BIODIESEL

**ENERGY FACT:** A wide variety of feedstocks will position the state as a leading producer of biodiesel.

## Accomplishments:

State funding through the Centers of Excellence initiative has fostered a partnership between NDSU and Monsanto to increase acreage and oil content of canola. The release of these new canola lines in the near future will expand acreage and yields, increasing the available feedstock for biodiesel production in North Dakota.

Investments from the Renewable Energy Development Fund have enabled the Energy and Environmental Research Center to develop a bio-based diesel with traits identical to petroleum-based diesel. This has enabled the development of a demonstration plant hosted by Tesoro and allows Tesoro to consider placing this renewable fuel directly in its pipeline for export. The Biofuels PACE Program remains available as a financing incentive for new biofuel production facilities in North Dakota.

## Opportunities:

- Biodiesel (B100) is an environmentally friendly fuel with a favorable carbon foot print, lowering GHG emissions by 78 percent.
- Biodiesel reduces dependence on high-priced foreign crude oil and offers opportunities for international trade.
- Consumers support the availability of domestically made fuels.
- Federal Renewable Fuel standard RFS2 will increase demand.
- BQ 9000, the National Biodiesel Accreditation program, will help improve consistency.
- Engine manufacturers accept and warranty biodiesel blends in their engines.
- North Dakota has good business venture support programs.
- Biodiesel projects offer value-added agriculture opportunities in rural areas and can help stabilize the economics of production agriculture.
- New diesel technology is bringing increased efficiency for diesel engines, which may increase diesel engine use.
- Biodiesel is the only domestically produced advanced biofuel recognized by the EPA.

- North Dakota is an excellent feedstock supplier. The state leads the nation in canola production and three North Dakota counties are the top soybean producing counties in the nation.
- The availability of high-value co-products can help build North Dakota's livestock and feed industry.

## Challenges:

- Lack of adequate distribution and blending infrastructure exists.
- More education of cold temperature flow issues and storage properties is needed.
- Existing production capacity is under used.
- Production and tax incentives in other states are attractive to potential investors.
- The lack of a North Dakota certified lab may restrict small biodiesel plants from being ASTM compliant.
- Meeting the industry quality standard of ASTM D6751 is imperative as is BQ 9000 approved biodiesel.
- The North Dakota market for meal co-product is small.
- Federal incentives offer a short-term guarantee.



**Goal:** Promote the retention and expansion of existing production facilities while working to expand the industry in the state with new facilities by the year 2015. Develop in-state and out-of-state markets for biodiesel while continuing to provide a healthy business environment for all biodiesel facilities.

**Policy:** Improve tax policy and incentives for producing, blending and transporting biodiesel.

- Initiate a Tax Department analysis of the use of biodiesel tax credits to determine their effectiveness.
- Evaluate and develop alternative incentive programs instead of income tax credits to support infrastructure for blending, transport, retail, and production facilities.
- Continue the sales tax exemption on biodiesel equipment.
- Consider developing a Biodiesel Counter-Cyclical Production Incentive, similar to the Ethanol Counter-Cyclical Production Incentive, to provide a safety net for producers.
- Consider developing a state production incentive program structured to encourage new biodiesel facilities, such as a fixed production incentive on the first 30 million gallons of biodiesel produced annually for the first five years of production of ASTM-quality biodiesel.
- *(Federal)* Lengthen the time-span on federal incentives to provide long-term security for investors in the industry. Support the long-term continuation of the blender/producer tax credit at the federal level and the continuation of the Commodity Credit Corporation program in the farm bill.

**Policy:** Increase the use of biodiesel in North Dakota to an average of 5 percent of total diesel used per year by 2015 through market development and state consumer incentives with the support of a federal blender/producer tax credit.

- Consider a temporary reduction or temporary elimination of state taxes on biodiesel blends sold in North Dakota to lower the cost to consumers and encourage more consumption of biodiesel blends.
- Continue to fund the blender pump promotion program in North Dakota to assist petroleum retailers in having biodiesel blends available throughout the state.





# BIOMASS

**ENERGY FACT:** North Dakota's climate and soil are suitable for producing energy crops such as perennial grasses. An Oak Ridge National Laboratory study identified North Dakota as having the greatest potential for dedicated energy crops and crop residues.

