

ENERGY DEVELOPMENT AND TRANSMISSION COMMITTEE

The Energy Development and Transmission Committee is created by North Dakota Century Code (NDCC) Section 54-35-18. The committee has the duty to study the impact of a comprehensive energy policy for the state and the development of each facet of the energy industry, from the obtaining of the raw natural resources to the sale of the final product in this state, other states, and other countries. The study may include the review of and recommendations relating to policy affecting extraction, generation, processing, transmission, transportation, marketing, distribution, and use of energy and the taxation of shallow gas. The statute establishing the committee expires on August 1, 2011.

In addition, the Legislative Council assigned one study to the committee and delegated to the committee the responsibility to receive four reports. Section 1 of House Bill No. 1456 (2007) directed the study of the siting and decommissioning of commercial wind farms, including identification of key issues of public and industry concern; solicitation of public input from local government officials, electric utilities, the wind industry, landowners, farm organizations, and other concerned interests; review of the laws and policies of other jurisdictions; recommendations concerning laws or policies needed in this state to address wind farm siting and reclamation of wind farm sites; and the decommissioning of wind farm sites.

Under NDCC Section 17-05-13, the North Dakota Transmission Authority is required to deliver a written report on its activities to the Legislative Council each biennium. Under Section 54-17.7-13, the North Dakota Pipeline Authority is required to deliver a written report on its activities to the Legislative Council each biennium. In Section 6 of House Bill No. 1462 (2007) the Energy Policy Commission (commonly referred to as the Empower North Dakota Commission) is required to report to the Legislative Council during the 2007-08 interim on the progress and the results of the North Dakota Energy Independence Initiative. Under Section 57-40.6-12, the Emergency Services Communications Coordinating Committee is to provide by November 1 of each even-numbered year a report on the use of the assessed communications services fee revenue and recommended changes to the operating standards for emergency services communications.

The committee submitted this report to the Legislative Council at the biennial meeting of the Council in November 2008. The Council accepted the report for submission to the 61st Legislative Assembly.

COMPREHENSIVE ENERGY POLICY STUDY Energy Policy

In an effort to create a comprehensive energy policy, the Legislative Assembly passed House Bill No. 1462 (2007), specifically creating NDCC Title 17. The bill redesignated current North Dakota Century Code provisions as within Title 17--Sections 4-14.1-07.1, 4-14.1-07.2, 4-14.1-08, 4-14.1-09, and 4-14.1-10,

relating to ethanol plant production incentives from the ethanol production incentive fund; Chapter 6-09.17, relating to the biodiesel partnership in assisting community expansion (PACE) fund being used for interest rate buydowns on loans to biodiesel production facilities; Section 9-01-22, relating to the termination of a wind option agreement; Sections 47-05-14 through 47-05-16, relating to the creation of wind easements and termination for lack of development; Section 47-16-42, relating to the termination of a wind energy lease for lack of development; and Chapter 49-24, relating to the North Dakota Transmission Authority.

House Bill No. 1462 created the 25x'25 initiative, which adopts the goal of having the agricultural, forestry, and working lands of the United States provide from renewable resources not less than 25 percent of the total energy consumed in the United States by January 1, 2025. The initiative defines renewable energy to include biofuels, solar, wind, hydropower, geothermal, carbon recycling, carbon sequestration, use of waste heat, recycling, low emissions technologies that create or use hydrogen, and energy efficiency initiatives.

House Bill No. 1462 also created the Energy Policy Commission for developing a comprehensive energy policy as part of the North Dakota Energy Independence Initiative. The purpose for this policy is to:

- Stimulate the development of renewable and traditional fossil-based energy within the state with the goal of providing secure, diverse, sustainable, and competitive energy supplies to reduce the dependence on foreign energy sources.
- Promote the development of new technologies to decrease dependence on foreign energy supplies.
- Address the growth of fossil fuel and renewable energy industries to encourage the state's competitiveness.
- Address research, development, and marketing of North Dakota-produced energy.
- Address the expansion of existing energy resources and the diversification of this state's energy resource base.
- Evaluate existing tax credits and incentives.
- Modernize and expand this state's energy infrastructure.
- Examine potential innovations to improve environmental conditions through new technologies and review energy industry workforce and training needs and develop a strategy to maximize the state's market opportunities.

The Energy Policy Commission consists of the Commissioner of Commerce, as chairman, and members appointed by the Governor to represent the agricultural community, the Lignite Energy Council, the North Dakota Petroleum Council, the biodiesel industry, the biomass industry, the wind industry, the ethanol industry, the North Dakota Petroleum Marketers

Association, the North Dakota investor-owned electric utility industry, the generation and transmission electric cooperative industry, the lignite coal-producing industry, and the refining or gas processing industry.

In addition to the policy statements in House Bill No. 1462, House Concurrent Resolution No. 3020 (2007) declared that the renewable energy policy of this state includes the support of 25 percent of the state's and nation's energy supply coming from renewable energy resources by the year 2025. The Legislative Assembly also enacted House Bill No. 1506 (2007), which established a state renewable and recycled energy objective that 10 percent of all electricity sold at retail within the state by the year 2015 be obtained from renewable energy and recycled energy sources. In addition, Senate Concurrent Resolution No. 4001 (2007) urged the President and Congress to make the entire nation available for energy development in an environmentally responsible manner.

2007 Legislation

There were numerous bills introduced during the 2007 legislative session that related to energy. The bills mainly related to taxation and governmental entities. Bills on taxation related to property taxes, income taxes, sales and use taxes, coal taxes, oil and gas taxes, and fuel taxes. Bills on governmental entities related to the Industrial Commission, the Legislative Council, the Department of Commerce, the Office of Management and Budget, and the Bank of North Dakota.

The following is a list of legislative changes during the 2007 legislative session which promoted energy development in this state. These changes are organized by the following four categories:

Funds and funding

- Expanded the biofuels PACE interest rate buydown.
- Increased funding to the lignite research fund.
- Created the geophysical, geothermal, subsurface minerals, and coal exploration fund.
- Increased the cap on the abandoned oil and gas well plugging and site reclamation fund.
- Created the geologic data preservation fund.
- Created the biomass incentive and research fund.
- Provided funding for biomass research and education.
- Increased funding to the oil and gas research fund from the oil and gas gross production tax.
- Created the renewable energy fund.

Programs and incentives

- Created a biomass incentive program.
- Encouraged the State Board of Higher Education to create a biomass energy center.
- Created expedited rate recovery for new transmission facilities.

Governmental entities and priorities

- Created the Renewable Energy Council to recommend expenditures from the renewable energy development fund by the Industrial Commission.
- Created the Energy Policy Commission.

- Created the Energy Development and Transmission Committee.
- Made a priority to have carbon sequestration in this state.

- Created the North Dakota Pipeline Authority.

Taxes

- Reduced property tax for wind generation facilities.
- Created a sales tax exemption for materials to process natural gas and oil.
- Reduced and over time eliminates the sales tax on natural gas and fuels used for heating.
- Extended and expanded a sales tax exemption for certain power plant equipment.
- Extended the gross production tax exemption for shallow gas wells for the first 24 months of operation.
- Increased agriculture business investment tax credits and expanded these tax credits to include biofuels production facilities.
- Expanded income tax credits to install geothermal, solar, and wind devices to include biomass and made these tax credits tradable and transferable.
- Reduced the oil extraction tax.
- Allowed for agreements to collect and administer oil and gas taxes on the Fort Berthold Reservation.

The following is a list of other programs and efforts that may relate to the preceding measures or promote energy development:

- Research funding to universities.
- Ethanol production incentives from the ethanol production incentive fund administered by the Office of Renewable Energy and Energy Efficiency of the Department of Commerce.
- Lignite Research Council.
- Lignite Vision 21 Project.
- North Dakota Transmission Authority.
- Sales tax exemptions for carbon dioxide used for enhanced recovery, for biodiesel fuel equipment for sales facilities, and for hydrogen used for an engine or cell.
- Income tax credit to produce biodiesel.

Testimony and Discussion

The committee studied the eight major forms of energy--oil and gas, coal, nuclear, geothermal, ethanol, wind, hydroelectric, and solar power. North Dakota has significant resources in all of these forms of energy except solar. In particular, the committee focused on coal, oil and gas, ethanol, and wind due to the abundance of these resources in this state and the role of state involvement in these forms of energy. In an effort to learn more about these forms of energy, the commission toured the Energy and Environmental Research Center, a wind-to-hydrogen facility, Nabors oil drilling rig No. 688, the Red Trail Energy ethanol plant, an Archer Daniels Midland (ADM) Company canola crush and biodiesel plant, and the Tesoro Refinery.

