

**MEETING MINUTES**  
**LIGNITE RESEARCH COUNCIL**

**November 19, 2013**  
**Ramada Bismarck Hotel (Judicial Room), Bismarck, ND**

**LIGNITE RESEARCH COUNCIL MEMBERS (or their authorized alternates) PRESENT:**

Charlie Bullinger – Great River Energy  
Pat Clement - BNI Coal, Ltd.  
Randy Christmann - ND Public Service Commission; Lignite Research Council Vice-Chairman  
Jeff Delzer – North Dakota House of Representatives  
John Dwyer - Lignite Energy Council; Lignite Research Council Chairman  
Bob Fagerstrom – Dakota Gasification Company  
Matt Greek – Basin Electric Power Cooperative  
Jay Kost – The Falkirk Mining Company  
Paul Govig – North Dakota Department of Commerce  
Ray Holmberg - North Dakota Senate  
Carlyle Hillstrom – North Dakota Farm Bureau  
Luther Kvernen - Minnkota Power Cooperative, Inc.  
Ed Murphy, Ph.D. – ND Geological Survey  
John Phillips – North Dakota Coal Conversion Counties Association  
Todd Simmons – Minnesota Power  
Ed Steadman – Energy & Environmental Research Center  
Andrea Stomberg – Montana-Dakota Utilities Co.  
David Straley – The Coteau Properties Company  
Rich Voss – Great Northern Power Development  
Brad Zimmerman – Otter Tail Power Company

**OTHERS PRESENT:**

Iqbal F. Abdulally – Alstom Power  
Dave Allard - Lignite Energy Council  
Jason Bohrer – Lignite Energy Council  
Jim Deutsch – ND Public Service Commission  
Shin G. Kang – Alstom Power  
Karlene Fine - North Dakota Industrial Commission  
Daba Gedafa, Ph.D. - UND Department of Civil Engineering  
Vicki Gilmore - Lignite Energy Council  
Michael L. Jones, Ph.D. - Lignite Research Council Technical Advisor; Lignite Energy Council  
Scott F. Korom, Ph.D. – UND Institute for Energy Studies  
Peng Pei – UND Institute for Energy Studies  
Dave Smith, Ph.D. – SaskPower

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Lignite Research Council (LRC) chairman John Dwyer called the LRC meeting to order at 1:35 p.m. (CST) November 19, 2013 at the Ramada Bismarck Hotel, Bismarck, North Dakota.

**Approval of May 21, 2013 LRC Meeting Minutes:**

Dwyer asked for a motion to approve the minutes of the May 21, 2013 LRC meeting. Luther Kvernen so moved; seconded by Andrea Stomberg. Motion carried.

**Program Financial Summary:**

Karlene Fine and Michael Jones gave a brief financial summary regarding the Lignite Research, Development and Marketing Program (Program).

Fine said that the Program's available funding (as of 11/1/13) includes: \$700,000 for administration of the Program; \$0 for litigation (Minnesota); \$0 for non-matching Lignite Marketing Feasibility Study (LMFS) projects; \$1,275,000 for Small Research Projects; \$600,000 for Marketing Projects; and \$3,904,000 for Demonstration Projects. (The \$3,904,000 for Demonstration Projects does not include the commitment of \$12,482,309 over future biennia for the Lignite Vision 21 Program projects (the Coal-to-Liquids project, the Spiritwood Energy project and the Great Northern Project Development project).

Primary components of the proposed Lignite Research Program annual budget allocation for the 2013-2015 biennium are: \$750,000 for administration of the Program; \$3,000,000 for non-matching Lignite Marketing Feasibility Study (LMFS) projects; \$1,500,000 for Small Research Projects; \$1,200,000 for Marketing projects, and \$4,404,000 for Demonstration Projects.

**Program's Project Updates:**

Jones, technical advisor to the NDIC and the LRC, gave updates about active R&D projects (four carbon capture and storage projects, three gasification projects, three demonstration projects, three Lignite Vision 21 Program (LV21) projects, two metal emissions projects, one education/public relations project and two NOx projects. He also gave an update about the Enhance, Preserve and Protect project.

