INDUSTRIAL COMMISSION OF NORTH DAKOTA

Doug Burgum
Governor

Drew H. Wrigley
Attorney General

Doug Goehring
Agriculture Commissioner

Tuesday, August 27th, 2024
Governor's Conference Room or Microsoft Teams – 12:30 pm
Meeting Coordinators:
Karen Tyler, Executive Director
Reice Haase, Deputy Executive Director
Brenna Jessen, Recording Secretary
Join on your computer or mobile app
Join the meeting now
Or call in (audio only)
+1 701-328-0950,,875054627#

I. Roll Call and Pledge of Allegiance

(approximately 12:30 pm)

II. Office of the Industrial Commission – Karen Tyler

A. **Consideration of July 2nd, July 30th, and August 14th, 2024 Industrial Commission Meeting Minutes** (Attachment 1)
B. Other Office of Industrial Commission business

(approximately 12:35 pm)

III. North Dakota Public Finance Agency – DeAnn Ament

A. Consideration of the following State Revolving Fund loan applications:
   i. Grand Forks – Clean Water $6,922,000 (Attachment 2)
   ii. Southeast Water Users District – Drinking Water - $5,666,000 (Attachment 3)

B. Presentation of a memo of State Revolving loans approved by PFA Advisory Committee (Attachment 4)
   i. Drayton – Clean Water - $350,000

C. Presentation of a memo on the sale of $200,920,000 State Revolving Fund Program Bonds, Series 2024A (Attachment 5)

(approximately 1:00 pm)

IV. Department of Mineral Resources – Mark Bohrer, Ed Murphy

A. **Consideration of the following cases:**
   i. Order No. 33694 issued in Case No. 31008 regarding the confiscation of all production-related equipment and salable oil at the Oltmans Ocelot 1-21 well in Stark County, ND (Attachment 6)
   ii. Order No. 33664 issued in Case No. 30992 regarding an application of Zargon Oil (ND) Inc. authorizing the conversion of the E.J. Feland 25-6 well in Bottineau County, ND for the injection of fluids for enhanced oil recovery (Attachment 7)

B. Presentation of North Dakota Geological Survey Quarterly Report – Ed Murphy (Attachment 8)

C. Other Department of Mineral Resources business

(approximately 1:30 pm)

V. State Energy Research Center – Charlie Gorecki

A. Presentation of State Energy Research Center Annual Report (Attachment 9)

B. Presentation of Report on CO_2 Enhanced Oil Recovery Forecast prepared under Contract SERC-2019 Task 2 (Attachment 10)

C. Other State Energy Research Center business

(approximately 1:50 pm)

VI. North Dakota Transmission Authority – Claire Vigesaa

A. Report by Executive Director (Attachment 11)
   i. Transmission Authority Annual Report (Attachment 12)
   ii. Resource Adequacy in North Dakota Annual Report (Attachment 13)

B. Other Transmission Authority business

(approximately 2:00 pm)

VII. Legal Update* – Phil Axt, John Reiten

A. Litigation Status:
   i. Northwest Landowners v. NDIC
   ii. BLM Venting and Flaring Rule
   iii. BLM Conservation Rule
   iv. Council of Environmental Quality NEPA Phase II Rule
   v. EPA Mercury and Air Toxics Rule

vi. EPA Carbon Rule
vii. EPA Methane/OOOO Rule

B. Federal Regulatory Update:
i. BLM Resource Management Plan
ii. DAPL Draft Environmental Impact Statement
iii. EPA Methane Tax Rule

* Possible Executive Session under N.D.C.C. 44-04-19.1(9) & 44-04-19.2 for attorney consultation

(approximately 2:30 pm)

VIII. North Dakota Mill and Elevator – Vance Taylor, Cathy Dub

A. Presentation of Report on Fiscal Year 2024 Transfers to the Agricultural Products Utilization Fund and the General Fund (Attachment 14)
B. Presentation of 4th Quarter and Full Year 2024 Operations Report (Attachment 15 A,B and full report)
C. **Consideration of 2025 Capital Plan** (Attachment 16 A,B,C,D)
D. **Consideration of 2025 Gain Share Plan** (Attachment 17 A,B)
E. Other North Dakota Mill and Elevator business

Meeting Closed to the Public for Executive Session Pursuant to NDCC 6-09-35, 44-04-18.4, 44-04-19.1 and 44-04-19.2

(approximately 3:00 pm)

IX. North Dakota Mill and Elevator Executive Session – Vance Taylor, Cathy Dub

A. **Consideration of 2025 North Dakota Mill Strategic Plan** (Confidential Attachments 18 A,B,C,D,E)

(approximately 3:30)

X. Public-Private Partnership Discussion – Josh Teigen, Commerce Commissioner

(approximately 4:00 pm)

XI. Bank of North Dakota Executive Session – Don Morgan, Kirby Evanger

A. Report on one loan (Confidential Attachment 19)
B. Presentation of Non-Accrual Loans Quarterly Recap/Detail (Confidential Attachment 20)
C. Presentation of Problem Loans – Adversely Classified Quarterly Recap (Confidential Attachment 21)
D. Presentation of Loan Charge-Offs and Recoveries YTD 06/30/24 (Confidential Attachment 22)

E. Presentation of Off-Balance Sheet Risk Quarterly Recap/Detail (Confidential Attachment 23)
F. Presentation of Concentrations of Credit as of 06/30/24 (Confidential Attachment 24)
G. Presentation of May and June Confidential Minutes (Confidential Attachment 25)
H. Other Bank of North Dakota Confidential Business

Meeting Returns to Public Session

(approximately 4:30 pm)

XII. Formal Action Taken in Public Session

(approximately 4:35 pm)

XIII. Bank of North Dakota – Don Morgan, Rob Pfennig

A. Presentation of Second Quarter 2024 Performance Highlights (Attachment 26)
B. Presentation of May and June Nonconfidential Committee and Advisory Board Minutes (Attachment 27)
A. Other Bank of North Dakota Business

XIV. Adjournment

Next Meeting – September 30th, 2024, 1:00 pm
Governor's Conference Room, Bismarck, ND

Minutes of a Special Meeting of the Industrial Commission of North Dakota

Held on July 2nd, 2024 beginning at 9:00 a.m.

Governor's Conference Room – State Capitol

Present: Governor Doug Burgum, Chairman

Attorney General Drew H. Wrigley

Agriculture Commissioner Doug Goehring

Other attendees included Executive Director Karen Tyler, Brenna Jessen, Erin Stieg, Jace Beehler and a member of the media.

Governor Burgum called the meeting of the Industrial Commission to order at approximately 9:05 a.m.

Ms. Karen Tyler took roll call, and Governor Burgum, Commissioner Goehring, and Attorney General Wrigley were present.

Governor Burgum invited the room to stand and join the Commission in saying the Pledge of Allegiance.

Ms. Karen Tyler presented for consideration of approval changes to the Renewable Energy Standard and the Newly Created Carbon Free Standard under Minn Stat. 216B.1691 – Request for Approval to Submit Reply to Comments.

It was moved by Commissioner Goehring and seconded by Attorney General Wrigley that the Industrial Commission authorize counsel to provide any necessary and appropriate replies to comments submitted to the MN Public Utilities Commission regarding proposed rulemaking related to Changes to Renewable Energy Standard and the Newly Created Carbon Free Standard under Minn. Stat. 216B.1691, with such replies to be circulated to the Industrial Commission for review and signature and due to MPUC by July 10, 2024.

On a roll call vote, Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.

Ms. Tyler provided a review of the process utilized by the BND President/CEO search committee to carry out the search, which resulted in two finalists presented to the Commission for final interviews.

The following individuals were voting members on the search committee:

- Tammy Miller, North Dakota Lt. Governor
- Claire Ness, North Dakota Attorney General Deputy Director
- Tom Bodine, North Dakota Agriculture Commissioner Deputy Director
- Brenda Foster, BND Advisory Board Member
- Karl Bollingberg, BND Advisory Board Chair

Non-voting members of the search committee were Karen Tyler, NDIC Executive Director and Lori Leingang, BND CAO.

The first interview with candidate finalist Kelvin Hullet started at approximately 9:15 a.m.

The first interview concluded at approximately 10:25 a.m. and the Commission took a break until 11:00 a.m.

The meeting reconvened at 11:03 a.m.

The second interview with candidate finalist Don Morgan started at approximately 11:05 a.m.

The second interview concluded at approximately 12:00 p.m and the Commission took a break until 12:15 p.m.

The Commission members held a discussion regarding the two final candidates.

It was moved by Commissioner Goehring and seconded by Attorney General Wrigley that the Industrial Commission offer Mr. Don Morgan the position of Bank of North Dakota President and CEO with a start date no later than August 1, 2024, and authorize the Industrial Commission Executive Director to negotiate and initiate an employment agreement with Mr. Morgan.

On a roll call vote, Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.

The Commission members shared their gratitude for all candidates that took the time to apply to such an important position for the State of North Dakota. Governor Burgum specifically shared his gratitude to the two finalists for their willingness and courage to continue through a public interview process.

Discussion was had around challenges that arise with the requirement to make public the finalists for these executive positions and the impact the public nature of the process has on candidates.

With no further business, Governor Burgum adjourned the meeting at 12:40 p.m.

North Dakota Industrial Commission

Brenna Jessen, Recording Secretary

Reice Haase, Deputy Executive Director

Karen Tyler, Executive Director

Minutes of a Meeting of the Industrial Commission of North Dakota

Held on July 30th, 2024 beginning at 1:00 p.m.

Governor's Conference Room – State Capitol

Present: Governor Doug Burgum, Chairman

Attorney General Drew H. Wrigley

Agriculture Commissioner Doug Goehring

Also Present: This meeting was open through Microsoft Teams so not all attendees are known.

Agency representatives joined various portions of the meeting.

Governor Burgum called the meeting of the Industrial Commission to order at approximately 1:10 p.m.

Ms. Karen Tyler took roll call, and Governor Burgum, Commissioner Goehring, and Attorney General Wrigley were present.

Governor Burgum invited the room to stand and join the Commission in saying the Pledge of Allegiance.

DEPARTMENT OF MINERAL RESOURCES DIRECTOR FINALIST INTERVIEWS

Mr. Reice Haase presented the DMR Director Search Committee Report and explained the process that the committee went through to get to the finalists that are being interviewed today.

The following individuals were voting members on the committee:

- Reice Haase, North Dakota Industrial Commission
- Tom Bodine, North Dakota Agriculture Commissioner's Office
- Claire Ness, North Dakota Attorney General's Office
- Jace Beehler, North Dakota Governor's Office Chief of Staff
- Justin Kringstad, North Dakota Pipeline Authority
- Preston Page, Oil and Gas Research Council
- Zac Weis, Oil and Gas Research Council

Governor Burgum reminded the Commission members that there are recommended/guideline questions to ask the candidates, but they do not have to solely stick to those questions.

The first interview with Nathan Anderson began at approximately 1:15 p.m.

The interview concluded at approximately 2:25 p.m. and the Commission took a break until 2:35 p.m.

The second interview with Kevin Connors began at approximately 2:38 p.m.

The second interview concluded at approximately 3:40 p.m. and the Commission took a break until 4:00 p.m.

The Commission members held a discussion regarding the two final candidates. Governor Burgum stated that he needs more information and does not feel the Commission can confidently make a decision today without having the knowledge of the current state of Department of Mineral Resources

and what their needs are for a Director. It was requested there be a special Industrial Commission meeting in the next 7-14 days to discuss the candidates further and come to a consensus on the naming a new Director at that time.

It was moved by Attorney General Wrigley and seconded by Commissioner Goehring that the Industrial Commission reconvene in 7-14 days to discuss the two final candidates further and come to a consensus on naming a new Director at that time.

On a roll call vote, Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.

The Commission members shared their gratitude for all candidates that took the time to apply to such an important position for the State of North Dakota. Governor Burgum specifically shared his gratitude to the two finalists for their willingness and courage to continue through this process.

DEPARTMENT OF MINERAL RESOURCES

Mr. Mark Bohrer gave a presentation of the Oil and Gas Division Quarterly Report. There were 360 permit applications received in Q1 2024. The rig count was 39 for the quarter and 18,772 wells producing. The production was at 1,194,872 barrels of oil per day and the North Dakota avg $/barrel was $69.78.

Mr. Reice Haase presented for consideration of approval the authority to contract with Dr. Lynn Helms for professional consulting services. Dr. Helms would be there to assist with advising staff on administrative case load, execute orders, providing recommendations to open administrative cases, and other duties as requested by staff.

It was moved by Commissioner Goehring and seconded by Attorney General Wrigley that the Industrial Commission authorizes the Department of Mineral Resources to contract with Dr. Lynn Helms for professional consulting services, at a minimum through the start date of the next Director.

On a roll call vote, Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.

NORTH DAKOTA INSURANCE RESERVE FUND

Mr. Keith Pic presented for consideration of approval reinsurance policy recommendations for the Excess Loss Reinsurance Coverage – Fire and Tornado Fund.

The memo reads as follows:

"The State Fire and Tornado Fund ("Fund") provides property insurance coverage to 1,174 state agencies and local governments and protects $22.8 billion of total insured value ("TIV") as of July 18, 2024. The North Dakota Insurance Reserve Fund ("NDIRF") administers the Fund through a contract with the North Dakota Insurance Department. The contract has been in place since June 2019. The NDIRF is a member-owned nonprofit corporation that provides liability, automobile, and equipment coverage to North Dakota local governments.

Under the NDIRF's administration, the Fund's TIV has grown by over $8 billion. The increase in TIV represents the NDIRF's commitment to collecting updated property values and adding missing property

to property schedules. These tasks, which NDIRF employees perform, ensure that state and local government property, and ultimately North Dakota taxpayers, are protected if a partial or total loss occurs.

Due to term changes made in 2022 by Travelers in regard to NDSU's heating plant and UND's EERC buildings, NDIRF staff sought alternative reinsurance options in preparation for the Fund's 2023 renewal. The Fund's reinsurance structure in 2023 was changed to a shared and layered program. The main benefit of this structure is that all the Fund's properties are covered under the same program, reducing pricing and administrative costs.

Currently, the Fund has excess loss reinsurance for claims over $2 million up to $250 million through a shared and layered program. The reinsurance deposit premium paid was approximately $7.5 million based on over $21.5 billion of property values as of August 1, 2023, which translates to a rate of .0351 per $100 of insured value.

N.D. Cent. Code § 26.1-22-21 requires the Insurance Commissioner to procure excess loss reinsurance with the approval of the Industrial Commission. The Fund's current excess loss reinsurance treaty expires at midnight on July 31, 2024.

2024 Reinsurance Quotes

NDIRF staff through a reinsurance broker was able to continue the shared and layered structure that includes multiple reinsurance companies taking different portions of a $250 million limit above a $2 million retention per occurrence at a rate of .0349 per $100 of TIV. Based on a TIV of $22,380,238,517, the deposit premium for this structure is $7,813,294. As it was last year, the structure was heavily oversubscribed, which resulted in favorable terms and a reduction of the overall rate.

Travelers indicated that it would not quote the full program or take a share of the program without modifying the coverage terms.

Recommendation

It is recommended that the Fund accept the proposed shared and layered structure. This structure will guarantee that all Fund property is reinsured, providing long-term stability and greater control over the program's terms. The terms offered in the 2024-2025 shared and layered structure are the same as the current program and follow the Fund's forms.

The recommended shared and layered reinsurance structure is common for large commercial enterprises seeking insurance and reinsurance. If the Fund follows this recommendation, 2024-2025 would mark the second time the Fund has taken this approach to meet its reinsurance requirements. Century Code specifies that insurance is purchased from "authorized" insurance companies, but the Century Code does not specify whether non-admitted companies qualify as "authorized" companies. However, this same section of the century code, N.D.C.C. § 26.1-22-21, provides a general exception that, among other things, authorizes the Commissioner and the Industrial Commission to disregard the authorized insurance company requirement with the approval of the Industrial Commission.

Excess loss reinsurance continues to impact the Fund significantly, but this coverage is essential for proper claims management and the Fund's long-term financial strength and stability. The Fund's TIV has

increased by over $8 billion in the past five years and will continue to grow due to the continued work of NDIRF staff, new construction, and increased material and labor costs. In addition, the State's concentration of property at various locations, including its Capitol complex and 11 university and college campuses, requires the Fund to have adequate excess loss reinsurance to recover from a catastrophic event."

It was moved by Commissioner Goehring and seconded by Attorney General Wrigley that the Industrial Commission accept the recommendation of the North Dakota Insurance Commissioner regarding the Excess Loss Reinsurance Coverage for property coverage provided by the Fire and Tornado Fund, and approve the proposal for a shared and layered program policy with participation of the insurers as presented, which will provide reinsurance coverage of $250,000,000 with a $2,000,000 deductible per occurrence on Total Insured Value of $22,380,238,517 with a total policy premium of $7,811,220.

This motion acknowledges that the Century Code specifies that insurance must be purchased from "authorized" insurance companies, and further acknowledges that the Century Code does not specify whether non-admitted companies qualify as "authorized" companies. However, this same section of the century code, N.D.C.C. § 26.1-22-21, provides a general exception that, among other things, authorizes the Commissioner and the Industrial Commission to disregard the authorized insurance company requirement with the approval of the Industrial Commission, and such approval is herein recommended under this motion.

On a roll call vote, Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.

NORTH DAKOTA PUBLIC FINANCE AUTHORITY

Ms. DeAnn Ament presented for consideration of approval the following loan applications:

i. McLean Sheridan Rural Water District – Drinking Water - $8,159,000

The purpose of this project is to add a second treatment train which will double the plant treatment capacity. The project will also upgrade nearly all the process pipe, electrical components and instrumentation and controls systems within the plant which are nearing the end of their useful life. New larger office and garage space to support additional staff will also be constructed. The requested term for the loan is 30 years, and the District will issue revenue bonds payable with water user fees. The average annual payment for the revenue bonds will be $41,002.

It was moved by Commissioner Goehring and seconded by Attorney General Wrigley that the Industrial Commission approve the Drinking Water State Revolving Fund loan request for $8,159,000 for the McLean Sheridan Rural Water District.

On a roll call vote, Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.

A RESOLUTION WAS MADE

RESOLUTION APPROVING
LOAN FROM DRINKING WATER STATE REVOLVING FUND

WHEREAS, the Industrial Commission has heretofore authorized the creation of a Drinking Water State Revolving Fund Program (the "Program") pursuant to N.D.C.C. chs. 6-09.4, 61-28.1, and 61-28.2; and

WHEREAS, the State Revolving Fund is governed in part by the Master Trust Indenture dated as of July 1, 2011 (the "Indenture"), between the North Dakota Public Finance Authority (the "NDPFA") and the Bank of North Dakota (the "Trustee"); and

WHEREAS, McLean Sheridan Rural Water District (the "Political Subdivision") has requested a loan in the amount of $8,159,000 from the Program to add a second treatment train to double the plant treatment capacity, upgrade nearly all the process pipe, electrical components, and the instrumentation and controls system within the plant, and construct larger office and garage space to support additional staff; and

WHEREAS, NDPFA's Advisory Committee is recommending approval of the Loan; and

WHEREAS, there has been presented to this Commission a form of Loan Agreement proposed to be adopted by the Political Subdivision and entered into with the NDPFA;

NOW, THEREFORE, BE IT RESOLVED by the Industrial Commission of North Dakota as follows:

1. The Loan is hereby approved, as recommended by the Advisory Committee.

2. The form of Loan Agreement to be entered into with the Political Subdivision is hereby approved in substantially the form on file and the Executive Director is hereby authorized to execute the same with all such changes and revisions therein as the Executive Director shall approve.

3. The Executive Director is authorized to fund the Loan from funds on hand in the Drinking Water Loan Fund established under the Indenture upon receipt of the Municipal Securities described in the Political Subdivisions bond resolution, to submit to the Trustee a NDPFA Request pursuant to the Indenture, and to make such other determinations as are required under the Indenture.

4. The Commission declares its intent pursuant to Treasury Regulations '1.150-2 that any Loan funds advanced from the Federally Capitalized Loan Account shall be reimbursed from the proceeds of bonds issued by the NDPFA under the Indenture.

Adopted: July 30, 2024

ii. Dickinson – Clean Water - $3,539,000

The purpose of this project is to extend the sidewall of Cell 3-B 4 and develop Cell 3-B 5 to accept municipal waste from 26 communities in a 10-county area. The stormwater holding pond will be eliminated with this expansion. The requested term for the loan is 20 years, and the City will issue

revenue bonds payable with solid waste utility fee revenue and 50% of the 1% city sales tax dedicated to infrastructure. The average annual payment for the revenue bonds will be $146,234.

It was moved by Commissioner Goehring and seconded by Attorney General Wrigley that the Industrial Commission approve the Clean Water State Revolving Fund loan request for $3,539,000 for the City of Dickinson.

On a roll call vote, Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.

A RESOLUTION WAS MADE

RESOLUTION APPROVING
LOAN FROM CLEAN WATER STATE REVOLVING FUND

WHEREAS, the Industrial Commission has heretofore authorized the creation of a Clean Water State Revolving Fund Program (the "Program") pursuant to N.D.C.C. chs. 6-09.4 and 61-28.2; and

WHEREAS, the Clean Water State Revolving Fund is governed in part by the Master Trust Indenture dated as of July 1, 2011 (the "Indenture"), between the North Dakota Public Finance Authority (NDPFA) and the Bank of North Dakota (the Trustee); and

WHEREAS, the City of Dickinson (the "Political Subdivision") has requested a loan in the amount of $3,539,000 from the Program to extend the sidewall of cell 3-B 4 and develop cell 3-B 5 to accept municipal waste from 26 communities in a 10-county area to replace the stormwater holding pond; and

WHEREAS, the NDPFA's Advisory Committee is recommending approval of the Loan; and

WHEREAS, there has been presented to this Commission a form of Loan Agreement proposed to be adopted by the Political Subdivision and entered into with the NDPFA;

NOW, THEREFORE, BE IT RESOLVED by the Industrial Commission of North Dakota as follows:

1. The Loan is hereby approved, as recommended by the Advisory Committee.

2. The form of Loan Agreement to be entered into with the Political Subdivision is hereby approved in substantially the form on file and the Executive Director is hereby authorized to execute the same with all such changes and revisions therein as the Executive Director shall approve.

3. The Executive Director is authorized to fund the Loan from funds on hand in the Clean Water Loan Fund established under the Indenture upon receipt of the Municipal Securities described in the Political Subdivisions bond resolution, to submit to the Trustee a NDPFA Request pursuant to the Indenture, and to make such other determinations as are required under the Indenture.

4. The Commission declares its intent pursuant to Treasury Regulations '1.150-2 that any Loan funds advanced from the Federally Capitalized Loan Account shall be reimbursed from the proceeds of bonds issued by the NDPFA under the Indenture.

Adopted: July 30, 2024

Ms. Ament gave a presentation of a memo of State Revolving Fund loans approved by the Advisory Committee:

i. Richardton – Clean Water - $500,000

The purpose of this project is to construct a new lift station at a better location with a facility which will lower future maintenance costs and increase efficiency by adding easier access. Also, safety will be enhanced by adding fencing around the site. The requested loan term is for 20 years, and the City will issue revenue bonds payable with sewer user fees. The average annual payment for the revenue bonds will be $29,225.

ii. Rhame – Drinking Water - $1,199,000

The purpose of this project is to replace aging asbestos cement pipe water main which has needed extensive repairs over the years with PVC water main on the north side of the railroad tracks. Also, replace the existing water meters with new digital meters which will require less repairs and make it easier to detect and locate leaks. The requested loan term is for 30 years, and the City will issue improvement bonds payable with special assessments. The average annual payment for the improvement bonds will be $50,043.

iii. St. John – Drinking Water - $365,000 increase to previously approved $920,000

The purpose of this project is to replace the existing 50-000-gallon water tank with a new 100,000-gallon tank to meet storage requirements. The new storage will serve the new middle and high schools which have attracted students from all over the area and enrollment continues to grow. The requested loan term is for 30 years, and the City will issue revenue bonds payable with sewer fees. The average annual payment for the revenue bonds will be $53,591.

iv. Taylor – Drinking Water - $628,000

The purpose of this project is to replace undersized water main that does not meet standards with a 6" water main to help areas of town experiencing low water pressure. The requested loan term is for 30 years, and the City will issue improvement bonds payable with special assessments. The average annual payment for the improvement bonds will be $27,305.

v. Milnor – Drinking Water - $300,000

The purpose of this project is to update and incorporate the existing supervisory control system for the lift stations into the water control system, update the light fixtures, and electric system in the pumping station. The requested loan term is for 20 years, and the City will issue revenue bonds payable with water user fees. The average annual payment for the revenue bonds will be $17,596.

LEGAL UPDATE

A. Litigation Status:
    a. Northwest Landowners v. NDIC – argument on summary judgement motions was on June 28th. Waiting on judge's decision – will likely be appealed to Supreme Court

b. BLM Venting and Flaring Rule – waiting on the decision on the preliminary judgement made in June
c. BLM Conservation Rule – filed complaint on June 21st. Feds moved to try and move the case out of North Dakota and into Utah.
d. Council of Environmental Quality NEPA Phase II Rule – 21 states are challenging. North Dakota and Iowa are leading
e. EPA Mercury and Air Toxics Rule – North Dakota is leading 22 other states. Filed our reply yesterday
f. EPA Carbon Rule – 27 states are challenging. We submitted an emergency application to the Supreme Court – West Virginia is leading
g. EPA Methane/OOOO Rule – 25 states are challenging, lead by Oklahoma and Texas. DCA denied the stay motion.

B. Federal Regulatory Update:
   a. BLM Resource Management Plan – no updates
   b. DAPL Draft Environmental Impact Statement – extended timeline to 2026
   c. EPA Methane Tax Rule – no updates

It was moved by Attorney General Wrigley and seconded by Commissioner Goehring that under the authority of North Dakota Century Code Sections 6-09-35, 44-04-18.4, 44-04-19.1, 44-04-19.2, the Industrial Commission enter into executive session for the purposes Pipeline Authority and Bank of North Dakota confidential business and attorney consultation.

On a roll call vote, Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.

The Commission is meeting in executive session regarding Pipeline Authority confidential business pursuant to N.D.C.C. 44-04-18.4 to consider those items listed on the agenda. Only Commission members, their staff, Commission staff, Pipeline Authority staff and potential contract parties will participate in that executive session.

After the Pipeline Authority executive session, the Commission will meet in executive session regarding Bank of North Dakota confidential business pursuant to N.D.C.C. 6-09-35 and 44-04-19.1 to consider those items listed on the agenda under Bank of North Dakota confidential business. Only Commission members, their staff, Commission staff, DFI Commissioner and staff, and BND staff will participate in that executive session. The Commission received approval from their Attorney to allow BND staff present to sit in on the North Dakota Pipeline Authority's Executive Session per request due to a potential partnership.

Any formal action taken by the Commission will occur after it reconvenes in open session.

Governor Burgum reminded the Commission members and those present in the executive session that the discussions must be limited to the announced purposes which is anticipated to last approximately 1 hour and 30 minutes.

The executive session began at approximately 5:08 p.m.

Meeting Closed to the Public for Executive Session Pursuant to NDCC 6-09-35, 44-04-18.4, 44-04-19.1 and 44-04-19.2.

