

NORTH DAKOTA LEGISLATIVE MANAGEMENT

Minutes of the

ENERGY DEVELOPMENT AND TRANSMISSION COMMITTEE

Wednesday and Thursday, May 11-12, 2016
Energy and Environmental Research Center, 15 North 23rd Street
Grand Forks, North Dakota

Senator Rich Wardner, Chairman, called the meeting to order at 9:00 a.m.

Members present: Senators Rich Wardner, Kelly M. Armstrong, Brad Bekkedahl, Philip M. Murphy; Representatives Mike Brandenburg, Ben Hanson, Corey Mock, Todd Porter

Members absent: Senators Bill L. Bowman, John M. Warner; Representatives Dick Anderson, Chuck Damschen

Others present: Senator Ray Holmberg, Grand Forks, member of the Legislative Management
Mark Sanford, State Representative, Grand Forks
See [Appendix A](#) for additional persons present.

It was moved by Representative Mock, seconded by Senator Bekkedahl, and carried on a voice vote that the minutes of the February 3, 2016, meeting be approved as distributed.

ENERGY AND ENVIRONMENTAL RESEARCH CENTER UPDATES**Overview**

Mr. Thomas A. Erickson, Chief Executive Officer, Energy and Environmental Research Center, presented information ([Appendix B](#)) regarding an overview of the activities of the Energy and Environmental Research Center (EERC). He said the EERC had approximately \$28.4 million of contract funding in fiscal year 2015, of which approximately 85 percent was from private industry. He said the primary mission of the EERC is to lead the world in developing solutions to energy and environmental challenges. He said the EERC has over 250,000 square feet of facilities for laboratory experiments and demonstration projects. He said North Dakota has a long history of developing practical solutions for agricultural and economic challenges. He said North Dakota's oil industry generates more than \$12 billion of economic activity and supports over 100,000 direct and indirect jobs. He said North Dakota's lignite industry generates more than \$3.3 billion of economic activity and supports over 15,000 direct and indirect jobs. He said according to data from the federal Environmental Protection Agency, electrical generation increased by 157 percent from 1970 to 2014 while carbon dioxide emissions increased by 27 percent during the same period. He said electrical demand will continue to increase, which requires collaborative solutions between all energy types. He said the EERC has experience conducting research in all energy types and can help to develop technology solutions to enhance North Dakota's energy industry.

Oil and Gas

Mr. Edward N. Steadman, Vice President for Research, Energy and Environmental Research Center, presented information ([Appendix C](#)) regarding oil and gas research. He said one of the goals at the EERC is to conduct energy-related research to identify new solutions and to provide objective data to decisionmakers. He said enhanced oil recovery with water may not be effective in North Dakota because of the geology of the Williston Basin. He said under current techniques, approximately 3 to 10 percent of the available oil can be recovered. He said a small increase in the recovery percentage can result in billions of barrels of additional production. He said the EERC is in the process of conducting laboratory tests on enhanced oil recovery using carbon dioxide.

In response to a question from Chairman Wardner, Mr. Steadman said the two techniques for enhanced oil recovery with carbon dioxide include a sweeping method and a diffusion method. Mr. Steadman said in the sweeping process, carbon dioxide is injected into a series of vertical shafts to push the oil to a well lateral where it can be extracted. He said in the diffusion method, carbon dioxide is injected into an uncompleted well lateral where it can diffuse into the formation. He said the length of time before oil production starts, after injecting the carbon dioxide, is unknown but could range from a few days to a few years.

In response to a question from Representative Hanson, Mr. John A. Harju, Vice President for Strategic Partnerships, Energy and Environmental Research Center, said estimates for oil recovery under current techniques range from 3 to 10 percent. Mr. Harju said the estimates vary by oil company and vary by technique. He said most estimates range from 4 to 6 percent.

Lignite

Mr. Michael J. Holmes, Director of Energy Systems Development, Energy and Environmental Research Center, presented information ([Appendix D](#)) regarding lignite research. He said the lignite industry in North Dakota has been addressing a variety of challenges for a number of years. He said the solutions became possible only after researching and understanding the unique properties of lignite in North Dakota. He said early lignite boilers were plagued by slag deposits but research provided solutions to improve boiler efficiency and to reduce the impact of coal slag. He said the EERC spent decades developing technology to measure and reduce mercury emissions which reduced mercury capture costs from \$80,000 per pound to a few thousand dollars per pound of mercury captured. He said the EERC demonstrated new gasification technologies and is in the process of researching new gasification technologies which could provide solutions for reduced carbon dioxide emissions from lignite energy production. He said the EERC is in the process of conducting research for the Allam cycle which is part of the early phases in the development of Allam cycle-related technology. He said a commercial demonstration project of the Allam cycle could be ready as early as 2024 with an estimated cost of \$500 million to \$1 billion. He said Allam cycle technology is a potential solution for carbon dioxide capturing from lignite energy production.

