Lignite Research Council (LRC) Chairman, Jason Bohrer, called the LRC meeting to order at 1:35 p.m. (CT) on November 16, 2017 at the Ramada Inn, Bismarck, North Dakota.

Approval of August 3, 2017 LRC Meeting Minutes:

Bohrer asked for a motion to approve the minutes of the August 3, 2017 LRC meeting. Randy Christmann so moved; seconded by Jay Kost. Motion carried.

Program Financial Summary:

Karlene Fine gave a financial summary regarding the Lignite Research, Development and Marketing Program.

Fine stated the Lignite Research Program Cash Balance for the 2017-2019 biennium as of September 30, 2017 is $25,049,703. She reviewed the current outstanding commitments which total $13,799,008. She proposed the following budget for the 2017-2019 biennium:
Administration: $ 850,000
Non-matching Studies $ 2,192,250
Marketing Project $ 2,634,000
LV 21 Demonstration Projects $ 1,367,678
Small Research/Education/Demonstration Projects $ 7,674,844
Advanced Energy Technology Projects ($9,375,000 Required) $20,844,145
Litigation Costs (net) $ 1,500,000
Total $37,062,917

Bohrer stated the following Advanced Technology Guidelines:

- **Advancing Energy Science** - The primary focus of this effort is to advance energy science in a way or ways that benefit the residents of North Dakota. Advances need to be transformative in one or more ways while offering the promise of competitive advantages that will ultimately sustain and grow the breakthrough without financial or regulatory support. It is foundational to this effort that advances are clearly transformational and offer breakthrough potential. As such, the lack of either or both makes the subject advance inappropriate for support through this grant.

- **Application Dates** - Grant applications may be submitted as part of the standard Lignite Research Program grant process on either April 1 or October 1. To maximize flexibility a special grant round may be requested, and approval will be required from the North Dakota Industrial Commission.

- **To Encourage Participation from North Dakota’s Existing Entities** - Priority shall be given to companies presently doing business in the North Dakota lignite fields or to teams that include strong collaboration with North Dakota industry.

- **To Ensure Substantial Commitment by Project Applicant(s)** - Each project team will provide a minimum of ten percent of the total project costs with at least half in the form of a cash contribution. The project will meet all other LRC funding requirements. Projects will be evaluated in part, on the basis of leveraging of State funding.

- **To Provide Industry / State Partnership** - The Industrial Commission Technical Representative and the Lignite Energy Council shall co-manage the State’s investments into the Advanced Energy Technology program.

- **To optimize Likelihood of Application in North Dakota** - Priority will be given to projects that show a clear need by North Dakota industry and show a clear path for application in North Dakota upon successful demonstration of technical and economic viability. Additionally, priority will be given to projects that are on a path working toward demonstration on a scale of at least 25 MWe or equivalent.

- **In addition to the guidelines listed above, the projects will follow the NDIC Lignite Research Program grant process and meet all of the related guidelines.**

Fine asked for a motion to approve the 2017-2019 biennium Lignite Research Council proposed budget. Al Rudeck so moved, seconded by Matt Greek. Motion Carried

**Project Overview for 2017**

Mike Holmes gave an overview of the three previous grant rounds held in 2017.

**Grant Round 82:**

- Project 82A “North Dakota Integrated Carbon Storage Complex Feasibility Study” Led by EERC - Wes Peck as a 2 year project for $1,500,000 from NDIC out of $13,857,978 total. **LRC Member Partners:** ALLETE Clean Energy, BNI Energy, Basin Electric, Minnkota Power, EERC
- Project 80C (Modification) “Pathway to Low-Carbon Lignite Utilization – Phase 1B & 2A” Led by EERC – Jason Laumb as a 19 month project for $3,500,000 from the NDIC out of $9,955,600 total. **LRC Member Partners:** Minnesota Power, BNI Energy, Basin Electric Power Cooperative, Dakota Gasification Company, EERC
Grant Round 83

- **Project 83C** “Carbon Capture & Utilization Using "VCCSTM Cycle" Technology - Phase II: Mineralization of Acidic Flue Gas CO2 via Chemical Reaction with Alkaline Lignite Fly Ash Extraction of Marketable Minerals & Other Commodities from Lignite Fly Ash” Led by Expansion Energy LLC - David Vandor as a 16 week project for $62,000 from the NDIC out of $124,000 total. **LRC Member Partners:** Great River Energy, North American Coal Corporation, EERC

- **Project 83D** “Resource Recovery from a Coal-Fired Power Plant to Enhance Agricultural Production in Open Field and Greenhouse Facilities” Led by North American Coal Corporation – Gerard Goven as a 14 month project for $149,557 from NDIC out of $300,000 total. **LRC Member Partners:** North American Coal Corporation & EERC (Partnered with NDSU & Knorr Farms)