NORTH DAKOTA PIPELINE AUTHORITY EXECUTIVE SESSION

Industrial Commission Members Present
Governor Doug Burgum
Attorney General Drew H. Wrigley
Agriculture Commissioner Doug Goehring

Pipeline Authority Members Present
Justin Kringstad

Others in attendance

Nicole Kivisto	MDU Resources
Rob Johnson	WBI Energy
Mark Anderson	WBI Energy
Don Morgan	BND
Kelvin Hullet	BND
Kylee Merkel	BND
Rob Pfennig	BND
Craig Hanson	BND
Kirby Evanger	BND
Nathan Svihovec	Governor's Office
Zach Greenberg	Governor's Office
Karen Tyler	Industrial Commission Office
Reice Haase	Industrial Commission Office
Brenna Jessen	Industrial Commission Office
Erin Stieg	Industrial Commission Office

BANK OF NORTH DAKOTA EXECUTIVE SESSION

Industrial Commission Members Present
Governor Doug Burgum
Attorney General Drew H. Wrigley
Agriculture Commissioner Doug Goehring

BND Members Present
Don Morgan, BND
Kelvin Hullet, BND
Kirby Evanger, BND
Rob Pfennig, BND
Craig Hanson, BND

Others in attendance

Lise Kruse	Dept. of Financial Institutions
Corey Krebs	Dept. of Financial Institutions
Ryan Spah	Dept. of Financial Institutions

Tracey Kennedy	Zimney Foster P.C.
Ryan Ames	Zimney Foster P.C.
Nathan Svihovec	Governor's Office
Zach Greenberg	Governor's Office
Jace Beehler	Governor's Office
Karen Tyler	Industrial Commission Office
Reice Haase	Industrial Commission Office
Brenna Jessen	Industrial Commission Office
Erin Stieg	Industrial Commission Office

The executive session ended at approximately 7:15 p.m. and the Commission reconvened in open session.

During the Pipeline Authority executive session, the Commission discussed confidential business related to the Pipeline Authority's capacity purchase program.

During the Bank of North Dakota executive session, the Commission discussed those items listed on the agenda under Bank of North Dakota confidential business.

No formal action was taken during either executive session.

STATE ENERGY RESEARCH CENTER

Mr. Haase presented for consideration of approval the authority to contract under SERC-2019-01 Task 2: "Expanding and Future-Proofing North Dakota's Electric Grid in an Evolving Energy Landscape".

During the 2023-2025 biennium, $750,000 is available for the Commission to contract for on-demand studies under Contract SERC 2019-01 Task 2 – Provide Prompt Expertise for North Dakota. To date, the Commission has approved $222,000 under the current biennium's contract:

- $135,000 for a CO2 Enhanced Oil Recovery Incremental Oil Production Forecast
- $87,000 for updates to the North Dakota Grid Resiliency Plan

This leaves **$528,000** remaining for the 2023-2025 biennium.

At the request of the North Dakota Transmission Authority (NDTA), the Energy & Environmental Research Center (EERC) proposes to develop, in coordination with the NDTA, electric utilities, and regulatory stakeholders, an analytical framework for supporting near-to-long-term planning and decision-making around key issues facing North Dakota's electricity sector. Key issues that will be investigated include the rapid growth of electric demand, particularly the growth in demand from data centers, impacts of a changing resource mix, new policies and regulations affecting coal-based electricity generation, increasing penetration of renewable sources, lead times for transmission infrastructure build-out, and load growth on resource adequacy and electricity reliability within the state, as well as the regional grid.

It was moved by Commissioner Goehring and seconded by Attorney General Wrigley that the Industrial Commission authorizes $528,000 from Contract SERC 2019-01 Task 2 – Provide Prompt

Expertise for North Dakota for the purpose of completing the deliverables for "Expanding and Future-Proofing North Dakota's Electric Grid in an Evolving Energy Landscape".

On a roll call vote, Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.

OIL AND GAS RESEARCH PROGRAM

Mr. Haase gave a presentation of the Oil and Gas Research Program Project Management and Financial Report. There have been 116 cumulative projects that have gone through this program and currently 14 of those are active. There has been a total of $93.2 million granted through the Oil and Gas Research program and $530.5 million in project value to the State. The current cash balance of the fund is $27,540,577.33 and there is $6,353,346.49 available for funding.

Mr. Haase presented for consideration of approval Application G-060-A: "Well Site Thief Hatch Methane Detectors – Phase II", Submitted by Blue Comply, Total Project Costs: $900,000, Request for $450,000.

It was moved by Commissioner Goehring and seconded by Attorney General Wrigley that the Industrial Commission accepts the recommendation of the Oil and Gas Research Council, approves application G-060-A: "Well Site Thief Hatch Methane Detectors – Phase II", and authorizes the Office of the Industrial Commission to execute a contract in the amount of $450,000.

On a roll call vote, Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.

OFFICE OF THE INDUSTRIAL COMMISSION

Ms. Karen Tyler presented for consideration of approval the June 26, 2024 Industrial Commission Meeting Minutes.

It was moved by Commissioner Goehring and seconded by Attorney General Wrigley that the June 26, 2024 Industrial Commission meeting minutes be approved.

On a roll call vote, Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.

Ms. Tyler presented for consideration of approval of 4% legislative salary increases for agency directors – Public Finance Authority, Housing Finance Authority, and North Dakota Mill.

The Memo reads as follows:

"Senate Bill 2015 adopted by the 2023 Legislative Assembly states in part:

The 2023-25 biennium compensation adjustments for permanent state employees are to average 6 percent per eligible employee for the first fiscal year of the biennium **and are to average 4 percent per eligible employee for the second year of the biennium.** The increases for the first year of the biennium are to be given beginning with the month of July 2023, to be paid in August 2023, **and for the second year of the biennium are to be given beginning with the month of July 2024, to be paid in August 2024.** Increases for eligible state employees are to be based on documented performance and are not to be the same percentage increase for each employee.

The Industrial Commission Agency Directors continue to lead with excellence and a dedicated commitment to serving North Dakota citizens and businesses and supporting the Industrial Commission in executing on its vast portfolio of responsibilities. I am recommending the following salary increases effective July 1, 2023:

Current	**4%**	**New**
DeAnn Ament	136,213	5,448	141,661
Dave Flohr	162,912	6,516	169,428
Vance Taylor	379,881	15,195	395,076 "

It was moved by Commissioner Goehring and seconded by Attorney General Wrigley that the Industrial Commission approve the 4% salary increases for Industrial Commission executives as approved by the Legislature for the second fiscal year of the 2023-2025 biennium, and as recommended by the Interim Executive Director.

On a roll call vote, Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.

Being no further business, Governor Burgum adjourned the meeting of the Industrial Commission at 7:28 p.m.

North Dakota Industrial Commission

Brenna Jessen, Recording Secretary

Reice Haase, Deputy Executive Director

Karen Tyler, Executive Director

Minutes of a Special Meeting of the Industrial Commission of North Dakota

Held on August 14th, 2024 beginning at 8:00 a.m.

Governor's Conference Room – State Capitol

Present: Governor Doug Burgum, Chairman (remote)

Attorney General Drew H. Wrigley

Agriculture Commissioner Doug Goehring (remote)

Governor Burgum called the meeting of the Industrial Commission to order at approximately 8:05 a.m.

Ms. Karen Tyler took roll call, and Governor Burgum, Commissioner Goehring, and Attorney General Wrigley were present.

Governor Burgum invited the room to stand and join the Commission in saying the Pledge of Allegiance.

DEPARTMENT OF MINERAL RESOURCES DIRECTOR FINALIST SELECTION

Ms. Karen Tyler reminded the Commission that the two finalist interviews were held at the July 30, 2024 Industrial Commission meeting, and the Commission moved to table the appointment decision to allow more time for consideration.

It was noted by Governor Burgum that Ms. Tyler conducted interviews with members at DMR to get a better understanding of what is needed in a leader for the agency.

The Commission held a discussion regarding the two Department of Mineral Resources Executive Director Finalists. It was noted that both finalists had strong, relevant, although different, experience to bring to the position.

Governor Burgum shared his view that at the current time Nathan Anderson was the right leader for DMR given his deep industry experience. Additionally, he noted the important work Kevin Connors has done at EERC and his hope that EERC will strive to retain him.

Both the Agriculture Commissioner and Attorney General echoed the comments made by the Governor, and the Commission thanked both candidates for their time and commitment to this process.

It was moved by Commissioner Goehring and seconded by Attorney General Wrigley that the Industrial Commission offer the position of the Department of Mineral Resources Executive Director to Nathan Anderson.

On a roll call vote, **Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.**

Governor Burgum noted that Ms. Tyler will be responsible for discussions with Mr. Anderson and providing an offer letter for his consideration.

Governor Burgum thanked Kevin Connors for all the work he has done in the oil and gas industry and for the State of North Dakota, and extended his support, recognition, and gratitude for applying to this position and becoming a finalist. He requested a letter of appreciation be sent to Mr. Connors.

It was moved by Commissioner Goehring and seconded by Attorney General Wrigley that the Industrial Commission send a letter of appreciation to extend their gratitude and recognition to Kevin Connors for his application and for the role he plays both at EERC and for the State of North Dakota.

On a roll call vote, **Governor Burgum, Attorney General Wrigley, and Commissioner Goehring voted aye. The motion carried unanimously.**

Governor Burgum thanked the DMR selection committee, the Office of the Industrial Commission, and the applicants for their hard-work and dedication to this process.

With no further business, Governor Burgum adjourned the special meeting of the Industrial Commission at 8:35 a.m.

North Dakota Industrial Commission

Brenna Jessen, Recording Secretary

Reice Haase, Deputy Executive Director

Karen Tyler, Executive Director

RESOLUTION APPROVING
LOAN FROM CLEAN WATER STATE REVOLVING FUND

WHEREAS, the Industrial Commission has heretofore authorized the creation of a Clean Water State Revolving Fund Program (the "Program") pursuant to N.D.C.C. chs. 6-09.4 and 61-28.2; and

WHEREAS, the Clean Water State Revolving Fund is governed in part by the Master Trust Indenture dated as of July 1, 2011 (the "Indenture"), between the North Dakota Public Finance Authority (NDPFA) and the Bank of North Dakota (the Trustee); and

WHEREAS, the City of Grand Forks (the "Political Subdivision") has requested a loan in the amount of $6,922,000 from the Program for phases three through five of the installation of a sanitary sewer collection system to serve areas currently on septic systems in need of replacement, which will remove the potential for underground nutrient shifts impacting the watershed; and

WHEREAS, the NDPFA's Advisory Committee is recommending approval of the Loan; and

WHEREAS, there has been presented to this Commission a form of Loan Agreement proposed to be adopted by the Political Subdivision and entered into with the NDPFA;

NOW, THEREFORE, BE IT RESOLVED by the Industrial Commission of North Dakota as follows:

1. The Loan is hereby approved, as recommended by the Advisory Committee.

2. The form of Loan Agreement to be entered into with the Political Subdivision is hereby approved in substantially the form on file and the Executive Director is hereby authorized to execute the same with all such changes and revisions therein as the Executive Director shall approve.

3. The Executive Director is authorized to fund the Loan from funds on hand in the Clean Water Loan Fund established under the Indenture upon receipt of the Municipal Securities described in the Political Subdivisions bond resolution, to submit to the Trustee a NDPFA Request pursuant to the Indenture, and to make such other determinations as are required under the Indenture.

4. The Commission declares its intent pursuant to Treasury Regulations '1.150-2 that any Loan funds advanced from the Federally Capitalized Loan Account shall be reimbursed from the proceeds of bonds issued by the NDPFA under the Indenture.

Adopted: August 27, 2024

_____
Governor Doug Burgum, Chairman

Attest:

_____
Karen Tyler, Executive Director
Industrial Commission of North Dakota

August 20, 2024

PUBLIC FINANCE AUTHORITY ADVISORY COMMITTEE

RECOMMENDATION TO THE INDUSTRIAL COMMISSION

The Advisory Committee, at its August 20, 2024 meeting, reviewed, discussed, and recommends approval of a $6,922,000 Clean Water State Revolving Fund Program loan to the City of Grand Forks.

North Dakota Public Finance Authority
Advisory Committee

Keith Lund, Chairman
Linda Svihovec
John Phillips

NORTH Dakota | Public Finance Authority
Be Legendary.

Memorandum

To: Public Finance Authority Advisory Committee
Miles Silbert, Public Financial Management, LLC
Kylee Merkel, Bank of North Dakota

From: DeAnn Ament, Executive Director

Date: August 14, 2024

Re: City of Grand Forks
Clean Water State Revolving Fund

Purpose of the Project: Phase 3 through 5 of the installation of a sanitary sewer collection system to serve areas currently on septic systems which need replacement. This will remove the potential for underground nutrient shifts impacting the watershed.

Project Amount:

CWSRF Request	$ 6,922,000
Project Total	$ 6,922,000

Population to Benefit from the Project: 58,692; $118/person
Population Served by the System: 58,692
Is the Project Area Within the Extraterritorial Jurisdiction of a City: Yes

The requested term for the Clean Water State Revolving Fund (CWSRF) loan is 30 years. The average annual payment for the improvement bonds will be $298,390. The City will issue improvement bonds payable with special assessments. The improvement bonds will be a contingent general obligation of the City, backed by the statutory requirement that the City will levy a general deficiency tax in the event that the revenues from the collection of special assessments are not sufficient to pay the debt service on the improvement bonds.

The City has 15,387 residential users that pay a monthly sewer base rate of $15.80 with a $3.67/1,000-gallon charge and 1,780 commercial users that pay a monthly sewer base rate of $16.94 with a $3.96/1,000-gallon charge. The City annually reviews and adjusts the base and volume rate.

Wastewater Fund:

	2020	2021	2022	2023
Interest Revenue	$140,258	$12,380	-$86,788	$476,239
Operating Revenue	1,713,328	11,150,301	11,579,177	11,894,346
Operating Expenses	6,902,906	7,326,374	7,049,512	7,944,167
Net Operating Revenue	4,950,680	3,836,307	4,442,877	4,426,418
Sales Tax Transfer In	-	649,429	278,033	247,000
Noncash: Pension Adjustment	-	-	160,770	-
Adjusted Net Operating Revenue	$4,950,680	$4,485,736	4,881,680	4,673,418
Revenue Bond Payments	$3,025,338	$3,122,902	1,653,969	1,698,482
Net Operating Coverage	164%	144%	295%	275%

The City outstanding indebtedness as of December 31, 2023:

	Original Amount	Outstanding Amount
General Obligation Bonds	$ 2,735,000	$ 885,000
Special Assessment Bonds	126,899,989	111,421,047
Water/Sewer Revenue Bonds *	184,015,496	99,088,079
Sales Tax Revenue Bonds	40,380,000	20,770,000
	$ 354,030,485	$232,164,126

*All payments have been made as agreed. The City has seven CWSRF and two DWSRF loans with outstanding balances of $76,010,889 as of December 31, 2023.

With $118,343,047 of outstanding improvement bonds (including this request) and an estimated population of 59,166 the improvement bond debt is $2,000 per person. The 71 industrial and commercial parcels assessed for the CWSRF project will have an average annual payment of $4,202.

The City of Grand Forks is located in Grand Forks County 82 miles north of Fargo on Interstate 29. Based on the 2020 census, the total population is 59,166; this is an increase of 6,328 from the 2010 census. The largest employers in the City are Altru Health Services with 3,950 employees, University of North Dakota which has 3,464 employees, and Grand Forks Air Force Base employs 1,643.

K-12 School Enrollment:

			Current	Estimated
2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
7,423	7,407	7,440	7,428	7,600

The City's 2023 taxable valuation was $270,291,072. This is an increase of $19,350,466 over the 2022 taxable valuation.

Property Tax Collections 7/31/2024:

Levy Year	Dollar Amount of Levy	Amount Collected to Date of Application	Percentage Collected
2023	25,887,617	23,848,803	92%
2022	24,347,668	23,169,633	95%
2021	23,292,267	22,242,356	95%

Special Assessment Collections 7/31/2024:

Year	Dollar Amount	Amount Collected to Date of Application	Percentage Collected
2023	9,286,257	8,645,549	93%
2022	9,270,607	8,884,851	96%
2021	8,266,899	8,263,391	100%

Mill Levy History:

Year	City	School	Park District	State and County	Total for Each Year
2023	96.37	131.69	37.31	87.16	352.53
2022	96.84	110.79	37.80	82.63	328.06
2021	97.02	111.00	37.88	79.29	325.19
2020	97.87	100.94	38.19	80.82	317.82
2019	98.67	101.00	39.00	82.20	320.87

50 South Sixth Street
Suite 2250
Minneapolis, MN 55402

612.338.3535
612.338.7264 Fax
www.pfm.com

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Memorandum

TO: DeAnn Ament, Executive Director
North Dakota Public Finance Authority

FROM: PFM Financial Advisors LLC

DATE: August 20, 2024

RE: Marketplace Analysis - Clean Water State Revolving Fund Program
City of Grand Forks

The City of Grand Forks ("City") has presented a request to the Authority and the North Dakota Department of Environmental Quality ("Department") for a $6,922,000 loan under the Clean Water State Revolving Fund Program ("CWSRF Program"). The CWSRF Program is used to make subsidized interest rate loans to political subdivisions for the purpose of constructing various wastewater treatment projects and landfill projects as approved by the Department in accordance with federal and state regulations and an updated Intended Use Plan prepared by the Department.

The City intends to use the proceeds for Phase 3 through 5 of the sanitary sewer collection system installation to serve areas currently on septic systems that need replacement, which will remove the potential for underground nutrient shifts that impact the watershed.

The municipal securities to be acquired by the Authority will be improvement bonds of the City payable from special assessments levied against the benefited property. The City's average annual payment under the proposed loan will be approximately $298,380. The improvement bonds will be a contingent general obligation of the City, which will be required by law to levy a general deficiency tax if the revenues collected from the levy of special assessments are insufficient to make the debt service payments.

As of December 31, 2023, the City has $885,000 of General Obligation Bonds, $111,421,047 of Special Assessment Bonds, $20,770,00 of Sales Tax Revenue Bonds and $99,088,079 of Water/Sewer Revenue Bonds outstanding. The City currently has seven Clean Water and two Drinking Water loans outstanding totaling $76,010,889. The City is current in its payments for its outstanding Authority loans.

Funding for the construction of the City's projects has been included in a list of approved projects as prepared and updated by the Department. As an authorized participant in the CWSRF Program, the City will benefit substantially from the subsidized fixed rate loans made under the Program. Consequently, no other financing mechanism can provide a greater cost advantage than that offered by the CWSRF Program.

BND
Bank of North Dakota

PO BOX 5509, 1200 Memorial Hwy.
Bismarck, ND 58506-5509

800.472.2166
800.366.6888 TTY
701.328.5600

bnd.nd.gov

Memorandum

To: Industrial Commission

From: Kylee Merkel, Business Banker
Bank of North Dakota

Date: August 16, 2024

RE: City of Grand Forks
Clean Water State Revolving Fund Program

ND Public Finance Authority has delivered to BND their memo which recommends approval of a $6,922,000 loan to the City of Grand Forks under the Clean Water State Revolving Fund (CWSRF). The entire cost of the project is $6,922,000, with CWSRF financing the full project.

The project is Phases 3 through 5 which will upgrade aging septic systems by installation and connection to the City's sanitary sewer system. The requested loan term is 30 years. The City will issue an improvement bond payable with special assessment collections. The annual payment will average $298,390. The improvement district includes 71 parcels.

Debt Service Coverage:

Wastewater Fund	**2021**	**2022**	**2023**
Operating Revenue	11,150,301	11,579,177	11,894,346
Interest Revenue	12,380	-86,788	476,239
Operating Expenses	-7,326,374	-7,049,512	-7,944,167
Net Operating Revenue	3,836,307	4,442,877	4,426,418
Sales Tax Transfer In	649,429	278,033	247,000
Noncash Pension Adjustment	0	160,770	0
Adjusted Net Operating Income	4,485,736	4,881,680	4,673,418
Current Debt Service	3,122,902	1,653,969	1,698,482
Debt Service Coverage	144%	295%	275%

BND
Bank of North Dakota

PO BOX 5509, 1200 Memorial Hwy.
Bismarck, ND 58506-5509

800.472.2166
800.366.6888 TTY
701.328.5600

bnd.nd.gov

The City currently serves 15,387 residential connections that pay a monthly base rate of $15.80 and a volume charge of $3.67 per 1,000 gallons. The City also serves 1,780 commercial connections that pay a monthly base rate of $16.94 and a volume charge of $3.96 per 1,000 gallons. The City annually review and adjust rates as needed.

Outstanding Debt (as of December 31, 2023):

	Original Amount	Current Balance
General Obligation Bonds	2,735,000	885,000
Special Assessment Bonds	126,899,989	111,421,047
Sales Tax Revenue Bonds	40,380,000	20,770,000
Water & Sewer Revenue Bonds	184,015,496	99,088,079
	354,030,485	232,164,126

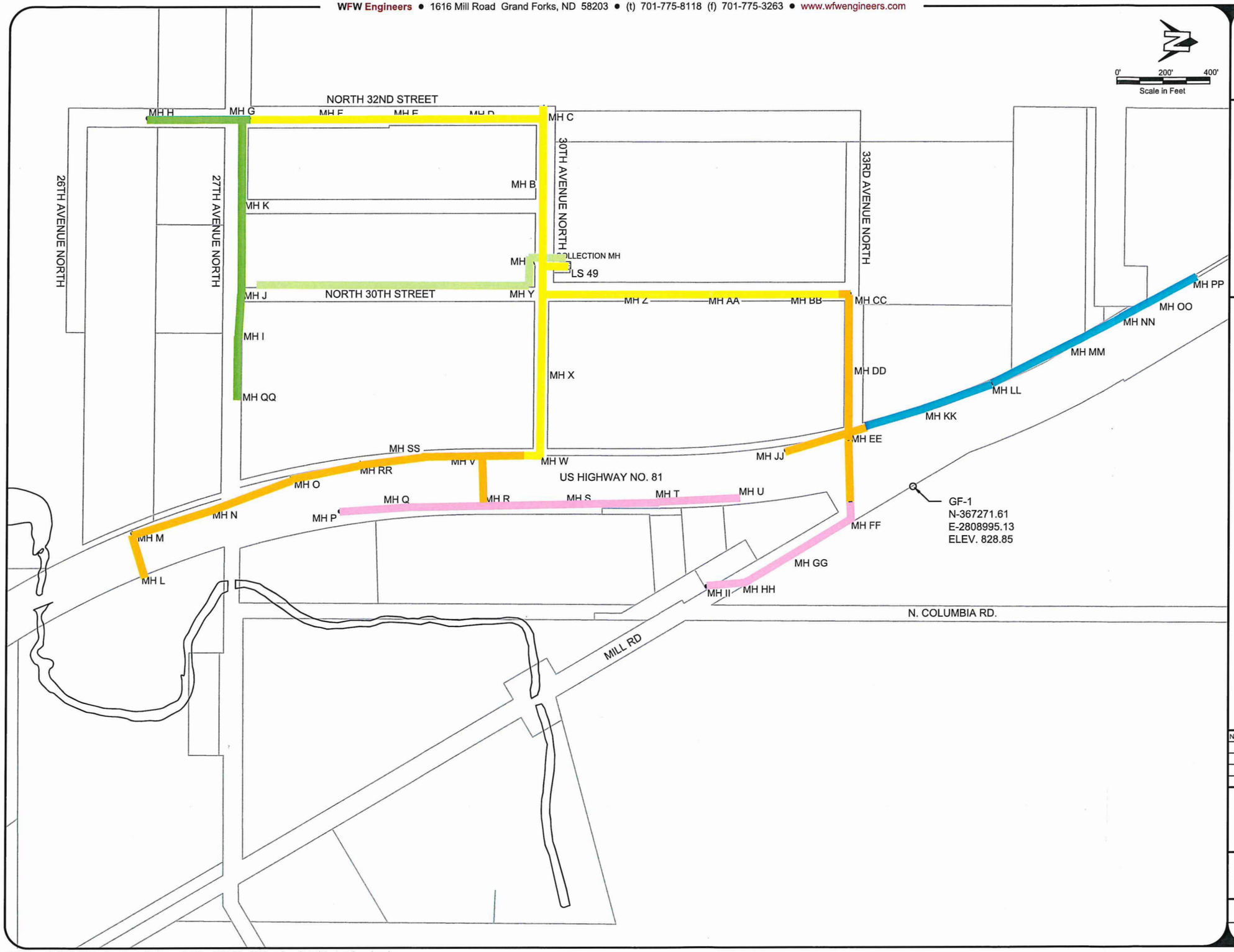
Average annual debt service requirements are estimated at $20,027,363, which is an average of $338.47 per resident.

Historical census populations for the City of Grand Forks were 59,170 in 2020, 52,838 in 2010 and 49,342 in 2000. The largest employers in the City are Altru Health System, University of North Dakota and Grand Forks Air Force Base.

Based upon the PFA recommendation and the benefits obtained with this project, BND concurs with their evaluation and support of the request.

Kylee Merkel
Business Banker

WFW Engineers • 1616 Mill Road Grand Forks, ND 58203 • (t) 701-775-8118 (f) 701-775-3263 • www.wfwengineers.com



WFW ENGINEERS

REGISTERED PROFESSIONAL ENGINEER
DALE BERGUM
PE - 3713
DATE 1/13/23
NORTH DAKOTA

Schedule 10-23-23

P1	2023-24	$2.7mil
P2	2024	$750k
FM	2024	$525k
P3	2025	$1.85mil
P4	2026	$850k
P5	2027	$625k

Cost estimates based on 2023 dollars with no contingencies.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

SANITARY SEWER FOR PEONY ADDITION, HWY 81 & ASSOCIATED AREA

GRAND FORKS, ND

PROJECT OVERVIEW

DRAWN BY	DESIGNED BY	CHECKED BY	DATE
KLE	DRB	BEW	7/14/22
WFW PROJECT NO.	CITY PROJECT NO.		DRAWING NO.
20G446	8486		4

RESOLUTION APPROVING
LOAN FROM DRINKING WATER STATE REVOLVING FUND

WHEREAS, the Industrial Commission has heretofore authorized the creation of a Drinking Water State Revolving Fund Program (the “Program”) pursuant to N.D.C.C. chs. 6-09.4, 61-28.1, and 61-28.2; and

WHEREAS, the State Revolving Fund is governed in part by the Master Trust Indenture dated as of July 1, 2011 (the "Indenture"), between the North Dakota Public Finance Authority (the “NDPFA”) and the Bank of North Dakota (the “Trustee”); and

WHEREAS, Southeast Water Users District (the “Political Subdivision”) has requested a loan in the amount of $5,666,000 from the Program to design and construct a new iron and manganese removal water treatment plant to improve water quality for users in Dickey, LaMoure and Logan Counties; and

WHEREAS, NDPFA’s Advisory Committee is recommending approval of the Loan; and

WHEREAS, there has been presented to this Commission a form of Loan Agreement proposed to be adopted by the Political Subdivision and entered into with the NDPFA;

NOW, THEREFORE, BE IT RESOLVED by the Industrial Commission of North Dakota as follows:

1. The Loan is hereby approved, as recommended by the Advisory Committee.

2. The form of Loan Agreement to be entered into with the Political Subdivision is hereby approved in substantially the form on file and the Executive Director is hereby authorized to execute the same with all such changes and revisions therein as the Executive Director shall approve.

3. The Executive Director is authorized to fund the Loan from funds on hand in the Drinking Water Loan Fund established under the Indenture upon receipt of the Municipal Securities described in the Political Subdivisions bond resolution, to submit to the Trustee a NDPFA Request pursuant to the Indenture, and to make such other determinations as are required under the Indenture.

4. The Commission declares its intent pursuant to Treasury Regulations '1.150-2 that any Loan funds advanced from the Federally Capitalized Loan Account shall be reimbursed from the proceeds of bonds issued by the NDPFA under the Indenture.