### Accomplishments:

The state has developed programs to support renewable energy research. The Bank of North Dakota has established a Biofuels PACE program to help finance potential biomass projects. During the 2007-2009 biennium, the Legislature appropriated \$2 million to the Industrial Commission for biomass research and approved a \$3 million Renewable Energy Development Fund to be administered by the Industrial Commission that could be used to fund biomass research.

During the 2009-2011 biennium, the Legislature combined these two programs into one Renewable Energy Development Fund with \$3 million in funding. During the 2007-2009 biennium, two biomass projects were completed: a feasibility study of the biomass supply for the Spiritwood Energy Park and an NDSU study titled "Developing a Biomaterials Industry in North Dakota." Ongoing biomass projects currently being funded by the Industrial Commission include:

- Evaluation of North Dakota perennial herbaceous biomass crops
- A biomass enhanced refined lignite demonstration project
- Development of a biomass testing laboratory at NDSU

### Opportunities:

North Dakota is the top producer of 14 different commodities and has been identified as having the greatest potential resource for switch grass and other dedicated energy crops. These natural resources offer an opportunity for biomass development. Other advantages include:

- Federal energy policy mandates production of 16 billion gallons of cellulosic-based ethanol by 2022 as well as programs promoting green power and carbon neutral or renewable fuel premiums.
- North Dakota offers a favorable regulatory environment for energy development.
- Land suitable for biomass crops is available in abundance in North Dakota.
- North Dakota has an excellent research and development base for developing new biomass crop and fuel technologies, including demonstration projects.
- North Dakota's lignite power plants and extensive lignite resources offer opportunities for co-firing/co-generation that can significantly improve the economics of biomass.
- A diverse package of state and federal incentives for biomass development exists.
- Biomass offers value-added agriculture opportunities for rural areas that can help expand businesses, create jobs, grow population, and expand the tax base.
- Biomass crops offer environmental and economic advantages including low input costs, suitability for marginal land and CRP, and the creation of wildlife habitat.
- The public along with political and conservation groups support biomass development.
- The negative carbon footprint of perennial grasses creates the possibility to sell carbon credits for those using biomass.

### Challenges:

- Biomass is not currently cost-competitive with other alternatives such as fossil fuels and therefore lacks a market.
- Current economics do not support the significant infrastructure investments required for biomass including transmission for electrical production, pipelines for liquid fuels, roads, and year-round facilities for storing low-density biomass in remote rural areas.
- Significant technological advancements are necessary to make biomass fuel production economically feasible.
- State and federal incentives are limited and the private sector is not currently investing in the research necessary to develop biomass technology.
- North Dakota has a short growing season, dry climate, inhospitable climate for trees, and is a long distance to major markets.
- Premium lands are needed for higher return food crops forcing biomass crops to marginal lands.
- Biomass faces stiff competition in North Dakota from a broad array of other renewable and non-renewable energy resources.

**Goal:** Develop commercial biomass production and use in North Dakota and become a national leader in the development of economically viable, production-scale cellulosic ethanol production facilities.

**Policy:** Support increased funding for state and federal biomass research and development programs.

- Encourage market studies on the development possibilities of biomass.
- *(Federal and State)* Continue federal and state programs that promote renewable energy development and renewable fuels.
- *(Federal and State)* Support federal and state funding for basic and applied research on biomass feedstock and conversion technology.

**Policy:** Support policies aimed at improving the long-term economic feasibility of biomass production.

- Examine funding sources for a producer incentive program.
- Support continuation of sales tax reductions for value-added agriculture expenditures.
- Support continuation of Biofuels PACE.



# ENERGY EFFICIENCY

**ENERGY FACT:** Energy efficiency is the most cost-effective method of reducing the environmental effect of energy production.

## Accomplishments:

More than \$44 million in federal stimulus dollars have been invested in North Dakota to improve energy efficiency in homes, businesses, and public facilities. These initiatives include public education efforts, weatherizing approximately 4,000 homes, improving the efficiency of public buildings in 97 communities, and replacing 3,800 old refrigerators with newer, energy-efficient models.

## Opportunities:

- Using energy efficiently is the most cost-effective method of protecting the environment and reducing energy costs for North Dakota families, farms, and businesses.
- Federal funding through the stimulus program has provided significant short-term funding to support energy efficiency programs and evaluate their cost effectiveness.
- Modifications in regulatory structure could remove disincentives for regulated utilities to pursue cost-effective energy efficiency actions.
- Vocational training programs see opportunity in incorporating energy efficiency practices and procedures into their curriculums.
- Existing measures at state facilities provide positive examples of energy efficiency benefits and allow state government to lead by example.

