

**MEETING MINUTES**

**LIGNITE RESEARCH COUNCIL – GRANT ROUND 104**

Wednesday, November 13, 2024 - 1:30 p.m. (CT)

Bismarck State College – National Energy Center of Excellence Room #335

**LRC VOTING MEMBERS PRESENT:**

Jason Bohrer – Lignite Research Council, Chairman  
Jay Kost – The Falkirk Mining Company  
Mike Heger – BNI Energy  
Bryan Walther – North American Coal Company  
Dale Johnson – Dakota Gas  
Tim Hagerott – Minnkota Power Cooperative  
Dave Glatt – North Dakota Department of Environmental Quality  
Randy Christmann – North Dakota Public Service Commission  
Tom Oakland – North Dakota Commerce  
Todd Porter – North Dakota House of Representatives  
Dale Patten – North Dakota Senate  
Bill Sawyer – ALLETE  
Joseph Heringer – Land Board  
Rita Faut – North Dakota Farm Bureau  
Charlie Gorecki – EERC  
Ed Murphy – North Dakota Geological Survey

**OTHERS PRESENT:**

Reice Haase – North Dakota Industrial Commission  
Brenna Jessen – North Dakota Industrial Commission  
Erin Stieg – North Dakota Industrial Commission  
Mike Holmes – Lignite Research Council  
Angie Hegre - Lignite Energy Council  
Jonathan Fortner – Lignite Energy Council  
Kay LaCoe – Lignite Energy Council  
Brad Zimmerman – Otter Tail Power Company  
Jessica Bell – Rainbow Energy Center (on-line)  
Geoff Simon – ND Coal Conversion Counties Assoc.  
Joe Geiger – Montana-Dakota Utilities Co.  
Jim Sheldon – Basin Electric  
Reese Boehm - Rainbow Energy Center  
Nathan Anderson - DMR  
Alex Benson – Microbeam (presenter)  
Steve Benson – Microbeam (presenter)  
Kevin Connors - EERC (presenter)  
Amanda Livers-Douglas – EERC (presenter)  
Marty Doll – AE2S (presenter)  
Brent Bogar – AE2S  
Jackie Fleck – Rainbow Energy Center

**I. CALL TO ORDER**

**Meeting called to order:**

Lignite Research Council (LRC) Chairman Jason Bohrer called the meeting to order at 1:35 p.m. (CT) on November 13, 2024.

## II. APPROVAL OF MINUTES

### Approval of May 9, 2024, LRC Meeting Minutes:

Bohrer asked for a motion to approve the minutes from the above-listed meeting. Randy Christmann had an edit changing a word from tons to barrels. Charlie Gorecki asked that his name be added, as he was in attendance. Those changes were made. Rita Faut so moved; seconded by Bill Sawyer, motion carried.

## III. UPDATES

### Program Management & Financial Report:

Reice Haase shared the financial summary regarding the Lignite Research, Development and Marketing Program. (A copy of the financial summary is available in the Lignite Research Program files, and the meeting packet provided.)

Haase displayed a high-level dashboard view summary of all the Industrial Commission-managed funds to the committee. Haase shared that the Lignite Research Fund availability as of November 2024, is \$13.5 million which is dollars available to commit to new projects. Haase shared that there are three projects before the committee today with an ask of \$3.7 million.

Haase brought forth to the committee the Lignite Research fund cash balance of \$32.1 million with \$18.6 million of that having outstanding project commitments. Haase shared that the total of \$13.5 million is uncommitted and available while considering new projects.

For the Lignite Research Fund, Haase provided a cumulative view of the fund. Since the program's inception in 1987, 258 cumulative projects have been funded. Each of those projects brings private capital and private match back to the state of North Dakota. That private match has equaled \$2.8 billion project value that has been invested in the state of ND thanks to projects approved through this program. Currently there are 22 active projects.

In addition, Haase shared the 2023-2025 biennium appropriation and forecasted income. Sharing a graphic showing the Lignite research fund money coming from the Coal Severance Tax, Coal Conversion Tax, Research Tax and formula funding from Oil Production and Extraction Taxes showing a total of \$18.5 million through the course of the biennium. Of which \$14.7 million to date.

The financial data was emailed before the meeting to the LRC members.

Several committee members thanked Reice for his work with the Industrial Commission and the LRC. Others expressed gratitude for his contributions. Haase acknowledged and shared his appreciation of Erin Stieg and Brenna Jessen in the NDIC as well.

### Annual Update on R&D Program:

Mike Holmes provided an overview of the 2025 R&D program and the EPP project, emphasizing the importance of the state-industry partnership in North Dakota (ND). He highlighted recent successes in the lignite research program, alongside historical challenges that had been overcome. He also stressed the significance of domestic sourcing for rare earth elements (REEs) and critical minerals.

