

# **Annual Lignite Energy Council Education Seminar: Energy, Economics & Environment**

**Grant Submitted by  
Lignite Energy Council**

**Principal Investigator  
Lignite Energy Council**

**Grant Deadline: October 1, 2014**

**Amount Requested: \$80,000**

## Table of Contents

Abstract .....	3
Project Summary .....	3
Standards of Success .....	4
Background .....	5
Qualifications .....	6
Value to North Dakota .....	6
Management .....	7
Timetable .....	7
Budget .....	7
Matching Funds.....	8
Tax Liability .....	8
Confidential Information.....	8

## **ABSTRACT**

The objective of the Lignite Energy Council's annual Teachers Seminar (Seminar) is to educate teachers from North Dakota and surrounding states about the economic benefits, career opportunities and operations of the lignite industry.

With support from the Lignite Energy Council's Education Program, education website and other outreach efforts, the expected results of the Seminar include facilitating open communication between the industry and educators, increasing the awareness and understanding of the industry and improved favorability of the industry. Ultimately, a positive public opinion will attract workforce and create interest and awareness of the career opportunities afforded by the North Dakota lignite industry.

In 2014, the Seminar began a period of transition as it relates to the facilitation and administration of the Education Program and Seminar. This period of transition has presented opportunities for change, growth and improvements for the program and Seminar.

The funding request is for a one-year program. The total budget for the Seminar as described is \$160,000, of which \$80,000 is requested from the Lignite Research Council. The other \$80,000 represents in-kind services and cash provided by the Lignite Energy Council and representatives of the lignite industry who serve as faculty for the seminar and coordinate the seminar plus support and host the seminar participants.

## **PROJECT SUMMARY**

The mission of the Lignite Research Council is to assist in marketing as well as research and development activities. The Seminar as outlined in this grant request is an effective way for the Lignite Energy Council to continue to market the industry, its economic benefits and its career opportunities to educators and students in the states of North Dakota, Minnesota, South Dakota and Montana.

Education is critical to the future success of the energy industry in our state. Public awareness of the value of the industry to the state is important for public acceptance and support of this industry which will be helpful when trying to attract a workforce. Providing teacher educators with an understanding of the lignite industry and related career opportunities will likely provide teachers with the background knowledge to encourage students to consider the career opportunities in North Dakota's energy industry when they begin to look at career choices.

Attracting a future workforce is crucial as the industry faces a 50 percent retirement bubble in the next few years – both at the mines and coal conversion facilities. The demand for a qualified workforce is also increased by the number of environmental technology improvements that are needed at existing plants and further construction projects as the lignite industry expands with new plants and production.

The four-day Seminar, which is held each June, includes tours of mines and coal conversion facilities along with presentations and panel discussions on a number of relevant issues including history, geology, mining and reclamation, converting lignite to electricity, converting lignite to synthetic natural gas, economics of the lignite industry, career opportunities, environmental issues facing the lignite industry, transmission and research and development topics.

Each participating teacher is eligible to receive two graduate credits from the North Dakota University system (UND, NDSU and Minot State University) upon the completion of the seminar and submission

of a lesson plan. Teachers also receive ancillary information for classroom work including classroom activities, a DVD of various generation, mining and reclamation videos and samples of coal and coal combustion byproducts.

The seminar focuses on sending teachers home with practical and applicable information and classroom tools. It places an emphasis on technology and hands-on learning to help the teachers prepare lesson plans.

The 2015 seminar will be held at the National Energy Center of Excellence on the campus of Bismarck State College in Bismarck, ND, on June 15-18. The annual seminar historically has attracted educators from a four-state area – North Dakota, South Dakota, Minnesota and Montana. School superintendents, principals and teachers of all grade levels from elementary to senior high attend the four-day seminar. Approximately 125-135 educators attend annually.

Additionally, during this period of transition, this grant will help support research and development of materials for use in future seminars creation and program expansion.