- **Project 83E** “Investigation of Rare Earth Element Extraction from North Dakota Coal-Related Feedstocks” Led by UND IES - Dr. Daniel Laudal as a 1.5 year project for $280,000 from NDIC out of $3,437,500 total. **LRC Member Partners:** North American Coal Corporation, Great River Energy, Great Northern Properties, Minnkota Power, & EERC

Grant Round 84

- **Project 84A** “Project Carbon” Led by EERC - Jason Laumb as a 14 month project for $3,200,000 (+$2,000,000 contingency) out of $12,700,000 total. **LRC Member Partners:** ALLETE, Inc., BNI Energy, EERC & Minnkota Power Cooperative

- **Project 84C** “Development of Low-Cost Rare Earth Element Analysis and Sorting Methods” Led by Microbeam Technologies Inc. - Shuchita Patwardhan as a 2 year project for $224,767 from NDIC out of $449,534 total. **LRC Member Partners:** North Dakota Geological Survey, Minnkota Power Cooperative, Inc., BNI, SaskPower, & Great Northern Properties, Inc.

Total awarded monies in 2017 of: $8,916,324 ($2,000,000 contingency)

Grant Round LXXXIV (85) Grant Application

**LRC-LXXXV (85)-A: Annual Lignite Energy Council Education Program** Submitted by: Lignite Energy Council; Request for: $100,000; Total Project Costs: $215,000; Principal Investigator: Lignite Energy Council; Project Duration: 1 year

Fine stated that the objective of the Lignite Energy Council’s (LEC) Education Program is to educate teachers, students and members of the general public about career opportunities, economic benefits and operations of the lignite industry.

Fine said that the three technical peer reviewers gave the proposal an average weighted score of 215 out of 250 points. The weighted score was 214 out of 250 points from reviewer 01-01, 207 out of 250 from reviewer 01-02, and 223 out of 250 from reviewer 01-03. Technical peer reviewers 01-01, 01-02 and 01-03 all recommended funding the project.

As the Technical Advisor for this project, Fine recommended fund based off of the three technical reviewers recommended funding and noted that the additional information provided by the applicant answered the majority of the questions raised by the reviewers.

Fine said that the Lignite Energy Council and the members of the Lignite Energy Council all have conflicts of interest for LXXXV-A.

Kay LaCoe of the Lignite Energy Council presented on behalf of the applicant..
Project Updates

Charlie Bullinger gave an update on Dryfining™ Fuel Enhancement Process. He stated that the process was proven with continuous operation since December of 2009 at Coal Creek Station–Great River Energy dried and refined more than 50 million tons of lignite. Bullinger also stated that it was reliable by showing the 95%+ availability with no major outages or incidents with improved plant availability. He stated that it was cost effective by having an $80 million capital cost rather than conventional pollution control equipment and also had a net operating savings of $39 million ($17 million O&M decrease with DryFining equipment compared to $22 million increase with conventional pollution control equipment.)

Election of LRC Chairman, LRC Vice Chairman, and LRC Executive Committee

Jason Bohrer – Lignite Energy Council, Elected chairman , 18-0
Randel Christmann – Public Service Commission, Elected Vice Chairman, 18-0

Other Members

- Nicole Kivisto, Montana-Dakota Utilities Company, 16-2
- John Bauer. Great River Energy, 17-1
- Matt Greek, Basin Electric Power Cooperative, 17-1
- Jay Kost, The Falkirk Mining Company, 18-0
- Tim Rogelstad, The Otter Tail Power Company, 17-1
- One write-in vote with the name of Cory Fong, MDU Resources Group

Next LRC Meeting and 2018 Grant Round deadline:

Bohrer announced that the next LRC meeting is scheduled for May 17, 2018.
The application deadline date for submitting proposals to the NDIC for the next grant round is April 1, 2018.

Other Business

Dave Glatt of the North Dakota Dept. of Health stated that the Governor signed a Memorandum of Understanding (MOU) on Carbon Capture, Utilization and Storage (CCUS) at the Western Governors’ Association (WGA) meeting in Arizona between North Dakota, Wyoming, Montana and Saskatchewan. The three-year MOU will encourage the immediate engagement of CCUS-related organizations in the four jurisdictions, prioritize joint cooperative projects and ensure a formal evaluation process of activities and accomplishments.

Ballot Results:

Bohrer announced the results of the LRC's non-confidential ballots concerning the LRC’s recommendations to the NDIC regarding the Grant Round LXXXV (85) proposal as follows:

- **LRC-LXXXV (85)-A: Annual Lignite Energy Council Education Program**
  Submitted by: Lignite Energy Council; Request for: $100,000; Total Project Costs: $215,000; Principal Investigator: Lignite Energy Council; Project Duration: 1 year
  - Fund: 18 votes
  - Do Not Fund: 0 vote
  - Abstain: 1 vote

Adjournment:

There being no further business, Bohrer requested a motion for adjournment of the LRC meeting at 3:47 p.m. David Straley so moved; seconded Rita Faut. Motion carried.

Laney DeGraw, recording secretary