In response to a question from Senator Bekkedahl, Mr. Holmes said the mercury is captured with the coal ash. Mr. Holmes said the coal ash with mercury deposits is sold at a discounted price compared to coal ash without mercury. He said the coal ash is a beneficial byproduct that can be sold for use in concrete and other industrial products.

In response to a question from Representative Brandenburg, Mr. Holmes said the research data from the EERC could be an important tool for defending the state's energy policies and disputing federal regulations.

Carbon Management

Mr. Charles D. Gorecki, Director of Subsurface Research and Development, Energy and Environmental Research Center, presented information ([Appendix E](#)) regarding carbon management. He said North Dakota is part of the Plains Carbon Dioxide Reduction Partnership, which is a collaborative effort to develop carbon dioxide sequestration and utilization projects. He said the partnership includes energy and chemical companies as well as research entities from eight other states and four Canadian provinces. He said the partnership's carbon management projects include the Boundary Dam project in Estevan, Saskatchewan, the Bell Creek project in Bell Creek, Montana, and a lignite field test in northwestern North Dakota. He said the Boundary Dam project is a \$1 billion project that will capture approximately 1 million tons of carbon dioxide per year. He said the captured carbon dioxide will be used for enhanced oil recovery or injected into a deep saline geological formation. He said the Bell Creek project will inject approximately 1 million tons of carbon dioxide into the Bell Creek oil field for enhanced oil recovery. He said the project is anticipated to produce approximately 40 million to 50 million barrels of incremental oil. He said the lignite field test successfully injected approximately 90 tons of carbon dioxide into an unminable lignite seam for long-term storage.

In response to a question from Senator Murphy, Mr. Gorecki said if researchers can develop beneficial uses for captured carbon dioxide, carbon dioxide emissions may become a marketable commodity rather than a cost of regulatory compliance. Mr. Gorecki said the current marketability of captured carbon dioxide is limited, but could be further developed as part of the potential credit trading program under the proposed federal Environmental Protection Agency's carbon dioxide emissions regulations.

Collaboration

Mr. Erickson presented information ([Appendix F](#)) regarding collaborative solutions. He said managing North Dakota's resources will require collaboration between all the energy sectors for future economic development and environmental responsibility. He said collaborative solutions require research, which includes fundamental understanding, concept evaluation, and demonstration projects. He said funding for fundamental research is limited because research grants from the United States Department of Energy and other federal agencies are no longer available. He said North Dakota has numerous opportunities to develop the energy industry in the state, which the EERC can facilitate through its research.

CORE LIBRARY TOUR

Mr. Ed Murphy, State Geologist, Department of Mineral Resources, Industrial Commission, led the committee on a tour of the Wilson M. Laird Core and Sample Library and distributed information ([Appendix G](#)) regarding the status of the expansion project. He said the storage space will increase by 15,000 square feet, from 13,000 square feet to 28,000 square feet, while the office and laboratory space will increase by 10,000 square feet, from

2,000 square feet to 12,000 square feet. He said the new laboratory space will allow more researchers to analyze core samples at the same time and will be equipped for improved analysis techniques and instruments. He said the number of new cores received at the core library has decreased since the peak in 2014. He said the number of requests to research core samples remains high as companies investigate potential lease acquisitions and enhanced oil recovery. He said the exterior walls and roof of the facility are composed of precast concrete sections, which allowed for faster construction compared to traditional methods. He said the project is anticipated to be completed by October 2016.

In response to a question from Chairman Wardner, Mr. Murphy said the oil extraction tax generated for the state from oil wells that Whiting Petroleum drilled as a direct result of research at the core library could have paid for the equivalent of four expansion projects. Mr. Murphy said other anecdotal evidence suggests the research at the core library has resulted in hundreds of millions of dollars of oil and gas tax revenue collections for the state.

EMPOWER NORTH DAKOTA COMMISSION UPDATES

Mr. Alan Anderson, Commissioner, Department of Commerce, said the EmPower ND Commission will provide recommendations on energy policy to the committee, but will not prepare any legislation unless requested to do so by the committee. He said the EmPower ND Commission's infrastructure subcommittee, research and development subcommittee, and regulatory subcommittee identified various recommendations for energy policy in North Dakota.

Infrastructure Recommendations

Mr. Ron Ness, President, North Dakota Petroleum Council, presented information ([Appendix H](#)) regarding the recommendations of the EmPower ND Commission's infrastructure subcommittee. He said the five key infrastructure needs for energy production and value added energy include water availability, a reliable supply of resources, electrical capacity, an interconnected transportation network, and a skilled workforce. He said the subcommittee recommends support for continued infrastructure development by increasing the accessibility of loans for local political subdivisions, funding the ombudsman program to mitigate easement issues, and clarifying jurisdictional authority to streamline the permitting process. He said support for infrastructure development is important even when the state's revenue collections are declining because construction costs have decreased and the infrastructure will promote economic development and enhance public safety.