### **STANDARDS OF SUCCESS**

In 2009, the Teachers Seminar expanded from a one-credit (two and a half days) to a two-credit (four-day) Seminar. This change required more face-to-face time between instructors and teachers. It also gave the LEC the opportunity to make some capital improvements, such as an electronic Audience Response System, which allows more interactivity between the instructor and the audience of teachers.

The Audience Response System has allowed staff to track changes in opinions about the industry, what participants have learned throughout the seminar and also what they are interested in learning more about.

During the last two seminars held in 2013 and 2014, a survey of participants has indicated a marginal increase in favorability opinions from the beginning of the seminar to the conclusion of the seminar. Additionally, a majority of participants indicated that they will make use of material and knowledge gained through the seminar when they return to their classrooms.

The LEC is in the process of bringing together an advisory committee comprised of members of the lignite industry, teachers and the North Dakota Department of Public Instruction to perform an audit of the Education Program and Seminar with the goal to establish improved and expanded program goals and projected outcomes. The overarching goal for the work supported by this funding will be to measure the effectiveness of the Seminar and implement improvements identified during the Seminar audit process.

A survey of over 800 of the 2,500 past participants through 2007 was conducted in 2008. A response rate of 34% revealed that more than 70% of respondents had incorporated seminar information into their teaching plans, but only 43% had used activities learned at the seminar in the classroom. Other questions asked during that survey period included gauging the use of supplemental material such as DVDs, samples and lesson plans.

In the fourth quarter of 2014, the LEC will be sending out a similar survey to those who attended the seminar since 2009 since the Seminar expanded to a two-credit program. Results of that survey will be used to direct and shape improvements and changes for future Seminars.

Additionally, the LEC is looking to update and improve educational materials available to all teachers that will be made available by way of the education website. Materials will include lesson plans for multiple grade levels, hands-on activities and up-to-date workforce information. Through website analytics and follow-up with those who download the material, the LEC will be able to provide facts and figures on their usage.

Finally, the LEC will be evaluating lesson plans submitted by participants and seeking permission to use and post high-quality plans. The LEC will also be investigating what parameters need to be met in order to share all lesson plans with the Lignite Research Council members.

## **BACKGROUND**

The Lignite Energy Council has been offering the Seminars since 1986. The seminar is reviewed by UND faculty member Terry Hagen, who oversees the seminar as part of UND's School of Business and Public Administration. The coordination of the seminar is handled by Kay LaCoe, the communications and education coordinator with the Lignite Energy Council. The various presenters work in the industry and speak from experience on their various topics.

The Lignite Energy Council was selected as the 2008 winner in the "Advancement of Energy Education" category by the American Coal Council, and the 2012 winner of the Interstate Mining Compact Commission's mineral education awards in the public outreach category.

More than 3,000 teachers in 600 schools have completed the seminar and it is estimated that more than 60,000 students receive some education about lignite and its role in the regional economy every year. More than 700 of these teachers were from out of state.

The Seminar is open to any kindergarten through 12<sup>th</sup> grade teachers from North Dakota, South Dakota, Minnesota or other states where North Dakota lignite-based electricity is used. Teachers are accepted on a first-come, first-served basis; however, preference may be given to those who teach math, science or social studies.

Seminars held in 2013 and 2014 hosted 256 teachers, 190 of which were from North Dakota and 66 from other states such as Minnesota, South Dakota, Montana, Wyoming and Iowa. While participants represented every grade, subject matter and discipline, there is a well-balanced representation of approximately one-third grade school, one-third middle school and one-third high school teachers. Physical and earth sciences, math, and social studies teachers represented a majority of subject-specific teachers, while grade school teachers teaching all subject matters also make up a large portion of participants.

As part of the industry's in-kind contribution, North Dakota and Minnesota cooperatives and investor owned utilities provide sponsorships for out of state teachers to attend. These sponsorships typically cover transportation and meal costs incurred during travel to and from the Seminar.