Adopted: August 27, 2024

_____
Governor Doug Burgum, Chairman

Attest:

_____
Karen Tyler, Executive Director
Industrial Commission of North Dakota

August 20, 2024

PUBLIC FINANCE AUTHORITY ADVISORY COMMITTEE

RECOMMENDATION TO THE INDUSTRIAL COMMISSION

The Advisory Committee, at its August 20, 2024 meeting, reviewed, discussed, and recommends approval of a $5,666,000 Drinking Water State Revolving Fund Program loan to Southeast Water Users District.

North Dakota Public Finance Authority
Advisory Committee

Keith Lund, Chairman
Linda Svihovec
John Phillips

NORTH Dakota | Public Finance Authority
Be Legendary.

Memorandum

To: Public Finance Authority Advisory Committee
Miles Silberg, Public Financial Management
Kylee Merkel, Bank of North Dakota

From: DeAnn Ament, Executive Director

Date: August 16, 2024

Re: Southeast Water Users District, Drinking Water State Revolving Fund

Purpose of the Project: Phase 1 will design and construct a new iron and manganese removal water treatment plant to improve water quality for users in Dickey, LaMoure and Logan Counties.

Project Amount:

DWSRF Request	$ 5,666,000
DWR Cost Share	16,996,000
Total Project Cost	$ 22,662,000

Population to Benefit from the Project: 18,460; $1,228/person
Population Served by the System: 18,460 which includes 25 bulk users which serve a population of 7,621 which is included in the total

The requested term for the Drinking Water State Revolving Fund (DWSRF) loan is 30 years. The District will issue revenue bonds payable with water user fees. The average annual payment for the revenue bonds will be $241,303. The reserve requirement will be $252,350 and the 110% coverage requirement will be $265,433.

The District provides water services to 4,365 rural connections in Richland, Ransom, Sargent, LaMoure, Dickey and Logan Counties and provides bulk water twenty-two cities and three Hutterite colonies.

Water Connections:

				Projected	
	2022	**2023**	**2024**	**2025**	**2026**
Rural	4,305	4,335	4,365	4,395	4,425
Bulk	25	25	25	25	25

All residential users pay a monthly base rate of $55 per user. Their volume charge is $4.75/1,000 gallons in the East System, $6.00/1,000 gallons in the Central System and $3.75/1,000 gallons in the West System. They District plans to raise the monthly base rate $5 per user next year.

Net Operating Coverage:

	2020	2021	2022	2023
Interest Revenue	$28,126	$7,397	$8,791	$116,140
Operating Revenue	3,580,163	3,669,058	3,601,906	3,863,885
Operating Expenses	3,591,691	3,693,031	3,886,362[1]	3,895,548
Net Operating Revenue (Expense)	$16,598	-$16,576	-$275,665	$84,477
Depreciation	1,300,159	1,495,468	1,611,468	1,645,896
Adjusted Net Operating Revenue	$1,316,757	$1,478,892	$1,335,803	$1,730,373
Revenue Bond Payments	$1,090,985	$1,136,074	$1,115,011	$1,109,727
Net Operating Coverage	121%	130%	120%	156%
Proforma Rate Increase Revenue	$261,900	$261,900	$261,900	$261,900
Proforma DWSRF Payment	$241,303	$241,303	$241,303	$241,303
Proforma Net Operating Coverage	118%	126%	118%	147%

[1] Reduced $174,457 for NDPERS noncash pension adjustment.

With the anticipated rate increase, net operating revenue will be sufficient to meet the 110% net operating coverage requirement.

Listed below is a summary of the total outstanding debt of the District as of June 30, 2024:

	Original Debt	Outstanding Debt
Total Revenue Bond Debt [2]	$18,311,748	$8,591,919

[2] All payments have been made as agreed. The District has nine DWSRF loans with an outstanding balance of $8,135,000. The District has reserves of $1,108,000.

The average annual payment debt payment including this new loan will be $1,335,437. With 18,460 users, the average annual payment per user is $72.

The population of the connections is estimated to be 18,460. This is an increase of 1,543 since the 2020 census. Major employers in the service area are Doosan (manufacturing, Gwinner) with 1,300 employees, North Dakota State College of Science has 450 employees and Walmart (Wahpeton) employs 165.

District-Wide School Enrollment for K-12:

				Projected
2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
6,422	6,326	6,472	6,437	6,442

50 South Sixth Street
Suite 2250
Minneapolis, MN 55402

612.338.3535
612.338.7264 Fax
www.pfm.com

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Memorandum

TO: DeAnn Ament, Executive Director
North Dakota Public Finance Authority

FROM: PFM Financial Advisors LLC

DATE: August 20, 2024

RE: Marketplace Analysis - Drinking Water State Revolving Fund Program
Southeast Water Users District

The Southeast Water Users District ("District") has presented a request to the Authority and the North Dakota Department of Environmental Quality ("Department") for a $5,666,000 loan under the Drinking Water State Revolving Fund Program ("DWSRF Program"). The DWSRF Program is used to make subsidized interest rate loans to political subdivisions for the purpose of constructing various water treatment, distribution, and storage facilities as approved by the Department in accordance with federal and state regulations and an updated Intended Use Plan prepared by the Department.

The District intends to use the proceeds to improve water quality for users in Dickey, LaMoure and Logan Counties with Phase 1 design and construction of a new iron and manganese removal water treatment plant.

The municipal securities to be acquired by the Authority will be revenue bonds payable from water user fees. The District's average annual payment under the proposed loan will be approximately $241,303 indicating a 110% net revenue coverage requirement of approximately $265,433. The District will be required to deposit $252,350 into a reserve fund with payments of $50,470 per year for the first five years of the loan. The District intends to raise the monthly base rate $5 per user next year to $60 per user. Pro forma net operating coverage of the water fund was 1.18x, 1.26x, 1.18x and 1.47x for 2020-2023, respectively. The existing net operating revenues of the water fund plus the increase in monthly base rate will provide sufficient net revenues to meet the 110% coverage requirement.

As of June 30, 2024, the District has $8,591,919 of Revenue Bonds outstanding. The District has nine Drinking Water SRF loans with a total outstanding balance of $8,135,000. The District is current in its payments for its outstanding Authority loan.

Funding for the construction of the District's projects has been included in a list of approved projects as prepared and updated by the Department. As an authorized participant in the DWSRF Program, the District will benefit substantially from the subsidized fixed rate loans made under the Program. Consequently, no other financing mechanism can provide a greater cost advantage than that offered by the DWSRF Program.

BND
Bank of North Dakota

PO BOX 5509, 1200 Memorial Hwy.
Bismarck, ND 58506-5509
800.472.2166
800.366.6888 TTY
701.328.5600
bnd.nd.gov

Memorandum

To: Industrial Commission

From: Kylee Merkel, Business Banker
Bank of North Dakota

Date: August 16, 2024

RE: Southeast Water Users District
Drinking Water State Revolving Fund Program

ND Public Finance Authority has delivered to BND their memo which recommends approval of a $5,666,000 loan to Southeast Water Users District under the Drinking Water State Revolving Fund (DWSRF). The total cost of the project is $22,662,000, with $16,996,000 coming from a Department of Water Resources cost-share grant.

The project will design and construct a new water treatment plane to improve water qualify for users. The requested loan term is 30 years. The District will issue revenue bonds payable from user fees. The annual payment will average $241,303.

Debt Service Coverage:

	2021	2022	2023	Projected
Operating Revenue	3,669,058	3,601,906	3,863,885	3,863,885
Intended Rate Increase				261,900
Interest Revenue	7,397	8,791	116,140	116,140
Operating Expenses	-3,693,031	-4,060,819	-3,895,548	-3,895,548
Net Operating Revenue	-16,576	-450,122	84,477	346,377
Add: Depreciation	1,495,467	1,611,468	1,645,896	1,645,896
Adjusted Operating Income	1,478,891	1,161,346	1,730,373	1,992,273
Current Debt Service	1,136,074	1,115,011	1,109,727	1,109,727
Proposed Debt Service				241,303
Current Debt Service	1,136,074	1,115,011	1,109,727	1,351,030
Debt Service Coverage	130.18%	104.16%	155.93%	147.46%

Residential connections currently pay a monthly base rate of $55 per user. In addition, the volume charges per 1,000 gallons are: $4.75 in the East System, $6.00 in the Central System and $3.75 in the West System. The District intends to raise the monthly base rate $5.00 per user next year. The existing user fees, combine with the intended rate increase, will generate sufficient net operating revenues to service both the new and existing debt.

Outstanding Debt:

	Original Amount	**Amount Outstanding**
Revenue Bonds	$18,311,748	$8,591,919
Total Revenue Bonds	$18,311,748	$8,591,919

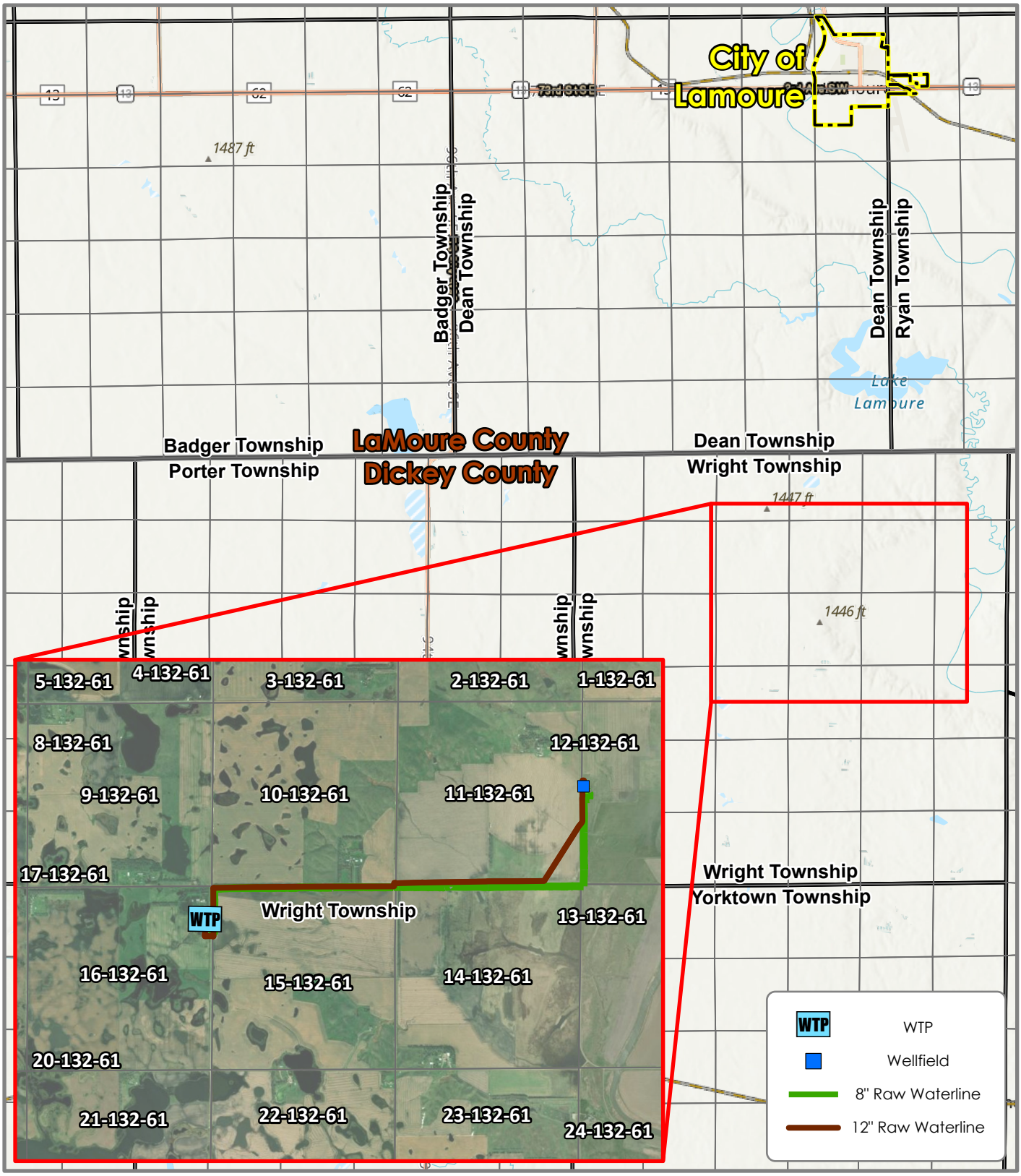
Average annual debt service requirements are estimated at $1,351,030, which is an average of $73.19 per resident of the District.

The regional system has 4,365 residential connections, 22 bulk City connections and serves 3 Hutterite colonies. The District provides water services to Richland, Ransom, Sargent, LaMoure, Dickey and Logan counties. The District's estimated population served is 18,460.

Based upon the PFA recommendation and the benefits obtained with this project, BND concurs with their evaluation and support of the request.

Kylee Merkel
Business Banker

www.ae2s.com | Advanced Engineering and Environmental Services, LLC



Coordinate System: NAD 1983 StatePlane North Dakota South FIPS 3302 Feet Intl | Edited by: jhenne | W:\S\SEWUD\General Services\GIS\SEWUD General Services - Mapping and Analysis.aprx| SEWUD West WTP & Well Site

N

Project Location

0 1 2 Miles

SEWUD-WEST WTP & WELL SITE

SEWUD
Wright Township | Dickey County, ND

Date: 10/20/2023

Industrial Commission
of North Dakota

Doug Burgum
GOVERNOR

Drew H. Wrigley
ATTORNEY GENERAL

Doug Goehring
AGRICULTURE COMMISSIONER

NORTH Dakota | Public Finance Authority
Be Legendary.

Memorandum

To: Industrial Commission: Governor Doug Burgum, Attorney General Drew H. Wrigley, Agriculture Commissioner Doug Goehring

From: DeAnn Ament, Executive Director

Date: August 20, 2024

Re: Drayton, Clean Water State Revolving Fund

Under current policy, the Public Finance Authority can make loans under the State Revolving Fund Program in an amount not to exceed $2,000,000 and under the Capital Financing Program in an amount not to exceed $500,000 without seeking the final approval of the Industrial Commission. Within this policy, once the loan has been approved, the Public Finance Authority is required to provide the details of the loan to the Industrial Commission. Accordingly, the Public Finance Authority and its Advisory Committee used this policy to approve the following loans.

The committee reviewed the City of Drake's Clean Water State Revolving Fund $350,000 application. The project will replace water meters with meters compatible with meter reading software to accurately bill for water that will be purchased from rural water once the switch is made in the summer of 2024. The requested term for the loan is 20 years. The city will issue revenue bonds payable from water and sewer revenues.

The Public Finance Authority's Advisory Committee approved this loan at their August 20, 2024, meeting.

NORTH Dakota | Public Finance Authority
Be Legendary.

Memorandum

To: Public Finance Authority Advisory Committee

From: DeAnn Ament, Executive Director

Date: August 8, 2024

Re: City of Drayton
Clean Water State Revolving Fund Program Loan

Purpose of the Project: Replace water meters with meters compatible with meter reading software to accurately bill for water that will be purchased from rural water once the switch is made in the summer of 2024.

Project Amount:

CWSRF Request	$350,000
Total Project	$350,000

Population to Benefit from the Project: 755
Population Served by the System: 755
Is the Project Area in the Extraterritorial Jurisdiction of a City: No

The requested term is 20 years. The City will issue revenue bonds payable with water and sewer user fees. The annual payment to the Public Finance Authority will average approximately $20,396. The reserve requirement will be $25,375 and the 110% coverage requirement will be $22,436.

The City has 390 water connections which each pay a monthly water base rate of $12 per connection and sewer base rate of $9 per connection. The City will be connecting to Walsh Rural Water District in July 2024. At the July 1, 2024, meeting the City increased the monthly rates $28 per user ($40 rate) with $15/1,000 gallon volume charge; the commercial rates increased $208 per connection ($220 rate) and a usage rate of $19/1,000 gallons; the industrial monthly rate will be $2,500 with a volume charge of $20/1,000 gallons. The sewer monthly base rate increased $9 to $18. These water and sewer base rate increases should annually generate approximately $343,560.

Water and Sewer Fund:

				Unaudited
	2020	**2021**	**2022**	**2023**
Operating Revenue	$487,122	$516,914	$554,203	$557,579
Operating Expenses	624,067	642,602	673,562	560,103
Net Operating Expense	-136,945	-125,688	-119,359	-2,524
Depreciation	107,459	107,459	106,575	-
Adjusted Net Operating Loss	-$29,486	-$18,229	-$12,784	-$2,524
Revenue Bond Payments	$40,070	$32,827	$34,278	$38,960
Net Operating Coverage	-74%	-56%	-37%	-6%
Proforma Rate Increase Revenue	$343,560	$343,560	$343,560	$343,560
Proforma New CW Payment	$20,396	$20,396	$20,396	$20,396
Proforma Net Operating Coverage	519%	611%	605%	575%

The recent rate increase should be sufficient to meet the 110% net operating coverage.

Outstanding Debt June 1, 2024:

	Original Amount	**Outstanding Amount**
Improvement Bonds *	$308,895	$184,000
Sewer Revenue	210,000	160,000
Total	$518,895	$344,000

* All payments have been made as agreed. The City has one CWSRF loan and two Capital Financing Program loans with a total of $344,000 outstanding.

With an outstanding balance of $694,000 with the new bond and an estimated population of 755 the bonded debt is $919 per person. The average annual payment of all bonded debt will be $80,432.

The City of Drayton is located in Pembina County and 46 miles north of Grand Forks on Interstate 94. Based on the 2020 census, the total population was 757; this is a decrease of 67 from the 2010 census. The largest employer is Drayton Public School with 44 employees, Love's Travel Stop employs 30 and CHS (agriculture) has 26 employees.

School Enrollment:

			Current	**Projected**
2020-2021	**2021-2022**	**2022-2023**	**2023-2024**	**2024-2025**
167	156	167	157	157

The City's 2023 taxable valuation was $2,903,992. This is an increase of $1,214,532 from the 2019 taxable valuation.

Property Taxes Levied & Collected 4/30/2024:

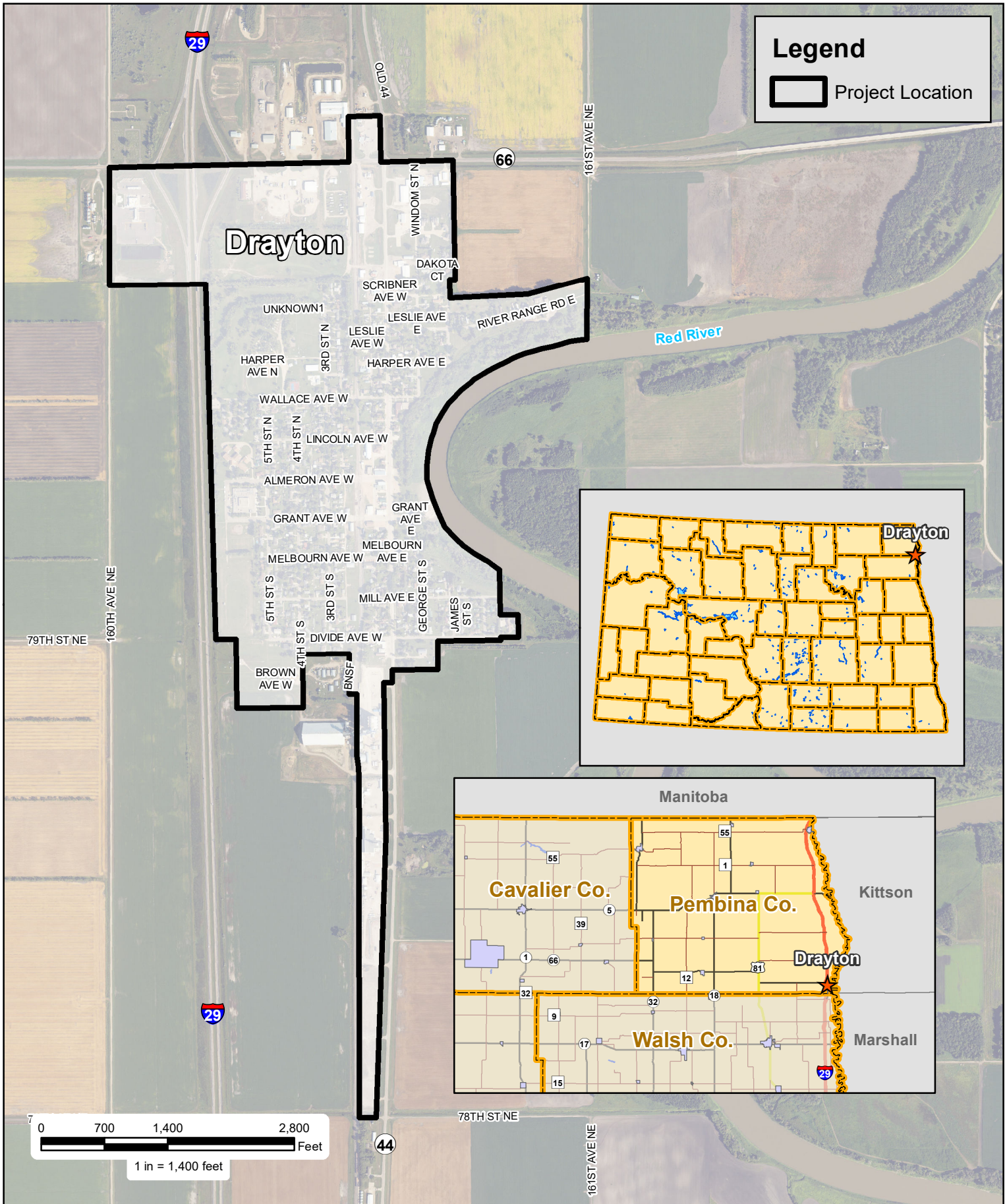
Levy Year	Dollar Amount of Levy	Amount Collected to Date of Application	Percentage Collected
2023	$320,738	$296,696	93%
2022	$263,634	$260,478	99%
2021	$142,988	$154,253	108%

Special Assessments Levied & Collected 4/30/2024:

Year	Dollar Amount	Amount Collected to Date of Application	Percentage Collected
2023	$21,464	$17,408	81%
2022	$21,467	$19,979	93%
2021	$22,231	$21,857	98%

City of Drayton Mill Levy History:

Year	City	School	Park District	State and County	Total for Each Year
2023	110.45	115.56	6.79	76.10	308.90
2022	106.46	119.16	7.99	73.99	307.60
2021	79.21	120.03	10.97	69.34	279.55
2020	94.30	120.03	11.54	82.52	308.39
2019	93.38	120.03	9.91	85.84	309.16



CITY WIDE WATER METER REPLACEMENT PROJECT
DRAYTON, NORTH DAKOTA

Created By: TJS Date Created: 02/16/24 Date Saved: 02/16/24 Date Plotted: NEVER Date Exported: 02/16/24
Plotted By: Tanner.Schmidt Parcel Date: N/A Aerial Image: 2023 County NAIP SIDS Elevation Data: Lidar
Horizontal Datum: NAD 1983 StatePlane North Dakota North FIPS 3301 Feet Vertical Datum: NAVD1988
T:\Projects\23900\23951_DraytonInfalmp\23951_ProjectLocationMap.mxd

N W E S

moore engineering, inc.

45 South Seventh Street 612.338.3535
Suite 2950 www.pfm.com
Minneapolis, MN 55402

August 20, 2024

DeAnn Ament, Executive Director
North Dakota Public Finance Authority
1200 Memorial Highway, 3rd Floor
PO Box 5509
Bismarck, ND 58506-5509

Dear Ms. Ament,

In our role as independent municipal advisor to the North Dakota Public Finance Authority (the "Authority"), PFM Financial Advisors LLC ("PFM") has carefully reviewed the structure and pricing of the Authority's $200,920,000 State Revolving Fund Program Bonds, Series 2024A (the "Series 2024A Bonds"). The following is intended to serve as a summary of the bond sale.

Transaction Summaries

$200,920,000 State Revolving Fund Program Bonds, Series 2024A

The Authority competitively sold the Series 2024A Bonds on August 13, 2024 to make loans to political subdivisions of the State of North Dakota and certain other entities (the "Borrowers") through the purchase of certain obligations issued by such Borrowers, for use in connection with the financing or refinancing of water pollution control and drinking water projects, and pay costs of issuance related to the Series 2024A Bonds. The Authority received six bids, as summarized below.

Bidder	Net Interest Cost	True Interest Rate
Jefferies LLC*	$84,058,349.79	3.3992%
BofA Securities	$84,597,878.66	3.4265%
Wells Fargo Bank, N.A.	$84,724,866.32	3.4330%
Morgan Stanley & Co, LLC	$85,055,507.15	3.4497%
J.P. Morgan Securities LLC	$85,082,369.28	3.4511%
Mesirow Financial, Inc.	$85,206,259.01	3.4574%

**Low bidder.*

Spread to BVAL

The following table shows the yields for the Series 2024A Bonds and their spread to the August 13 Interpolated BVAL AAA Municipal Curves (BVAL). The Interpolated BVAL AAA curve represents the valuation of AAA rated general obligation credits, assuming a 5.00% coupon, based on market activity in both the primary and secondary municipal bond market. BVAL uses real-time market data and transaction information for a more accurate and transparent representation of the municipal market.

Maturity	Coupon	Yield	Spread to October BVAL AAA	Maturity	Coupon	Yield	Spread to October BVAL AAA
2025	5.00%	2.70%	0.04%	2035	5.00%	2.88%	0.20%
2026	5.00%	2.66%	0.03%	2036	5.00%	2.94%	0.21%
2027	5.00%	2.66%	0.07%	2037	5.00%	3.00%	0.24%
2028	5.00%	2.65%	0.07%	2038	5.00%	3.02%	0.22%
2029	5.00%	2.65%	0.07%	2039	5.00%	3.10%	0.24%
2030	5.00%	2.66%	0.07%	2040	5.00%	3.18%	0.21%
2031	5.00%	2.72%	0.13%	2041	5.00%	3.28%	0.20%
2032	5.00%	2.75%	0.14%	2042	5.00%	3.34%	0.20%
2033	5.00%	2.78%	0.16%	2043	5.00%	3.40%	0.19%
2034	5.00%	2.80%	0.15%	2044	5.00%	3.45%	0.18%

PFM reviewed the results of the Authority's Series 2024A Bonds with regard to prevailing market conditions, and it is our opinion that the interest rate scales, couponing, reoffering yields and underwriting compensation received for the Series 2024A Bonds are fair and favorable to the Authority. The final pricing for the Series 2024A Bonds resulted in a gross underwriting spread of $670,352.30 or $3.34 per face amount of bonds.

We also opine that the Authority's Series 2024A Bonds were appropriately priced relative to other issues sold or trading in the secondary market during the same period. PFM believes that the final all-in true interest cost of 3.4030% for the Series 2024A Bonds are favorable to the Authority in light of prevailing market conditions. Additionally, PFM believes that these statistics are comparable to the interest rate levels of similar transactions sold either competitively or through negotiated placement in the market during the week of sale.

Moody's Investors Services, Inc. affirmed the Authority's outstanding "Aaa" credit rating and S&P Global Ratings also affirmed the Series 2024A Bonds a "AAA" credit rating prior to the receipt of bids.

We greatly appreciate the opportunity to have served as financial advisor to the Authority on the Series 2024A Bonds and we look forward to being of continued service on future financing transactions. As always, we will be available to respond to any questions you may have concerning the contents of this memorandum or on any part of the financing process.