Mr. Bob Grant, Treasurer, Northwest Landowners Association, said landowners are concerned about easement issues and value opportunities to provide input on infrastructure decisions. He said landowners are supportive of infrastructure development, but also want to protect their property. He said the easement process has improved as infrastructure development has slowed, but could benefit from additional input from landowners.

In response to a question from Representative Porter, Mr. Grant said the Northwest Landowners Association has not developed specific recommendations for improving the permitting and easement process. Mr. Grant said the primary concern from landowners is the opportunity to provide input in the permitting and easement process.

Research and Development Recommendations

Mr. John Weeda, Director, North Dakota Generation Operations, Great River Energy, presented information ([Appendix I](#)) regarding the recommendations of the EmPower ND Commission's research and development subcommittee. He said the subcommittee identified funding gaps for research and development. He said the subcommittee's recommendations for biennial funding include \$10 million for fundamental and basic research, \$8.4 million for the Lignite Research Council and the Oil and Gas Research Council, and \$40 million to \$50 million for advanced technology demonstration projects.

In response to a question from Chairman Wardner, Mr. Weeda said investment in research and development yields long-term benefits. Mr. Weeda said the state's agriculture industry has benefited significantly from the state's financial support for agricultural research. He said the Legislative Assembly should consider providing the same financial support for research in the energy industry as has been done with the agriculture industry.

Mr. Wade Boeshans, President, BNI Energy Inc., presented information ([Appendix J](#)) regarding the Allam cycle technology research. He said carbon capture requirements are a challenge for the lignite industry. He said developing Allam cycle technology will benefit both the lignite industry and the oil and gas industry. He said carbon dioxide captured and utilized in the Allam cycle can be transported to the Bakken Formation oil field for enhanced oil recovery. He said Allam cycle technology is anticipated to exceed the Environmental Protection Agency's proposed carbon dioxide regulations for coal power plants while providing electrical power generation at economical prices. He said a 25 megawatt demonstration project is currently under construction in Texas. He said the development of a commercial demonstration project could cost between \$500 million and \$1 billion. He said the Legislative Assembly should consider providing additional funding for further development of Allam cycle technology to preserve the lignite industry and to help the oil and gas industry through enhanced oil recovery opportunities.

Regulatory Recommendations

Ms. Julie Voeck, Director, Regulatory Affairs, NextEra Energy Resources, Milwaukee, Wisconsin, presented information ([Appendix K](#)) regarding the recommendations of the EmPower ND Commission's regulatory subcommittee. She said the subcommittee identified a sales and use tax exemption related to wind turbine construction for a potential policy change. She said the sales and use tax exemption will expire at the end of 2016. She said all other sales and use tax exemptions in North Dakota's energy industry are permanent except for the exemption related to wind turbine construction. She said the subcommittee recommends making the sales and use tax exemption permanent. She said making the exemption permanent will provide equity across all fuel types in the energy industry.

Mr. Jason Bohrer, President and Chief Executive Officer, Lignite Energy Council, said the committee is in the process of developing a recommendation for changes to incremental oil production utilizing carbon dioxide. He said oil extraction tax exemptions based on the amount of carbon dioxide used in enhanced oil recovery may be more beneficial than the current exemption which is based on a fixed number of years. He said an exemption linked to carbon dioxide utilization can benefit both the oil and gas industry and the lignite industry. He said the oil extraction tax exemption could be based on utilizing 15 million tons of carbon dioxide per year. He said 15 million tons per year is only a portion of the amount needed in the oil and gas industry for enhanced oil recovery and would allow lignite electrical generation units to comply with the federal Environmental Protection Agency's proposed carbon dioxide emission regulations.

In response to a question from Senator Bekkedahl, Mr. Bohrer said if the oil and gas industry does not utilize 15 million tons of carbon dioxide per year, all of the oil production from enhanced oil recovery using carbon dioxide could potentially be exempt from the oil extraction tax. Mr. Bohrer said the 15 million tons per year is a preliminary amount which could be adjusted when more information about enhanced oil recovery becomes available.

OTHER

Chairman Wardner recessed the meeting at 3:45 p.m. and reconvened the meeting on Thursday, May 12, 2016, at 8:00 a.m. He said the committee will attend an energy summit to receive information about updates in the energy industry.

Chairman Wardner recessed the meeting at 8:05 a.m. for attendance at the Energizing North Dakota's Future Partnership Summit.

Chairman Wardner reconvened the meeting at 12:10 p.m. He said the next committee meeting will be in Bismarck in July 2016. He said the committee will discuss energy policies in North Dakota, including potential legislation, at the next meeting.

No further business appearing, Chairman Wardner adjourned the meeting at 12:15 p.m.

Adam Mathiak
Fiscal Analyst

ATTACH:11