Coal

The committee received testimony on coal and, in particular, lignite coal in North Dakota. The committee received testimony on generation, transmission, and retail rates. One-third of the energy generated in this state is used in this state and one-half of the energy generated in this state is used in Minnesota. The remainder of energy generated in this state is used by other states. Coal produced 50.8 percent of the electric power in the United States in 2003. In North Dakota, there are approximately 25 billion tons of economically mineable lignite coal. At the present rate of mining, there is enough coal in North Dakota to last over 800 years. Due to this quantity, coal provides a consistent baseload for which long-term contracts may be negotiated. Lignite coal's positives include high reactivity and low mining costs. The main negative with lignite is the high water content. This high water content makes it not cost-effective to ship lignite coal for long distances. The water may be dried out of lignite coal, but the drying has to be done in a controlled manner due to the high reactivity.

Generation

Although there are a number of coal-fired electric generation plants in this state, the last energy generation plant built in North Dakota was in 1986. From the late 1930s to the 1970s the demand for electricity has grown about 10 percent per year. Presently, the growth demand for Montana-Dakota Utilities Company customers is around 1.4 percent per year and the regionwide projection is not much more than 1.5 percent. The growth in demand for electricity in Minnesota is over 5 percent per year.

Present plants have been able to meet the demand of consumers by increasing energy generation through efficiency. For example, a turbine rewind can provide an increase of 5 megawatts to 10 megawatts per turbine. In addition, coal drying and firing tire residue increases efficiency and, in the case of tires, has the additional benefit of reducing mercury. The Coyote Station expects a 4 percent plant efficiency improvement due to the scheduled installation of new high-intermediate pressure turbines. Coal Creek Station has increased from approximately 560 megawatts to around 630 megawatts due to increased efficiency. The committee was informed that it is difficult for a coal plant to burn more coal. If more coal is burned, then the coal plant would need a new air quality permit. The most difficult emissions limit to meet is the particulate limitation. Most plants are at or near the particulate limit.

There are a number of impediments to building new coal-fired electric generation plants. The two greatest impediments are the need for transmission and the effect of future carbon dioxide legislation. There needs to be certainty in the market for the investment of the enormous sums of money needed to build a coal-fired plant. The first step toward certainty is knowing the requirements of expected federal carbon dioxide legislation. The committee was informed that federal preemption in the area of carbon dioxide is necessary for future development.

The committee received information on coal processed into a gas or liquid, instead of electricity. The committee was informed that Great Northern Properties, the nation's largest private coal owner, intends to build a synthetic natural gas plant. The plant will need water for cooling purposes. The water for the plant will come from the water in the seams of coal. The project will use as much air cooling as possible and will be almost water sufficient with the water in the coal seams. The project designers considered using water from oil development; however, that would require infrastructure to transport the water to the plant.

The committee received information on the Great Plains Synfuels Plant. The plant is the only synfuels plant in the Americas. The synfuels plant is located next to the Antelope Valley Station and, as such, can sell the fine coal the synfuels plant is unable to burn to the Antelope Valley Station.

The committee was informed that American Lignite Energy intends to build a coal-to-liquid transportation fuel plant supplied with lignite in North Dakota. The construction decision will be made by 2010 and the plan is to have the plant producing gasoline and other products by 2013 or 2014. The project will produce gasoline, and not diesel, because of marketing studies and because diesel requires a larger investment and more coal. The project would produce half of Tesoro's current production. A major concern is the need for another pipeline out of this state. American Lignite Energy is working with partners and the North Dakota Pipeline Authority to increase this capacity.

The product produced should be competitive with oil at \$40 per barrel. As such, the committee was informed the project would not need a subsidy but would need a price guarantee. The guarantee is needed because of the fear the Organization of Petroleum Exporting Countries could flood the market and thus reduce the price of oil below \$40 which would shut down the project.

Transmission

The major topics affecting coal on a national basis relate to greenhouse gases and water, but in North Dakota the major issue is transmission. Electric consumption has doubled since 1980, but with few transmission upgrades. In the late 1980s there was 30 percent excess capacity, and now there is approximately 15 percent excess capacity. However, this 15 percent is the level required by reliability standards--the 15 percent is needed for the other 85 percent to be reliably delivered through transmission lines. The export constraint for North Dakota for transporting electricity is approximately 1,950 megawatts, which is about what the state exports. This state generates approximately 4,500 megawatts of energy and the peak demand of this state is approximately 2,000 megawatts. The existing transmission lines are capable of transmitting existing generation, but that may not be the case with new generation.

The major impediments to building transmission are cost recovery and allocation and siting. The Midwest Independent Transmission System Operator (Midwest

ISO) is a Federal Energy Regulatory Commission-approved regional transmission organization that oversees the wholesale electric power grid in 15 states to facilitate nondiscriminatory and open access to the grid. Cost allocation issues within the Midwest ISO footprint is a major issue. The issue is who pays for the transmission line if there is an energy generation plant built in North Dakota and a transmission line is built to Minnesota from that generation plant.

The two main ways to allocate costs are through a license plate or postage stamp system. The license plate rate is a regional rate and a postage rate is nationwide. A major issue is pancaking of rates when electricity moves across different transmission systems that have multiple license plates. If energy moves from the Western Area Power Association to the Midwest ISO area, the tariff is added on and pancaking takes place. The goal is to create a cost allocation system so that those who benefit from the transmission pay for it. The interconnection rules for the Midwest ISO allocate half the cost to the generator and half the cost to the transmission entity. The committee was informed that there may need to be a charge on every electric bill in the United States for large transmission projects.

The committee was informed that public utilities may purchase excess energy on the open market. If higher priced energy is purchased on the spot market, the additional cost is passed through to customers through the fuel cost adjustment clause. The open market is over the entire footprint of the Midwest ISO.

The CapX 2020 plan for Minnesota is a 15-year plan that will relieve reliability problems in Minnesota. There are fairly significant constraints on the system because of growth in Minnesota. The plan was made through the cooperation of 11 utilities to permit four high-voltage transmission lines in Minnesota. The plan is in multiple phases and Phase 3 includes transmission lines out of western North Dakota. The CapX 2020 plan does provide some increased export capabilities from North Dakota to Minnesota. However, this state is basically at the maximum load for transmission to Minnesota.

One difficulty in building a transmission line is siting a transmission line across state borders. In some states, there are groups that do not want any new transmission lines or have the lines limited due to environmental concerns. The Federal Energy Regulatory Commission has backup siting authority for national interest transmission corridors. However, this backstop authority has not been invoked in Minnesota or North Dakota.

Retail Rates

The committee was informed that utility rates have been flat because of construction done in the 1970s and 1980s. Public utilities are entering a new phase of construction. As a result of this construction, certain retail rates will reflect a 25 percent to 30 percent increase in the next 10 years. The average rate is 7.2 cents per kilowatt-hour and that increase will result in a rate of approximately 9.7 cents per kilowatt-hour. By way of comparison, the rate in New York City is approximately 16 cents per kilowatt-hour. The need for increased generation will greatly affect consumers' bills

because generation accounts for 70 percent of the electric utility bill.

Carbon Dioxide and Global Warming

The committee received information on global warming. The committee was informed that the preponderance of scientific opinion is that carbon dioxide and temperature are closely related. Although the climate changes with or without human intervention, the scientific community believes that human actions are so large in scale that the pace and scope of global warming have increased. This scientific evidence has created a general consensus that there will be federal legislation for carbon dioxide reduction. This federal legislation is expected regardless of extensive literature stating global warming is not caused by carbon dioxide and is not significantly increased by human activity. Because of the perceived need to reduce carbon dioxide, the committee monitored federal legislation and the Minnesota externality proceedings.

Committee discussion included concern that the major source of carbon dioxide was from China and any action done in the United States was not significant in comparison to China. China has some of the dirtiest coal production in the world. China is building 1,000 megawatts of coal-powered generation each week. The coal plants built in China in one year offset all wind development.

The committee was informed that what the United States does in relation to carbon dioxide emissions is important. It was argued that because the United States is wealthier and uses five times the energy per capita than the Chinese, the United States needs to act for diplomatic purposes.

The committee was informed there needs to be great care taken in crafting a solution to global warming. If the wrong solution is chosen, it will destroy the economy and not reduce global warming. If the federal government sets carbon dioxide emissions standards before there is technology to meet those standards, this may affect the cost of energy in the way that placing ultralow sulfur standards on diesel fuel before the technology was available resulted in a steep increase in the price of diesel fuel. The ultralow sulfur mandate made the once cheapest part of the barrel the most expensive part because, as the committee was informed, the cost of technology was not considered in the mandate.