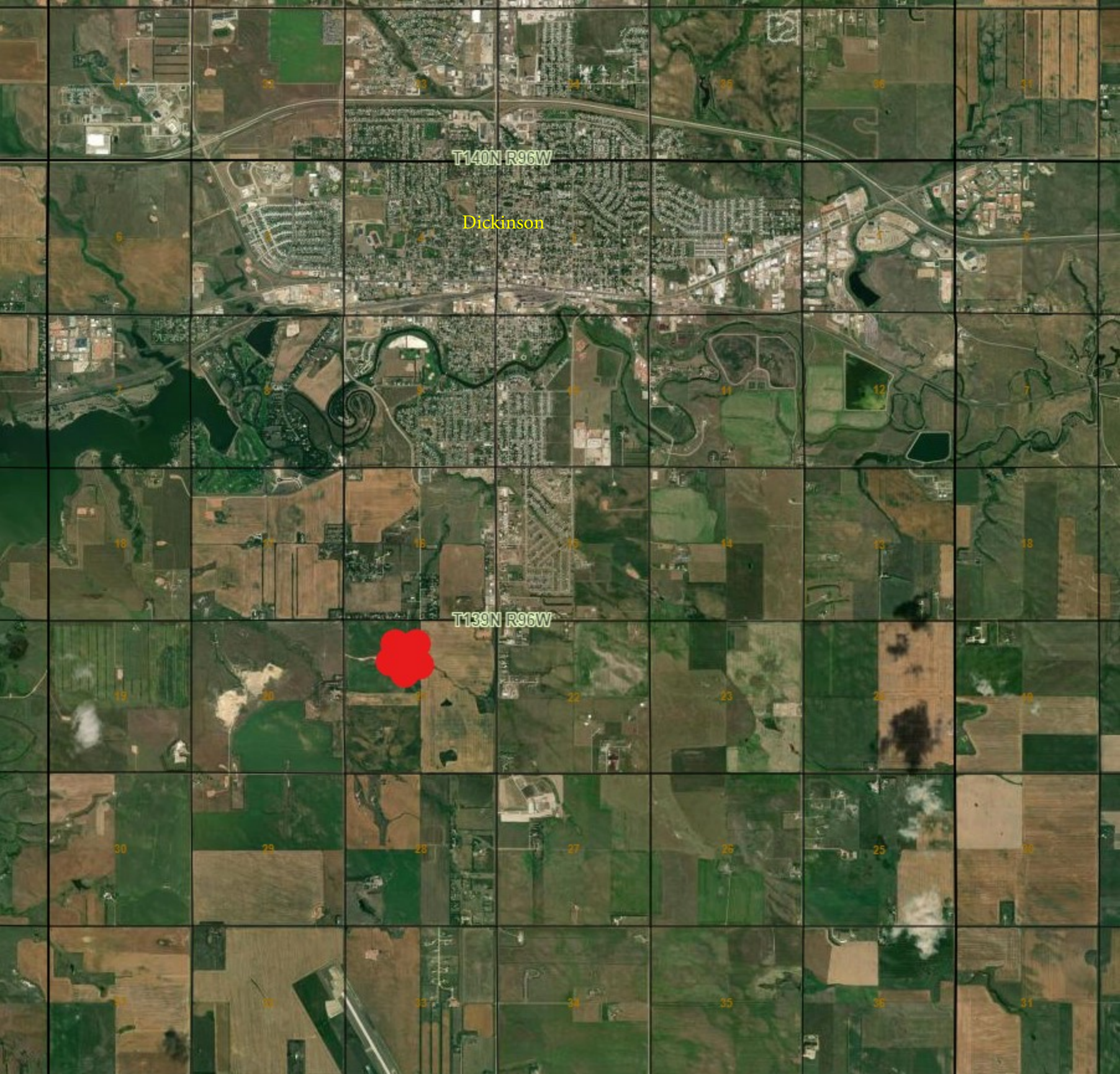
Sincerely,

PFM Financial Advisors LLC

Jessica Cameron Mitchell
Managing Director

Docket for Hearing
Wednesday, July 24, 2024
N.D. Oil & Gas Division N.D. Oil & Gas Division 1000 East Calgary Avenue

Case No. 31008, Order No. 33694: In the matter of a hearing called on a motion of the Commission to consider the confiscation of all production-related equipment and salable oil at the Oltmans Ocelot 1-21 well (File No. 36308), NENW Section 21, T.139N., R.96W., Wildcat Field, Stark County, ND, operated by Freedom Energy Operating, LLC, or any working interest owner, pursuant to NDCC §§ 38-08-04 and 38-08-04.9.


T140N R96W
Dickinson
T139N R96W

Attachment 7

Docket for Hearing
Thursday, July 25, 2024
N.D. Oil & Gas Division N.D. Oil & Gas Division 1000 East Calgary Avenue

Case No. 30992, Order No. 33664: Application of Zargon Oil (ND) Inc. for an order authorizing the conversion of the E.J. Feland 25-6 well (File No. 6738), with a location in the SENW of Section 25, T.163N., R83W., Bottineau County, ND, Haas-Madison Unit, for the injection of fluids into the unitized formation pursuant to NDAC Chapter 43-02-05, and such other relief as is appropriate.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35
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GEOLOGICAL SURVEY QUARTERLY REPORT

April 1, 2024 to June 30, 2024
to the

NORTH DAKOTA INDUSTRIAL COMMISSION

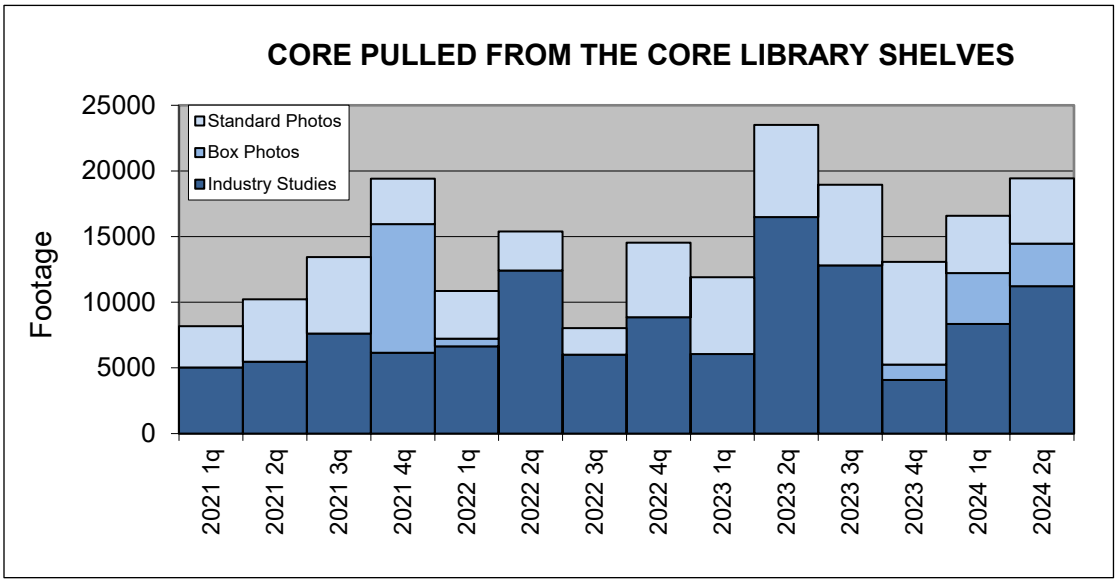
Edward C. Murphy
State Geologist
Geological Survey
Department of Mineral Resources
North Dakota Industrial Commission

August 27, 2024

Table of Contents

Wilson M. Laird Core and Sample Library

During the second quarter of 2024, geologists from two oil companies, the Geological Survey and EERC, professors from West Virginia University and Minnesota State University-Moorhead, and graduate students from UND studied 10,164 feet of core. Additionally, 1,066 feet of core was sent to the Williston Basin Petroleum Conference core workshop in Bismarck for a quarterly total of 11,230 feet. A total of 4,972 feet of core was photographed generating 6,577 standard photographs and 3,241 feet of core was photographed with a tripod generating 256 photographs for the subscription site.



Workers pulled 19,433 feet of core from library shelves during the second quarter of 2024.

Core Pulled From the Shelf During the Second Quarter

A total of 19,433 feet of core, with an approximate weight of 87 metric tons, was removed from the core library shelves during the second quarter of this year. This is equal to all of the core on this north-facing shelving unit.

Williston Basin Petroleum Conference

Twenty-five hundred people attended the 31st Williston Basin Petroleum Conference in Bismarck from May 14-16. The conference began in 1993 as the International Williston Basin Horizontal Well Workshop and was sponsored by the North Dakota and Saskatchewan Geological Surveys. The conference was created as an opportunity for geologists and engineers in both Canada and the United States to share their successes and failures regarding the relatively new technology of horizontal drilling. In 2006, the North Dakota Petroleum Council was brought in as a partner as a means of taking much of the time-consuming conference preparation away from the Geological Survey on the even numbered years when the conference was held in Bismarck. At that time, the conference was rebranded as the Williston Basin Petroleum Conference & Prospect Expo.

Over the years, the North Dakota conferences have grown significantly in both size and content. In 1993, it had a handful of booths, a dozen presentations (compared to 56 presentations in 2024), and 179 attendees. During the first 15 years of the conference, attendance averaged 385 participants, but jumped to an average of 2,850 over the last 16 years, with a high of 4,250 in 2014. While the Bakken Play has been largely responsible for that, the partnership with the ND Petroleum Council has been able to capitalize on that interest.

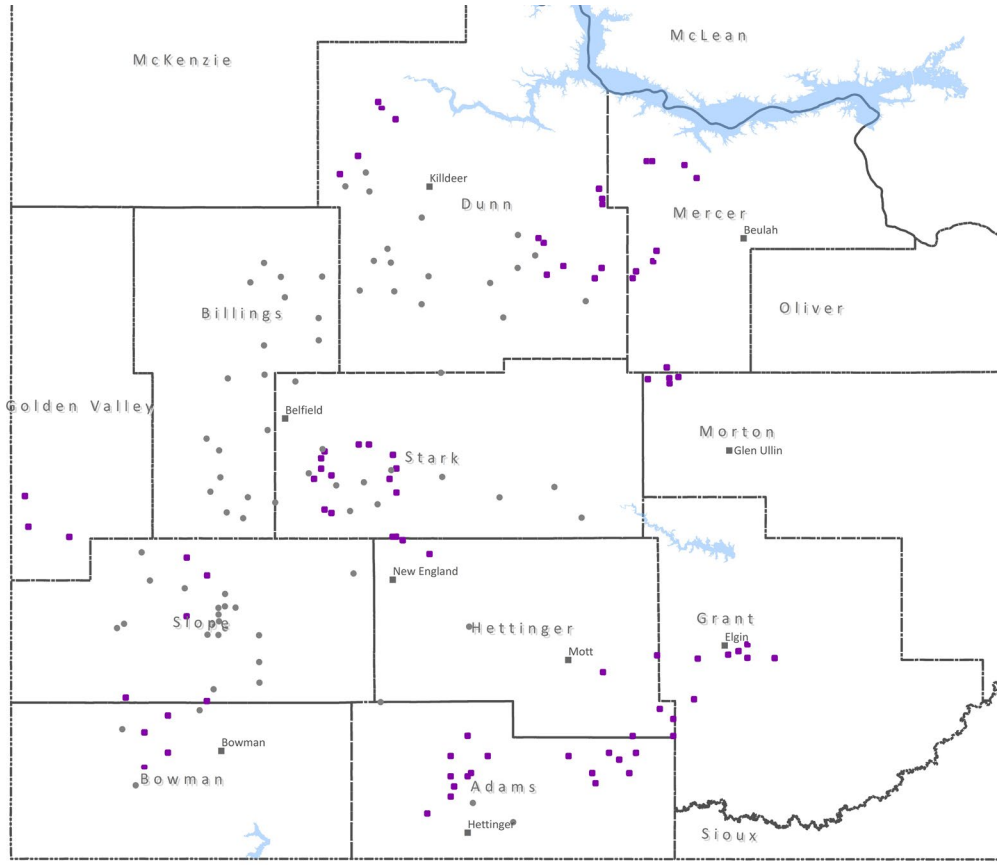
Tim Nesheim gives a presentation on the Three Forks Formation at the 2024 Williston Basin Petroleum Conference core workshop.

UND Geology and Geological Engineering Department Chair Sven Egenhoff (center) describing features in Bakken core to core workshop registrants during the 2024 Williston Basin Petroleum Conference.

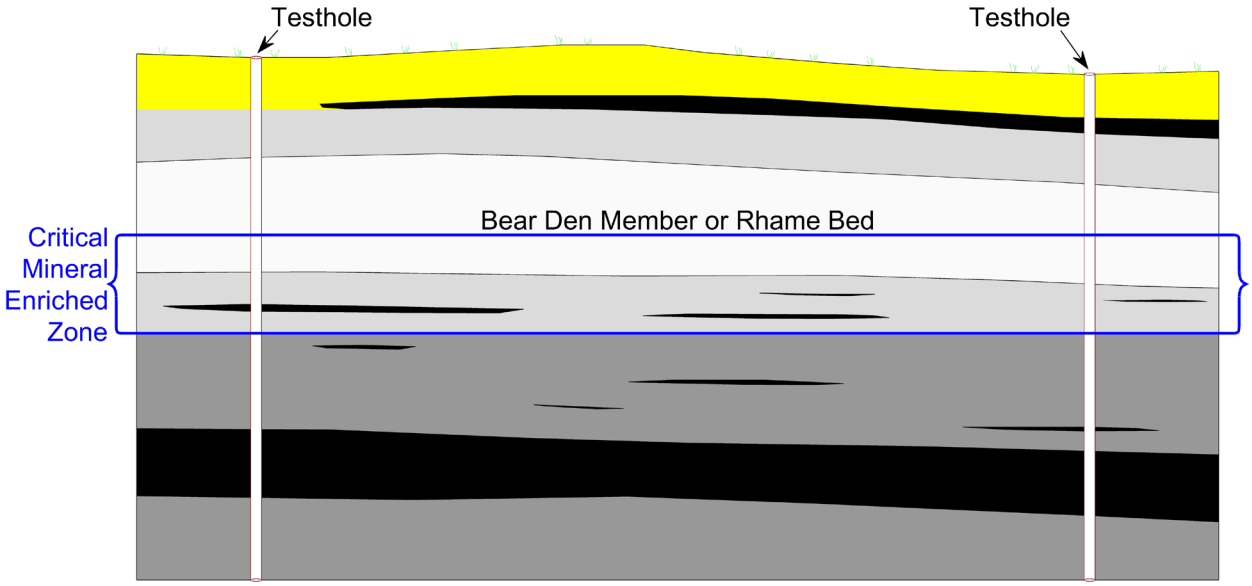
Critical Minerals Drilling Project

During the 68th Legislative Session, the Geological Survey received $500,000 in one-time funding to complete a 50-hole drilling project in western North Dakota targeting coals within and immediately beneath the Bear Den Member of the Golden Valley Formation and the Rhame bed at the top of the Slope Formation. Two geologists spent 400 hours correlating the coals from thousands of electric logs in an effort to choose ND Trust Lands surface and mineral tracts that held the most promise for intercepting these target zones. Additionally, hundreds of hours were spent obtaining a permit from ND Trust Lands, securing contracts with drilling and logging companies, field checking the proposed drill sites, contacting Trust Lands lessees and the surface owners of Trust Lands mineral tracts, and procuring drilling supplies. Seventy-five tracts were chosen, 25 Trust Lands surface and mineral tracts and 50 tracts with Trust Lands minerals and private surface.

To date, we have spent over 800 hours on drilling preparation and anticipate another 800 hours will be spent drilling/coring the holes. The drilling project is scheduled to start the first week in September and is anticipated to take two truck-mounted rigs, three weeks to complete.



The locations of the original drilling project (72 gray dots) and the revised drilling project (75 purple squares) in southwestern North Dakota.



A generalized cross section showing the difficulty of intersecting lignites beneath the Bear Den Member of the Golden Valley Formation or the Rhame bed at the top of the Slope Formation.

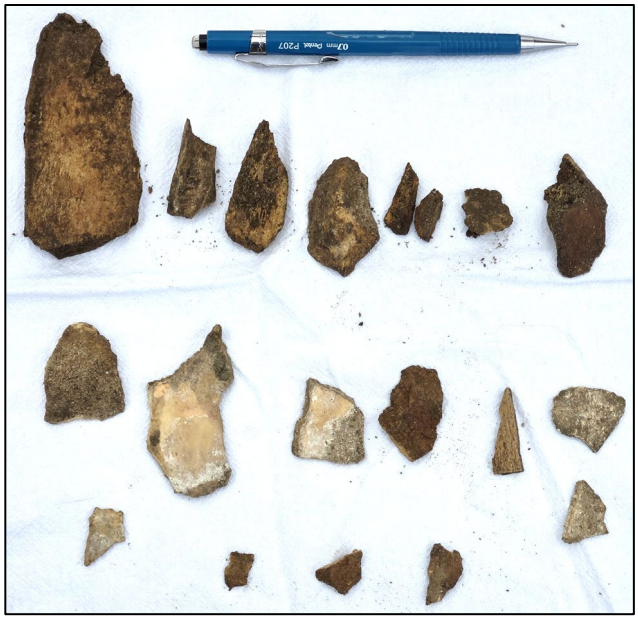
Woolly Mammoth in Northwestern North Dakota

In August of 1988, I was doing fieldwork in Bowman County when I was asked to investigate a site in northwestern North Dakota where woolly mammoth bones were reportedly encountered while digging the foundation for a garage. By the time I received the information, the slab had been poured, the garage was built, and there were no bones left at the surface. I met with the high school science teacher at the job site and got the names of the three construction workers who had encountered the bones. The homeowner said he would allow us to remove the slab to go after the bones as long as we got it poured back in during the month of September. I contacted a number of agencies and professors at ND universities, but no one had the time, nor the funds, to undertake the job on such short notice. Last December, after thinking about this for thirty-five years, I contacted the homeowner and obtained permission for the Geological Survey and the State Historical Society to investigate the site. We went up there in May and the Historical Society conducted ground-penetrating radar and resistivity surveys, both inside and around the perimeter of the garage. Preliminary interpretation of the ground-penetrating radar confirmed the location where two of the three construction workers said the mammoth bones were encountered. The homeowner allowed us to dig along the outside wall at this spot and 100 kindergarteners through 6th graders, along with a handful of 7th and 8th graders, from the nearby town came by on one of the last days of school to see what we were doing. Clint Boyd gave each grade a short presentation and showed them a woolly mammoth tooth and archaeologists Margaret Patton and Brittany Brooks explained how the ground-penetrating radar and resistivity surveys work. We allowed each student to participate in the dig by removing a shovelful of the foundation backfill from the site. That backfill turned out to contain several pieces of bone and tusk. In addition, when we got below the fill, we found three, undisturbed bones. We covered those bones with plaster to protect them until the paleontology and archaeology crews can get back up there this fall to do a detailed excavation.

The local high school science teacher stands at the spot where woolly mammoth bones were encountered while digging the foundation. Photograph taken on August 25, 1988.

The area north of the garage is gridded for the ground penetrating radar and resistivity surveys. Inset photo: Brittany Brooks and Margarett Patton (background), State Historical Society of North Dakota, ready the three-wheeled ground penetrating radar device for operation.

Clint Boyd points out features on a woolly mammoth tooth to a class from the nearby elementary school. The orange flagging mark the area of interest noted by the ground-penetrating radar survey.



Left: Bone and tusk scraps found within the 1988 foundation backfill. Right: Clint uncovered three bones in undisturbed sediment 30 inches below the surface and immediately adjacent to the foundation backfill.

Regulatory Programs (April 1 to June 30, 2024)

Coal Exploration Program	One permit was issued this quarter.
Subsurface Mineral Program	No permits were issued this quarter.
UIC Class III Well Program	No permits were issued this quarter.
Geothermal Program	Six permits (1 residential, 5 commercial) were issued this quarter.
Paleontological Resource Program	Three permits were issued this quarter.

Publications This Quarter (April 1 to June 30, 2024)

Maike, C.A., 2024, Areas of Landslides Denhoff Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. Dnhf - l3.

Maike, C.A., 2024, Areas of Landslides Goodrich East Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. Gdrc E - l3.

Maike, C.A., 2024, Areas of Landslides Goodrich West Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. Gdrc W - l3.

Maike, C.A., 2024, Areas of Landslides McClusky Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. McCl - l3.

Maike, C.A., 2024, Areas of Landslides Mercer Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. Mrcr - l3.

Maike, C.A., 2024, Areas of Landslides Pickardville Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. Pkrd - l3.

Maike, C.A., 2024, Areas of Landslides Selz NE Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. Selz NE - l3.

Maike, C.A., 2024, Areas of Landslides Turtle Creek NE Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. TrtC NE - l3.

Maike, C.A., 2024, Areas of Landslides Turtle Creek NW Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. TrtC NW - l3.
Anderson, F.J., 2024, Areas of Landslides Baldhill Dam Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. BlhD - l.
Anderson, F.J., 2024, Areas of Landslides Burlington Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. Brlg - l.
Anderson, F.J., 2024, Areas of Landslides Burlington SE Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. Brlg SE - l.
Anderson, F.J., 2024, Areas of Landslides Dazey NE Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. Dzey NE - l.
Anderson, F.J., 2024, Areas of Landslides Deering SW Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. Drng SW - l.
Anderson, F.J., 2024, Areas of Landslides Minot Quadrangle, ND Quadrangle: North Dakota Geological Survey 24K Map Series No. Mnot - l.
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Presentations This Quarter (April 1 to June 30, 2024)

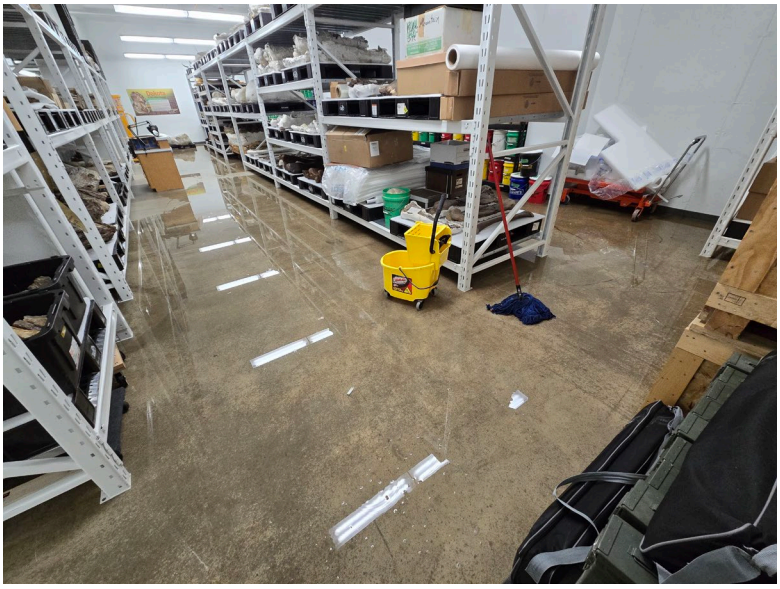
F. Anderson, NDGS Geologic Hazards & Mapping Programs, NDDES Planners Mtg., online, April 8.
J. Person, Lab and collections tour, University of Mary Biology, Heritage Center, April 9.
J. Person, Dakota tour, general public, Heritage Center, April 10.
B. Barnes, lab and collections tour, DMR staff, Heritage Center, April 15.
J. Person, B. Barnes, Earth Day "Will You Survive?" Jr. High 6th grade, State Capitol, April 16.
C. Boyd, T. Ford, Earth Day Evening Event, general public, Civic Center, April 16.
T. Ford, B. Barnes, Lab and collections tour, Christ the King 1-3rd grade, Heritage Center, April 17.
B. Barnes, Dakota tour, general public, Heritage Center, May 1.
S. Chittick, Opeche Salts, Williston Basin Petroleum Conference core workshop, Bismarck Event Center, May 14.
S. Chittick, Salts in the Opeche Formation, Williston Basin Petroleum Conference, Bismarck Event Center, May 15.
T. Nesheim, Three Forks Fm., Williston Basin Petroleum Conference, Bismarck Event Center, May 15.
T. Nesheim, E. Starns, Three Forks Production, WB Petroleum Conference, Bismarck Event Center, May 15.
C. Boyd, E. Murphy, Mammoth Dig Tour, K-8th graders, northwestern ND, dig site, May 21.

C. Boyd, Dakota Tour, Admiral Munsch, Heritage Center, May 23.
T. Nesheim, Core Library Tour, UND Petroleum Engineering, Core Library, June 7.
F. Anderson, Earthquakes and Seismicity in North Dakota, KFYR-TV, Weather Segment, June 12.
C. Boyd, Lab and collections tour, Midwest Travel Writers, Heritage Center, June 13.

The Robert's Cottonwood Grove Ranch House in Slope County, circa 1900 (SHSND 03-175).

The Robert's Cottonwood Grove Ranch House in Slope County, July 2, 2024.

The pond that developed outside of the paleontology office windows (6:30 pm on August 13, 2024).



A half-inch of water covers much of the southeast portion of the State Fossil Collections area (left) and a quarter-inch covers portions of the northeast corner of the collections area on the evening of August 13.

STATE ENERGY RESEARCH CENTER

Annual Report (2023–2024)

Submitted to:

Reice Haase

North Dakota Industrial Commission
600 East Boulevard Avenue, Department 405
State Capitol, 14th Floor
Bismarck, ND 58505-0840

Submitted by:

Scott C. Ayash

Energy & Environmental Research Center
University of North Dakota
15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018

August 2024

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EXECUTIVE SUMMARY

The University of North Dakota (UND) Energy & Environmental Research Center (EERC) was designated the State Energy Research Center (SERC) by the 66th Legislative Assembly of North Dakota through Senate Bill SB2249. SERC is built on the reputation of the EERC as a leader in critical energy research, with the purpose of serving the state of North Dakota by developing technologies to ensure a prosperous energy future for the state. The availability of commercially deployable technologies and concepts to serve the state in the future is dependent on continually developing innovative ideas.

As stated within SB2249, SERC was established to allow the EERC to conduct exploratory, transformational, and innovative research that advances future energy opportunities and benefits the state's economy and environment through:

- Exploratory research of technologies and methodologies that facilitate the prudent development, and clean and efficient use, of the state's energy resources.
- Greater access to energy experts for timely scientific and engineering studies to support the state's interests.
- Education and outreach related to the state's energy resources.

Funding for SERC activities, up to $7.5 million per biennium, is provided from a small portion of the oil and gas production and extraction taxes. Currently, SERC funding has been directed by the Legislature through June 30, 2029, and activities will continue according to the scope of work with the North Dakota Industrial Commission (NDIC) through that date.

The past year of SERC activities has resulted in:

- Significant growth in exploratory research, with several new projects beginning as well as continuation of multiple ongoing projects and activities across all facets of North Dakota energy.
- An increase in the number of new innovations and inventions.
- Initiating an effort to update a statewide grid resiliency plan for North Dakota.
- Completing a study forecasting 20-year CO_2 enhanced oil recovery (EOR) potential for the state.
- Fourteen North Dakota students completing the Energy Hawks Program.

- Collaboration across the state's institutions of higher education, including tribal colleges.

Over the past year, 18 new exploratory research projects were selected for SERC funding, in addition to the four projects that were ongoing at the end of last year. Six projects were completed this year, and these are summarized in this report. Sixteen projects remain ongoing. In addition, a new exploratory research effort began this year entitled "SERC Strategic Initiatives." The topical initiatives selected under this research effort were chosen for their strategic relevance to the state of North Dakota, its energy and other industries, its environment, and its people.

NDIC approved the use of SERC funds this year to conduct two efforts. The first is updating a statewide electric grid resiliency plan for the North Dakota Transmission Authority, which was completed via SERC efforts earlier this year. The plan is being reviewed and will be revised and updated as necessary. This effort is ongoing at the time of this report. The second effort approved by NDIC was a project forecasting 20-year CO_2 EOR potential in the state. This study was conducted with input from the Bank of North Dakota and the North Dakota Tax Department. At the time of this report, the CO_2 EOR study has been completed, with a plan to present the results to NDIC at one of its monthly meetings.