As part of the Seminar's expansion in 2009, special consideration was made to make additions to the Seminar to stress heavily the job and career opportunities associated with the North Dakota lignite industry. The Lignite Industry Career Choices section was a special addition that features a speaker who not only works as the Energy Career Awareness Program Coordinator for the Bismarck Public School System, but also owns an energy-related company doing business with the lignite industry. Additionally,

each presentation has been specifically tailored to highlight special education requirements or future learning opportunities directly related to current and future workforce needs. Finally, the Seminar also provides an opportunity for participants to get a first-hand look at the Power Plant Programs available at Bismarck State College.

## **QUALIFICATIONS**

The Lignite Energy Council will be responsible for managing the Seminar. The Lignite Energy Council is a regional trade association representing the interests of producers and users of lignite and conducts programs in four separate areas including: government action; research, development and marketing; education; and public relations. Through these programs, the Council seeks to maintain a viable lignite industry and enhance development of North Dakota's abundant lignite resources in a clean, economical and efficient manner. These programs provide timely, accurate information that enables elected officials, government leaders and the public to make sound, informed decisions on lignite issues.

Representatives of the Lignite Energy Council who also serve as presenters at the Seminar include:

**Jason Bohrer** serves as President and CEO of the Lignite Energy Council. He also serves as the Chairman of the Lignite Research Council (LRC) which includes government, research, environmental and industry representatives. The LRC assists with development and administration of North Dakota's Lignite Research, Development and Marketing Program by providing recommendations to the Industrial Commission.

**Mike Jones** is the vice president of research and development for the Lignite Energy Council and is the technical advisor to the North Dakota Industrial Commission. Jones has been senior research advisor at the Energy & Environmental Research Center and an adjunct professor of physics at the University of North Dakota. He received his Ph.D. and M.S. in physics at the University of North Dakota and his B.S. in physics from Bemidji State University. A Minnesota native, Mike joined the Lignite Energy Council in 2009.

**Kay LaCoe** serves as the communications and education coordinator for the Lignite Energy Council. Kay has a Bachelor of Science Degree in Business Communications from the University of Mary. She worked extensively with the Seminar since 2008 prior to assuming the role of the Seminar's facilitator in 2014.

## **VALUE TO NORTH DAKOTA**

The North Dakota Legislature has a long history of supporting the lignite energy industry. Specifically, the North Dakota Legislature has enacted legislation which "... declares that it is an essential government function and public purpose to assist with the development ... of North Dakota's vast lignite resources ... in order to maintain and enhance development of North Dakota lignite and its products; preserve and create jobs involved in the production and utilization of North Dakota lignite; ensure economic stability, growth and opportunity in the lignite industry; and maintain a stable and competitive tax base for our state's lignite industry for the general welfare of North Dakota ... "

The lignite energy industry is vital to North Dakota's economic health. The industry comprises four percent of the states' total economic base. Lignite production has reached approximately 30 million tons since 1988, making North Dakota one of the 10 largest coal producing states in the nation. In 2014, an NDSU economic study showed that 4,000 North Dakotans are directly employed in the lignite industry

and another 12,000 indirectly. The industry is expected to generate almost \$3.4 billion in annual business activity, as well as \$97 million in annual state tax revenues.

This Seminar project is part of the larger LEC mission which seeks to:

- Preserve and create jobs involved in the production and utilization of North Dakota lignite;
- Ensure economic stability, growth and opportunity in the lignite industry; and
- Maintain a stable and competitive tax base for North Dakota's lignite industry for the general welfare of North Dakota.

The Lignite Energy Council has also engaged in other educational and promotional opportunities to support and supplement the Seminar and the promotion of workforce needs. One example was the North Dakota Energy Tour.

In 2014, the LEC and North Dakota Petroleum Council partnered together to host the first-ever "North Dakota Energy Tour." College professors and administrators from NDSU and UND participated in a two-day event which included tours of coal and oil facilities and presentations from industry personnel. The objective of the Energy Tour was not only to educate participants on the industries, but also to promote workforce opportunities within the industries.

Furthermore, the LEC is also in the process of establishing a charitable 501(c)(3) organization. The primary goal of the Lignite Energy Foundation is to raise funds to support education and scholarship programs for students and teachers in the Upper Midwest who are served by coal-based electricity. The Foundation will provide funds for educational programs and activities which educate about the coal industry, processes, and economic impact; promote industry-related career opportunities; and aim to facilitate opportunities to actively engage students with the industry.