Federal Legislation

The committee monitored the Lieberman-Warner bill that mandated cap and trade. A cap and trade program determines the quantity of emissions wanted—a cap. Allowances are then used to meet the emissions reduction goals. To meet annual emissions reduction goals, a covered facility must reduce emissions, remit allowances sufficient to cover admissions, borrow from future allowances, or purchase from a trading exchange. The number of allowances is decreased over time. The cost of the Lieberman-Warner bill was estimated at \$5.6 trillion. The committee was informed that the Lieberman-Warner bill would not be enacted and that new legislation was not expected until 2010. The

committee was informed that the Lieberman-Warner bill would have been very damaging because it would have required carbon capture and storage before it is commercially feasible.

Public utilities can and do itemize the cost of environmental impacts and can place those costs on a consumer's bill in the same manner that the fuel cost adjustment is a separate line on a consumer's bill. The committee was informed of a formula to determine the cost of carbon dioxide legislation to a consumer. The average North Dakotan's cost is based on the average consumer creating one ton of carbon dioxide per household per month. Any legislation can be reviewed to see the additional cost per ton of carbon dioxide and that cost could be added onto a consumer's monthly bill.

The committee reviewed House Bill No. 1221 (2007), which provides for an automatic passthrough of federal environmental mandates that result in increased cost. The major issue with the bill is that a public utility can recover the cost of federal environmental mandates automatically which removes the incentive for utilities to oppose federal environmental mandates. The bill placed the burden on the Public Service Commission to disapprove the increase and the commission does not have the funds to research these increases.

Minnesota Externality Proceeding

In 2007 the Minnesota Legislature directed the Public Utilities Commission to set externality costs by January 1, 2008, and propose these costs to the legislature. The Minnesota externality proceeding is for resource planning for Minnesota utilities. Minnesota utilities must look at certain factors in determining which resources to use and one of those factors is cost. The externality proceeding adds the cost of carbon dioxide to the cost of fuel, which makes coal less desirable. In the past, Minnesota has proposed a cost of \$9 per ton for carbon dioxide on lignite coal, which sells for around \$10 per ton. In Minnesota, an electric utility has to use the cheapest power, including externality costs. The additional externality costs make North Dakota lignite noncompetitive.

It was argued that if Minnesota holds all energy from every state to the same standard as North Dakota, this will increase power production in North Dakota because there are very few places other than North Dakota to sequester carbon dioxide. North Dakota will be able to charge people in another state, like Minnesota, for the carbon dioxide sequestration.

In addition to the externality proceeding, Minnesota has a greenhouse gas reduction requirement of 80 percent by 2050. This reduction assumes there will be sequestration programs. The cost of sequestration will be incorporated into the price of the coal.

During the 2007 legislative session, the North Dakota Legislative Assembly appropriated \$500,000 for litigation of this matter. At issue is a constitutional question of whether Minnesota can make a determination that substantially affects an industry in another state--North Dakota. The North Dakota Attorney General did not appeal the determination of the Minnesota Public Utilities Commission for two reasons--first, to avoid a piecemeal

attack on the Minnesota law, and, second, North Dakota is engaged in dialog with Minnesota to change the law.

The committee was informed that this state could not retaliate against Minnesota by prohibiting North Dakota energy from being shipped to Minnesota because once energy is on the grid it is controlled by the Midwest ISO and not the companies that produce the energy.

Carbon Dioxide Reduction

The current concentration of carbon dioxide in the atmosphere is around 380 parts per million. There were 250 parts per million in the preindustrialized days. Assuming a business-as-usual scenario, children born today will see levels of 1,000 parts per million during their lifetime. The population has quadrupled and energy consumption has increased 16 times in the 20th century. However, the carbon dioxide intensity in the United States has been decreasing for the last 100 years. Intensity recognizes that energy is linked to wealth and carbon dioxide relates to the gross national product. The committee was informed that greenhouse gas emissions may be reduced through renewable energy technologies, advanced high-efficiency energy systems, improved efficiency on existing systems, reduced consumption of energy, and sequestering greenhouse gas emissions.

The committee received information on the Powering the Plains Project. The Powering the Plains Project developed a broad-based roadmap for energy policy. The project created a common analytical framework for a computer model which shows that continuing business as usual and reducing carbon dioxide emissions by 80 percent from 1990 levels by the year 2055 have approximately the same cost. A reduction of 50 percent to 80 percent in carbon dioxide emissions would stabilize the amount of carbon dioxide in the atmosphere. Carbon dioxide lasts for over 100 years in the atmosphere. By comparison, methane lasts for approximately 30 years and nitrous oxide lasts for approximately 300 years.

The committee was informed that there is technology for zero or near zero emissions from a coal-powered power plant. However, this technology is very expensive. The committee was informed that the amount of mercury that is emitted by coal-fired power plants in one year would fit in a Chevrolet Suburban. Mercury is removed because mercury causes problems with mental development and birth defects. The release of mercury by coal-fired plants could produce a mild decrease in the mental faculties of individuals. These individuals would get the mercury into their system through eating fish, not breathing the air. The committee was informed that the increase in fish advisories was due to better analytical techniques used to measure mercury and the benefit of the selenium in fish outweighs the harm of mercury in most fish.

The committee received information on an activated carbon plant in the permitting process near the Falkirk Mine and at an alternative site in North Dakota. The plant is in this state because lignite is the most suitable coal for activated carbon. The plant will provide

activated carbon to clean flue gas of mercury in coal-fired power plants.

The committee was informed that clean coal technologies will need to be developed in the future to meet the electricity needs of consumers through coal-fired generation. Clean coal technologies will reduce carbon dioxide much more than the move to renewable sources of energy. It was suggested that a two cent per kilowatt-hour subsidy be attached to electricity to develop clean coal technologies.

The committee was informed that any technology for clean coal will need economy of scale to be successful. Economy of scale has reduced the kilowatt-hour cost of wind by almost 90 percent and the hope is that the price for clean coal technologies will drop in a similar fashion. It was argued that legislative policy needs to be focused on new technologies and to make these technologies commercial through large-scale demonstrations.

There are reductions in carbon dioxide emissions through present technology by replacing older plants with new plants. For example, the Big Stone II Project will produce 20 percent less carbon dioxide than a similar existing coal plant.

Carbon dioxide is a resource that may be used for enhanced oil and gas production. The Energy and Environmental Research Center's Plains CO₂ Reduction Partnership is working on carbon dioxide sequestration. The partnership includes nine states and four provinces and has over 70 partners representing public agencies, utilities, oil and gas companies, engineering firms, associations and nonprofit organizations, and universities. The partnership is in the first phase and is trying to gauge public understanding, develop databases, identify sequestration opportunities, conduct public outreach campaigns, and develop an action plan. The goal of the Williston Basin test is to validate the sequestration of carbon dioxide in deep carbonate oil reservoirs. The goal of the Zana Project is to validate the sequestration of carbon dioxide-rich acid gas in depleted oil reservoirs. The goal of using carbon dioxide in lignite is to determine the feasibility of simultaneously sequestering carbon dioxide and producing natural gas from a lignite coal seam. Carbon dioxide may be used to displace methane gas in coalfields. This method would be used in areas where there is unmineable coal. The goal of the prairie potholes wetland and grasslands project is to validate and quantify carbon sequestration potential in the prairie potholes wetlands and grasslands. The committee was informed that a carbon dioxide capture and sequestration project will be very expensive.

The Energy and Environmental Research Center's Plains CO₂ Reduction Partnership has done a cursory review of certain geological strata and has done some modeling in this state. The committee was informed that North Dakota is ideally located to lead in using carbon dioxide for enhanced oil recovery because of geological formations to store carbon dioxide and the coincidence of coal and oil resources. Carbon dioxide is inert and nontoxic and is only dangerous in high concentrations. Carbon dioxide has been placed underground for enhanced oil recovery and any danger of carbon dioxide escaping drops over time because the carbon dioxide

becomes part of the underground formation. The largest risk of escape of carbon dioxide is after it is initially placed in the ground. Energy has to be added to carbon dioxide to change its chemical makeup. However, it was argued that there needs to be more research on the effects of carbon dioxide sequestration.

The committee was informed that most ethanol plants do not provide the volume of carbon dioxide needed for enhanced oil recovery. The typical ethanol plant produces 8 million cubic feet of carbon dioxide per day from fermentation and 10 million cubic feet per day from the combustion of fuel. The economics of a pipeline to carry the carbon dioxide to the oilfield requires one million cubic feet of carbon dioxide for each mile of pipeline. The Great Plains Synfuels Plant provides 240 million cubic feet of carbon dioxide per day. The committee was informed that mandated carbon dioxide capture and sequestration may make coal gasification the least costly method.

The Energy and Environmental Research Center's Plains CO₂ Reduction Partnership is looking at storage rights and liability issues. There are some draft state regulations and model statutes. The storage of carbon dioxide is quite similar to the storage of natural gas for which many states have laws. The Industrial Commission has drafted rules, which were withdrawn, relating to carbon dioxide storage.