During the summer of 2023, 14 students, including 13 from UND and one from Minot State University, participated in the Energy Hawks Program. Three concept research projects were developed and presented by the students to EERC research staff and are summarized in this report.

The 2024 Energy Hawks Program commenced in May 2024 and includes 14 students: 13 from UND and one from Minot State University. The 2024 program includes an in-person tour of western North Dakota, a team-building workshop at the EERC, and on-site and hybrid on-site/virtual participation at the EERC. The 2024 program is scheduled to wrap up in August and, similar to previous years, the Energy Hawks will present research concept papers to EERC staff.

In addition to the regular Energy Hawk activities, a panel discussion entitled "Energy Hawks Present: The Future of Energy" was planned and carried out on the UND campus. The event featured EERC and UND College of Engineering and Mines research staff as panel members engaging in discussion focused on current and future energy issues, facilitated by a former Energy Hawks intern.

The overall efforts of SERC will continue over the coming year, beginning with a new round of fundamental research projects anticipated to start late summer 2025. As appropriate, results will be presented to NDIC, the Energy Development and Transmission Committee, and the next North Dakota Legislative Assembly.

STATE ENERGY RESEARCH CENTER
ANNUAL REPORT – 2023–2024

INTRODUCTION

North Dakota is blessed with abundant energy opportunities (including coal, oil and gas, wind, biofuels, and solar), exceptional agricultural production, and a highly skilled workforce. To keep North Dakota globally competitive while focusing on resource and environmental stewardship, new and more efficient energy production technologies and methods are needed. This includes innovative energy and agricultural synergies and the creation of new value-added products from raw materials and energy by-products/wastes. Recognizing this need, the 66th Legislative Assembly of North Dakota, through Senate Bill SB2249, named the University of North Dakota (UND) Energy & Environmental Research Center (EERC) the State Energy Research Center (SERC) of North Dakota. SERC is built on the EERC's long history as a leader in critical energy research, with the purpose of serving the state of North Dakota by developing technologies to ensure a prosperous energy future for the state.

The availability of commercially deployable technologies and concepts to serve the state in the future is dependent on continually creating innovative ideas. As shown in Figure 1, exploratory research is the first step in the process toward commercialization. Exploratory research feeds research and development, eventually leading to demonstration and commercialization.

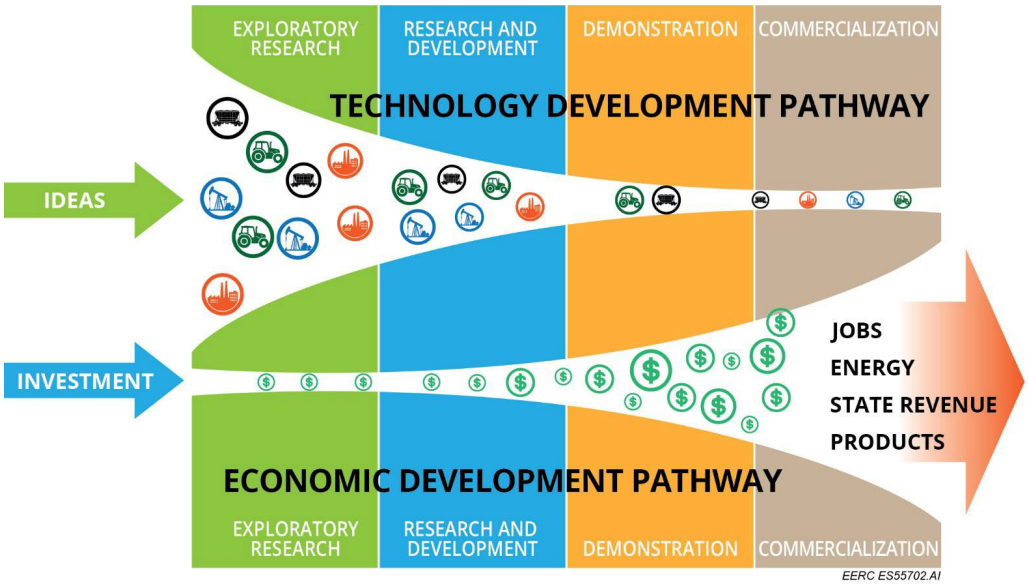


Figure 1. SERC funding is focused on accelerating exploratory research to generate new ideas and concepts. Those concepts can then be advanced through additional research and development, demonstration, and commercialization with separate funding sources.

As stated within SB2249, SERC was established to allow the EERC to better support North Dakota by conducting exploratory, transformational, and innovative research that advances future energy opportunities and benefits the state's economy and environment through:

- Exploratory research of technologies and methodologies that facilitate the prudent development, and clean and efficient use, of the state's energy resources.

- Greater access to energy experts for timely scientific and engineering studies to support the state's interests.

- Education and outreach related to the state's energy resources.

Funding for SERC activities, up to $7.5 million per biennium, is provided from a small portion of the oil and gas production and extraction taxes. Currently, SERC funding has been directed by the Legislature through June 30, 2029, and activities will continue according to the scope of work with the North Dakota Industrial Commission (NDIC) through that date.

SERC was given the mandate to provide practical, pioneering technologies and methods to support North Dakota's energy opportunities and benefit the state's economy and environment. Three corresponding work tasks were created to execute SERC's mandate:

- Task 1 – Perform Exploratory Research for North Dakota Energy
- Task 2 – Provide Prompt Expertise for North Dakota
- Task 3 – Advocate and Educate Through Outreach

This report provides an update on SERC efforts conducted over the past year across these three tasks. It should be noted that because of the potential opportunities for intellectual property (IP) development, technical activities are only presented at a high level to avoid negating the opportunity to protect the IP in the future.

TASK 1 ANNUAL SUMMARY

SERC is conducting multiple projects under this task, each focused on early-stage, exploratory energy research topics with the potential to positively impact North Dakota, its industries, and its citizens. Emphasis is placed on technology and strategy development that could ultimately lead to commercial application with public and private sector partners.

The EERC is using a five-step innovation process to accelerate exploratory research and serve the state of North Dakota by developing new technology concepts. This process is designed to promote researcher productivity while decreasing unnecessary administrative burden and has proven successful in generating fundamental research concepts over the past year. Only a select number of these concepts were ultimately chosen for funding. The five-step process includes:

1) Generating innovative research ideas focused on North Dakota-specific needs.

2) Reviewing ideas using teams of technical and nontechnical research experts to assess the concepts and support their selection.

3) Working with selected projects to optimize their research plans for service to North Dakota.

4) Conducting exploratory research.

5) Identifying additional funding sources to further the research and development of completed projects and, when appropriate, demonstration and commercialization.

In addition to the fundamental research activities selected via the above internal solicitation process, small-scale, high-impact concepts may go through a modified review process and be selected for SERC funding based on their fundamental research merit and potential impact to the state.

Over the past year, 53 fundamental research concepts were identified and evaluated, with 18 new projects ultimately selected for SERC funding. These projects are listed below, along with the four projects that were ongoing at the time of last year's annual report. Six projects were completed this past year, resulting in 16 projects ongoing.

- Metal Organic Frameworks as Cathode Materials for Next-Generation North Dakota Brine-Based Lithium–Halogen Batteries (selected for funding during a previous year, completed)

- Electrochemical Extraction of Rare-Earth Elements from North Dakota Lignite and Produced Water Brine (selected for funding during a previous year, completed)

- Produced Water to Low-Cost Hydrogen and Higher Concentration Metals/REEs Solution (selected for funding during a previous year, completed)

- Tunable Electrochemical Pathway for High-Purity REM (rare-earth metals) and CM (critical materials) (selected for funding during a previous year, ongoing)

- Williston Basin Resource Study for Commercial-Scale Subsurface Hydrogen Storage (ongoing)

- Metal/Graphene Composites with Enhanced Material Properties (ongoing)

- Effects of Impurities (N_2/O_2) on CO_2 Dissolution in a Saline CO_2 Storage Reservoir (ongoing)

- Treatment Technology for North Dakota's Geologic Brines (completed)

- Suitability Study of Carbon-Based Sorbents for Simultaneous Critical Mineral Recovery and Treatment of Oil and Gas Produced Water (ongoing)
- Advanced Geothermal Energy Extraction in Decommissioned Wells (completed)

- Development of Lab Methods to Simulate Diffusion of Hydrogen in Subsurface Salts (ongoing)

- Optimization of Hydraulic Fractures Interaction with Natural Fractures to Improve Oil Production in the Bakken (ongoing)

- Hydrogen Horizons: Empowering Professionals, Industry Leaders, and First Responders with Cutting-Edge Hydrogen Safety Training (ongoing)

- Evaluation of North Dakota Glacial Clay Enhanced with Lignite-Derived Graphitic Carbon (LDGC) for Value-Added Composite Materials (completed)

- Application of Biomining for REE Extraction from Lignite and Fly Ash (ongoing)

- Recycling of Magnet Materials to Recover Critical Rare-Earth Elements Using Lignite-Based Separation Media (ongoing)

- Realizing Beneficial Use Economics of Produced Water by Plasma Desalination (ongoing)

- Dynamic Corrosion Test System Design for Special Alloys in the CCS Environment: Feasibility Study (ongoing)

- Development of Advanced Postgraphitization Processing Methods to Enhance and Expand Graphite Applications (ongoing)

- Evaluation of Cushion Gas for H_2 Storage in Three Geologic Structures – Supporting H_2 Hubs in North Dakota (ongoing)

- Transforming Waste to Power: Improving the Urea Oxidation Reaction for Direct Urea Fuel Cells (ongoing)

- Sunflower Pectin Extraction and Utilization – Phase I Collection, Extraction, and Characterization (ongoing)

In addition to the projects listed above, the EERC began a new exploratory research effort this year entitled "SERC Strategic Initiatives." These topical initiatives were selected for their strategic relevance to the state of North Dakota, its energy and other industries, its environment, and its people. It is anticipated that the strategic topics within this effort may change based on evolving opportunities and value to the state. The strategic initiatives that began this year are listed below:

- Maximizing National Security Opportunities with North Dakota's Energy Industries (ongoing)

- Critical and Novel Materials to Support North Dakota's Energy (ongoing)

- Strategic Operational Development to Support North Dakota Energy Research (ongoing)

- Enhancing the Nexus Between North Dakota's Energy Opportunities and Tribal Nations (ongoing)

To date, inventions from SERC have resulted in 11 U.S. patent applications submitted (not including an additional 21 continuation, continuation in part (CIP), divisional, or foreign applications), six U.S. patents received, one signed license agreement, and one license agreement at the final stages of negotiation at the time of this reporting.

Highlights from the Task 1 fundamental research projects completed this past year, as well as updates on the strategic initiatives, are provided in the remainder of this section.

Metal-Organic Frameworks as Cathode Materials for Next-Generation North Dakota Brine-Based Lithium–Halogen Batteries

Overview

The goal of this project was to conduct exploratory research that could lead to the development of a secondary, nonaqueous lithium–halogen battery. Project activities included conducting a literature review, fabricating a metal–organic framework(s) (MOF), and conducting laboratory testing to evaluate MOF performance and potential use in batteries.

Highlights

- Based on a literature review, four electrode materials were chosen for evaluation based on low-cost materials and synthesis methodologies that could then be economically scaled up: Cu-BTC, UiO-66-NH2, UiO-67(Ce), and Ce-MOF-808.

- MOFs were successfully grown onto carbon cloth and analyzed using scanning electron microscopy (SEM) (Figure 2).

- This project successfully tested electrodes made from various synthesized multiple-MOF materials. The cerium-based MOFs, UiO-67(Ce) and Ce-MOF-808, showed greater peak current density and higher reversibility than baseline carbon cloth. These results showed promise for scalability and low-cost production of these electrodes; however, additional testing is needed to confirm these results.

Next Steps

- Identification of additional funding opportunities will continue. This project has provided the basic knowledge needed for future work.

- To fully determine if these materials are suitable for lithium–bromine batteries, the next step for testing would be to use the cerium-based MOFs in a coin cell setup to determine overall capacity (energy and power density) cycling and Coulombic efficiency. This should be done using a nonaqueous electrolyte solvent, similar to current battery technology.

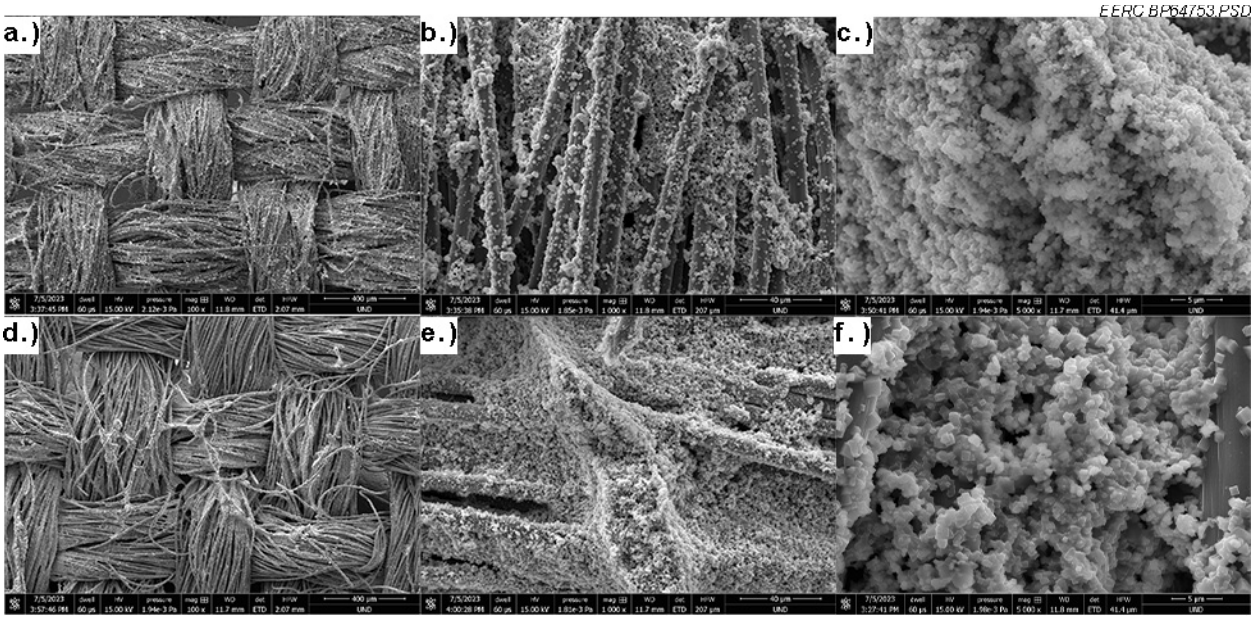


Figure 2. SEM images of MOF growth onto carbon cloth at various magnifications for UiO-67(Ce) (a–c) and Ce-MOF-808 (d–f).

Electrochemical Extraction of Rare-Earth Elements from North Dakota Lignite and Produced Water Brine

Overview

The goal of this project was to identify and devise the means of exploiting key electrochemical properties of rare-earth elements (REEs) for their efficient extraction, separation, and purification via a tunable electrochemical process. To accomplish this goal, literature review, computer-based simulations, and laboratory experiments were performed.

Highlights

- This project successfully evaluated various acids and concentrations of these acids as a mechanism to leach REEs from lignite coal ash. The choice of acid was highlighted as a key factor in REE extraction, with results showing hydrochloric acid as a more efficient leaching agent (Figure 3). Following leaching, an electrochemical process was applied to enhance REE extraction.

- An electrochemical process to extract REEs from produced water brine was also tested, although the initial results were not as promising as those from the coal ash experiments. Based on available resources, a focus was put on coal ash.

- While project results show promise, especially the tests using coal ash, additional work is needed to optimize the processes involved in using electrochemical methods for extracting REEs at a large scale.

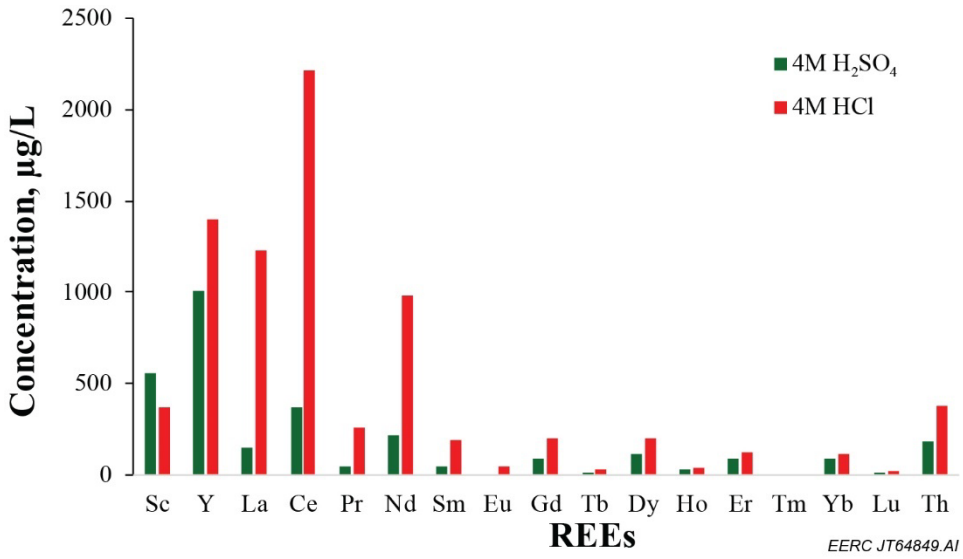


Figure 3. Effect of acid type on REE leaching.

Next Steps

- Identification of additional funding opportunities will continue. This project has provided the basic knowledge needed for future work.

- There are several next steps that could be taken to advance this research, including the following:
  - Diverse acidic leaching: The investigation of various acids in the leaching solution should be pursued to attain maximum extraction, which could lead to the selective extraction of REEs from coal samples.
  - Temperature optimization: Further exploration is needed to understand the role of leaching temperature in extracting REEs from lignite coal samples, as temperature significantly influences REE leaching kinetics.
  - Strong and weak acid inquiry: The leaching of REEs using both strong and weak acids should be investigated.
  - Greener leaching processes: The optimization of eco-friendly leaching processes should be studied by varying electrochemical potential and time.
  - Selective electrochemical oxidation: Oxidation potential and duration play pivotal roles in separation and extraction. The process of selective electrochemical oxidation of REEs should be fine-tuned to maximize recovery efficiency.

Produced Water to Low-Cost Hydrogen and Higher-Concentration Metals/REEs Solution

Overview

Produced water electrolysis (PWE) presents a transformative solution to North Dakota's produced water management challenges and existing excess electricity. The goal of this project

was to develop an electrolysis process to directly convert North Dakota produced water into hydrogen and higher-concentration metal/REE solution. Specific activities performed included identifying a suitable catalyst and laboratory-scale electrochemical testing.

Highlights

- This project studied the complex challenges associated with produced water electrolysis, addressing issues such as the competition between chlorine evolution reaction and oxygen evolution reaction on the anode, the necessity for robust electrocatalysts capable of withstanding chloride corrosion, and the formation of precipitates on the electrode surface.

- Various electrolytes were investigated and prepared, including produced water (Figure 4), alkaline solution, and laboratory-made alkaline seawater. Results of this investigation highlight the strong effect of the selected catalyst on the effectiveness of this approach. The choice of catalyst is influenced by several factors, including the nature of minerals present in produced water.

- The produced water samples used in the laboratory experiments were obtained from a North Dakota well.

- The results of this project showed the laboratory-made alkaline seawater performed better as an electrolyte than the produced water samples. This is because of the high concentration of chloride in the produced water. Reducing the chloride present in the produced water prior to applying the electrochemical process tested in this project would help improve its performance.

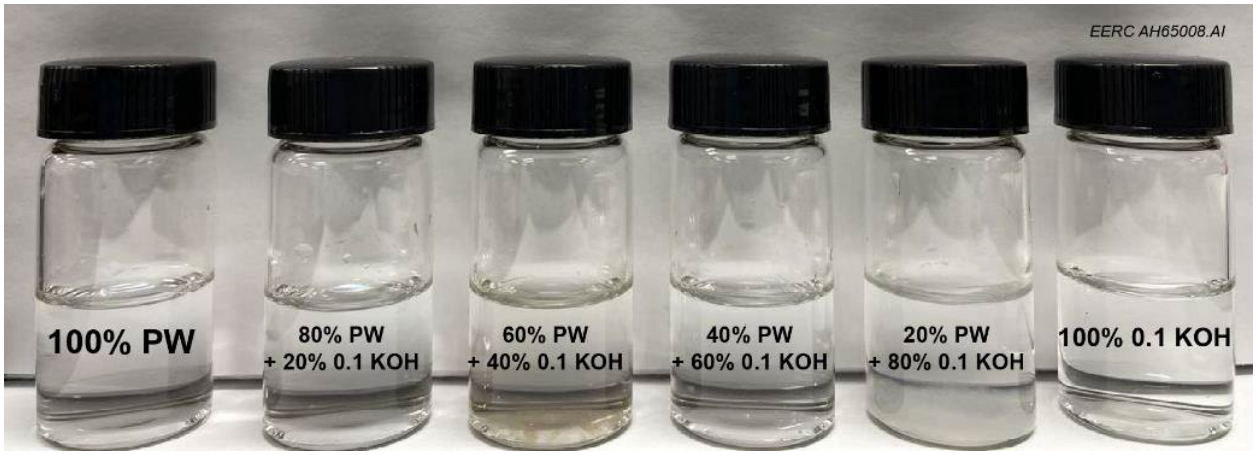


Figure 4. Different percentages of produced water samples, some mixed with 0.1 M KOH.

Next Steps

- The formation of white insoluble precipitates on the surface of the cathode/anode could be possible during electrolysis, which could partially diminish the electrochemical activity.

Additional research could focus on the development of electrocatalysts with robust stability and the ability to reduce precipitate formation.

- The high chloride concentration in the produced water samples appeared to negatively affect its performance in the laboratory tests. Future work could focus on approaches to reduce chloride or mitigate its effect during the electrochemical process tested in this project.

- Learnings from this project and the project entitled "Electrochemical Extraction of Rare-Earth Elements from North Dakota Lignite and Produced Water Brine" (discussed above) have helped provide direction for future work, should funding sources be identified. Identification of additional funding opportunities will continue.

Treatment Technology for North Dakota's Geologic Brines

Overview

This project evaluated an existing brine hydrolysis process for its potential to make useful chemicals from produced water. Brine hydrolysis is a thermochemical method to split certain chloride salts into their constituent acid and base compounds. Being a thermal process offers operating cost advantages over electrochemical-based processes since brine hydrolysis can use relatively lower-cost coproduced natural gas as its primary energy source versus electricity.

Highlights

- This project has furthered the experimental understanding of treating salts typical of oil and gas produced water in North Dakota using brine hydrolysis (Figure 5). Results indicate potential benefit of this method over existing treatment options for high-salinity brines. Two invention disclosures were filed using data generated from this project.

- Several concepts for hydrolysis-based treatment were experimentally evaluated using a sample of Bakken produced water and the mixed salts extracted from it. The mixed salt composition typical of Bakken produced water was found to affect hydrolysis behavior compared to single salt components. While this effect would impact the design of hydrolysis treatment equipment, there was no apparent benefit to chemical conversion extent from hydrolyzing mixed salts versus that observed with individual components.

- A processing scheme was developed that exchanged captured carbon dioxide (as carbonate) for the chloride to also produce carbonate by-products that might have value in other aspects of produced water treatment or potentially as a carbon sequestration compound.

- The economic feasibility of hydrolysis-based produced water treatment was highly sensitive to the concentration of dissolved solids in the produced water, with higher concentration, near-saturation conditions being most favorable.

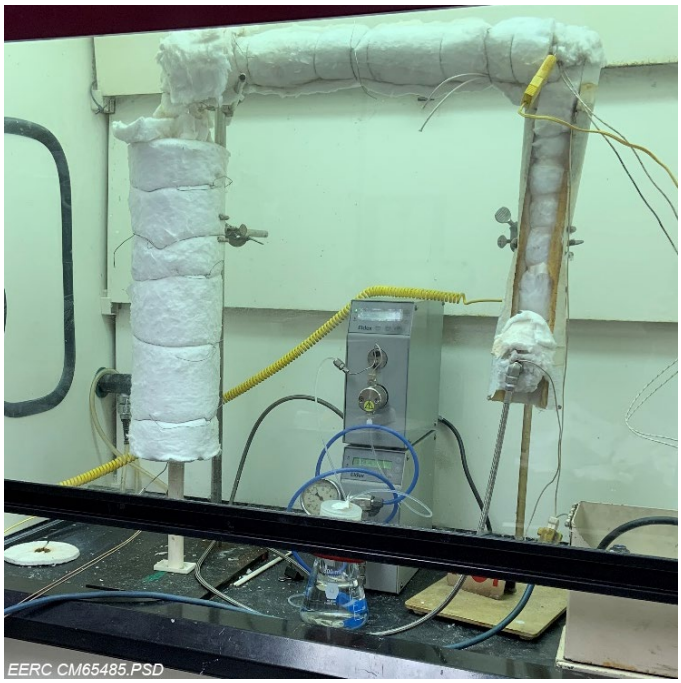


Figure 5. Experimental setup for evaluating the hydrolysis of liquid-phase salts.

Next Steps

- This project has provided the fundamental knowledge needed for future work, and identification of additional funding opportunities will continue.

- The results of this project could be used to support lithium recovery from produced water. Opportunities to develop this concept will be investigated.

- It is possible that hydrolysis treatment could be favorably paired with other processes designed to extract freshwater from brine and that produce a concentrate stream containing most of the dissolved solids. Future work could test this concept.

Advanced Geothermal Energy Extraction in Decommissioned Wells

Overview

The goal of this project was to explore the potential of repurposing decommissioned oil and gas wells into sustainable geothermal energy sources and to assess if such a transition could occur with North Dakota's current policy landscape. Several activities were performed, including 1) investigating the technical feasibility and long-term operational performance of geothermal repurposing, 2) performing a feasibility study representative of a North Dakota oil field, 3) performing reservoir and wellbore heat loss simulations to evaluate key parameters for geothermal repurposing, 4) conducting a high-level techno-economic analysis, and 5) evaluating current North Dakota policies and regulations for geothermal energy production.

Highlights

- This project successfully assessed the technical feasibility, economic viability, and regulatory landscape for repurposing decommissioned wells in the Bakken Formation for geothermal energy extraction.

- Results indicate this approach has potential for sustainable geothermal energy extraction while reducing costs and enhancing renewable energy potential. Key factors such as production rates, well spacing, and wellbore completion designs affect potential thermal recovery and should be considered.

- An interactive tool that provides a platform for real-time prediction of surface temperature based on various reservoir and wellbore parameters was developed during the project. This tool uses advanced machine learning techniques and has the potential to support practical application and optimization of geothermal parameters.

- North Dakota has an existing regulatory framework for deep geothermal activities and has experience permitting over 1000 shallow geothermal projects as of 2021; however, current regulations do not clarify ownership rights of geothermal heat. This could result in challenges if a geothermal energy project, as considered in this study, were to move forward.

Next Steps

While this preliminary investigation showed promise, additional work should be completed to further advance this concept, including the following:

- Simulations should be performed using actual wellbore fluid compositions. It is suspected that trace amounts of oil, dissolved gases, and other impurities exist beyond the 30% NaCl brine assumed in this project for simplicity. Literature review to determine actual composition or ranges of composition and integration of those findings would help to further refine the simulations completed.