## **MANAGEMENT**

The Lignite Energy Council will manage and oversee the Seminar and its Board of Directors has authorized the program and budget. Kay LaCoe, communications and education coordinator, is the primary person responsible for the Seminar. Kay reports to Jason Bohrer, president and CEO of the Lignite Energy Council. The University of North Dakota, North Dakota State University and Minot State University have approved the program for eligibility of two graduate credits for the Seminar.

## **TIMETABLE**

The Lignite Energy Council's Teacher Education Seminar described in this grant request runs from January 1, 2015, through December 31, 2015. The four-day Seminar will be held on June 15 – 18, 2015 in Bismarck with tours of nearby lignite facilities.

## **BUDGET**

The Lignite Energy Council's Teacher Education Seminar annual budget, including in-kind services, from January 1, 2015, through December 31, 2015 is \$160,000 (See page 9).

## **MATCHING FUNDS**

The Lignite Energy Council and its members will provide in-kind services and funding of at least \$80,000 for one year to match the Industrial Commission's funding of \$80,000 for one year. Total funding requested for the one-year period is \$80,000, which will be matched by the Lignite Energy Council and its members.

## **TAX LIABILITY**

I, Jason Bohrer, certify that the Lignite Energy Council is not delinquent on any tax liability owed to the State of North Dakota.

## **CONFIDENTIAL INFORMATION**

No confidential information is included in this proposal.

## **Appendix**

- Budget
- Seminar Syllabus and Agenda

Jason Bohrer, President & CEO  
Lignite Energy Council



### Proposed Annual Teacher Seminar Budget - 2015

<b>Facility Cost (BSC) - Meals, Dorm Rooms and Facility Charges for 130 teachers</b>		\$ 20,000
<b>UND/Minot/NDSU Graduate Credits</b> \$100 for 2 credits per teacher (Estimate 130 teachers)		\$ 13,000
<b>Transportation</b> Bus rental for tours, mileage for teacher presenters and panel members		\$ 5,000
<b>Materials &amp; Supplies</b> Brochures, Postage, Binders & Contents, DVDs, speaker gifts, miscellaneous		\$ 17,000
<b>Faculty</b> Director's Salary & Benefits Instructor of Record - UND Classroom Teacher Instructors		\$ 25,000
<b>Total expenses per year for seminar</b>		<b>\$ 80,000</b>
<b>Match by Industry &amp; LEC</b>		
In Kind by Industry Faculty & Staff	\$40,000	
Lignite Energy Council Cash	\$40,000	
		<b>\$ 80,000</b>
<b>Total Seminar Cost for One Year</b>		<b>\$ 160,000</b>

# Seminar Syllabus

## 2015 Lignite Education Seminar: Energy, Economics and Environment

### Monday, June 15, 2015

#### **Welcome & Introductory Remarks**

**Time:** 9:00 a.m. – 9:30 a.m.

**Topic description:** Kay LaCoe will give the class an overview of what will transpire during the four-day seminar; she will acquaint them with the binder of materials they received when they registered; she will tell them what is expected of them during the class (attendance at all sessions) and will discuss the lesson plan that they will need to write. Administrative announcements will be made and questions will be answered.

**Speaker:** Kay LaCoe, seminar facilitator, is Communications & Education Coordinator for the Lignite Energy Council, and has a Bachelor of Science degree in Business Communications from the University of Mary.

#### **Lignite: The Region's Best Kept Secret**

**Time:** 9:30 a.m. – 10:30 a.m.

**Topic description:** Mining lignite in North Dakota is often overshadowed by tales of gold mining in the Black Hills, copper mining in Montana or even taconite mining on Minnesota's Iron Range. This presentation provides a history of the lignite industry dating back to the days of Lewis & Clark and moving forward to the present. Information is provided on the various utility companies involved in the North Dakota lignite industry, which provides electricity to 2 million customers in a four-state region and synthetic gas to a quarter of a million customers. Activities include researching historical utility information for particular cities and demonstrating the economic impact on the region.