The committee was informed there has been interest in using carbon dioxide for oil recovery in Bakken wells. Although carbon dioxide has been used in fracture jobs, carbon dioxide has not been used for fracture jobs in this state due to the lack of availability. In addition, carbon dioxide may be used for tertiary recovery. In the initial phase of oil recovery, 12 percent to 15 percent of the oil is removed from the well. In the secondary stage of oil recovery, 12 percent to 15 percent is removed through a water flood. In tertiary recovery, another 13 percent of oil may be removed through carbon dioxide, natural gas, or compressed air. It was noted that there has been more oil left in the ground than has been produced from oil wells.

Some carbon dioxide used for oil recovery is produced with the oil. Reclaiming the carbon dioxide used in enhanced oil recovery is essential to the financials. The carbon dioxide and water have to be removed from the oil regardless of whether the carbon dioxide is used again. Carbon dioxide costs \$1 per thousand cubic feet and it costs \$80,000 per day to buy carbon dioxide to enhance oil recovery.

Wind

One way to reduce carbon dioxide emissions is through alternatives to coal. One alternative is wind. Current installed wind capacity in the United States is 1 percent of the total energy in the United States. With aggressive growth, this number could reach 5 percent by 2020. The demand for wind is growing and North Dakota is ranked first in wind resources. However, the issues with using wind include cost, the need for backup power, and the need for transmission.

To be economically viable, wind needs a federal production tax credit. The production tax credit of

2.5 cents per kilowatt-hour was scheduled to expire in 2008. The production tax credit is periodically renewed for limited amounts of time and wind development tracks the tax credit. Not having long-term production tax credits is a major concern to wind development, especially with the manufacturers of wind tower components. For wind power to be more economically viable there needs to be economy of scale, which requires the steady production of similar wind towers by manufacturers.

The cost for electricity from wind is between six cents and eight cents per kilowatt-hour without a subsidy and not including the cost of backup gas turbines. Electricity from a gas turbine plant costs between 7 cents and 16 cents per kilowatt-hour. The cost for electricity from coal is one and one-half cents per kilowatt-hour, not including the cost of the "wires." Although wind costs more than coal, there is consensus building among consumers for paying more for wind power.

Backup power generation is required for wind because wind cannot provide a consistent baseload. Studies have shown that wind blows less when it is hot and more electricity is needed. The Midwest Reliability Organization allows 10 percent of nameplate capacity as the reliability factor for wind turbines. Therefore, gas turbine generation sources are needed as backup for 90 percent of nameplate capacity. Gas turbines are used as backup to wind power because they are quick to ramp up when the wind changes and are easier and less expensive to build than other power plants. The problems with gas turbines are that the price of natural gas fluctuates, natural gas for electricity generation is the highest cost generation, and natural gas for electricity generation competes with the use of natural gas for the heating of homes and the manufacture of fertilizers.

Ninety percent of all new electric generation in the last 15 years burns natural gas. A usage study shows coal-based electricity stagnant until 2030 and a steep increase in natural gas usage between now and 2030. Because of this increase in natural gas usage, one study shows by 2020 a 44 percent increase in electricity costs.

For wind power to be used, it must enter the transmission grid. The committee was informed that new transmission for wind cannot be justified on a reliability basis. A Minnesota study concluded that 20 percent of energy from wind for Minnesota could reliably enter the present grid. Beyond 20 percent needs new innovation as to storage techniques to address the variability of wind--compressed air and hydrogen. In order to interconnect with the electric transmission grid, each generating project must enter through the interconnection queue with the Midwest ISO. The queue uses the first-in, first-out process. This process has become unworkable because of the number of wind generation projects in the queue. There are 83,000 megawatts of power requesting service in the Midwest ISO area, and there are 64,000 megawatts of renewable energy in North Dakota and South Dakota. The Midwest ISO is working to change the process to prioritize certain projects.

Nuclear

There are 103 nuclear reactors in 64 locations around the United States. This country receives 20 percent of electrical generation from nuclear facilities. Nuclear energy is being reviewed closely to address carbon issues; however, there are large water requirements for nuclear energy and a major issue is spent fuel. The United States is not replacing the nuclear infrastructure and the nuclear infrastructure is relatively old. However, nuclear energy is coming back in favor because of the low cost.

Biomass

The committee received information on the use of biomass for generating electricity. A truss plant in Grand Forks generates electricity out of sawdust and scrap lumber. The energy is generated from a small power plant that is a microgasification plant that gasifies the wood so that it can fire a generator. The committee was informed of opportunities for biomass with landfills, agriculture processing residue, state-owned boilers, the conservation reserve program, and with energy crops.

The United States has little cofiring of biomass with coal by large utilities. The utilities need supply guarantees, low financial risk, and bottom-line profits that biomass does not provide. However, the collocation of ethanol plants near power plants could provide lower production costs for both the ethanol plant and the power plant. Ethanol plant residues are primarily lignin and this could provide 10 percent to 15 percent of the coal in the 500-megawatt polarized coal-fired coal boiler.

Conservation and Efficiency by Consumers

It is assumed that there will be a cost increase for electricity regardless of any action with carbon dioxide. One way of keeping the cost of electricity under control is through efficiency upgrades and conservation by consumers. Efficiency is doing the same with less while conservation is doing without. There is a natural efficiency caused when the cost of electricity goes up because people use less. Generally, each person uses two kilowatts of energy per year.

The committee was informed that Minnesota requires a certain percentage of revenues collected by public utilities to be spent on energy efficiency. The committee was informed that efficiency programs by public utilities should include cost recovery and return on investment comparable to supply-side investment. Any program expenditures need to be recovered as well as the profit for what did not get sold. The committee was informed that the Public Service Commission could allow the same types of programs as Minnesota on a case-by-case basis.

Oil and Gas

The committee received information on the challenges facing North Dakota's oil and gas industry. One major challenge is the need for a trained workforce. There are numerous well-paying jobs in the oilfields. To address workforce problems, the petroleum industry has targeted advertising and has partnered with Job Service North Dakota. The rig training program at Williston State

College can accommodate nine people for each eight-day session. Williston State College also provides a two-week safety training course and a two-week hazardous materials training course.

The committee received information on drilling rigs and the tax incentives for the Bakken Formation enacted during the 2007 legislative session. The committee was informed that, as a result of these incentives, there has been a great increase in rig activity in the Bakken Formation. Each rig provides approximately 120 jobs. Due to the increased activity in the Bakken Formation, a workforce of at least 3,000 people per year is expected to be needed for the next four years. All this activity results in about \$400 million in direct economic impact, \$600 million in indirect economic impact, and \$110 million in taxes collected by this state. The committee was informed that 50 percent to 60 percent of the wells make money and there are no dry wells in the Bakken Formation. The major issue for wells in the Bakken Formation is the mechanics of fracturing the rock to provide enough oil for the well to be profitable.

The Bakken Formation is 50 feet to 90 feet thick, and drilling is done in the middle of the formation which is 30 feet to 70 feet thick. The rock is not porous or permeable and fractures have to be found or made in the rock to produce oil. Typically, drilling in the Bakken is two miles down and two miles horizontal. Fracturing is done by injecting sand and water under high pressure. It takes weeks to set up a fracture job that takes 5 hours to 6 hours.

The committee was informed that the oil and gas research fund contributed \$700,000 to a \$14 million project with the big oil players in the state. The project is for testing fracturing techniques and using carbon dioxide to remove more oil. The information from the project is proprietary for one year.

The committee received information on natural gas processing. The committee was informed that the sales tax exemption for natural gas facilities was meant to reduce the flaring of natural gas and has had an immediate effect. There are plans to have gas plants by Parshall and Ray and there will be expansions of existing plants.

The Tioga Gas Plant was built in the early 1950s and gathers gas from 500 wells. The fractional train at the plant pulls out propane, butane, natural gas, sulfur, and crude oil. The plant averages 97 percent capacity. The gas is moved to the plant by pipeline and transported from the plant by rail. The committee was informed it will cost approximately \$110 million to upgrade and modernize the plant. A new plant would cost \$500 million to \$600 million. A pipeline costs \$100,000 to \$200,000 per mile and there needs to be a field of wells to justify the cost. The committee was informed Bakken Formation wells have natural gas that is ideal for natural gas processing but the Bakken wells tend to be isolated from one another.

Refining

The committee received testimony on refining. In 1985 there were 223 refineries in the United States and in 2003 there were 144. The reason for the reduction in

refineries is because the return on capital investment for refineries is around 5 percent. The Tesoro Refinery in Mandan has a 60,000-barrel-per-day nameplate. The 10 year plan for the Mandan plant is a 15 percent expansion. The committee was informed that the Tesoro Refinery could supply North Dakota with all the diesel and gas required by the state if all sales were in North Dakota. However, 60 percent of gas and 25 percent of diesel from the refinery goes to Minnesota. Most refineries, including the refineries in Wyoming and Minnesota, refine sour crude. The Tesoro Refinery is important because it can refine North Dakota sweet crude.