- Oil and gas coproduced with the brine should be considered – quantifying the amount produced, exploring utilization options, and completing a life cycle analysis (LCA) should be investigated in future studies.

- More robust economic modeling should be performed that includes capital expenditure (CAPEX) and operating expenses (OPEX) for CO_2 transportation, CO_2 storage well(s), brine well acquisition, well and equipment maintenance and redundancy of equipment, and operating time such as capacity factor. Additionally, potential revenue streams, such as recovered hydrocarbons to offset operational costs, should be examined.

- Conducting a resource assessment of deeper and hotter reservoirs within the Williston Basin (e.g., Red River and Deadwood Formations) would provide a more comprehensive understanding of geothermal potential. These reservoirs may offer higher temperatures and greater energy yields, enhancing the feasibility and efficiency of geothermal projects.

- A task force directed by the state of North Dakota to investigate geothermal policy, related ownership rights, and adjacent industrial applications could help provide additional regulatory certainty and may help stimulate geothermal projects in the state.

Evaluation of North Dakota Glacial Clay Enhanced with Lignite-Derived Graphitic Carbon (LDGC) for Value-Added Composite Materials

Overview

This project investigated a value-added composite material formed from the addition of LDGC to glacial clay from North Dakota that could be used to produce a brick with improved properties. This project set out to assess and characterize the properties and performance of a material produced from LDGC and glacial clay, which currently has no use and is an overburden/waste material.

Highlights

- This project successfully combined North Dakota clay with LDGC to produce kiln-fired composite bricks (Figures 6 and 7). These bricks were successfully characterized using various laboratory methods, followed by testing of select bulk properties – specifically thermal conductivity and compressive strength.

- All samples were tested to determine the effects of the LDGC additive on clay properties. The clay with LDGC samples demonstrated compressive strength in compliance with ASTM International C62-17 specifications for clay building bricks; however, their performance was not meaningfully better than that of the clay-only samples in this experiment.

- Unfortunately, results of this project indicate that the tested amounts of LDGC (1.25% and 5%) did not have a significant effect on the tested bulk properties (thermal conductivity and compressive strength) of the samples.

Figure 6. A set of pressed green samples ready for kilning.

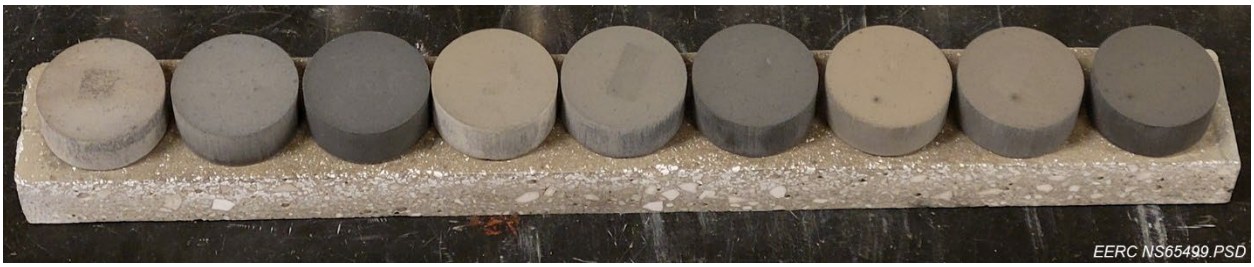


Figure 7. Kilned samples from Figure 5. Samples are in the same order as the samples in Figure 6.

Next Steps

While the results of this study did not show improvement in the tested bulk material properties with the addition of LDGC, several aspects of the project could be studied further. Funding opportunities to continue this work will be investigated. Aspects for additional study include:

- Higher percentages of LDGC: Higher percentages of LDGC were attempted during this project, but the samples began to crumble. A binder could be used to test higher LDGC content.

- Particle sizing: Getting the clay and LDGC to the same size or having LDGC smaller than the clay may help cohesion and mixing.

- Mixing of the clay and LDGC: Improved techniques in mixing powders may be beneficial for producing a more homogeneous mixture of clay and LDGC.

- Longevity testing of the brick: The addition of LDGC to the brick material may make it more resistant to water and salt penetration because of the carbon content of the LDGC.

SERC Strategic Initiatives

The goal of SERC strategic initiatives is to develop topical program areas that have a strong potential to benefit the state of North Dakota, its energy and other industries, its environment, and its people. Each initiative will have distinct activities within it, and the strategic topics within this effort are anticipated to change based on evolving opportunities and value to the state.

Maximizing National Security Opportunities with North Dakota's Energy Industries

Overview

North Dakota's ability to support our overall national security has been demonstrated over and over again. Helping to enhance that ability through a focus on energy will help to secure that role into the future. The overall goal of this initiative is to gather information and data that increase

near-term national security project opportunities with the potential to benefit the state of North Dakota.

Highlights

- A plan to develop research and opportunities under this strategic initiative was created. Work that will be performed includes investigating national security opportunities for North Dakota with the Department of Defense (DOD) and exploring collaboration options in this area with key partners, including North Dakota's Air Force bases.

- The climate action plans for each service in the DOD were reviewed to identify current and future national security trends that align with those of North Dakota's energy industries. Energy resilience was identified as an essential part of national security interests. Within this broad category, initial areas of alignment with North Dakota's energy industry were identified including grid resilience and backup power

- Regional DOD entities, including the Grand Forks Air Force Base and the Army Reserve 88th Readiness Division (RD), were contacted. The 88th RD is in charge of facility management for reserve facilities across most of the northern tier of the country, including all of North Dakota. The goal of initiating contact with these groups is to discuss strategic local and regional opportunities for collaboration on research activities.

- An active federal funding opportunity was identified and pursued in collaboration with the 88th RD. The submitted concept was based on demonstrating a stored hydrogen fuel cell system to meet combined energy resiliency and decarbonization mandates that DOD has set for stateside installations. This concept could create a demand-side application for hydrogen, which might be produced in-state if a hydrogen economy is developed in North Dakota. Unfortunately, this concept was not accepted by the funding opportunity.

Next Steps

- This strategic initiative is ongoing at the time of this reporting and activities will continue into next year.

- Additional funding opportunities will continue to be identified and conversations will continue with potential DOD partners.

Critical and Novel Materials to Support North Dakota's Energy

Overview

North Dakota's energy industry is at the leading edge of innovation. This innovation often encounters the need for new and novel materials as well as the opportunity to produce new materials from North Dakota's energy and other resources. This initiative will work toward expanding current materials research areas, including developing new materials and providing material characterization, that support the state's energy industries.

Highlights

- A research plan for this strategic initiative was developed.

- Discussions were held with Ames and Oak Ridge National Laboratories to inquire about their CMs research programs, including Ames National Laboratory's Critical Materials Innovation Hub (CMI). CMI is a DOE-funded effort working to develop resilient and secure supply chains for REMs and other important materials for energy technologies. The EERC and CMI are actively looking for ways to collaborate on exploratory research.

- Research opportunities related to novel materials in battery, solar, and electrochemical applications were investigated. Two proposals seeking federal funding to advance CM research were prepared and submitted. If awarded, these projects will allow development of key knowledge and partnerships and provide opportunities for North Dakota's future materials research. More information about the submitted proposals is as follows:
  - The EERC partnered with Oak Ridge National Laboratory and Metglas, Inc., on a proposal focused on establishing an end-of-life recycling program for domestically produced amorphous steels.
  - The EERC partnered with Semplastics to propose a project focused on using lignite coal as a battery anode material rather than conventional graphite.

- Development of a materials road map began. The goal of this document is to identify the state's materials research needs and areas of alignment between EERC capabilities, state and federal funding agencies, and industrial groups. Equipment and resources required to conduct new materials research will also be identified.

Next Steps

- This strategic initiative is ongoing at the time of this reporting, and activities will continue into next year.

- The materials road map will continue to be developed.

- Funding and collaboration opportunities will continue to be identified.

Enhancing the Nexus Between North Dakota's Energy Opportunities and Tribal Nations

Overview

North Dakota's tribal nations are an important part of the past, present, and future of North Dakota's energy opportunities. To fulfill SERC's mission of benefitting the state of North Dakota and all its people through critical energy and environmental exploratory research, Native American communities in North Dakota will be engaged through this initiative, with the purpose of developing clean energy strategies, partnerships, technology, and workforce.

Highlights

- Discussions and interactions were held with key leaders and energy and engineering faculty members of North Dakota tribal colleges, including Nueta, Hidatsa, Sahnish (NHS) College, Turtle Mountain Community College (TMCC), Cankdeska Cikana Community College at Spirit Lake, Sisseton Wahpeton College, and United Tribes Technical College. The purpose of these meetings was to discuss potential collaboration on energy research, learn how SERC can support the needs of tribal communities, and share information about the Energy Hawks Program. NHS College invited the EERC to participate in a career fair for its students that was held in spring 2024.

- Plans were made for the EERC to support REE sampling for the MHA Nation. This work will be conducted through a separately funded, non-SERC project at the EERC.

- A meeting was held with the Director of UND's Indigenous Center to discuss potential opportunities for SERC to support North Dakota's tribal nations, tribal colleges, and Native American students.

- The EERC hosted the April monthly meeting of the North Dakota tribal college presidents. Attendees included college presidents of Sitting Bull College, United Tribal Technical College, NHS College, TMCC; Cankdeska Cikana Community College, and Sisseton Wahpeton College. Discussion included research capabilities of the EERC and potential collaboration with tribal colleges.

- EERC staff attended the Strengthening Government to Government Conference held June 25–26 in Bismarck. This conference brings together tribal leaders and elders, state agency leaders and staff, statewide elected officials, local leaders, and federal officials and legislators to discuss various topics of interest. This year's topics included autonomy and artificial intelligence (AI), workforce, tribal health, and cybersecurity, among others.

Next Steps

- This strategic initiative is ongoing at the time of this reporting, and activities will continue into next year.

- Opportunities to collaborate with North Dakota's tribal nations will continue to be identified.

Strategic Operational Development to Support North Dakota Energy Research

Overview

This initiative will support the development of novel energy and materials technologies in the state of North Dakota by ensuring that testing and pilot demonstration facilities and trained personnel are available to support ongoing and future research. The EERC is a unique organization in its ability to demonstrate technology at the pilot scale and provide a critical service to the state and its technology development partners. This initiative will provide a high level of readiness for

unique facilities and specialized personnel to assist the state and its partners in developing these advanced technologies safely.

Highlights

- A material blender was enhanced with increased power and ventilation. This will allow improved and safer material-processing capabilities to mix and dry various materials required for technologies such as CO_2 capture, energy conversion, and advanced materials research.

- EERC research staff traveled to Dakota Gasification Company's (DGC's) Great Plains Synfuels Plant to tour its facilities and learn more about the gasification processes being used there. In addition to the DGC plant, the group visited Falkirk Mine and Milton R. Young Station. This trip occurred June 24–25.

- Research operations staff began training on hardware and software necessary for future operation of advanced energy research equipment. This training will allow EERC researchers to be able to custom-program the control systems of various equipment (e.g., gasifiers, combustors, CO_2 capture system, solid oxide fuel cell test stand, etc.) to support the unique needs of future research projects for the state of North Dakota and its industries.

- A thermal oxidizer stack was designed. This could be installed on an existing thermal oxidizer to allow emission control on future advanced energy research projects.

Next Steps

- This strategic initiative is ongoing at the time of this reporting, and activities will continue into next year.

TASK 2 ANNUAL SUMMARY

Task 2 is intended to provide quick and efficient access to energy experts from the EERC for timely scientific and engineering studies to support the state's interests. Through this task, SERC has the ability to both react to and proactively address issues that have the potential to impact the state's energy and other (if appropriate) industries. All projects conducted through this task are at NDIC's discretion. Below is an update on Task 2 activities this past year.

North Dakota Grid Resiliency Plan Completion and Update

In the fall of 2023, the EERC completed a North Dakota Grid Resiliency Plan for the North Dakota Transmission Authority (NDTA) as part of a larger project for the North Dakota Department of Commerce (effort discussed in the previous SERC annual report). The resiliency plan evaluates risks and threats that various hazards pose to the North Dakota electric grid and addresses gaps in improving grid resiliency. It also focuses on a resilience assessment framework that evaluates the current resilience strategies and provides recommendations for improving grid resiliency in the context of emerging catastrophic threats to the regional grid. Following the plan's

completion, NDTA requested that the EERC update the resiliency plan based on feedback received from the federal government. At its April 2024 meeting, NDIC approved the use of $87,000 of Task 2 funding to update the state grid resiliency plan. To accomplish the update, the current plan will be reviewed and revised or updated as needed. Key activities performed throughout the year included the following:

- Recent grid reliability assessments by Southwest Power Pool, Midcontinent Independent System Operator, the North American Electric Reliability Council, and the Federal Energy Regulatory Commission were reviewed, and relevant data have been gathered.

- The generation and transmission adequacy sections in the existing grid resiliency report were updated based on the latest data.

- Demand growth data for North Dakota began to be collected, and the risk profiles were reviewed to determine if any changes or updates are needed.

North Dakota 20-year CO_2 EOR Forecast

At its November 2023 meeting, NDIC approved the use of $135,000 of Task 2 funding to execute a project focused on enhanced oil recovery (EOR). This project is forecasting incremental oil production associated with CO_2 EOR in North Dakota's conventional and unconventional reservoirs. The forecast focuses on realistic development scenarios in the 2024–2045 time frame and includes the projected CO_2 availability and demand and a prediction of yearly net CO_2 use and incremental oil production. The EERC is working with the Bank of North Dakota and the North Dakota Tax Department to evaluate the economic impacts of a broad EOR program in the state. Key activities performed throughout the year include the following:

- Potential realistic development scenarios were outlined, and the forecasting of incremental oil production associated with CO_2 EOR was performed using analytical models. Both unconventional and conventional reservoirs were investigated, with a focus on potential development in the 2025 to 2044 time frame (20 years).

- The unconventional reservoirs included in the study were the Bakken and Three Forks Formations of the Bakken petroleum system. The conventional reservoirs included in the study were 21 fields representing approximately 28% of conventional oil in place.

- Technical activities for this project were completed, and a draft final report was prepared and submitted to the Bank of North Dakota and the North Dakota Tax Department for their review.

- The EERC will present the findings of this work at a future NDIC monthly meeting.

TASK 3 ANNUAL SUMMARY

This task is focused on outreach activities to advocate for and educate about North Dakota's energy industries. Within this task, opportunities to collaborate with other North Dakota institutions of higher education were created. During the last year, the primary education and outreach activities have been related to the Energy Hawks Program.

Energy Hawks

The multidisciplinary Energy Hawks Program brings together students from a variety of academic programs and institutions to collaborate on identifying value-added opportunities for North Dakota energy. Highlights from the Energy Hawks Program over the last year are discussed below.

Public Engagement Presentations

With the objectives of energy outreach and education, as well as recruiting Energy Hawks applicants, a panel discussion entitled "Energy Hawks Present: The Future of Energy" was planned and carried out on the UND campus by the Energy Hawks Program as follows:

- The event held March 14, 2024, was open to the public and featured EERC and UND College of Engineering and Mines research staff as panel members engaging in discussion focused on current and future energy issues, facilitated by a former Energy Hawks intern. Information on the Energy Hawks Program was also provided.

- An estimated audience of 30 UND students attended and engaged the panelists with questions. Learnings from this panel discussion were captured to support similar events that may be held in the future.

2023 Program

The 2023 Energy Hawks Program consisted of 14 students: 13 from UND and one from Minot State University (Figure 8). Bismarck State College (BSC), North Dakota State University (NDSU), Williston State College, NHS College, and Dickinson State College declined the offer to participate in 2023. The 14 students spent 10 weeks learning about all forms of North Dakota energy. The 2023 program consisted of a team-building workshop at the EERC, a weeklong in-person tour of western North Dakota's energy industry, and on-site and hybrid on-site/virtual participation at the EERC. Three concept research projects were developed and presented by the 2023 Energy Hawks to EERC research staff and are summarized below.

Figure 8. 2023 Energy Hawks outside the EERC. One Energy Hawk is not pictured in the photo.

Energy Hawks Concept No. 1 – Harnessing Geothermal Energy from North Dakota's Oil Wells – This paper presents a prefeasibility study of geothermal energy generation in McKenzie County, North Dakota. One potential method to address the high commissioning cost of geothermal wells is to use an existing, unplugged abandoned oil and gas well instead of drilling a new well. As McKenzie County is part of the Bakken Formation, one of the major oil-producing regions in the nation, it has many deep abandoned oil wells that could potentially be used for geothermal applications. Furthermore, North Dakota can benefit from the addition of geothermal energy because it creates long-term job opportunities from otherwise unprofitable wells, a baseload reliable source of renewable energy, and produces little to no greenhouse gas emissions. The starting point for the research process was selecting a county in North Dakota where there are unplugged abandoned wells that meet the criteria a geothermal system needs. This information was used to do an economic analysis of commissioning and operating and maintenance of a geothermal power plant.

Energy Hawks Concept No. 2 – Fueling the Future: Electrolysis for Large-Scale Hydrogen Production – Hydrogen production is essential to renewable diesel refining. The current method of hydrogen production used by Marathon Petroleum's Renewable Diesel Facility in Dickinson, North Dakota, is steam methane reforming (SMR), which is carbon-intensive. Hydrogen production via water electrolysis is a less carbon-intensive alternative that was investigated in this study. Currently, electrolytic hydrogen production is not an economically viable option for use on a commercial scale. This project assesses the techno-economic viability of implementing hydrogen production via water electrolysis at Marathon Petroleum's Renewable Diesel Facility. The hydrogen demand of the refinery was used to determine the type and capacity of the electrolyzer required. Results indicate that hydrogen production via electrolysis costs more than SMR. The use

of green energy to power electrolysis could allow Marathon Petroleum to take advantage of federal tax credits; however, there is a significant capital cost to install and operate the electrolyzer. To decrease the operational cost of the refinery, modifications were proposed to utilize the oxygen by-product from the electrolyzer and the water by-product from the renewable diesel reaction. The oxygen by-product can be used to heat the reactor and second separator, and the water by-product can be recycled into the electrolyzer. Developing hydrogen production via electrolysis in North Dakota presents an opportunity for the state to become a leader in a rapidly developing industry.

Energy Hawks Concept No. 3 – From Coal to Clean Energy: Advancements in Hydrogen Production and Transportation – Hydrogen is emerging as a promising alternative to traditional fossil fuels for achieving a cleaner and sustainable energy future. With its versatile nature, high energy density, and zero carbon emissions when used in fuel cells, hydrogen offers a viable option for decarbonizing various industries. This study highlights hydrogen's potential as a cleaner and more sustainable energy carrier by investigating its production from coal and addressing associated transportation challenges. In doing so, it looks at the techno-economic analysis of coal-based hydrogen production and transportation in North Dakota and evaluates various gasification methods, hydrogen transportation trends, and legislative influences. The feasibility of hydrogen transportation via dedicated pipelines, highlighting the importance of efficient separation methods and strategic planning for infrastructure development, are discussed. Overall, this research offers valuable insights for policymakers, industry stakeholders, and investors, demonstrating the potential of North Dakota's coal resources in shaping a greener, more sustainable energy future through hydrogen.

2024 Program

The Energy Hawks Program for 2024 began on May 17, 2024, and included an in-person tour of western North Dakota, a team-building workshop at the EERC, and on-site and hybrid on-site/virtual participation at the EERC. Forty-three student applications for the program were received from UND. Ultimately, 14 students, a mix of graduate and undergraduate students, were selected to participate in the program: 13 from UND and one from Minot State University (Figure 9). BSC, NDSU, Williston State College, NHS College, and Dickinson State College declined the offer to participate in 2024. The tour of western North Dakota occurred June 3–7, 2024, and included stops at power generation, transmission, and distribution facilities; a coal mine; oil and gas-related facilities; a renewable diesel plant; regulatory entities; Williston and Williams County offices; and the MHA Nation. The program will be completed in early August 2024, with three concept papers prepared by the students, like previous Energy Hawks Program years.

Figure 9. 2024 Energy Hawks participated in an in-person tour of western North Dakota energy.

FUTURE WORK

The overall efforts of SERC will continue over the next year, beginning with a new round of fundamental research projects anticipated to start in late summer 2025. As appropriate, results will be presented to NDIC, the Energy Development and Transmission Committee, and the next North Dakota Legislative Assembly. New inventions will also be identified, and where appropriate, patent protection will be sought.

APPENDIX A

STATE ENERGY RESEARCH CENTER FINANCIAL SUMMARY AS OF JUNE 30, 2024

STATE ENERGY RESEARCH CENTER FINANCIAL SUMMARY
AS OF JUNE 30, 2024

Table A-1 shows the budget of $10 million over the first two bienniums of State Energy Research Center (SERC) activity and expenses through June 30, 2024. Table A-2 shows the budget of $7,500,000 over the current biennium and expenses through June 30, 2024

The remaining balance in Task 1 of Table A-1 is a result of ongoing exploratory research activity. This funding will continue to be expensed and used to support exploratory research under Task 1 over the coming year.

Table A-1. Project Cost, Past Two Bienniums

Task	Budget	Expended	Balance
1 – Exploratory Research	$7,728,575	$7,701,184	$27,391
2 – Prompt Expertise	$955,223	$955,216	$7
3 – Advocate and Educate	$1,316,202	$1,316,200	$2
Totals	$10,000,000	$9,972,600	$27,400

Table A-2 Project Cost, Current Biennium (7/1/2023 – 6/30/2025)

Budget	Expended	Balance
$5,672,967	$2,928,164	$2,744,803
$750,000	$128,798	$621,202
$1,077,033	$351,228	$725,805
$7,500,000	$3,408,190	$4,091,810

Energy & Environmental Research Center (EERC)

Project Summary: North Dakota 20-Year CO_2 Enhanced Oil Recovery (EOR) Forecast

North Dakota Industrial Commission

Bismarck, North Dakota

August 27, 2024

Charlie Gorecki

CEO

CO_2 EOR Study Goals and Outcomes

- **Goal:** Forecast plausible CO_2 EOR development scenarios (5–20 million tons CO_2/year) in North Dakota's unconventional and conventional reservoirs over 20 years.

Bakken

- Incremental oil recoveries ranged from 337 million barrels (MMbbl) to 1 billion barrels (Bbbl) under low- and high-CO_2-availability scenarios, with an average of 694 MMbbl under the baseline CO_2 scenario of 10 million tonnes (MMt) CO_2/year.
- CO_2 supply demands ranged from 93 to 294 MMt, depending on the scenario.
- If EOR were operated to maintain higher CO_2-utilization rates or we achieved greater IOR ratios, greater than 15 MMt CO_2/year would be needed (CO_2 supply constrained).

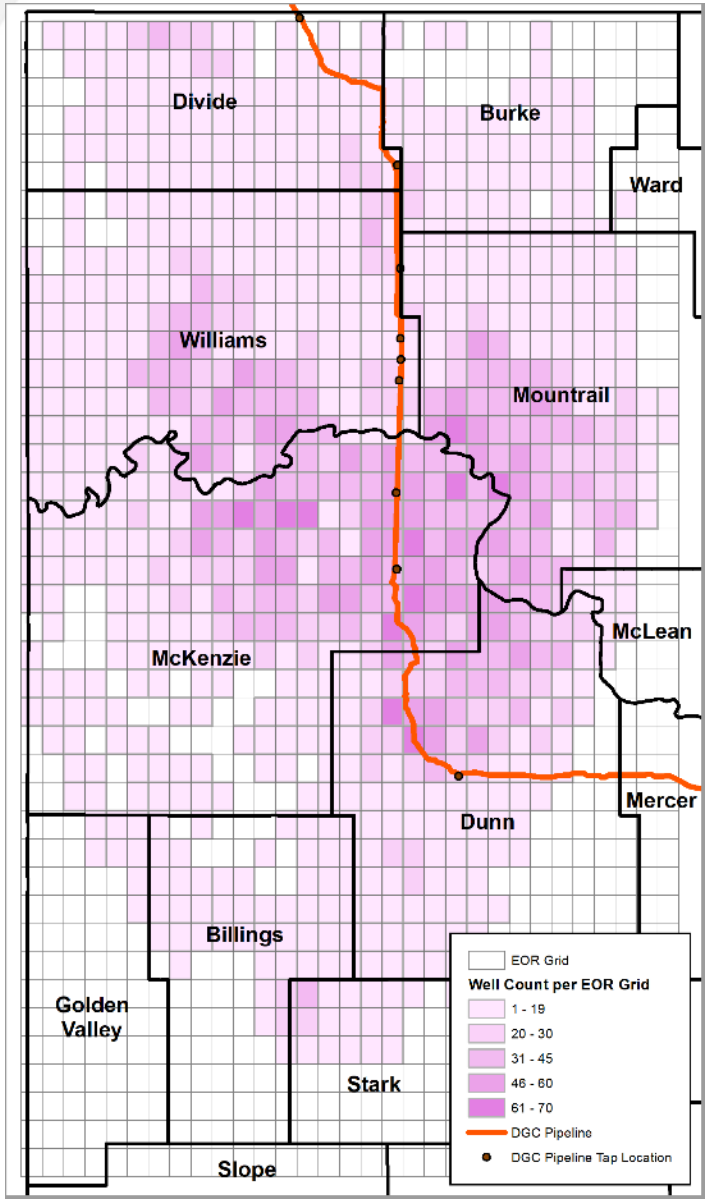
Conventional Reservoirs

- Incremental oil recoveries were 105 MMbbl, and CO_2 supply demand was 88 MMt.

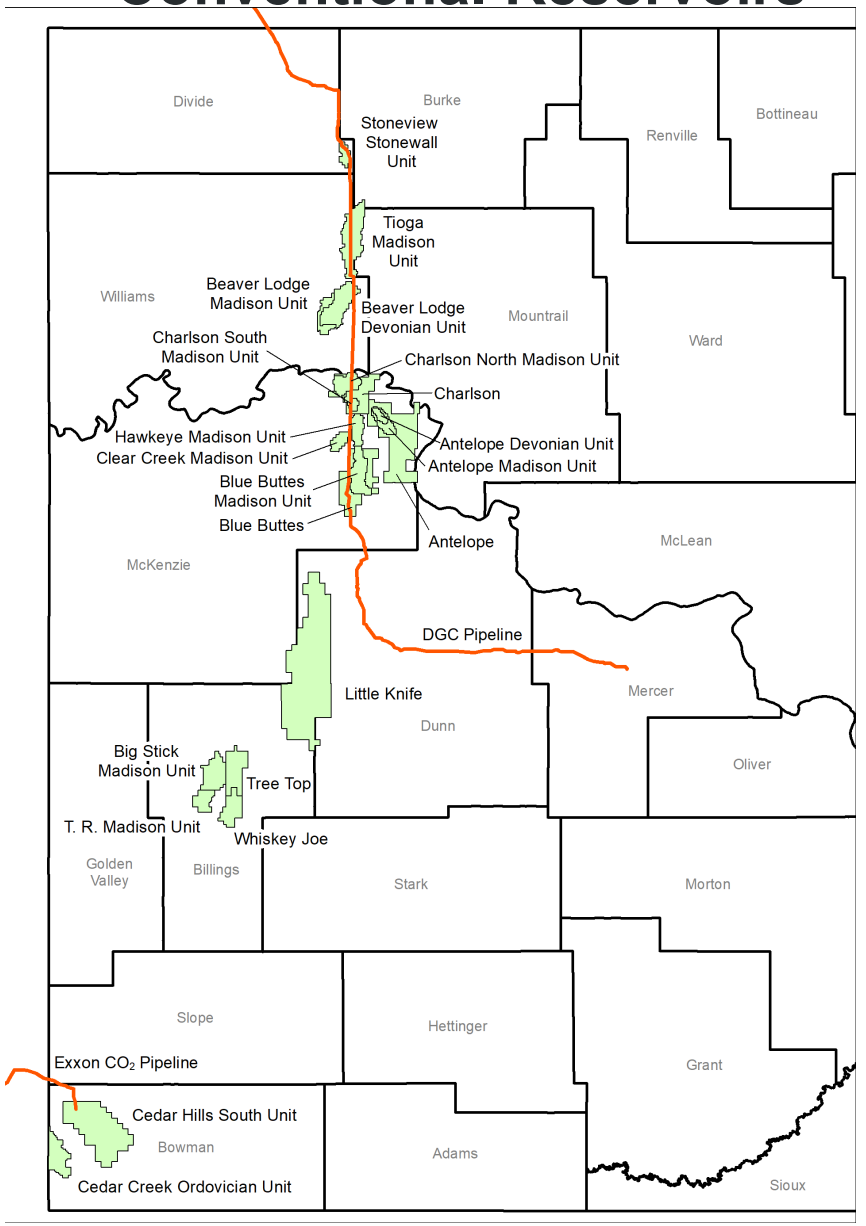
Bakken CO_2 EOR Development Assumptions

- **Baseline case:** CO_2 was limited to 10 MMt of CO_2/year. The baseline case assumed 6 thousand cubic feet (Mcf)/bbl (0.3 tonnes/bbl) and an increased oil recovery (IOR) ratio of 1.3.
- **Low-/high-CO_2-availability cases:** Two additional sensitivity cases were considered using 50% less (5 MMt CO_2/year) and 50% more (15 MMt CO_2/year).
- **High-CO_2-utilization case:** The high-CO_2-utilization case used 3x more CO_2 per incremental barrel than the baseline case (17.3 Mcf/bbl, or 0.9 tonnes/bbl) to explore a scenario where operators were incentivized to store CO_2.
- **High-IOR case:** The high-IOR case increased the IOR from 1.3 to 1.6, and CO_2 utilization was 9.6 Mcf/bbl (0.5 tonnes/bbl).