A graph of the current project distribution within the R&D program was shared, revealing that:

- 19% are focused on carbon management projects
- 23% are dedicated to rare earth elements - critical minerals
- 50% are allocated to other emerging markets
- 8% fall under miscellaneous categories

Holmes pointed out that the funding allocation reflects a strong emphasis on carbon management, with 71% of the budget directed toward carbon capture, utilization, and storage (CCUS).

### **Roadmap and Future Focus**

Looking ahead, Holmes discussed key priorities, including:

- Enhancing the performance of the existing energy fleet
- Investing in transformational research initiatives
- Focusing on carbon capture, utilization, and storage
- Leveraging international R&D breakthroughs
- Renewing focus on additional value propositions for lignite and Polygeneration opportunities

### **Emerging Markets & Carbon Management**

Holmes also covered developments in emerging markets and carbon management, highlighting:

- The success of the core CM project and its potential for regional expansion
- The pilot-scale purification of rare earth elements and critical minerals at the University of North Dakota (UND)
- Opportunities for extracting germanium and gallium from REE concentrates
- The strategic importance of carbon management and lignite’s potential for various applications

Holmes gave a status update on active and completed carbon management projects. He summarized key emerging market projects, including:

- Rare Earth Elements (REE) initiatives
- Core CM initiative
- Germanium and Gallium projects
- Lignite-derived building materials and carbon materials, such as lithium-ion battery anodes, graphene, graphite, asphalt, and tires

A detailed list of these projects can be found on the NDIC website: [ndic.nd.gov/research-grant-programs/lignite-research-program](http://ndic.nd.gov/research-grant-programs/lignite-research-program).

### **Unlocking Conventional EOR Potential in ND**

Holmes discussed the opportunity to unlock the full potential of conventional enhanced oil recovery (EOR) in ND. He noted that 358 million tons of CO<sub>2</sub> would be needed to produce up to 1 billion barrels of incremental oil. Holmes shared with 2-3 billion tonnes of CO<sub>2</sub>, the Bakken region could potentially produce 4-7 billion barrels of incremental oil—representing a tremendous commodity opportunity.

### **Study on Next Generation Plant of the Future**

Holmes shared insights from the “Next Generation Plant of the Future” study conducted in collaboration with the Energy & Environmental Research Center (EERC). This study aims to identify challenges and opportunities for building the next-generation lignite facility within the current and future business environment. Focus areas include:

- Permitting and regulatory challenges

- Fair access to financing and insurance
- Developing additional products, including CO2 utilization
- Evaluating future needs for power generation and demand growth

The EERC team has met with Lignite Energy Council (LEC) member organizations on two occasions to discuss priorities and understand challenges. Holmes discussed the regulatory obstacles posed by rulemaking and EPA overreach, highlighting specific issues such as:

- MATS Rule
- Carbon Rule
- Coal Combustion Residual Rule
- Regional Haze Rule
- Bureau of Land Management Resource Plan
- Minnesota’s goal of achieving 100% carbon-free energy by 2040

#### IV. GRANT ROUND 105 APPLICATION

##### **LRC-105A: Production of Germanium and Gallium Concentrates for Industrial Processes**

Submitted by: Microbeam Technologies

Request for: \$376,000

Total Project Costs: \$3,3134,978

Principal Investigator: Alex Benson

Project Duration: 3 years

Microbeam Technologies Incorporated (MTI) is teamed with UND and Barr Engineering with support from industry including North American Coal and BNI Energy to demonstrate germanium and gallium extraction from North Dakota Lignite at the bench-scale. This phase II project effort would build on Phase I to develop a conceptual design to extract, separate, recover and purify germanium and gallium from mixed rare earth element concentrates at lower costs than current methods. The U.S. is import reliant on germanium and gallium and while demand increases. The project team is requesting \$376,000 leveraged to a total project size of \$3,135, 483 with DOE and industry support.

Holmes shared that all three reviewers recommended funding. The proposal received an average score of 204.6 out of 250. Holmes shared that the funding would be subject to the Technical Advisor participating in the project reviews and reviews the project management plan with the project team. Holmes stated the conflicts of interest included BNI and North American Coal.

Alex Benson of Microbeam Technologies presented on behalf of the applicant.

A copy of the PowerPoint presentation is available in the LRP files.

##### **LRC-105B: Williston Basin Regional Initiative Technical Assistance Partnership: Support for continuation of PCOR Partnership**

Submitted by: EERC

Request for: \$1,250,000

Total Project Cost: \$6,250,000

Principal Investigator: Kevin Connors

Project Duration: 3 years

Holmes shared that the proposed project would be a continuation of PCOR efforts in the Williston Basin. The stated goal of the project is to identify and address storage and transport challenges facing commercial CCUS deployment in the Williston Basin. The total value of the proposed effort is \$6,250,000 including a request of \$1,250,000. The PCOR program would continue in parallel with funding from members to further leverage the results of the Williston Basin Project. The proposed project would be a three-year effort.