The Tesoro Refinery is for sweet crude oil and does not have a coker. Sulfur is what makes crude oil sour. A coker allows a refinery to refine sour crude. However, a refinery with a coker may refine the large quantity of sour crude imported from Canada. Because there is a \$10 to \$15 discount per barrel for sour crude, a refinery would prefer to refine sour crude rather than sweet crude.

The crude oil from Bowman County is sour crude and does not work in large quantities for refining at Mandan. The discounts for Bowman County oil are because it competes with Canadian oil, both of which are sour.

The committee discussed the construction of a new refinery. The committee was informed that a new refinery would not be able to compete with expansions in existing refineries because of cost. A new refinery would require an environmental impact statement, and consequently it would take approximately 10 years to complete a new refinery. Expanding a refinery takes approximately three years. If a refinery is expanding and there is no major increase in emissions, only state permits are required. The committee was informed that the regulatory environment in North Dakota is good because to get permits to expand it takes approximately three months, whereas in other states it may take up to three years.

The committee received information on the limits to expansion. One limitation is the pipeline capacity of refined product from the refinery. Without extra pipeline capacity, the committee was informed that there will not be expansion of refining in this state. A refinery can use the same pipeline for all the products it produces. A shift from gasoline to diesel in the pipeline takes about one week.

The committee was informed that it costs one cent per hundred miles of pipeline to move a gallon of finished product. By comparison, it costs three cents per hundred miles of highway to move a gallon of product by truck and the cost of railroads is somewhere in between the costs for pipelines and trucks. Expansion of the Tesoro Refinery by 15 percent will require a pipeline for refined products to carry this added capacity. Although pipeline capacity may be increased with pumps and drag reducing agents, there will need to be a loop in the pipeline to Jamestown.

Oil Pipelines

The Canadian tar sands oil formation affects oil transportation in this state because 2.5 million barrels

per day from the tar sands are transported by pipeline. A pipeline that moves Canadian crude oil to the Gulf of Mexico refineries would provide crude oil to those refineries and would displace their use of Venezuelan crude oil. Once the Keystone pipeline is built, it will move Canadian crude oil and will free up capacity for North Dakota oil. Construction on the Keystone pipeline will begin in North Dakota in 2008 and pumping stations will be completed in 2009. The pipeline is expected to be completed by early 2011.

Petroleum Marketers

The committee was informed that the industry of petroleum marketing looks bleak. The North Dakota Petroleum Marketers Association expects 20 percent of petroleum marketers to fail in the next year. Petroleum marketers are not only important to the oil industry, petroleum marketers are important to the ethanol industry because of the distribution of ethanol. In addition, petroleum marketers are important to customers because marketers allow customers to purchase petroleum products.

Alternative Fuels

The committee received information on ethanol, biodiesel, and hydrogen. The impact of biofuels on carbon dioxide is unknown because increased demand for commodities for biofuels has resulted in conversion of forest and prairie to farmland. Regardless of the effect on carbon dioxide, however, any bioenergy product offers the benefit of energy security.

The committee was informed that using current agriculture methods, 15 billion gallons of corn ethanol per year may be sustained. For over 15 billion gallons per year, there needs to be a genetic breakthrough or there needs to be more cellulosic ethanol produced. The United States currently produces 5.6 billion gallons of corn-based ethanol per year. Corn-based ethanol is subsidized at \$.51 per gallon. In addition, there is a subsidy for capital investment in ethanol plants. The second generation of ethanol production will be wheat and barley, and the third generation will be cellulosic switchgrass. At present there is enough biomass for 600 billion gallons of ethanol per year if the residue from crops is used. A subsidy of approximately \$2.50 per gallon would be required for cellulosic ethanol to be competitive at present cost. In addition, the materials used for cellulosic ethanol have problems because of bale storage, competition with feedstock for cattle, and competition for land to plant mixed grasses instead of food for human consumption. Six cellulosic ethanol plants have been funded by the federal government and should be running in three years to four years. These plants will be located in California, Colorado, Florida, Georgia, Idaho, and Kansas.

The committee was informed that ethanol has fewer British thermal units than gasoline and most of the loss in gas mileage comes when the vehicle is working hard. The committee was informed the loss in mileage is around 20 percent. E85 is a high performance fuel with octane over 100, and if a vehicle is designed to run on E85, the vehicle has the same performance and more

horse power than gasoline. The problem with flex-fuel vehicles in the United States is that the vehicles are designed to burn gasoline primarily and ethanol secondarily.

One important factor to the profitability of a corn ethanol plant is the sale of the remaining feedstock product after the making of the ethanol. For every \$10 per ton saved on shipping, \$3.2 million is made by an ethanol plant. If wet byproduct can be sold, the plant does not have to dry the byproduct with natural gas. One million five hundred thousand head of cattle could be fed in this state with the leftover grains from corn ethanol production. A livestock feedlot near an ethanol plant could be mutually beneficial to the plant and the feedlot. The committee was informed that ethanol producers make 10 cents to 15 cents per gallon profit and this profit is shrinking.

In addition to creating more demand for the wet feed byproduct, increasing demand for ethanol would increase profitability. There are 24,000 flex-fuel vehicles in North Dakota and it does not cost much more to make a flex-fuel vehicle than a vehicle that uses only gasoline. Chrysler and General Motors have stated that 50 percent of the vehicles made by these companies will be flex-fuel vehicles by 2012.

An ethanol plant takes between three gallons and three and one-half gallons of water per gallon of corn-based ethanol and 70 percent of the water leaves the plant through the cooling tower. The remainder stays in the byproduct. The typical plant discharges little or no water in liquid form. Switchgrass would require between four gallons and five gallons of water for a gallon of cellulosic ethanol.

Biodiesel

The committee received information on the ADM biodiesel plant. The committee was informed that the biodiesel plant is in North Dakota because of the sales tax exemption, the biodiesel PACE program, and because 95 percent of canola produced is from North Dakota. Biodiesel may be made out of canola, animal fat, and yellow fat. Although the ADM plant can crush canola, the plant may also make biodiesel from vegetable oil. Not all biodiesel plants have crush plants and some biodiesel plants purchase vegetable oil on the open market. Some plants lease oil to food processors before the plant turns the oil into biodiesel.

The committee was informed that the ADM plant does not need a countercyclical program, but the program may be needed for plants that buy oil on the market. The purpose of a countercyclical program would be to keep plants from shutting down, not to guarantee a profit. The program would pay when the cost of vegetable oil is high. Committee members discussed whether the state should have a safety net program when there is a profitable market for the oil as food. As such, a countercyclical program would provide an incentive to plants not to crush canola.

The committee was informed a countercyclical program may be needed to grow the industry because there are very tight margins and a large investment required for a biodiesel plant. With a countercyclical

program there could be more biodiesel plants without crushing facilities.

Hydrogen

The committee toured the wind-to-hydrogen facility south of Minot. The hydrogen is meant for use as a fuel in automobiles. The hydrogen in automobiles is contained in carbon fiber tanks. These tanks are very strong and dissipate the hydrogen straight up when punctured. The danger to the occupants of the automobiles is the same or less than with gasoline tanks. The vehicles that use hydrogen also use gasoline when additional power is needed. Oxygen is a byproduct of making hydrogen and may be sold if there is enough oxygen to be marketable.

Bill Drafts Considered by the Committee Extension of Taxable Value of 1.5 Percent Assessed Value for Wind Generators Until 2015

The committee considered a bill draft to extend the reduction in taxable value from 3 percent to 1.5 percent of assessed value for a centrally assessed wind turbine electric generation unit with a nameplate generation capacity of 100 kilowatts or more from January 1, 2011, to January 1, 2015. This date relates to the date of construction. The committee was informed that a 100-kilowatt wind tower is a relatively small turbine. All commercially and centrally assessed real property of investor-owned utilities is 10 percent.

Under the bill draft there were three tax rates. Some older wind farms are at the original rate of 3 percent which was because wind towers produce energy approximately one-third of the time or at one-third of nameplate capacity. Some wind farms under a purchase power agreement are at 1.5 percent until the power purchase agreement ends, and the newest wind farms are at 1.5 percent. The committee was informed that the original legislation was for a tax rate of 3 percent so there would be development of wind. Two companies developed wind farms with that incentive. Due to inflation, the rate was lowered to 1.5 percent. The committee was informed that this rate competes with other states as well. Lowering the 3 percent wind farms to 1.5 percent would not provide an incentive with respect to those wind farms already developed and would reduce the tax base in the counties with those wind farms and raise the taxes on other property owners in the county. Lowering the taxes before wind development occurs does not affect a county because the county is not losing anything. The power purchase agreement language was removed because some owners of turbines were starting to use the power, so there was not any power purchase agreement. Power purchase agreements are generally from 20 years to 25 years in length.