## Challenges:

- Energy efficiency is not considered a high priority due to the state's abundant supply of relatively low-cost energy.
- The public is reluctant to accept some new energy efficiency measures particularly if the quality is not on par with their expectations (i.e. incandescent light bulbs).
- State funding for energy efficiency and low-income home weatherization programs could be enhanced.
- The upfront cost of energy efficiency measures to the customers can be high.
- North Dakota's low population density limits the effectiveness of mass transportation.
- Energy auditors are in short supply.

**Goal:** Increase energy efficiency in North Dakota through education and promotion of energy savings best practices and programs, as well as conservation measures.

**Policy:** Initiate state policies that encourage and increase energy efficiency.

- Incorporate energy provisions into the state building code.
- Encourage North Dakota state agencies and their employees to seek ways to improve energy efficiency.
- Support and promote the use of public transportation.
- Create a program to provide recognition to businesses that employ energy efficiency measures.

**Policy:** Create incentives and education programs that promote energy efficiency.

- Consider recommending that the Resources Trust Fund, originally created for water and energy conservation projects, be used to promote energy conservation while maintaining a priority for water projects.
- Support education programs to teach consumers how to save energy and consider providing financial incentives for businesses and individuals who adapt successful energy efficiency efforts.
- Promote energy efficiency education in high school and higher education construction programs.
- Encourage the Public Service Commission to approve energy efficiency programs that are cost effective and initiated by the utilities. The programs should include cost recovery and a return on investment comparable to supply-side investment.
- *(Federal)* Use federal funds as available to promote energy efficiency and increase federal energy efficiency incentives.

**Policy:** Support tax incentives to encourage the installation of commercial and residential geothermal HVAC systems.



# REFINING

**ENERGY FACT:** A study is being conducted to evaluate the economic viability of increased refining capacity in North Dakota.

## Accomplishments:

Several refining projects have been initiated in recent years in North Dakota:

- Tesoro completed an expansion in 2010 to increase their capacity to manufacture low-sulfur diesel and to ensure reliability of gasoline production at its Mandan refinery. The refinery's current capacity is 60,000 barrels/day.
- American Lignite Energy, LLC is conducting a front end engineering and design (FEED) study on a 10.9 million barrels/year synthetic coal-to-liquid fuels facility.
- Three Affiliated Tribes, Makoti is considering a refinery that would produce 15,000 barrels per day of Canadian synthetic crude.
- Dakota Oil Processing, LLC near Williston is considering a 20,000 barrel per day diesel topping plant.

## Challenges:

- Large economies of scale are necessary to be competitive and sustainable long term.
- Profit margins in refining are cyclical and historically tight due to high crude oil prices, volatility of the market, and costs associated with the refining process.
- Expansion of existing refining capacity beyond current capacity requires a substantial capital investment and the timeframes for developing new projects are lengthy.
- North Dakota currently produces more refined product than it consumes.
- Gasoline demand has dropped and is expected to remain flat as the United States moves to a diesel-driven market.
- Refining expansions are occurring in North Dakota's key export markets.
- Investors are cautious about investing in new projects because of uncertainty in the market and uncertainty in state and federal policies and mandates that significantly affect the market.

**Goal:** Encourage the development of economically feasible oil refining and processing projects in North Dakota.

**Policy:** The state's role in the development of future refining capacity through Industrial Commission programs is to cost-share in feasibility and FEED studies and to support and fund research and development.

- Continue sufficient funding for the Industrial Commission research programs.

**Policy:** Maintain North Dakota's existing tax and regulatory structure that supports refining growth.

- Continue the sales tax exemption for new or expanded refining capacity.
- Continue the sales tax exemption for environmental upgrades.

**Policy:** Support and assist in pipeline infrastructure development as needed through the North Dakota Pipeline Authority.



## NATURAL GAS PROCESSING

**ENERGY FACT:** During 2009, North Dakota produced 92.5 billion cubic feet of natural gas and processed 56.4 billion cubic feet of natural gas. This compares to 70.7 billion cubic feet produced in 2007.