**Speaker:** Jason Bohrer, President & CEO of the Lignite Energy Council, is a graduate of North Dakota State University and earned his law degree from George Mason University.

#### **The Mining and Reclamation Process**

**Time:** 10:45 a.m. – 12:15 p.m.

**Topic description:** A mining engineer provides a history of mine regulations in North Dakota over the past 40 years and identifies various permitting and regulatory aspects of surface coal mining required today, including surface water management and ground water monitoring. The presentation takes a step-by-step approach to mining from removing and stockpiling top soils and subsoil, to removing the coal, which is followed by reclamation. The presentation serves as an introduction to the mining and reclamation area teachers will tour the following day. Activities include a reclamation experiment that simulates the regulatory environment that surrounds surface mining.

**Speaker:** Jessica Unruh, Environmental Specialist with The Coteau Properties Company, Bachelor of Science degree from NDSU in Natural Resources Management and Economics.

## **Electricity Generation from Lignite**

**Time:** 1:00 p.m. – 2:15 p.m.

**Topic description:** A power plant manager gives teachers an “insiders” view of how coal is converted from chemical energy to thermal energy – electricity. The presentation begins with a look at different ways electricity is produced, including hydro-power, wind energy and nuclear plants. Zeroing in on coal-based power plants, teachers see the various steps it takes to change coal to electricity and see how power plants use modern technology to increase efficiency and decrease wastes, including emissions. This presentation serves as an introduction to the power plant the teachers will tour the following day. Activities include riding a bike to produce electricity and how magnets create an electronic field.

**Speaker:** **John Weeda**, is the Director of ND Plant Operations for Great River Energy and has a bachelor’s degree in mechanical engineering from the University of North Dakota

## **North Dakota Geology – From Dinosaurs to Lignite**

**Time:** 3:00 p.m. – 5:00 p.m.

**Topic description:** A paleontologist and geologist with the North Dakota Geological Survey provide insights into the state’s rich geological past. The “geologic tour” includes information about pre-historic fossils from the time of the dinosaurs up to the formation of lignite and other coals found in the United States. This presentation includes a discussion of ancient seas, deposition of materials and compaction to make lignite. Information is also given about the differences in coal varieties, how coal reserves are measured and what makes certain reserves more economical to mine than others. Physical geology is also examined to look at why coal reserves are found in certain areas and not in other adjacent areas. Activities include a classroom “coal formation” experiment and an experiment with a chocolate chip cookie to determine economical mining.

**Speakers:** **John Hoganson**, State Paleontologist and curator of the North Dakota State Fossil Collection housed at the ND Heritage Center in Bismarck. John has a Master’s Degree in geology and a Doctorate Degree in geology. **Ned Kruger**, is a Subsurface Geologist and oversees the subsurface mineral exploration and development program for the ND Geological Survey. Ned has a bachelor of science in geology and 10 years of experience as an environmental consultant.

**Time:** 5:00 p.m. – 7:00 p.m. – Supper and Tour of Heritage Center

## **Tuesday, June 16, 2015**

### **Plant Level Environmental Compliance**

**Time:** 8:00 a.m. – 9:00 a.m.

**Topic description:** Speaker looks at issues related to the lignite industry: air quality, Clean Air Act amendments, sulfur dioxide, nitrogen oxides, and mercury regulation. North Dakota is one of 9 states in the nation to meet all federal ambient air quality standards. This presentation looks at existing regulations such as the Clean Air Act and how they impact coal conversion facilities. Future regulations, such as regional haze and the Mercury Rules are also addressed.

**Speaker:** **Craig Bleth**, has degrees in geological engineering and engineering management and is a registered professional civil engineer and has worked for Minnkota Power Cooperative for the past 23 years. He is currently the plant environmental superintendent at the Milton Young Station.