Permanent Sales and Use Tax Exemption for Wind-Powered Facility

The committee considered a bill draft to make permanent the sales and use tax exemption for materials used in the construction or expansion of a wind-powered facility. The exemption applied to the equipment on the

tower. At present, areas of energy other than wind have a permanent exemption.

Income Tax Credit for Renewable Energy Extended Until 2015

The committee considered a bill draft to extend the 15 percent income tax credit for the installation of geothermal, solar, wind, or biomass energy devices from an end date of January 1, 2011, to an end date of January 1, 2015, allow a credit carryover of 10 years, and limit the sale of unused credits to these credits earned before January 1, 2011. The credit is a 5 percent credit for three years and is 15 percent in total. The committee was informed that the 2015 sunset was chosen as the time by which these industries need to be weaned from incentives. The committee was informed that the sunset is seven years away and it takes five years to move a project through the Midwest ISO queue.

Under the bill draft, a generator of a credit can sell the credit in a power purchase agreement or to any taxpayer that constructs or expands an electricity transmission line. This is capped at \$3 million per biennium. As such, the credit was meant to encourage transmission. The committee was informed that this is not the best way to encourage transmission. The only other tax credit that is salable is the research and development tax credit.

The committee was informed that the fiscal impact of this bill draft was beyond the 2007-09 biennium and the fiscal impact for the 2009-11 biennium is zero. Further fiscal information could not be provided because at least five corporations had not taken advantage of this tax credit in 2006 and at least five corporations are needed for the Tax Department to release information.

The committee amended the bill draft to change the date after which tax credits may be carried over for 10 years. The date was changed from December 31, 2008, to September 30, 2008. The date was changed so that Otter Tail Power Company would have the longer carryover for the Ashtabula wind project in Barnes County which will be completed before December 31, 2008. The company did not want to stall the project until after that date because the company wanted to be assured of receiving federal production tax credits that were scheduled to expire before December 31, 2008. The committee was informed that any decrease in the price of wind is passed on to the customers.

Oil Extraction Tax Exemption for Tertiary Recovery Extended to Unlimited Duration

The committee considered, but does not recommend, a bill draft that would have extended the oil extraction tax exemption for tertiary recovery projects from 10 years from the date of incremental production to an unlimited duration. There are three means of tertiary recovery--by natural gas, by high air pressure, and by carbon dioxide. The first two are being used and developed without an incentive. The committee was informed that the bill draft was intended to benefit the lignite industry by incentivizing the capture of carbon dioxide so the carbon dioxide has a use--tertiary oil recovery. However, the bill

draft was not limited to tertiary recovery by carbon dioxide.

The committee considered a bill draft to extend the oil extraction tax exemption for tertiary recovery projects using carbon dioxide from 10 years from the date of incremental production to an unlimited duration. The committee was informed that carbon dioxide is not being used for enhanced oil recovery in this state but is being used in Canada. There is not any additional carbon dioxide in this state because all available carbon dioxide is being shipped to Canada. By removing the expiration date on the tax exemption, the bill draft would extend the lives of carbon dioxide projects and reassure carbon dioxide suppliers when determining whether to make capital investments. There are opportunities for carbon dioxide capture at the Antelope Valley Station and certain ethanol plants. The committee was informed that there will be legislation introduced next legislative session to provide an incentive to turn a tertiary oil recovery project into a carbon sequestration project.

Sales and Use Tax and Severance Tax Exemptions for Beneficiated Coal

The committee considered a bill draft to include a power plant that uses beneficiated coal--coal with improved physical, environmental, or combustion qualities--within the sales and use tax exemption and include a severance tax exemption on coal purchased for coal beneficiation which is used in an agricultural commodity processing facility. The severance tax exemption is for coal and beneficiated coal used in agricultural commodity processing facilities. The agricultural commodity processing facilities are buildings, structures, fixtures, and improvements used or operated primarily for the procession or production of marketable products from agricultural commodities. Current law applies the exemption to coal used in agricultural procession or sugar beet plants. This makes the language in the sales tax statute and coal severance tax statute similar.

Extension of Coal Conversion Tax Exemption for Beneficiated Coal for Repowering

The committee considered a bill draft to extend the coal conversion tax exemption for repowering to include an electrical generating unit that uses beneficiated coal. The bill draft limited the repowering exemption to units that complete repowering. Current law provides a five-year exemption from the state portion of the coal conversion tax for the plant and an optional exemption from the county's portion of the tax for the plant, even if only one of the plant's units has been repowered. The bill draft limited the exemption to the repowered unit.

Energy Conservation and Efficiency Standards for Buildings

The committee considered, but does not recommend, a bill draft that would have required the Division of Community Services to adopt rules for construction standards for public buildings that are consistent with or exceed the silver building rating of the Leadership in Energy and Environmental Design (LEED) rating system

for new commercial construction and major renovation projects. The bill draft would have applied to new buildings in excess of \$5 million and for the extension of an existing structure in excess of \$2 million. The bill draft would have provided for an exemption from the construction standards if the cost of compliance significantly outweighed the benefits. The bill draft was based on laws adopted in Washington and Connecticut.

The committee considered, but does not recommend, a bill draft that would have required the Division of Community Services to adopt rules for construction standards for public buildings that are consistent with or exceed the silver building rating of the LEED rating system for new commercial construction and major renovation projects. The bill draft would have applied to new buildings in excess of \$2,000,000 and for the extension of an existing structure in excess of \$500,000. The bill draft would have provided for an exemption from the construction standards if the cost of compliance significantly outweighed the benefits.

The committee was informed that the LEED standards of certified, silver, gold, and platinum address issues beyond energy efficiency--enhanced sustainability and the use of renewable resources. A 2004 United States General Services Administration study found that the hard costs of the silver LEED standard were up to \$9.57 per square foot. The soft costs were \$.41 to \$.55 per square foot. The committee was informed that sustainability does not necessarily reduce costs over time.

The committee was informed that the certification costs can be as high as \$80,000. The committee was informed that some political subdivisions build to high standards, but do not certify in order to save money.

The committee considered, but does not recommend, a bill draft that would have required the 2006 International Energy Conservation Code standards for energy conservation in any new building construction. Current law refers to an energy code based on the 1993 model code, which is discretionary for local jurisdictions. The committee was informed that the 2006 version is the current nationally accepted version and the adoption of this version would bring this state into compliance with federal law. However, federal law does not have a penalty for noncompliance. The committee was informed that the upfront costs are higher with efficiency standards, but over time efficiency standards are the most cost-effective. The energy standards in the bill draft would have been shown to repay the upfront costs in 2.4 years for a commercial building and 3.9 years for a residential building.

The committee received testimony on concerns with imposing energy standards. The committee was informed that most builders would want guidance with the new standard. The energy standards are written for engineers and architects and may be difficult to understand by residential builders. The Office of Renewable Energy and Energy Efficiency would provide training on the energy code. Although the bill might affect affordable housing, the return on investment occurs in a relatively short time considering the life of homes, businesses, and especially public buildings.

Another concern was enforcement in rural areas. It was suggested that enforcement could be achieved through a joint powers agreement with a larger city or through a contract with an engineer.

The committee was informed that there would not be any additional costs for residential buildings because these buildings are already being built to or exceeding the energy standards. The additional cost may occur with some smaller commercial buildings. The main areas of deficiency are windows, walls, and controls. The energy standards require advanced controls, instead of a simple thermostat, to control heating and cooling. State buildings are built to the Energy Star rating, which exceeds the energy standards in the bill draft.

The committee considered, but does not recommend, a bill draft that would have required local jurisdictions, including jurisdictions operating under a home rule charter, to enforce the 2006 International Energy Conservation Code standards for energy conservation in any new commercial building and would have allowed a local jurisdiction to enforce the standards for residential building.

Committee discussion noted that the idea for efficiency standards started in the committee with applying higher standards to public buildings due to the long life of the buildings and potential savings over the long term. In addition, the mandate on local jurisdictions would send the message that the state does not trust local governments to make reasonable decisions.

Sales and Use Tax Exemption for Construction of Natural Gas System for Gas Collected From Oil Wells

The committee considered a bill draft to include within the sales and use tax exemption for the construction or expansion of a system used to compress, process, gather, or refine gas from an oil well, rather than only a gas well, and provide for a certificate of qualification for the exemption from the Tax Commissioner. The bill draft addressed House Bill No. 1462 (2007), which incentivized gas gathering. The 2007 legislation did not by definition include the oil wells that produce under 50 percent gas, which some committee members thought were included. The bill draft included gas gathered from all oil wells.