### Accomplishments:

More than \$400 million has been invested in natural gas pipelines and gathering systems in the last two years. As a result, 13 natural gas processing plants are operating in western North Dakota. Two more are being developed in Tioga and near Watford City. Both will create up to 100 long-term, high-tech jobs in rural North Dakota.

From 2006 to 2010, natural gas processing companies have more than doubled their ability to turn North Dakota's valuable natural gas resources into a safe and clean energy source for America. The Alliance Pipeline System transports North Dakota natural gas to local and distant markets, adding value to rich, high-quality Bakken and Three Forks natural gas that offers many co-product opportunities.

In 2009, the Legislature approved several EmPower ND Commission recommendations for natural gas processing including:

- Clarifying a sales tax exemption to include gas gathering systems from oil wells in order to eliminate flaring.
- Streamlining the permitting process for upgrading petroleum and natural gas pipelines.
- Increasing funding for the Oil and Gas Research Fund. A portion of those dollars is funding a project that will demonstrate the commercial viability of using otherwise wasted associated natural gas as fuel for on-site electrical power generation as an alternative to gas flaring.

### Opportunities:

- North Dakota's natural gas production is increasing rapidly, creating new opportunities for investment.
- Bakken and Three Forks natural gas is a top-quality product with high natural gas liquids content, which creates many appealing investment opportunities for co-product development.
- Excess capacity on the export pipelines exists.
- Production growth has created interest in expanding existing and building new natural gas processing facilities.

- Eastern North Dakota contains shallow gas reservoirs that could have production potential.
- The industry has an excellent environmental record, is a significant tax payer, and offers good-paying jobs for highly skilled people in rural areas.
- A natural gas liquids pipeline will allow for the capture and sale of additional natural gas liquids (ethane).

### Challenges:

- Rail car and truck services for NGL and sulfur take away are limited.
- Qualified operating personnel (mechanics, instrument techs, operators, etc.) are in short supply.
- Infrastructure and resources limitations:
  - No high-end ethane NGL pipeline infrastructure.
  - Limited pipeline/compressor capacities to sell additional natural gas volumes.
  - New equipment delivery delays.
- Low-volume natural gas wells cost too much to connect to existing pipelines.

**Goal:** Expand oil and gas gathering, processing, and export capacity infrastructure to minimize flaring while ensuring industry has adequate time to evaluate and plan infrastructure needs.

**Policy:** Continue to promote and provide tax incentives for shallow-well gas production.

- Encourage research and development through the Oil and Gas Research Council for shallow natural gas exploration and production in eastern North Dakota. Possibilities include connecting wells to ethanol plants, other commercial facilities, or communities or farms for use in heating homes or facilities.

**Policy:** Regulators and industry should conduct a study and develop short, medium, and long-range plans for gathering and processing natural gas in fields that have reached development stage.

- Appoint a task force to spearhead the study.
- Fund a study that culminates with a report to the Industrial Commission and the Legislature.



# OIL AND GAS

**ENERGY FACT:** North Dakota is the fourth largest oil producing state. The Bakken and Three Forks formations have potentially recoverable reserves of 4 billion barrels of oil.

## Accomplishments:

Oil exploration and extraction has exploded in western North Dakota in recent years. Rising prices and continued strong demand for domestic oil has helped drive this growth. State leaders have also helped fuel the growth with a number of key policies and incentives. These include:

- Reauthorizing a tax agreement with the Three Affiliated Tribes that provides business certainty and has spurred development on Fort Berthold Reservation.
- Creating the Oil and Gas Research Fund to stimulate the production and development of oil and gas in North Dakota.
- A tax exemption for the first two years on any new shallow natural gas well developed in North Dakota to stimulate the production of natural gas.
- An expanded tax incentive for tertiary recovery of oil and gas using CO<sub>2</sub> gas. The incentive provides a use and sales tax exemption for carbon dioxide that is used for enhanced oil recovery.
- Creating a pipeline authority to help private industry construct additional capacity to ship crude oil, natural gas, carbon dioxide ethanol, biodiesel and other energy products to market.
- Tax reductions for new horizontal drilling in the Bakken and Three Forks formations.
- Sales tax exemption for costs associated with gas gathering.
- Two studies, completed by the Industrial Commission Department of Mineral Resources and Geological Survey, identifying and quantifying the oil and gas resources in the Bakken and Three Forks formations.