Holmes shared that all three technical reviewers recommending funding the project with an average score of 235 out of 250 and facilitating commercial CCUS is a primary focus for sustaining use of our vast lignite resources. Carbon management is a critical component of the lignite industry R&D roadmap and the lignite research program, and PCOR has been central to our progress. This Williston Basin effort would continue that progress as we add to the commercial applications.

Holmes shared that the funding would be subject to the Technical Advisor participating in the project reviews and reviews the project management plan with the project team. Holmes stated the conflicts of interest included many of the ND lignite industry members indirectly as PCOR members

Kevin Connors of EERC presented on behalf of the applicant.

A copy of the PowerPoint presentation is available in the LRP files.

**LRC-105C: Coal Creek Carbon Capture: Geologic CO2 Storage Complex Development Add-On**

Submitted By: EERC

Request for: \$5,150,874

Total Project Cost: \$10,945,607

Project Duration: 2 years

Holmes shared The EERC is working with Rainbow Energy Center toward commercial storage of carbon dioxide from the Coal Creek Station, in a storage complex adjacent to the power plant. This add-on scope of work would include coring, injection testing, and modeling to support the overall project objective – to advance carbon capture and storage at Coal Creek Station by characterizing and obtaining a permit for a storage complex capable of accommodating 200 MMt of CO2. The proposed add-on would be 23 months in duration with a total budget of \$10,945,607 including \$5,150,874 requested from the Lignite Research Program.

As the technical advisor, Holmes recommends funding. The proposed project is important to the Lignite Research Program in support of the overall carbon management efforts for North Dakota lignite. Results would be valuable to any plant in the region considering geologic storage, especially with stacked storage as a consideration. Both of the technical reviewers recommended funding with an average score of 230 out of 250. The project would leverage state funding with funding from the DOE and industry. Holmes shared that the funding would be subject to the Technical Advisor participating in the project reviews and reviews the project management plan with the project team. Conflicts of interest include North American Coal–Falkirk Mine.

Amanda Livers-Douglas from EERC presented on behalf of the applicant.

A copy of the PowerPoint presentation is available in the LRP files.

V. **Voting Process** – Ballots distributed, returned and tabulated.

VI. **Update on the CO2 Education & Outreach Strategic Plan – Marty Doll, Advanced Engineering and Environmental Services (AE2S)**

A strategic plan was discussed outlining a comprehensive approach to effectively engage and inform target audiences through tailored educational initiatives and community outreach efforts, aiming to enhance awareness. They discussed the understanding of CO2 and North Dakota’s role. The plan is to provide factual information backed by trusted resources and experts. Initiate widespread outreach so people have access to sourced information and can easily research scientific studies, economic benefits, landowner rights, and safety protocols. The next outcome they discussed was building trust. As an entity designed to serve communities throughout the state, there is a need to re-establish that base of trust as it relates to CO2 initiatives. It was shared that listening and providing clarity of landowner rights was key. Another desired outcome of this strategic plan was to help audiences connect the challenges facing agriculture and energy, navigating the best ways to adapt for the benefits of ND communities. Key themes were safety, natural preservation, landowner rights, ND pipeline and CO2 history and federal regulations and economic impact. The timeline of events was shared with a recommended campaign launch and implementation date of July 2025- June 2027.

VII. **RESULTS**

**LRC-105A: Production of Germanium and Gallium Concentrates for Industrial Processes**

Submitted by: Microbeam Technologies

Fund: 15  
Do Not Fund: 0  
Abstain: 0

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**LRC-105B: Williston Basin Regional Initiative Technical Assistance Partnership: Support for continuation of PCOR Partnership**

Submitted by: EERC

Fund: 15  
Do Not Fund: 0  
Abstain: 0

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**LRC-105C: Coal Creek Carbon Capture: Geologic CO2 Storage Complex Development Add-On**

Submitted By: EERC

Fund: 14  
Do Not Fund: 0  
Abstain: 0

Chairman Bohrer requested a motion to present the results to the Industrial Commission at the November 13, 2024 meeting. Senator Patten so moved, seconded by Jay Kost. The motion carried.

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**VIII. OTHER BUSINESS**

Bohrer announced that the next NDIC meeting is scheduled for November 26, 2024. Bohrer reminded the group that the spring grant application deadline is April 1, 2025, and the next LRC meeting is tentatively scheduled for May 7, 2024.

**IX. ADJOURNMENT**

There being no further business, Jason Bohrer requested a motion to adjourn the LRC meeting. Charlie Gorecki so moved, seconded by Jay Kost. The motion carried.

The North Dakota Industrial Commission meeting, when these recommendations will be considered, will be held on November 26, 2024.

Angie Hegre, recording secretary