Construction and Gathering Pipelines Excluded From Public Service Commission Siting Jurisdiction

The committee considered a bill draft to change the definition of construction to exclude from the siting jurisdiction of the Public Service Commission construction conducted wholly within land for which a utility has previously obtained a certificate of site compatibility or a route permit from the commission and to exclude actions conducted wholly within land on which is located an energy conversion facility or transmission facility that was constructed before April 9, 1975. In addition, the bill draft changed the definition of certain pipelines to exclude from the siting jurisdiction of the Public Service Commission pipelines with an inside diameter of four inches or less or a length of one mile or

less and gathering pipelines as defined by federal law. The committee was informed that the small and short pipelines are not "transmission" facilities.

Although not a legislative proposal from the Energy Policy Commission, the commission identified this area as an area for future legislative change. The bill draft will save the industry resources in siting a pipeline.

Shortened Time for Designation of a Transmission Facility Route

The committee considered a bill draft to reduce the time allowed for the Public Service Commission to designate the route for a transmission facility from six months to three months after receiving the application.

The Public Service Commission testified against the bill draft. The committee was informed that the commission acts in a timely manner at present. There are statutory requirements for public hearings in the siting process that take time beyond the decisionmaking process.

Committee discussion noted that three months is a long enough time to make a decision and the longer the process takes, the higher the cost of the project.

Recommendations

The committee recommends Senate Bill No. 2031 to extend the reduction in taxable value from 3 percent to 1.5 percent of assessed value for a centrally assessed wind turbine electric generation unit with a nameplate generation capacity of 100 kilowatts or more from January 1, 2011, to January 1, 2015.

The committee recommends Senate Bill No. 2032 to make permanent the sales and use tax exemption for materials used in the construction or expansion of a wind-powered facility.

The committee recommends Senate Bill No. 2033 to extend the 15 percent income tax credit for the installation of geothermal, solar, wind, or biomass energy devices from an end date of January 1, 2011, to an end date of January 1, 2015, allow a credit carryover of 10 years, and limit the sale of unused credits to the credits earned before January 1, 2011.

The committee recommends Senate Bill No. 2034 to extend the oil extraction tax exemption for tertiary recovery projects using carbon dioxide from 10 years from the date of incremental production to an unlimited duration.

The committee recommends Senate Bill No. 2035 to include a power plant that uses beneficiated coal within the sales and use tax exemption and includes a severance tax exemption on coal purchased for coal beneficiation which is used in an agricultural commodity processing facility. The severance tax exemption is for coal and beneficiated coal used in agricultural commodity processing facilities.

The committee recommends Senate Bill No. 2036 to extend the coal conversion tax exemption for repowering to include an electrical generating unit that uses beneficiated coal. The bill limits the repowering extension to units that complete repowering. The

current exemption is applied to electrical generating plants.

The committee recommends Senate Bill No. 2037 to include within the sales and use tax exemption the construction or expansion of a system used to compress, process, gather, or refine gas from an oil well, rather than only a gas well, and provides for a certificate of qualification for the exemption from the Tax Commissioner.

The committee recommends House Bill No. 1032 to exclude from the siting jurisdiction of the Public Service Commission construction conducted wholly within land for which a utility previously has obtained a certificate of site compatibility or a route permit from the commission and to exclude actions conducted wholly within land on which is located an energy conversion facility or transmission facility that was constructed before April 9, 1975. In addition, the bill excludes from the siting jurisdiction of the Public Service Commission pipelines with an inside diameter of four inches or less or a length of one mile or less or gathering pipelines as defined by federal law.

The committee recommends House Bill No. 1033 to reduce the time allowed for the Public Service Commission to designate the route for a transmission facility from six months to three months after receiving the application.

SITING AND DECOMMISSIONING OF COMMERCIAL WIND FARMS STUDY

As introduced, House Bill No. 1456 (2007) required the Public Service Commission to conduct the study of the siting and decommissioning of commercial wind farms. The legislative history reveals that two of the reasons for changing the responsibility for the study from the Public Service Commission to the Legislative Council were budgetary concerns of the Public Service Commission and the Legislative Assembly being the policymaking branch of government. The main issue discussed in the legislative history was at what level siting should be within the jurisdiction of the Public Service Commission; so much so that the House Natural Resources Committee considered an amendment reducing the threshold for Public Service Commission jurisdiction over siting from 100 megawatts to 50 megawatts.

The impetus for the bill came from a wind farm in Spring Valley Township in Dickey County. Because the facility was below the threshold for Public Service Commission jurisdiction and the county did not have or make zoning regulations, the township was forced to make zoning regulations for the siting of a wind farm.

Other Law and Legislation

A major piece of legislation affecting siting and decommissioning approved during the 2007 Legislative Assembly was House Bill No. 1317. House Bill No. 1317 allows the Public Service Commission to adopt rules governing the decommissioning of a commercial wind energy conversion facility. The bill provides that the rules may address:

- The anticipated life of the project.

- The established decommissioning cost in current dollars.
- The method and schedule for updating the cost of decommissioning and restoration.
- The method of ensuring that funds will be available for decommissioning and restoration.
- The anticipated manner in which projects will be decommissioned and the site restored.

In addition, the bill reduces the taxable valuation of a centrally assessed wind turbine electric generation unit with a nameplate capacity of 100 kilowatts or more from 3 percent to 1.5 percent of assessed value if construction of the unit is completed after June 30, 2007, and before January 1, 2011. The dates were changed in House Bill No. 1018 (2007) to allow the reduced taxation for the construction of a unit completed after June 30, 2006, and before January 1, 2011.

Current law relating to wind energy conversion siting is contained in NDCC Chapter 49-22, which relates to the siting of any energy conversion and transmission facility that meets the criteria of the chapter. Under Section 49-22-03, to be an energy conversion facility, the plant must be designed for or capable of generating 100,000 kilowatts or more of electricity. House Bill No. 1283 (2005) increased the threshold of an energy conversion facility from a facility that generates 50,000 kilowatts or more of electricity to a facility that generates 100,000 kilowatts of electricity. Siting that is not within the jurisdiction of the Public Service Commission falls within the zoning jurisdiction of counties and townships. Generally, the county has zoning jurisdiction unless there is an organized township with zoning regulations.

Once the jurisdiction of the Public Service Commission is engaged under NDCC Chapter 49-22, a utility needs a certificate of site compatibility from the Public Service Commission under Section 49-22-07. The procedure to receive this certificate begins with a letter of intent from the utility to the commission followed by an application for a certificate under Section 49-22-08. The application requires information on the facility, including the environmental impact of the facility, the need for the facility, a comprehensive analysis supporting why the location is best-suited for this facility, mitigative measures for foreseen adverse impacts, and other information. There are a number of statutory factors under Section 49-22-09 which the commission must consider when evaluating and designating sites.

After notice and a public hearing, the commission may designate a site for the proposed facility. Under NDCC Section 49-22-13, the commission must hold public hearings in the county in which any site is proposed to be located. Under Section 49-22-16, the issuance of a certification of site compatibility is the sole site approval required to be obtained by the utility. However, a certificate of site compatibility does not supersede or preempt any local land use, zoning, or building rules and a site may not be designated which violates these rules. In addition, utilities subject to Chapter 49-22 must obtain state permits required to construct and operate energy conversion facilities and must follow the rules of any state agency.

Other States

Some states have facility siting guidelines. According to the American Wind Energy Association, the following states have the listed thresholds for state jurisdiction:

- Colorado - 2 megawatts.
- Connecticut - 1 megawatt.
- Iowa - 25 megawatts.
- Maine - Over 20 acres.
- Maryland - 70 megawatts.
- Minnesota - 5 megawatts.
- Nevada - 150 kilowatts.
- New Hampshire - 30 megawatts.
- New York - 80 megawatts.
- Ohio - 50 megawatts.
- Oregon - 105 megawatts.
- South Dakota - 100 megawatts.
- Vermont - All.
- Washington - 350 megawatts.
- Wisconsin - 100 megawatts.

Testimony and Discussion

The committee received updates throughout the interim from the Public Service Commission on the activities of the commission. In particular, the committee monitored the siting of new wind farms and the decommissioning rules adopted by the commission.

The committee was informed that the Public Service Commission adopted decommissioning rules. The rules are retroactive and exempt wind farms that are under 500 kilowatts. These are typically the type of towers that are privately owned. Basically, the commission has jurisdiction over the decommissioning of all commercial wind facilities. The rules provide for a financial mechanism that satisfies the commission that the decommissioning process will be completed. The rules require a decommissioning plan that will include information so the site will be restored. The rules do not require the land to be restored to the same topography but do contain enough latitude so the site can be improved on decommissioning. The rules require cables to be buried at least 24 inches under the soil. Committee discussion expressed concern over this depth because, although the wires are not live, some farming processes go deeper than 24 inches. In addition, a wire that is 24 inches under the ground could be within 24 inches of the surface years later because of erosion. The committee was informed, however, that it is the regular practice to bury wires 24 inches in this state.