## Opportunities:

North Dakota has the biggest continuous oil deposit in the lower 48 states, estimated at approximately 4 billion barrels of oil in the Bakken and Three Forks formations that is recoverable using current technology. In addition, the use of new technology has the potential to make many other formations in the state more productive. North Dakota's advantages and opportunities include:

- The resource offers a significant source of revenue for the state and counties.

- The industry has high growth potential in North Dakota.
- The state can protect air, water, wildlife, and other natural resources while allowing for oil and gas development.
- Oil industry job growth offers opportunities to develop additional skilled professionals and the overall labor force.
- Best management practices can help minimize environmental impacts.
- Recovery and sales of ethane as a liquid offers a spin-off opportunity.
- Stranded or flared natural gas creates opportunities for new business development.
- New pipelines will eliminate flaring.
- A natural gas pipeline will allow for the capture and sales of natural gas liquids.

## Challenges:

- The number of restrictive federal government regulations is increasing.
- Maintaining a state legal and regulatory environment that allows for timely exploration and development activities is important.
- Lack of qualified employees for the industry restricts growth.
- Punitive Federal laws and regulations restrict or slow development (taxes, hydraulic fracturing regulations, air quality standards, access to federal land).
- Commodity prices fluctuate significantly and threaten the economic stability of development.
- Large natural gas shale plays result in oversupply/depressed prices.
- Lack of pipeline/compressor capacities restricts the sale of additional natural gas volumes.
- Transportation limitations such as rail car, truck and shipping, restrict the ability to transport product to markets.



**Goal:** Provide a responsible regulatory environment that promotes oil and gas development and maintains the industry's ability to access resources.

**Policy:** Develop a competitive and simplified oil tax structure.

- Establish a simplified, competitive, and predictable oil tax structure.
- Maintain the stripper well and secondary and tertiary recovery tax exemptions.

**Policy:** Continue support for the oil tax agreement between the state and tribe.

- Ensure that the tribal tax agreement is followed and that the state maintains a consistent and predictable tax and regulatory structure on tribal lands.

**Policy:** Ensure efficient extraction and responsible development of the mineral resources with effective regulations regarding permitting, well spacing, reservoir development, and other key regulatory issues.

- Provide adequate funding that anticipates future staffing and resources needed for the Department of Mineral Resources.

**Policy:** Support policies and research that protect the state's natural resources including air and water.

- Provide funding for research using sound scientific findings to support environmental regulations.
- Evaluate the opportunities for creating water depots for local and industrial use at key locations along major access routes.
- Maintain the existing gas flaring regulations to allow resource development.
- Provide adequate resources to the State Health Department to ensure they can manage air quality.

**Policy:** Support the allocation of adequate state resources to counties, cities, and townships to address the impacts from energy development.

- Continually evaluate and adjust the funding formula for distribution of oil and gas tax revenues to address the impact of energy development on infrastructure.
- Increase funding and streamline the process for obtaining funds for long-term, strategic, and sustainable improvements to road infrastructure, water development, housing, local services, and other essential needs that are impacted by oil development.

**Policy:** Ensure that policies, laws, and regulations do not impede industry's ability to access minerals or private property.

- Avoid passing laws that subjugate private contracts, rights, and negotiations between private parties or that restrict timely exploration and development activities.
- Ensure that the State Lands Department follows approved processes and procedures in order to eliminate de facto policy development.

**Policy:** Develop and fund transportation planning and road infrastructure that is designed to accommodate industry activity for state and local infrastructure.

- Implement the recommendations of the housing, workforce, and local infrastructure studies and support ongoing, long-term local infrastructure planning.
- Provide funding for engineering studies for counties with significant Bakken and Three Forks activity to facilitate long-term planning for transportation that helps manage vehicle safety, routing, load requirements, and maintenance.



## PETROLEUM MARKETING

**ENERGY FACT:** In 2009, 373.4 million gallons of gasoline and 476.1 million gallons of diesel were sold in North Dakota.

### Accomplishments:

North Dakota leaders followed the recommendation of the EmPower ND Commission during the 2009 session and approved an initiative to provide state grants to petroleum marketers to help underwrite the cost of installing new blender pumps. The pumps allow marketers to sell new varieties of fuel as they become available, providing an important part of the infrastructure needed to help the United States incorporate alternative fuels into mainstream use and reduce our reliance on foreign oil. More than 150 blender pumps have been or are being installed statewide.