## **Energy Conservation: Teaching “Negawatt” Basics**

**Time:** 9:15 a.m. – 10:30 a.m.

**Topic description:** Conserving energy can be as easy as switching off lights or combining errands to save on gasoline. But energy conservation can also include investing in programmable thermostats and insulated windows. With all these choices, consumers need to understand what makes sense for them. This presentation provides insights into how consumers can do a better job of making energy decisions and reducing their use of electricity and other forms of energy. Fun approaches for bringing energy efficiency education to the classroom will be discussed, including Vampire Hunts, Draft-O-Meters, and Watt Watchers.

**Speaker: Carl Pedersen**, energy educator with the North Dakota State University Extension Service, with degrees from the University of Wisconsin, Stevens Point, and Southwest Minnesota State University.

## **Enhancing Lignite’s Future through Research and Development**

**Time:** 10:45 a.m. – 12:30 p.m.

**Topic description:** The director of the Lignite Research, Development and Marketing Program, a partnership between the state and lignite industry, provides an overview of current and future coal conversion technologies along with R&D projects. This presentation provides a scientific look at lignite and explores the possibilities of further development and enhancement through ongoing research projects. For instance, projects are underway to dry lignite, thus reducing emissions and increasing plant efficiencies. Activities include a coal drying experiment and a material separation simulation.

**Speaker: Mike Jones**, vice president of research and development for the Lignite Energy Council and is the technical advisor to the North Dakota Industrial Commission. Mike received his Ph.D. and Master’s in physics from the University of North Dakota.

## **Energy and CO<sub>2</sub> Management: Carbon Capture and Storage**

**Time:** 1:15 p.m. – 2:30 p.m.

**Topic description:** Traditional fossil-fuel-based energy and the environmental protection have been interwoven topics for years. Now as countries look at ways to reduce greenhouse gases, the challenges facing the lignite industry include developing technologies to both capture and store carbon dioxide safely. A representative of the Energy and Environmental Research Center will provide information about researchers who are working with industry to advance technologies that will dramatically reduce CO<sub>2</sub> emissions from coal-based power plants and store the gas safely in geologic formations.

**Speaker: Dan Daly**, is a research manager at the Energy & Environmental Research Center at the University of North Dakota, and has a master’s degree in geology from the University of North Dakota.

## **Transmission – Transporting Electricity by Wire**

**Time:** 2:45 p.m. – 3:30 p.m.

**Topic description:** Transmission issues are as important to reliable, low cost electricity as the generation sources themselves. The director of North Dakota’s Transmission Authority provides a history of transmission and how federal policies for greater competition in the electric industry have spawned changes in who owns and controls transmission facilities. Currently, there is a constraint on transmission lines. However, more transmission facilities need to be built. Regulation is changing regarding who will own, control and pay for new transmission.

**Speaker: Matthew Stoltz**, manager of transmission services with Basin Electric received his bachelor’s degree in electrical engineering from North Dakota State University.

## **Lignite Industry Career Choices**

**Time:** 3:45 p.m. – 4:45 p.m.

**Topic description:** Jobs in the lignite industry represent some of the best paying vocations in the region. Many of these jobs require only a two-year degree. The presenter, Kent Ellis, has been speaking before North Dakota teachers discussing the opportunities presented in the industry and how educators can help prepare their students for rewarding careers in the North Dakota energy industry.

**Speaker: Kent Ellis**, Energy Career Awareness Program Coordinator for the Bismarck School System, bachelor’s degree in secondary education from the University of Northern Colorado

**Time:** 4:45 p.m. - 5:30 p.m.

**Topic description:** Presentation on the Power Plant Technology Program at Bismarck State College and then a tour of the facility (National Energy Center of Excellence).

## **Wednesday, June 17, 2015**

### **Tours of power plants and mines**

**Time:** 7:00 a.m. – 5:00 p.m.

**Topic description:** Teachers take a “hands-on” tour of North Dakota’s “coal country.” The tour features information provided during the bus rides, stops at lignite mines, power plants and the nation’s only lignite-based synfuels plant. Teachers have a chance to see huge mining machinery at work and see mine reclamation for themselves. At the plants, teachers see how lignite is converted to either electricity or synthetic natural gas in an environmentally compatible way. During the tour, teachers will hear a lecture by the manager of the Great Plains Synfuels Plant. As the largest coal conversion facility in the state, the synfuels plant converts lignite to pipeline-quality synthetic natural gas. The plant’s origin began in the 1970s when the United States policy makers wanted to be less reliant on foreign sources of energy. Today the plant produces not only synthetic natural gas but a host of other valuable byproducts, including carbon dioxide, which is sent via a pipeline to Canadian oil fields for tertiary oil recovery in partially depleted fields. Activities include showing how hydrogen and carbon monoxide can be transformed into water and methane.