The committee was informed that there are commonalities among states, but states differ in the scope of guidelines and in primary jurisdiction for siting decisions. In some states, siting authority rests with a local branch of government, while in other states, primary siting authority rests at the state level. When primary siting authority rests at the state level, a variety of agencies may be involved, including state environmental protection agencies, departments of transportation, economic development entities, and public utilities regulation. Siting approvals for wind

facilities vary significantly by state and these processes fall into five main categories:

1. Mandatory, state-level wind siting statutes.
2. Voluntary guidelines for siting within states.
3. Model ordinances for local governments to apply.
4. Local government siting rules.
5. Voluntary checklists and resources for local governments to recommend.

The committee received information on this state's siting rules. If a wind farm has fewer than 100 megawatts, siting is done by local government. There is no secondary authority with the Public Service Commission. If there is siting authority with the commission, there is decommissioning authority as part of the siting authority.

The committee was informed that problems exist whenever a new industry comes into the state and it was argued that the state needs to set standards for wind tower siting, especially as to setbacks. The industry standard is five rotor blade diameters from the property line as the prevailing winds blow and three rotor blade diameters otherwise. Without this standard, first-come, first-served is the rule and it was argued that this is not fair when two adjacent wind farms begin a project at about the same time.

The committee received testimony in favor of the state regulation that includes the industry standard for setbacks--the Minnesota law. The reason for setbacks is because the wind wake extends downwind up to 8 times to 11 times the turbine rotor diameter. It was argued that wind should be treated like oil and gas wells--as a shared resource--because the property owner affected by a wind wake has a property interest in the wind. The committee received information on wind resource-based compensation for cooperative development. Under this plan, the landowner hosting the turbine would receive 25 percent of the turbine payment and the remainder would be allocated in proportion to the percentage of wind wake affecting each landowner's property.

The committee was informed that state setbacks would prevent competition among counties for wind projects. In addition, the uniformity would provide for the orderly and consistent development for a new industry. In addition, it would be easier for companies building wind towers. Committee discussion noted that lowering the threshold for Public Service Commission jurisdiction would make this state not competitive with South Dakota. In addition, a lowered threshold would take power away from local government. The committee was informed, however, that the regulation of wind farms by local government can be a burden and the focus should be on protecting landowners.

The committee received testimony against strict setback requirements. A strict setback requirement could prevent a viable wind farm due to an area in which a wind farm is not viable. Because of the prairie geology in this state, there could be a high point ideal for a wind tower within the setback of a low point that would not ever have a wind tower built on it.

The committee reviewed the effect of wind farms on wildlife. In particular, the committee received testimony on the effect of wind farms on birds. The committee was informed that there has been a high level of decline of birds in native grasslands. A direct impact is the collision of birds with rotor blades. An indirect impact is habitat fragmentation. Roads for wind farms placed on native prairies increase predation and brood parasitism. Another indirect impact is that hunting is not allowed around wind towers and people do not engage in birding.

The committee was informed that the Northern Plains Wind Energy Forum is promoting wind power and safeguarding wildlife through voluntary guidelines. The guidelines have been drafted with involvement of the major wind power developers in this state. The committee was informed that the concern is not with these companies but with companies that may be more motivated to develop sensitive areas without a concern for wildlife. It was argued that there may need to be incentives for companies to follow the guidelines. In addition, there may need to be an incentive to not develop wind power in areas with good wind and great habitat.

NORTH DAKOTA TRANSMISSION AUTHORITY REPORT

The North Dakota Transmission Authority provided a written report entitled *North Dakota Transmission Authority: Annual Report - July 1, 2007 to June 30, 2008*. The North Dakota Transmission Authority has been working with the Energy Policy Commission, the North Dakota Public Service Commission, the Minnesota Public Utilities Commission, the Midwest ISO, the Upper Great Plains Transmission Coalition, the congressional delegation, and other interested parties to develop and promote transmission in this state. A major issue for the North Dakota Transmission Authority is to have federal tax exemption for bonds issued by the authority so that the bonds are competitive with other bonds. Another major issue addressed by the North Dakota Transmission Authority has been the treatment by the Minnesota Public Utilities Commission of North Dakota coal energy. The authority has been monitoring and providing comment to the commission and legislative leaders in Minnesota.

NORTH DAKOTA PIPELINE AUTHORITY REPORT

The committee received a biennial report from the North Dakota Pipeline Authority on its activities. The committee received updates as to the authority's activities throughout the interim and received the *North Dakota Pipeline Authority Annual Report April 11, 2007-June 30, 2008*. The committee was informed that North Dakota Port Services near Minot has begun to accept crude shipments at an initial capacity of 30,000 barrels a day for shipment by railcar. There is a capacity of 25,000 barrels a day for oil to move by pipeline into Minot but not out of Minot. The capacity may be used by Port Services to reduce truck traffic. The rail transportation from Minot should meet the production of

crude oil until the Enbridge Phase VI expansion is completed in 2010. Even after the 2010 expansion, the railcar transport will be needed or there will need to be a new pipeline. Transporting oil by rail costs more than by pipeline, and if there is enough oil, the economics dictate that a pipeline be built.

The committee received information on the Enbridge Pipeline. The Phase VI project is an update of pump facilities. This phase will reach the maximum capacity for the pipeline and increase export capacity by 51,600 barrels per day.

The committee received information on natural gas pipelines. The committee was informed that there is export capacity on the Northern Border Pipeline for natural gas. Generally, there needs to be processing of natural gas before it may be placed in a pipeline. One exception is the Alliance Pipeline that transports unprocessed gas to Chicago for processing.

DEPARTMENT OF COMMERCE'S ENERGY POLICY COMMITTEE REPORT

The Energy Policy Commission met jointly with the Energy Development and Transmission Committee to review the work of the Energy Policy Commission. The Energy Policy Commission presented a final report containing 21 goals, 40 policy recommendations, and 98 action points. The Energy Policy Commission was unanimous in its findings, and of the 98 action points, 8 were for state legislative action for which legislative proposals were drafted. These action points were categorized as Category 1. Category 2 action points were intended to be addressed between the issuance of the report and the end of the legislative session. Category 3 action points were intended to be addressed after the legislative session, some through legislatively sanctioned studies.

The Energy Development and Transmission Committee focused on these eight Category 1 action points:

- Extend the 1.5 percent reduction of taxable value for wind generating units until 2015.
- Make permanent the sales and use tax exemption for building materials, production equipment, and other tangible personal property used in the construction of a wind tower facility.
- Extend the 15 percent investment tax credit on the cost associated with installing a wind, biomass, geothermal, or solar energy device until 2015 and extend the income tax credit carryforward from 5 years to 10 years.
- Make permanent the tertiary extraction tax exemption on all projects using carbon dioxide for enhanced oil recovery.
- Amend the current coal severance tax exemption to include beneficiated coal that ultimately is used in North Dakota agricultural commodity processing facilities and amend the definition of coal to address changes in the uses of coal.
- Address tax issues for repowering generation facilities due to new environmental changes and

amend the definition of coal to address changes in the uses of coal.

- Create a state energy building code.
- Clarify the sales tax exemption created in House Bill No. 1462 (2007) to include gas gathering systems from oil wells.

The Energy Policy Commission also reported on other action points under the topics of wind, transmission, lignite, ethanol, biodiesel, biomass, energy efficiency, refining, oil and gas, natural gas processing and petroleum marketing, infrastructure, workforce, and solar, geothermal, hydrogen, and hydro power. Each topic in the report listed the opportunities, challenges, goals, and policy recommendations. As for wind, the Energy Policy Commission urged that boundary issues and property owner's rights in relation to wind towers and wind wakes be addressed. The Energy Policy Commission also urged that there should be a wind taxation study to find a new method of taxing wind farms so that each wind farm would be taxed the same. South Dakota has recently changed from a property tax system to a production tax and Minnesota does not use a property tax.

As for oil and gas, the Energy Policy Commission suggested that a flatter extraction tax structure would make budgeting and planning easier for both the industry and the state. The present rates range from

5 percent to 11.5 percent and a range from 7 percent to 9.5 percent was proposed.

EMERGENCY SERVICES COMMUNICATIONS COORDINATING COMMITTEE REPORT

The committee received the report from the Emergency Services Communications Coordinating Committee on the uses of assessed communications services fee revenue and recommended changes to the operating standards for emergency services communications. The committee was informed that some counties are saving for the future while negatively spending to operate a public safety answering point. The committee was informed that there are a number of duplications in technology around the state--one reverse 911 system could handle the whole state. In addition, the computer-aided dispatch system in Fargo could be the backbone for the entire state. Committee discussion noted that there is no incentive for the sharing of technology and there is local resistance to sharing which results in duplication. It was argued that there is no reason for saving for shared equipment. The committee was informed that there was some sharing and there are technological problems crossing the local access transport line.