### Opportunities:

In 2009, 373.4 million gallons of gasoline and 476.1 million gallons of diesel were sold in North Dakota. Of the total gasoline sold, 206 million gallons (55 percent) included some blend of ethanol. North Dakota's petroleum marketing industry is poised to be a partner in delivering alternative fuels and fuel blends that benefit the environment and help our nation address energy challenges.

- North Dakota petroleum marketers are locally owned, civic-minded businesses.
- The industry provides steady employment for thousands of North Dakotans.
- North Dakota petroleum marketers have an excellent environmental record.
- The state's growing economy offers growth potential for the industry.

### Challenges:

- The public perceives that petroleum marketers are responsible for the high price of fuel.
- Investors receive a low return compared to the risk involved.
- Government mandates and regulations are increasing.
- The industry is consolidating (i.e. fewer number of brands).
- Market volatility results in distribution delays.

**Goal:** Support the marketing of transportation fuels based on consumer demand.

**Policy:** Support energy education programs that help consumers make informed fuel purchase decisions.

- Consider authorizing legislation to allow petroleum marketing to access Industrial Commission research funds to enhance innovation in safety, environment, and education.

**Policy:** (Federal) If the federal government establishes national fuel standards, those standards need to be consistent and have clearly identified timeframes that allow industry to make the infrastructure investments needed to support the standards.

**Policy:** (Federal) Support federal legislation to address potential petroleum retailer liability issues associated with selling fuels with a higher blend of renewable content.



# SOLAR, GEOTHERMAL, HYDROGEN & HYDRO POWER



## SOLAR, GEOTHERMAL, HYDROGEN & HYDRO POWER

**ENERGY FACT:** In 2009, the Legislature passed a 15 percent tax credit (3 percent over five years) on the cost of installing geothermal for commercial or residential use.

### Accomplishments:

The state of North Dakota has invested generously in research for hydrogen, solar and geothermal applications. This includes \$2.5 million for a Centers of Excellence project at the EERC's National Center for Hydrogen Technology, which is attracting hydrogen-based business to the state; funding for research at UND for commercial application of geothermal; and funding for research at NDSU on solar energy. In the private sector, Basin Electric completed research on wind-to-hydrogen technologies.

**Goal:** Support commercial-scale research and development programs for solar, geothermal, hydrogen, hydropower, pumped storage and other alternative energy resources.

**Policy:** Continue to support tax incentives to encourage the installation of commercial or residential geothermal.

**Policy:** Continue to support funding for Centers of Excellence and Renewable Energy Council initiatives to support public education about and research and development of renewable energy technologies.



## WORKFORCE

**ENERGY FACT:** Energy growth is creating thousands of new job opportunities in North Dakota.

### Accomplishments:

Careers in North Dakota's energy industry offer promising job opportunities for young, skilled workers in our state. North Dakota's higher education system has made progress toward developing education and training programs in response to the needs of the state's energy industry. For example:

- Lake Region Community College's wind energy worker training program
- Williston State College's petroleum training
- University of North Dakota's petroleum engineering degree
- Bismarck State College's Energy Center of Excellence
- Minot State University's energy economics degree

**Goal:** Train more students for energy industry and energy research jobs by building stronger connections between industry and education and improving awareness of energy career opportunities among teachers and career advisors.

**Policy:** Encourage the North Dakota Commerce Department to create a biannual summary of energy industry workforce needs to facilitate the necessary programmatic decisions and changes by educators.

**Policy:** Establish an advisory board appointed by the governor with representatives from the industry to meet with the board of higher education to outline a plan for educating and training the workforce needed for the energy industry.

- Continue, enhance and fund state career promotion efforts that direct students to both vocational and degree programs.
- Continue, enhance and fund Operation Intern.
- Continue, enhance and fund demand-driven education and training programs at two-year post-secondary institutions.

**Goal:** Attract a sufficient number of workers to fill energy-related jobs due to retirements, attrition and growth within the industry.

**Policy:** Expand the state's workforce recruitment and marketing strategy to include other talent pools to serve the extraordinary needs of North Dakota's energy industry.

- Support the continued development and implementation of a comprehensive state workforce strategy, including potential recommendations of the Interim Workforce Committee.
- Consider increasing the funding for workforce marketing efforts in the next biennium.