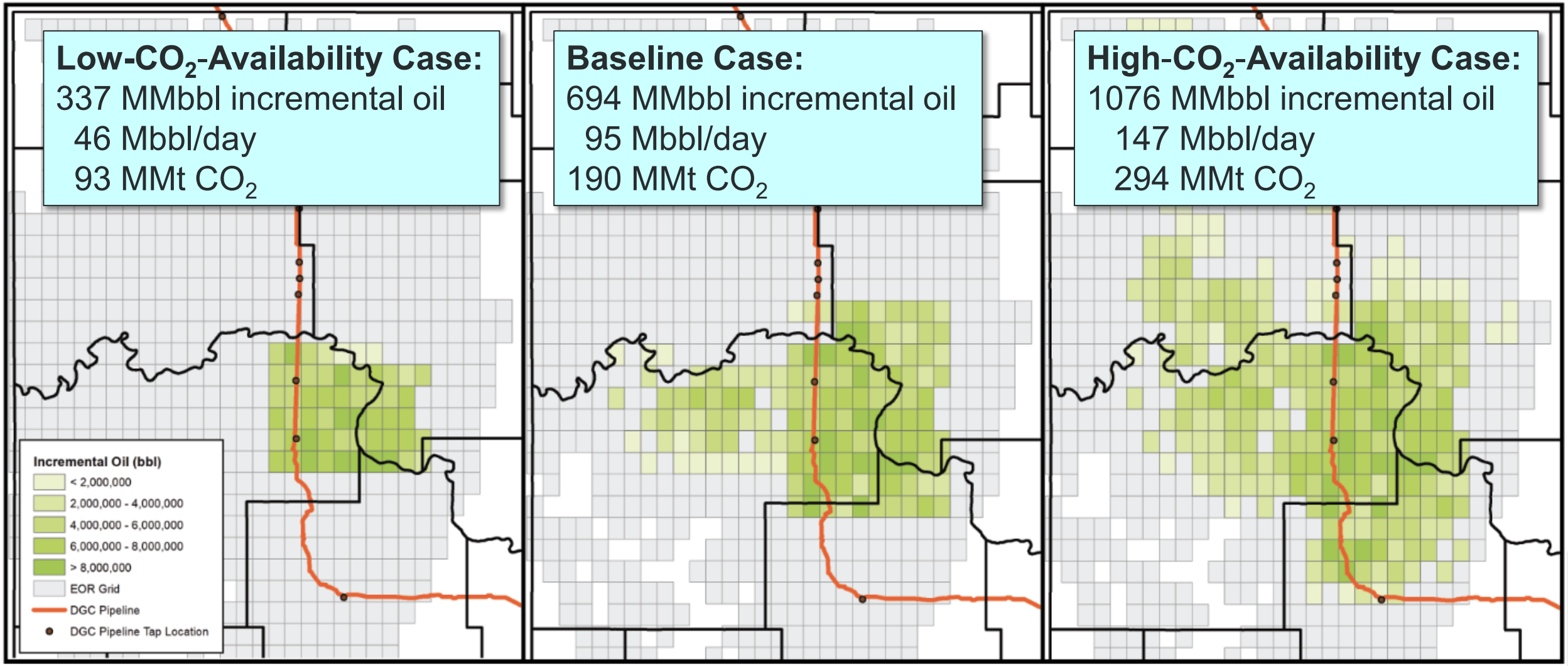
Bakken



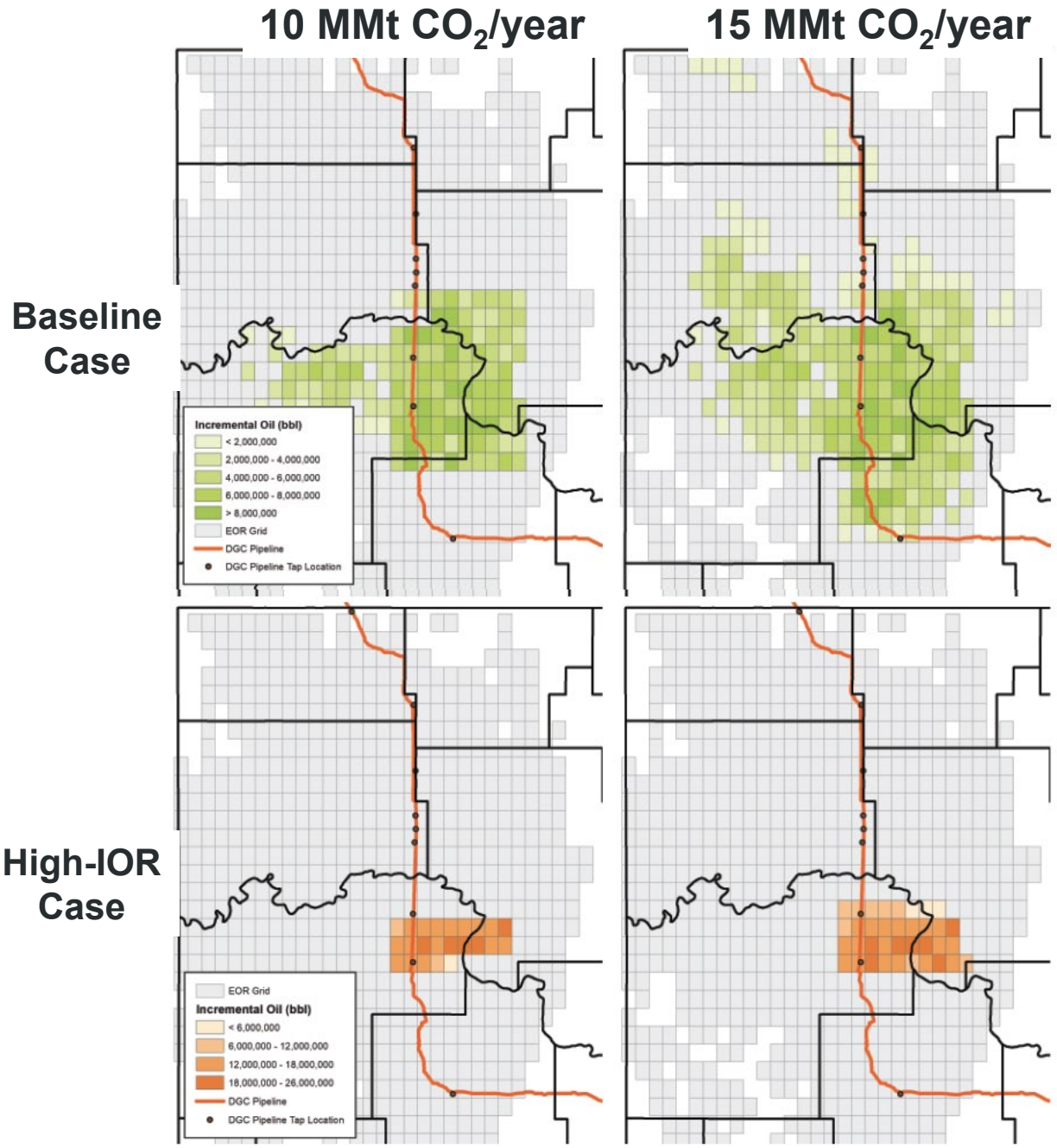
Conventional Reservoirs



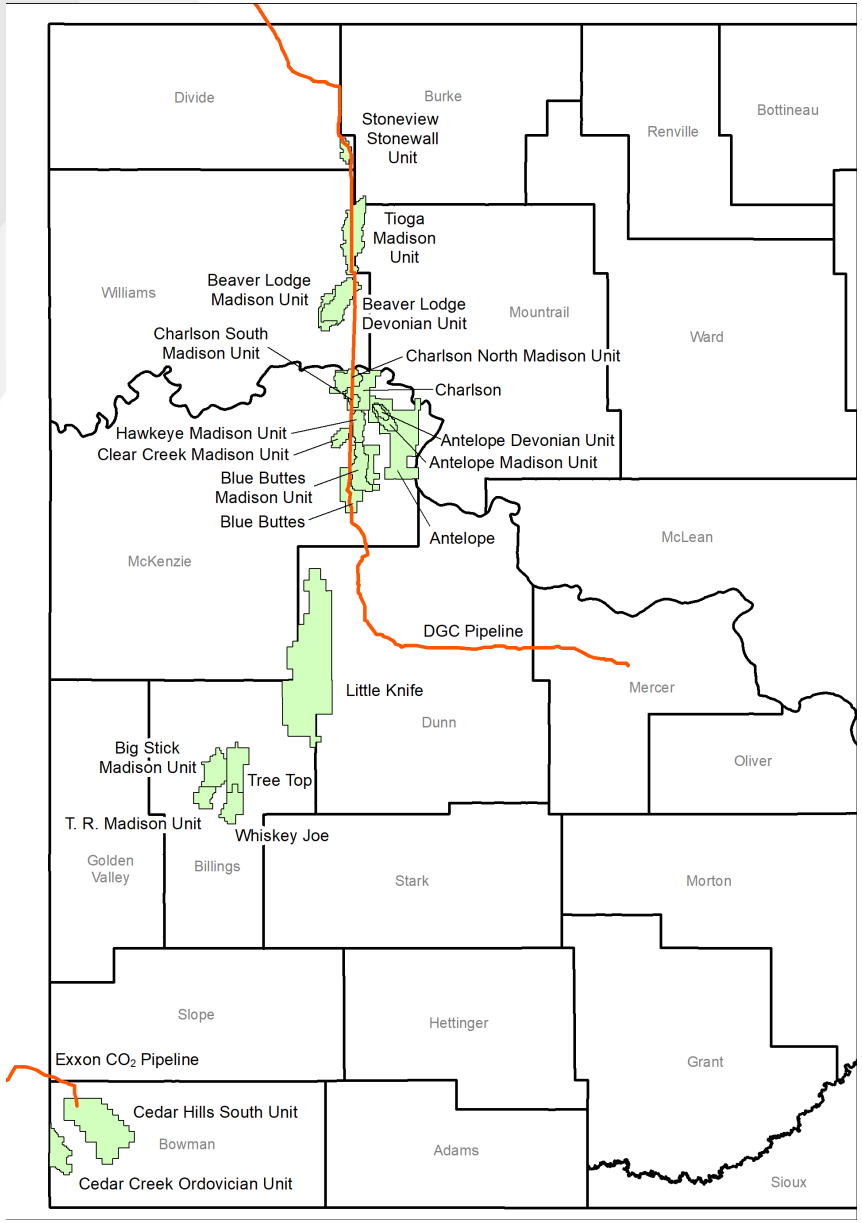
Bakken 20-Year CO_2 EOR Performance



Bakken CO_2 EOR Performance – Sensitivity



- High IOR/baseline:
  - 42 grids (69% decrease)
  - 295 MMbbl (58% decrease)
  - 172 MMt CO_2 (19% decrease)
- High IOR/high CO_2 availability:
  - 36 grids (86% decrease)
  - 513 MMbbl (52% decrease)
  - 269 MMt CO_2 (3% decrease)
- Similar results for the high-CO_2-utilization cases



Conventional 20-Year CO_2 EOR Performance

- Maximum daily oil rate: 23 Mbbl/day
- Average daily oil rate: 14 Mbbl/day
- Cumulative incremental oil production over 20 years: 105 MMbbl
- Maximum and average CO_2 utilization were 17,000 and 12,000 tonnes of CO_2/day, respectively
- Cumulative purchased CO_2 over 20 years: 88 MMt CO_2

Summary

Bakken

- Incremental oil recoveries over 20 years ranged from 337 MMbbl under a low-CO_2-availability scenario to 1 Bbbl under a high-CO_2-availability scenario, with an average of 694 MMbbl under the baseline CO_2 scenario of 10 MMt CO_2/year.
- CO_2 supply demands ranged from 93 to 294 MMt, depending on the scenario.
- Results show more than 15 MMt CO_2/year would be needed if EOR were operated to maintain higher CO_2-utilization rates or IOR ratios.
- Effectively optimizing Bakken EOR could use considerably more CO_2. Also, 10,000 new Bakken wells are expected to be drilled over 20-year period of this study, which were not included in these EOR scenarios.
- Next-generation EOR will likely be able to produce even higher IOR than postulated in this study, requiring even more CO_2.

Conventional Reservoirs

- Incremental oil recoveries over 20 years were estimated at 105 MMbbl.
- CO_2 supply demand was estimated at 88 MMt CO_2.

Charlie Gorecki
CEO
cgorecki@undeerc.org
701.777.5355

Energy & Environmental Research Center
University of North Dakota
15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018

www.undeerc.org
701.777.5000

THANK YOU

Critical Challenges. Practical Solutions.

EERC | UND UNIVERSITY OF NORTH DAKOTA

Critical Challenges. Practical Solutions.

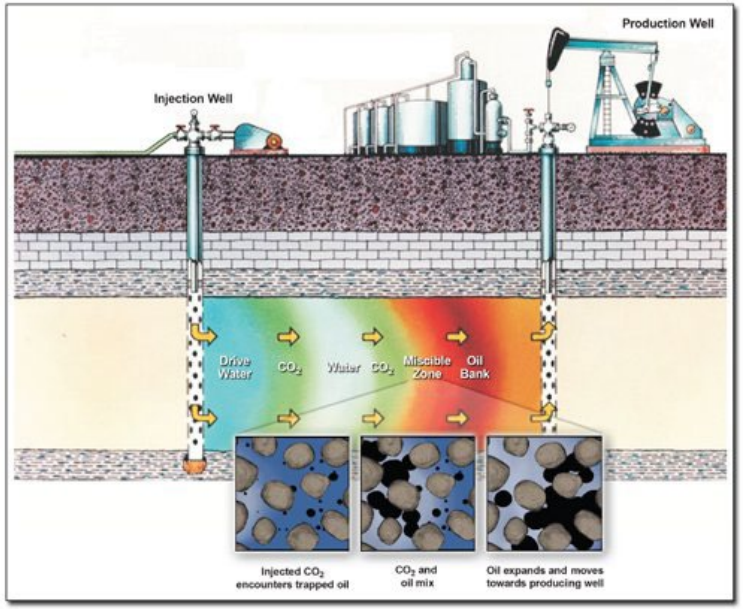
CO_2 EOR Performance Modeling

Bakken

- Cyclic gas injection
- 24-week cycles
  - 6 weeks of injection
  - 1 week of soaking
  - 17 weeks of production
- Seven cycles for 168 weeks, or 3.2 years, of EOR development

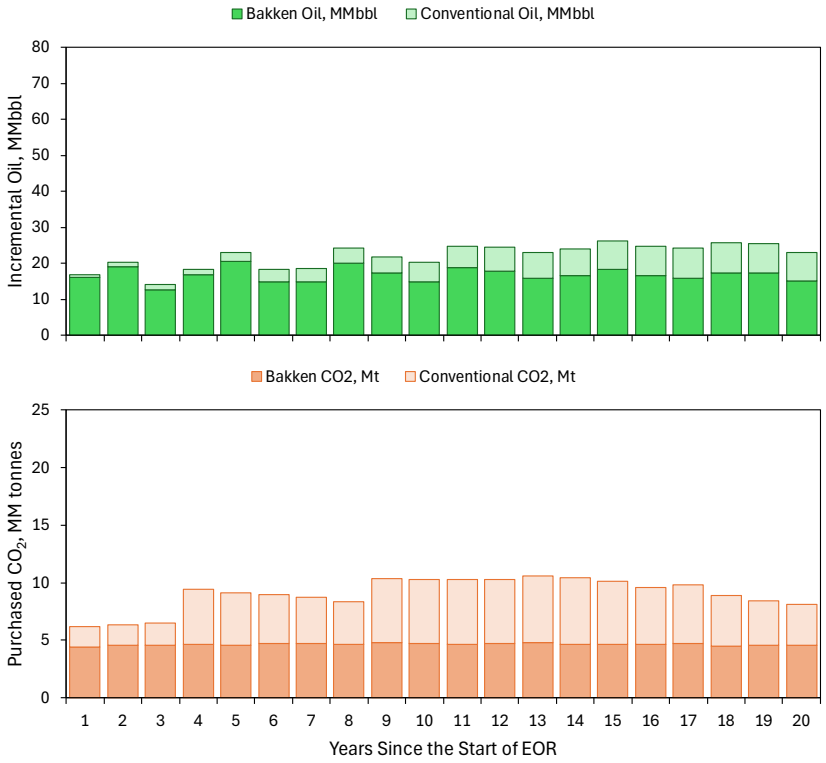
Conventional Reservoirs

- Water-alternating-gas injection
- Field-specific calculations of incremental oil recovery factors

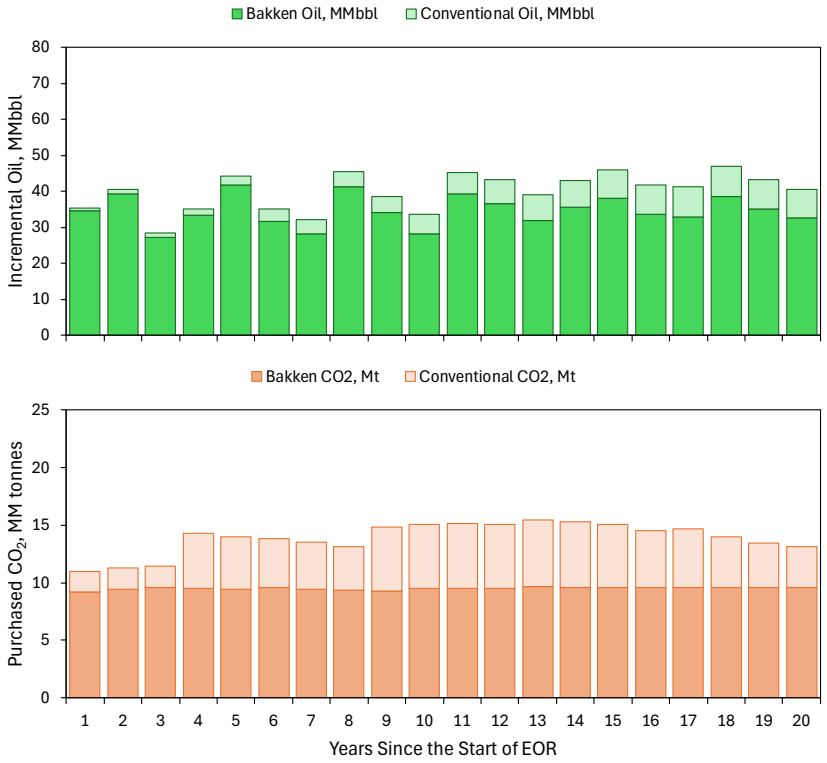


Annual Incremental Oil and Stored CO_2

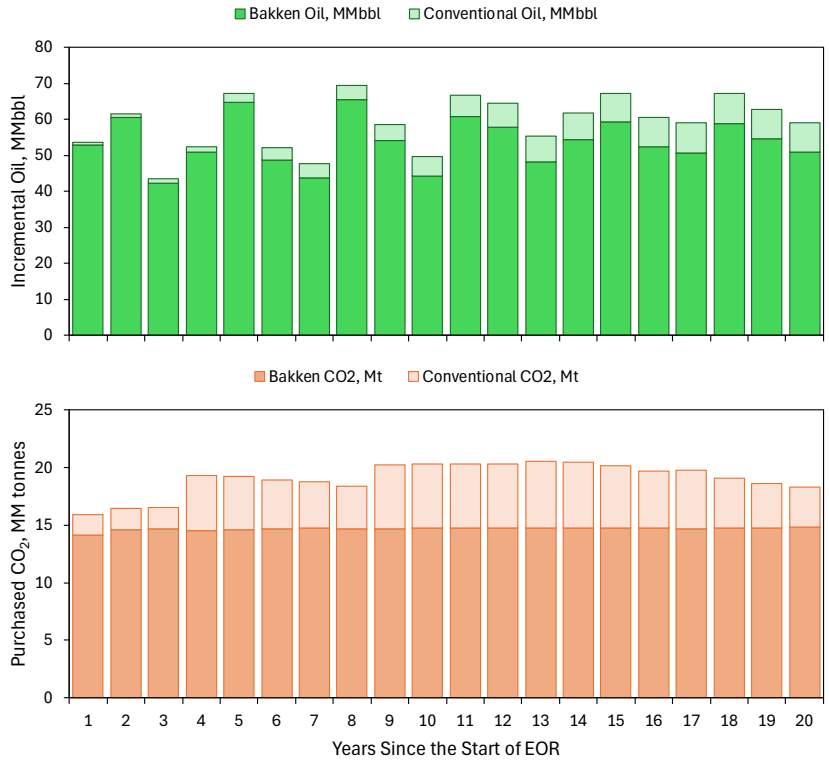
Bakken 5 MMt CO_2/year



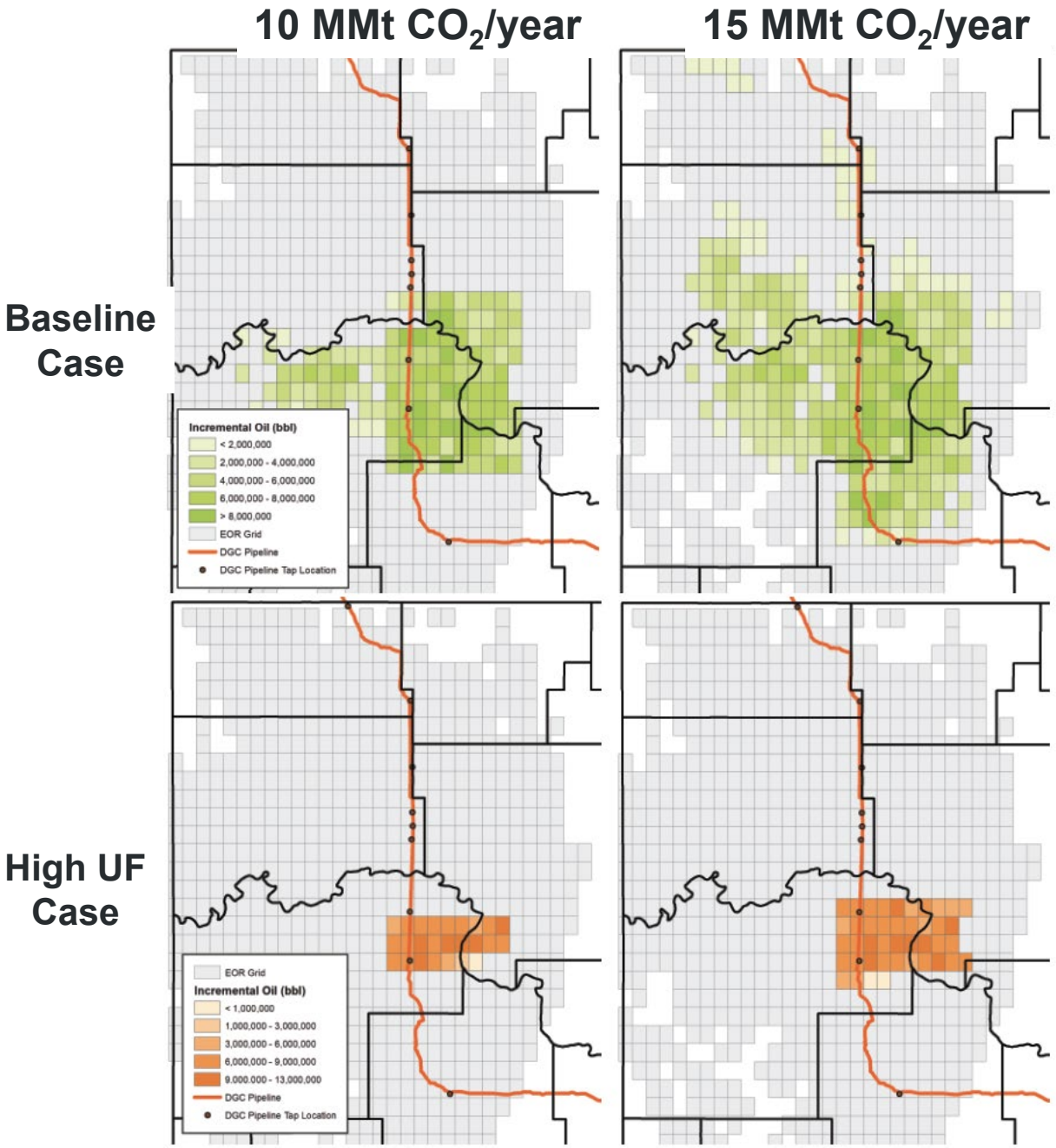
Bakken 10 MMt CO_2/year



Bakken 15 MMt CO_2/year



Bakken CO_2 EOR Performance – Sensitivity



- High utilization/baseline:
  - 25 grids (82% decrease)
  - 184 MMbbl (73% decrease)
  - 169 MMt CO_2 (12% decrease)
- High utilization/high-CO_2 availability:
  - 23 grids (91% decrease)
  - 352 MMbbl (67% decrease)
  - 172 MMt CO_2 (41% decrease)
- Similar results for the high IOR cases

North Dakota Industrial Commission

Claire Vigesaa – Executive Director
ND Transmission Authority
August 27, 2024

North Dakota Transmission Authority

NORTH Dakota Be Legendary.