**Grant Round LXXVI (76) Grant Application LRC-LXXVI-A:** "Investigating the Use of Fly Ash and Nanomaterials for Sustainable Concrete Infrastructure"; Submitted by: University of North Dakota Department of Civil Engineering; Request for: \$14,559 (Small Research); Total Project Costs: \$60,642; Principal Investigator: Daba S. Gedafa, Ph.D., P.E.

Jones said that the main objective of this project is to test the hypothesis that ordinary Portland cement can be fully replaced by fly ash and nanomaterials in concrete since nanomaterials can accelerate the rate of hydration reaction of fly ash in concrete and improve its desirable properties.

Jones said that the three technical peer reviewers for this proposal gave the proposal an average weighted score of 202.7 out of 250 points. The weighted score was 202.7 out of 223 points from reviewer 13-10, 153 out of 250 points from reviewer 13-11 and 232 out of 250 points from reviewer 13-12. Technical peer reviewers 13-10 and 13-12 recommended that the project be funded; technical peer reviewer 13-11 recommended funding to be considered. As technical advisor to the NDIC and LRC, Jones recommended that the project be funded, subject to the following contingency: Matching funding received.

Jones said that Great River Energy is the conflict-of-interest party for proposal LRC-LXXVI-A.

Daba Gedafa, Ph.D., P.E., with the University of North of North Dakota Department of Civil Engineering gave a presentation in support of proposal LRC-LXXVI-A.

**Grant Round LXXVI(76) Grant Application LRC-LXXVI-B:** “Continuation of Underground Coal Gasification Study in Western North Dakota”; Submitted by: University of North Dakota Institute for Energy Studies; Request for: \$299,958 (Demonstration); Total Project Costs: \$719,958; Principal Investigator: Scott Korom, Ph.D.

Jones said that this proposal is a continuation project of the UCG feasibility study in McKenzie County, North Dakota, to provide important and timely data that complement the current UCG research work. Previous drilling and well logs indicated that there are two coal seams potentially suitable for UCG north of Grassy Butte (Township 147N Range 99W). The additional information provided by our continuation project will include more detailed site information on aquifer properties, groundwater quality, stratigraphy, lignite properties, and geomechanical properties.

Jones said that the three technical peer reviewers for this proposal gave the proposal an average weighted score of 184.7 out of 250 points. The weighted score was 189 out of 250 points from reviewer 13-13, 190 out of 250 points from reviewer 13-14 and 175 out of 250 points from reviewer 13-15. Technical peer reviewer 13-15 recommended that the project be funded; technical peer reviewers 13-13 and 13-14 recommended funding to be considered.

As technical advisor to the NDIC and LRC, Jones recommended that the project be funded, contingent on the following: Matching funding received.

Jones said that Great Northern Power Development is the conflict-of-interest party for proposal LRC-LXXVI-B.

Scott Korom, Ph.D., with the University of North Dakota Institute for Energy Studies, did a presentation in support of proposal LRC-LXXVI-B.

**Grant Round LXXVI (76) Grant Application LRC-LXXVI-C:** “ION Advanced Solvent CO<sub>2</sub> Capture Project”; Submitted by: ION Engineering; Request for: \$1,000,000; Total Project Costs: \$20,194,045; Principal Investigator: Alfred (Buz) Brown, Ph.D..

Jones said that ION Engineering withdraw this proposal prior to the 11-19-13 LRC meeting.

**Grant Round LXXVI (76) Grant Application LRC-LXXVI-D:** “Alstom’s Chemical Looping Combustion Technology with CO<sub>2</sub> Capture for North Dakota Lignite Utilization”; Submitted by: Alstom Power Inc.; Request for: \$500,000 (Demonstration); Total Project Costs: \$10,489,821; Principal Investigator: Herbert E. Andrus, Jr.

Jones said that with this proposal, Alstom proposes a program to test and commercially develop a limestone-based chemical looping combustion process (LCL-C™) to utilize partially dried (dried to 25-30% moisture) and run-of-mine North Dakota lignite as well as other US coals.

Jones said that the three technical peer reviewers for this proposal gave the proposal an average weighted score of 175.7 out of 250 points. The weighted score was 156 out of 250 points from reviewer 13-19, 206 out of 250 points from reviewer 13-20 and 165 out of 250 points from reviewer 13-21. Technical peer reviewers 13-19 and 13-21 recommended funding to be considered; technical peer reviewer 13-20 recommended that the project be funded.

