

## MEETING MINUTES

### LIGNITE RESEARCH COUNCIL – GRANT ROUND 103

Thursday, November 9, 2023 - 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  
Brenden Brinkman – Coyote Creek Mining Company  
Jay Kost – The Falkirk Mining Company  
Mike Heger – BNI Energy  
Bryan Walther – North American Coal Company  
John Bauer- Rainbow Energy Center  
Jay Skabo – Montana-Dakota Utilities Co.  
Charlie Gorecki – Energy & Environmental Research Center (EERC)  
Ed Murphy – North Dakota Geological Survey  
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  
Al Christianson – Nexus Line LLC  
Joseph Heringer – Land Board  
Rita Faut – North Dakota Farm Bureau

#### OTHERS PRESENT:

Reice Haase – North Dakota Industrial Commission  
Brenna Jessen – North Dakota Industrial Commission  
Mike Holmes – Lignite Research Council  
Angie Hegre - Lignite Energy Council Jonathan Fortner – Lignite Energy Council  
Kay LaCoe – Lignite Energy Council  
Jim Sheldon – Basin Electric Power Cooperative  
Brad Zimmerman – Otter Tail Power Company  
Randy Bartsch – IBEW 11<sup>th</sup> District (ND)  
Geoff Simon – ND Coal Conversion Counties Assoc.  
John Weeda – Quail Hollow Consulting  
Rep. Anna Novak – ND House of Representatives  
Craig Bleth – Minnkota (presenter)  
Claire Vigessa – NDTA (presenter)  
Bill Easter – Semplastics EHC LLC (presenter)  
Sue Easter - Semplastics EHC LLC (w presenter)

approved through this program. Currently there are 28 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.

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

**Carbon Capture & Utilization Education and Marketing Special Grant Round Update:**

Haase shared that Section 10 of HB 1014 passed by the 68th Legislative Assembly included an appropriation of \$300,000 “to contract for carbon capture and utilization education and marketing”. The lignite research fund, oil and gas research fund, and renewable energy development fund have been directed to each contribute \$100,000 to the effort. The Commission is directed to develop the contract in consultation with each of the fund’s respective research councils. A combined special grant round would facilitate a thorough review of applications and would allow the Commission to efficiently consult with all three councils prior to considering a contract that would meet the legislative intent of HB 1014.

Haase suggested that the meeting with all three research councils would take place at the end of January or the beginning of February 2024.

**IV. GRANT ROUND 103 APPLICATION**

**LRC-103A: High-Value Products from Produced Water Mineralization via Reaction with Anthropogenic CO<sub>2</sub>**

Submitted by: Semplastics EHC LLC

Request for: \$100,000

Total Project Costs: \$356,494

Principal Investigator: Walter Sherwood

Project Duration: 12 months

Holmes shared Semplastics is teamed with the EERC and requesting funding to perform a project focused on the production of building materials from produced water and CO<sub>2</sub>. The objective is to develop and demonstrate a cost-effective method to mineralize sodium, lithium, and other elements in the brine while capturing and storing CO<sub>2</sub>. The carbonates would be used to produce samples of building products such as panels, coated mixed carbonates in polypropylene, and sodium carbonate or other commercially useful sodium compounds. The request is for \$100,000 from the lignite research program, with the balance from Semplastics for a total project cost of \$356,494.

As the Technical Advisor for this project, Holmes recommended funding. He shared that the proposed project focuses on the development and demonstration of value-added products from lignite utilization while storing CO<sub>2</sub>. This would be the first step of demonstrating the technology for producing additional building materials. Two of the technical reviewers

Bleth continued to the CREST study that was proposed in February 2022. The project had several partners on board, including NDIC, Minnkota, and Fluor Enterprises. The total funding requested for the project was \$10.8 million, but only \$5.9 million was required to complete it. The NDIC was asked to provide \$5.4 million initially, but only \$2.9 million was utilized. Bleth shared with the group that the total funding used was significantly less than what was originally requested. Tasks and outcomes were shared with the group.

#### CREST Key Outcomes

- Task 1 – Project Management and Technology Transfer
- Task 2 – Steam Extraction Studies
  - Both Units - Completed the preliminary evaluations begun in FEED
  - Thermal modeling at various load temperatures, Integration of extraction parameters into Fluor process design
  - Evaluation of STG control systems and instrumentation, ensure safe operation in all operating scenarios
  - Sargent & Lundy – design of the steam delivery piping and condensate return system
  - No fatal flaws
- Task 3 – Aerosol Measurement in Support of Dual Flue Gas Supply - EERC
  - Previous efforts concentrated on characterizing Unit 2 only
  - Generally, reduced plant load tends to reduce fly ash PM, while increasing the content of FGD carryover
  - Cyclic production of aerosols was identified, coinciding with the addition of lime slurry to the FGD absorber modules (cause unidentified).
  - Coal quality and varying cyclones in/out of service did not impact FGD carryover.
- Task 4 – Evaluation of Specific Value Engineering and Cost Reduction Opportunities
  - 70 Items were identified as potential cost reductions with Fluor, 55 were ultimately accepted. Three most impactful:
  - Use of extraction steam instead of capex associated with NG Steam Boilers & NG cost risk
  - Rearrangement and reduction in the size of the plot plan
  - Elimination of redundant pumps
- Task 5 – Analysis of Potential Impacts of Flue Gas Ductwork Pressure Transients
  - Contracted with Trax, LLC., who evaluated 22 separate transient scenarios
  - Predict the behavior of the Units in their future configuration, given existing equipment and equipment added by CCS
  - Condition assessment of existing FRP ductwork was included
  - 33 control recommendations for the Units and the CCS
- Task 6 – Icing Studies
  - Performed by Nels Consulting Services
  - Existing chimneys – full flow to less-than-full flow (no modifications indicated, have extensions)
  - Absorber stack – provide corrosion protection for top 10’
  - Cooling tower (S&L) – will be fogging and rime ice impacts, minimize by optimally locating
- Task 7 – Gaseous Dispersion Modeling
  - AECOM - absorber outlet and the startup/emergency vent stack (plus startup and shutdown scenarios) at various unit load combinations
  - Total concentrations for all pollutants were below the ND requirements and NAAQS

## VIII. 2023-2024 CALENDAR

Bohrer announced that the next NDIC meeting is scheduled for November 28, 2023. Bohrer reminded the group that the spring grant application deadline is April 1, 2024, and the next LRC meetings are tentatively scheduled for May 9, 2024, and November 14, 2024.

## IX. OTHER BUSINESS

None

## X. ADJOURNMENT

There being no further business, Jason Bohr requested a motion for adjournment of the LRC meeting. Charlie Gorecki so moved; seconded by Jay Skabo. Motion carried.

The North Dakota Industrial Commission meeting, when these recommendations will be considered, will be held on November 28, 2023.

Angie Hegre, recording secretary