**Policy:** Further enhance the state's online presence to provide a one-stop location for job seekers to find job information as well as resources regarding relocation issues such as housing, community information, and job training programs.

- Continue the use of an industry-led task force organized by the Department of Commerce, as needed, to recommend improvement to state workforce recruitment strategies and streamline the jobsnd.com process for energy-related jobs.
- *(Federal and State)* Support federal and state funding for the establishment of and maintenance of dynamic workforce recruitment tools.





## INFRASTRUCTURE

**ENERGY FACT:** Energy growth is creating thousands of new job opportunities in North Dakota.

### Accomplishments:

During the 2009 Legislative session, state leaders removed the caps for the formula funding and increased funding for oil-producing counties to a projected \$165 million in order to address the infrastructure needs relating to energy development. Additionally, the state is investing unprecedented funds on transportation infrastructure including improvements on Highway 85 in western North Dakota.

Gov. John Hoeven has also initiated financing programs to help stimulate housing development in oil-producing counties. At the recommendation of the EmPower ND Commission, the state's Water Commission has completed a study of the water resource needs to support future energy growth. The state is supporting studies on workforce, housing, and infrastructure and is providing technical assistance to help local leaders develop plans for long term infrastructure needs.

**Goal:** Ensure adequate water, power, and infrastructure for energy development and for the communities in which energy development exists.

**Policy:** Provide funding assistance to communities to develop a comprehensive infrastructure plan to accommodate energy development.

**Policy:** Evaluate the impact energy development is having on North Dakota's water and power supplies.

- Evaluate North Dakota's infrastructure needs related to energy development.
- Increase the effectiveness of state funding mechanisms to address growing local needs for water and power related to energy development.

**Policy:** Increase state funding for local jurisdictions to offset the infrastructure costs related to growth in the energy industry.

- Evaluate the adequacy of the oil tax distribution formula to meet the infrastructure needs of oil and gas producing counties through a comprehensive needs assessment.
- Establish a fund using oil tax revenues to alleviate upfront infrastructure needs related to oil and gas development.
- Create an upfront funding mechanism for roads and other infrastructure needs associated with energy development in other sectors of the energy industry.

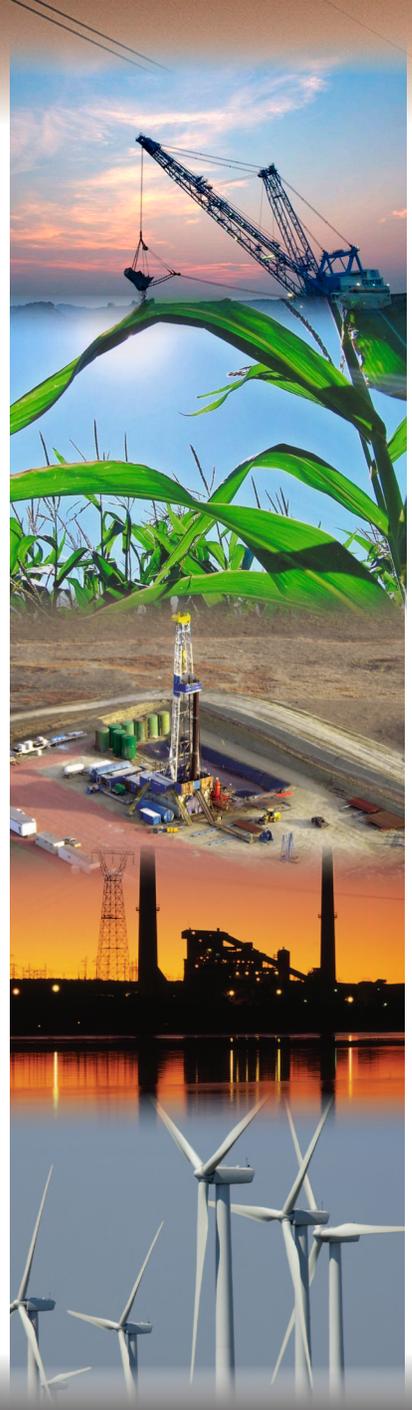


# EMPOWER NORTH DAKOTA



COMPREHENSIVE STATE ENERGY POLICY

2010-2025



*North Dakota*  
DEPARTMENT OF COMMERCE