**Speaker: Mike Just**, Engineering Manager for the Great Plains Synfuels Plant, has a bachelor’s degree in chemical engineering from the University of North Dakota.

## **Thursday, June 18, 2015**

### **Economics and Electricity**

**Time:** 8:00 p.m. – 8:45p.m.

**Topic description:** An economics teacher takes a look at the electric industry from a business standpoint and explains why there are different types of utilities – investor-owned, cooperatives and municipals. The presentation also delves into the economic factors involved in various forms of generation, such as coal-based, wind, nuclear, hydro and natural gas. The instructor also provides insights into how rates are determined by public utility regulators and how the needs of the utility are balanced with the needs of the consumer.

**Speaker:** **Julie Fedorchak**, Public Service Commissioner for the state of North Dakota, bachelor's degree in journalism from the University of North Dakota.

### **Environmental Issues Panel**

**Time:** 9:00 a.m. – 10:45 a.m.

**Topic description:** Representatives of the North Dakota Public Service Commission and Health Department along with a farmer/rancher whose land has been disturbed by mining activities answer questions from the audience together with a panelist from the lignite industry. This interactive presentation gives teachers an opportunity to ask questions that haven't been answered by other presenters.

The environmental panel includes: A moderator, **Jason Bohrer**, Lignite Energy Council; a ND Public Service Commission representative, **Dean Moos**; ND Department of Health representative, **Terry O'Clair**; a farmer whose land has been mined and reclaimed, **Brent Peterson**; and an environmental manager from a mine, **Jay Volk**, of BNI Coal.

### **Generation Choices**

**Time:** 11:00 a.m. – 12:00 p.m.

**Topic description:** A company CEO within the lignite industry discusses how utilities have to consider all the pluses and minuses of different generation choices in determining where to make investments that will best serve their customers needs. Generation options explored include: natural gas, hydro, wind turbines and nuclear plants. Activities include audience participation in making generation choices and deciding what investments make sense today and for the future.

**Speaker:** **Paul Sukut**, Chief Executive Officer and General Manager of Basin Electric Power Cooperative and Dakota Gasification Company. Paul has a bachelor's degree from Jamestown College in Business Administration and Political Science.

## **Lignite Energy Council Web Site Demonstration & Post Test**

**Time:** 1:00 p.m. – 1:30 p.m.

**Topic description:** Teachers will be given a live preview of the Lignite Energy Council’s web site so they can see what information is available for them. There is a button for teachers to click where they can find all the materials from the seminar (presentations, activities and lesson plans). Teachers are given a special password to use in accessing this information.

**Speaker:** Kay LaCoe, Lignite Energy Council will give the demonstration.

## **Lignite Education Classroom Sessions**

**Time:** 1:30 p.m. – 2:30 p.m.

**Topic description:** Teachers taking the seminar are split into groups by grade levels. Teachers who have previously taken the seminar share their ideas with the groups of teachers on how to use the lignite information they have learned in their classrooms by sharing lesson plan ideas with them. This helps the participants to begin thinking about the lesson plan they need to write to receive credit.

**Speakers:** In 2012, six veteran teachers led the classroom breakout sessions. They were:

Karen Preszler, Bismarck, ND - Elementary

Hank LaBore, Bismarck, ND – Grades 6-8

Thom Schmid, Burlington, ND – Sr. High Geology

Jeff Beck, Minot, ND – Sr. High Social Studies

Scott Weigum, Bismarck, ND – Sr. High Science

Vicki Olson, Almont, ND – Sr. High Family Living/Independent Living/Parenting