As technical advisor to the NDIC and LRC, Jones recommended that the project be funded, subject to the following conditions:

- Matching funding received.
- Detailed test matrix is developed.

Great River Energy is the conflict-of-interest party for this proposal.

Shin Kang, Ph.D., with Alstom Power, was the presenter in support of proposal LRC-LXXVI-D

**Motion for Closed Confidential Session:**

Dwyer asked for a motion to close the meeting prior to the confidential session regarding confidential pages of proposal LRC-LXXIV-D (“Alstom’s Chemical Looping Combustion Technology with CO2 Capture for North Dakota Lignite Utilization”), as well as a confidential update about the “Implementation of Regional Lignite Energy Marketing Plan” project which has previously received confidential status for its reports. It was moved by Sen. Ray Holmberg and seconded by Andrea Stomberg that the Lignite Research Council meeting be closed pursuant to 54-17.5-06. Motion carried.

**Motion to Open Session Following Closed Confidential Session:**

Dwyer asked for a motion to open the meeting following the confidential session. Rep. Jeff Delzer so moved; seconded by Randy Christmann. Motion carried.

**Boundary Dam Unit #3 ICCS Project; Ballots Distributed; Election of New LRC Chairman:**

Dave Smith, Ph.D., from SaskPower, gave a short update about the Boundary Dam Unit #3 Integrated Carbon Capture and Storage (ICCS) Project. He said that this \$1.35 billion SaskPower project will see the integration of a rebuilt coal-fired generation unit with carbon-capture technology, resulting in low-emission power generation. Unit #3 is located at Boundary Dam Power Station near Estevan, Saskatchewan.

Dwyer asked Karlene Fine to distribute ballots to the LRC members for them to complete regarding their funding recommendations for the three proposals.

Dwyer said that on 11-18-13, the LRC Executive Committee met via teleconference and unanimously voted to nominate Jason Bohrer of the Lignite Energy Council as the new LRC Chairman. Dwyer called for nominations from the floor. Hearing none, Dwyer asked for a motion to elect Jason Bohrer as the new LRC Chairman. Rich Voss so moved; seconded by Andrea Stomberg. Motion carried.

**Next LRC Meeting; NDIC Meeting to Consider LRC’s Recommendations; 2014 Grant Round Deadlines:**

Dwyer called for a motion to select May 20, 2014 as the next LRC meeting date. Charlie Bullinger so moved; seconded by Pat Clement. Motion carried. The next LRC meeting will be held on May 20, 2014 at the Ramada Bismarck Hotel.

Dwyer said that the LRC's recommendations concerning the Grant Round LXXVI (76) requests will be considered by the ND Industrial Commission at its meeting on December 19, 2013.

The application deadline dates for submitting proposals to the NDIC for the two 2014 grant rounds are: April 1, 2014 and October 1, 2014.

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**Ballot Results:**

Dwyer announced the results of the LRC's confidential ballots concerning the LRC’s recommendations to the NDIC regarding the three Grant Round LXXVI (76) proposals as follows:

**-Grant Round LXXVI (76) Grant Application LRC-LXXVI-A: “Investigating the Use of Fly Ash and Nanomaterials for Sustainable Concrete Infrastructure” :**

**Fund: 20 votes.**

**Do Not Fund: 0 votes.**

**-Grant Round LXXVI (76) Grant Application LRC-LXXVI-B:** “Continuation of Underground Coal Gasification Study in Western North Dakota”:

**Fund: 17 votes.      Do Not Fund: 3 votes.**

**-Grant Round LXXVI (76) Grant Application LRC-LXXVI-D:** “Alstom’s Chemical Looping Combustion Technology with CO<sub>2</sub> Capture for North Dakota Lignite Utilization”:

**Fund: 18 votes.      Do Not Fund: 2 votes.**

**Adjournment:**

There being no further business, Dwyer requested a motion for adjournment of the LRC meeting. Randy Christmann so moved; seconded by Sen. Ray Holmberg. Motion carried.

Vicki Gilmore, Recording Secretary

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