Report Topics

- ❑ 2023-2024 North Dakota Transmission Authority Annual Report
- ❑ Resilience of the Electric Grid in North Dakota Annual Report
- ❑ Data Center Technical Conference (8/1/2024 – ND PSC)
- ❑ North Plains Connector - $700 million GRIP Grant Award

North Dakota Transmission Authority Annual Report

- Organizational Changes – 14th Floor Office
- Transmission Owner Meetings – at their facilities/headquarters
  - MISO - SPP
- Generation Resource Adequacy Studies
  - MATs – Final Carbon Rule
  - Coordination with the Attorney General's office
- North Dakota Transmission Capacity Study
  - Collaboration with EERC (focus on large loads)
- IIJA FY22 & FY23 Grants
- Grid Resilience and Innovation Partnership (GRIP)
  - North Plains Connector

Resilience of the Electric Grid in North Dakota Annual Report

- Joined the Midwest Reliability Organization
  - Adjunct Member
- Risks to Grid Reliability
  - Energy Policy
  - Grid Transformation
  - Extreme Weather Events
  - Security – Physical/Cyber
  - Critical Infrastructure Interdependencies (natural gas)
- Regional Transmission Organization White Papers
  - MISO's Reliability Imperative
  - SPP's Generational Challenge

Data Center Technical Conference

- Hosted by the ND PSC on August 1st
- Three Group Discussions
  - Data Centers-Dept of Commerce-Counties
  - SPP-Basin Electric-Distribution Cooperatives
  - MISO, Xcel, Otter Tail Power, MDU & Minnkota

Data Center Technical Conference – “Take Aways”

- Artificial Intelligence and Data Center Load Growth is “real”
- We’d like the industry located domestically, preferable in ND
- Massive Generation – Gigawatt scale (behind the meter generation?)
- North Dakota Advantages

Abundant natural gas, coal, wind

Tax and Energy Policy

Climate (less energy requirement and minimal water resources)

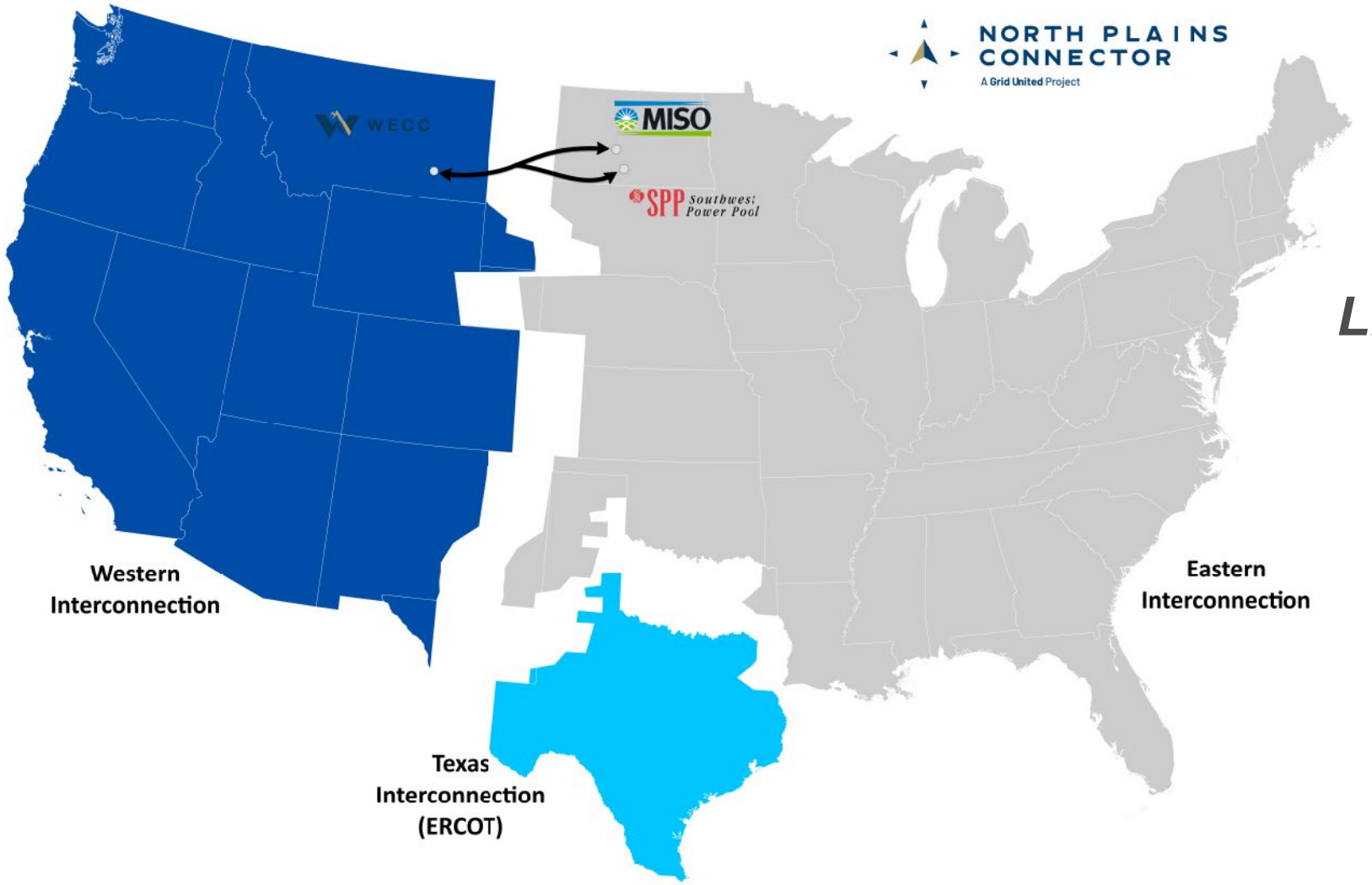
ND 1.3x total energy (100 MW of computation – 30 MW of ancillary energy)

GA 1.5x total electric energy (100 MW of computation – 50 MW of ancillary energy)

Grid Resilience and Innovation Partnership Award
North Plains Connector

- DOE Awarded the North Plains Connector $700 million – August 6th
- Joint Project with Allete and North Plains Connector (Grid United) $3.6 billion project
- Partnerships
  - Montana – North Dakota
  - Four local and state colleges
  - Nine electric utilities (5 with assets in ND currently)
- A new “Interstate Highway” for electrons
  - Export Capacity…for “all of the above” electric energy production
  - Two-way delivery of energy…3,000 MW of transfer capacity (doubles current transfer capability across the seam)
  - Connecting three regional U.S. Energy Markets (West, MISO & SPP)
  - Standing Rock Transmission Connection (27 miles connecting 235MW from Aneptu Wi Project)

NORTH PLAINS CONNECTOR



Linking Together the US Grid

Increasing ND's Export Capacity

NORTH PLAINS CONNECTOR - OVERVIEW

Project Configuration

Route:

- Length: 400 miles

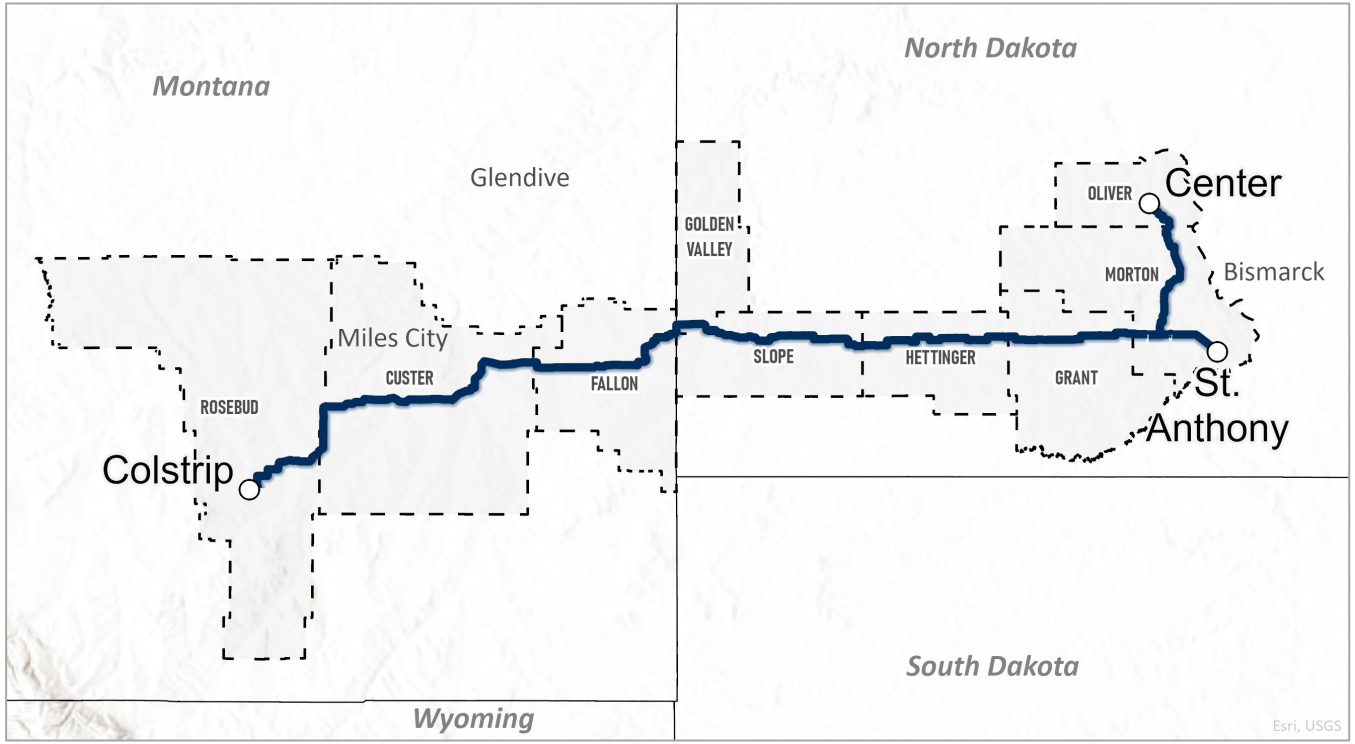
Rating:

- HVDC (VSC), 525kV, 3,000MW

Transmission Interconnections:

- **WECC** – 3,000MW into Colstrip, MT 500kV system
- **MISO –** 1,500MW (AC) to Center, ND Substation
- **SPP** – 1,500MW (AC) to *new* substation near St. Anthony, ND

Overview Map



Project's route is under active development and is subject to change.

Next Steps?

Grant Administration-Reice Haase

Montana Department of Commerce – Prime Applicant

Goal

Collaborate with North Plains Connector/Montana

Funding

-For ND transmission infrastructure build

-For ND Tribal Colleges/ND Technical Colleges

Remove roadblocks for 2032 Commissioning

NORTH
Dakota

Be Legendary.

NDTA North Dakota Transmission Authority

NORTH DAKOTA TRANSMISSION AUTHORITY

2024 ANNUAL REPORT

PREFACE

The North Dakota Transmission Authority (Authority) was created by the North Dakota Legislative Assembly in 2005 at the request of the North Dakota Industrial Commission. The Authority's mission is to facilitate the development of transmission infrastructure in North Dakota. The Authority was established to serve as a catalyst for new investment in transmission by facilitating, financing, developing and/or acquiring transmission to accommodate new lignite and wind energy development. The Authority is a builder of last resort, meaning private business has the first opportunity to invest in and/or build transmission.

By statute, the Authority membership is comprised of the members of the North Dakota Industrial Commission. Claire Vigesaa was appointed Executive Director of the Authority in July 2023. The Executive Director works closely with the Industrial Commission Administrative Office staff and receives direct general fund appropriation.

NORTH DAKOTA INDUSTRIAL COMMISSION

DOUG BURGUM
Governor

DREW H. WRIGLEY
Attorney General

DOUG GOEHRING
Agriculture Commissioner

NORTH DAKOTA TRANSMISSION AUTHORITY

CLAIRE VIGESAA
Executive Director
ND Transmission Authority

STATUTORY AUTHORITY

Statutory authority for the Transmission Authority is found in chapter 17-05 of the North Dakota Century Code. Section 17-05-05 N.D.C.C. delineates the powers of the Authority, including:

1) make grants or loans to borrow money
2) issue up to $800 million in revenue bonds
3) enter lease-sale contracts
4) own, lease, rent and dispose of transmission facilities
5) enter contracts to construct, maintain and operate transmission facilities
6) investigate, plan, prioritize and propose transmission corridors; and
7) participate in regional transmission organizations.

Before the Authority may exercise its power to construct transmission facilities, it must follow a process defined by statute to ensure public participation and comment. In particular, the Authority must publish a notice describing the need for the transmission project. Entities interested in construction of the facilities or furnishing services to satisfy the identified needs have 180 days to respond by filing a notice of intent. If the Authority receives a notice of intent from an interested entity, it may not exercise its power to construct unless the Authority makes a finding that doing so would be in the public interest. In making such a finding, the Authority shall consider the economic impact to the state, economic feasibility, technical performance, reliability, past performance, and the likelihood of successful completion and ongoing operation.

The Authority may finance approved projects through the issuance of bonds. Under current law up to 30 percent of the cost of a project may be financed by selling bonds that include the moral obligation of the State of North Dakota. In other words, up to $240 million of the Authority's $800 million total bonding authority may be sold with the moral obligation of the state. The moral obligation component enhances the marketability of the Authority's bonds.

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EXECUTIVE SUMMARY

The 68th ND Legislative Session appropriated general fund dollars to the North Dakota Industrial Commission (NDIC) for the operation of the North Dakota Transmission Authority (NDTA). Karen Tyler, NDIC Executive Director, designated office space for the NDTA Executive Director within the NDIC office suite on 14th floor of the Capitol. Prior to this action, the NDTA director was in the Lignite Energy Council building and was funded through the Enhance, Protect and Preserve Fund.

The 2023-2024 fiscal year brought significant change to the Authority beyond the office location and funding mechanism. The NDIC acting as the NDTA was a recipient of a Department of Energy Infrastructure Investment and Jobs Act Formula Grant and awarded Grid Resilience Grants to four utilities operating in ND.

Executive Director Vigesaa met with each transmission owner operating in the state to understand the scope of their operation within North Dakota, hear concerns, and discuss grid reliability challenges.

The NDTA became a member of the Midwest Reliability Organization in their Adjunct Sector, opening the door to engagement on grid reliability concerns.

The NDTA was engaged in several studies to substantiate concerns North Dakota has with EPA proposed rules that would harm or eliminate fossil fuel generation. The studies showed that both the MATS rule and Finalized 111d/Greenhouse Gas Rule would result in premature retirement of lignite power generation facilities, reducing the reliability of the electric grid and increasing costs to the ratepayer.

The unprecedented growth forecast for the region/country due to domestic manufacturing movement, data center development and industry electrification underscores the need to keep all dispatchable generation in place for years to come. The Regional Transmission Organizations, industry, the North American Electric Reliability Organization, and the Midwest Reliability Organization are adamant and aligned in purpose to retain these valuable legacy generation facilities to have the generation resource adequacy/capacity to keep the "lights on."

Electric transmission is top of mind, North Dakota has several 345kV transmission projects moving toward construction from east central ND to western ND. One of North Dakota's HVDC lines is being modernized and momentum is building on the proposed HVDC line from Colstrip MT to St Anthony/Center ND. We can expect to see continued interest in transmission development; like highways, wider lanes and additional on/off ramps present opportunities for all types of generation to have access to markets, creating more value for our ND produced energy.

BUDGET

The 68th ND Legislative Assembly appropriated $300,000 to operate the NDTA for the 2023-2025 biennium. The Legislative Assembly also appropriated $1,124,856 for the 15% match requirement for the FY22/FY23 IIJA Grid Resilience Formula Grant Program. This match enabled North Dakota to access $7,499,037 in DOE funds for grid enhancing project awards to utilities serving North Dakota consumers.

The NDTA accessed funds from both the NDIC lignite litigation budget as well as the Enhance, Protect & Preserve fund to commission a ND Transmission Capacity Study and EPA rule impact studies on Mid-Continent Independent System Operator (MISO) and the Soutwest Power Pool (SPP).

The NDTA has financed one project, Rainbow Energy's purchase of the NEXUS HVDC line that originates at Coal Creek Station and terminates in the Minneapolis area. The bond financing's term is 20 years with interest at a rate of 3.55% per annum secured by the mortgaged property.

Photo courtesy Andrew Spratta – McKenzie Electric Cooperative

ACTIVITIES

IIJA GRID RESILIENCE GRANTS: The $7,499,037 DOE award (for FY22 & FY23) under the Bipartisan Infrastructure Law – Section 40101(d) created a new activity for the NDTA. The 68th ND Legislative Assembly voted to provide the 15% state match, $1,124,856. The ND Industrial Commission entered a contract with EERC to provide grant administrative support. Applications were solicited in October 2023 for projects in North Dakota that would "prevent outages and enhance the resilience of the electric grid". Twelve applications were received, totaling $17,355,257 in requests. Outside technical reviewers scored the applications; the NDIC granted four awards at their December 2023 commission meeting. The four projects and impact are shown in the table below.

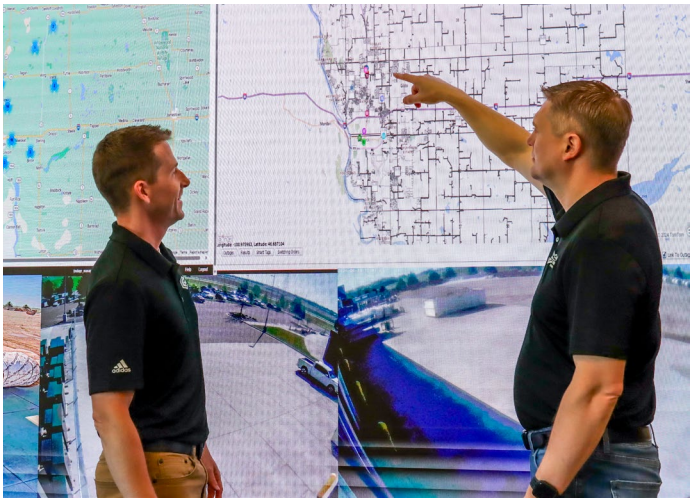
Utility	Award ($)	Project Description
Capital Electric Cooperative	$321,930	Converting OVHD to URD State/Fed Hwy Crossings
Otter Tail Power Company	$4,432,088	Next-Generation Grid Resiliency
Northern Plains Electric Cooperative	$586,000	Electronic SCADA Recloser Installation
McKenzie Electric Cooperative	$2,843,075	Capacitor Banks, Communications, SCADA Controls

$21 invested for every state dollar appropriated

Over 750 miles of power line upgrades

54 overhead crossings converted to underground

Deployment of new technologies for inspections and vegetation management



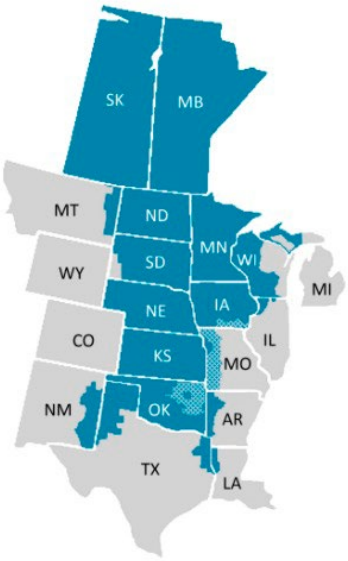
Capital Electric Cooperative and Otter Tail Power Company were recipients of the first round of IIJA Grid Resilience Grant. Left photo: Capitol Electric Cooperative staff ***Greg Owen****, Manager of Engineering, and* ***Paul Fitterer****, CEO. Right photo: Otter Tail Power Company Transmission Engineering staff* ***Dylan Stupca****,* ***Stacie Hebert****,* ***JoAnn Thompson****,* ***Michael Riewer*** *and* ***Jason Weiers****.*

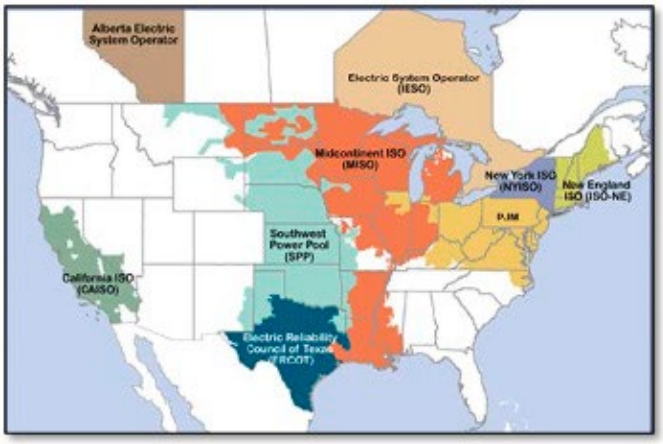
In January 2024 DOE opened the application process for FY24 IIJA Grid Resilience Formula Grants, North Dakota would be eligible for $3,885,295. An application was submitted in April; since the ND Legislature doesn't meet until 2025, the ND Industrial Commission's Lignite Research Council provided "gap" support for the 15% match enabling North Dakota to access the FY24 funding.

GRID RESILIENCE AND INNOVATION PARTNERSHIP (GRIP) – DOE GRANT: For the GRIP opportunity, a state entity is required to be the primary applicant. The NDIC, at their December 2023 commission meeting moved to accept that role for the North Dakota Association of Electric Cooperatives grant application. That application did not get DOE encouragement to move forward. However, Grid United's GRIP project application received DOE encouragement to apply. In March 2024, the NDIC moved to support collaboration and participation with the Montana Department of Commerce for Grid United's GRIP application to support the North Plains Connector project.

MIDWEST GOVERNORS ASSOCIATION (MGA): The MGA established an initiative (MID-GRID 2035) for regional transmission education and planning to position the Midwest as a modern energy producer and low-cost energy provider, with the goal to establish a long-term transmission grid vision for the region. The NDTA participated in three conferences held by the MGA, MID-GRID 2035 quarterly meeting at SPP Headquarters – September 2023, the MGA Transmission Summit in Detroit – November 2023 and the MGA Transmission Summit in Welch, MN – April 2024.

MIDWEST RELIABILITY ORGANIZATION (MRO): On October 25, 2023, the NDTA became a member of the MRO in the Adjunct Sector. MRO's primary responsibilities are to: ensure compliance with mandatory reliability standards by entities who use, own or operate the North American bulk power system; conduct assessments of the grid's ability to meet electric power demand in the region; and analyze regional system events. Additionally, MRO creates an open forum for stakeholder experts in the region to discuss important topics related to addressing risk and improving reliable operations of the grid. MRO serves as a vital link between grid owners, users, operators, and other stakeholders who share common reliability interests in the region. The organization presents opportunities to learn with electric grid operators in the region. Board representation from our constituents include Darcy Neigum-MDU, JoAnn Thompson-Otter Tail Power Company, Lloyd Linke-WAPA, Priti Patel-Great River Energy, and Sandra Johnson-Xcel Energy. The MRO serves the area depicted by blue in the map to the right.





REGIONAL TRANSMISSION ORGANIZATIONS: As shown on the map to the left, North Dakota is served by two regional transmission organizations, Mid-Continent Independent System Operator (MISO) and the Southwest Power Pool (SPP). The NDTA attends numerous committee meetings for both MISO and SPP to keep abreast of initiatives that impact grid reliability, particularly for North Dakota. Both RTOs are undergoing transformative shifts due to significant load growth, changing generation mixes and transmission development.

NORTH DAKOTA PUBLIC SERVICE COMMISSION: The NDTA appreciates the proximity to ND PSC staff and the open door to the three commissioners. We share/compare insights to mutually support a reliable grid and affordable energy for North Dakota. Meeting highlights include the semi-annual ND PSC meeting with MISO and SPP.

ND ENERGY DEVELOPMENT AND TRANSMISSION COMMITTEE: The NDTA presented to the interim committee on three occasions; the first in August 2023 to discuss grid reliability concerns and share highlights of the NDTA's generation resource adequacy studies on MISO & SPP, second in December to share information on proposed transmission grid expansion in North Dakota and lastly, in June 2024, to share the results of the EPA Impact Studies commissioned by NDIC/NDTA.

NORTH DAKOTA DEPARTMENT OF COMMERCE: The NDTA meets quarterly with ND Department of Commerce staff to discuss economic development needs relating to electric generation and transmission. The NDTA also collaborates with the Department of Commerce staff on the ND State Energy Plan (the ND Grid Resiliency Plan portion). This report is updated annually with help from the EERC.

GOVERNOR'S OFFICE: The NDTA works closely with the Governor's energy staff on grid related topics.

ENVIRONMENT/SOCIAL/GOVERNANCE STEERING COMMITTEE: As executive director of the NDTA, I was privileged to serve on the ESG steering committee. The committee was established by HB 1429, directing the Bank of North Dakota to analyze ESG impacts, trends and policies. Charlie Gorecki-EERC and Kelvin Hullet-BND chaired the committee. Kayla Ver Helst, Sustainability Officer for the Bank of North Dakota served as the project lead for the ESG study.

TRANSMISSION OWNERS & DEVELOPERS: The NDTA purposed to meet with each transmission owner/developer at their office/headquarters. The meetings on site have proved to be very helpful; gaining a better understanding of the transmission owner's goals, challenges and initiatives.

OUTREACH: There is significant interest in learning about the electric grid and reliability. The NDTA is available to present to associations, communities, and other entities upon request. The NDTA presented to the following associations this past year:

American Coalition on Renewable Energy-Policy Forum, Washington D.C.

Mid-West Electric Association Annual Meeting, Denver CO

Western Dakota Energy Association – Dickinson, ND

Lignite Energy Council – Bismarck, ND

ND Petroleum Council – Bismarck, ND

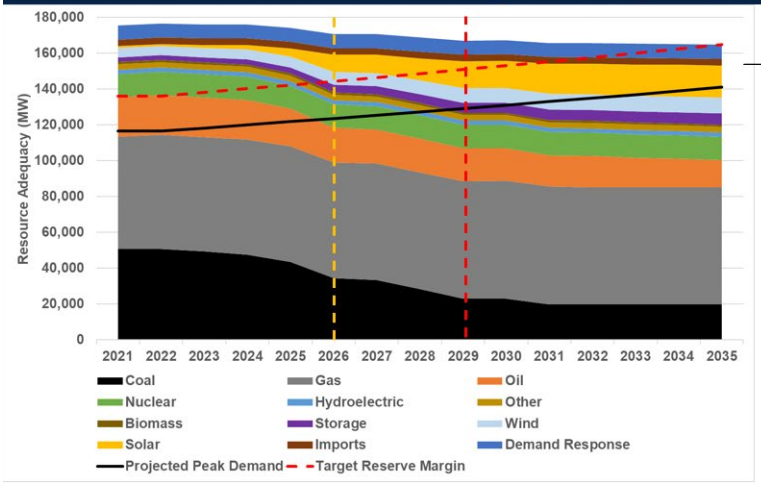
Executive Director Vigesaa participated in the ACORE policy forum, sharing North Dakota grid reliability concerns.

Pictured: ***Bill Murray****-Dominion Energy,* ***Nate Hill****-Amazon Web Services,* ***Jeff Dennis****-Grid Deployment Office,* ***Claire Vigesaa****-NDTA,* ***Sarah Webster****-Pattern Energy*

NDTA STUDIES

The North Dakota Transmission Authority periodically conducts independent evaluation of factors that affect the grid reliability of electric transmission in North Dakota. In 2024, three studies were commissioned, the Impact of EPA's MATS Rule on Generation Adequacy, DOE's Final Carbon rule impact study on MISO & SPP, and a North Dakota Transmission Capacity Study. The first study (click link here) provided an analysis of the proposed Mercury and Toxic Air Standards rule. The study revealed dire consequences to grid reliability and generation resource adequacy. The MATS rule would essentially shutter ND Lignite coal generation, a critical dispatchable generation resource. The graph below shows that by 2026, MISO would depend on intermittent resources for power reserve margins and by 2029, would be dependent on intermittent generation resources to meet peak demand.

Full Scenario RA is Maintained by Replacing Retiring Capacity with New Resources Using EPA Capacity Values, But…



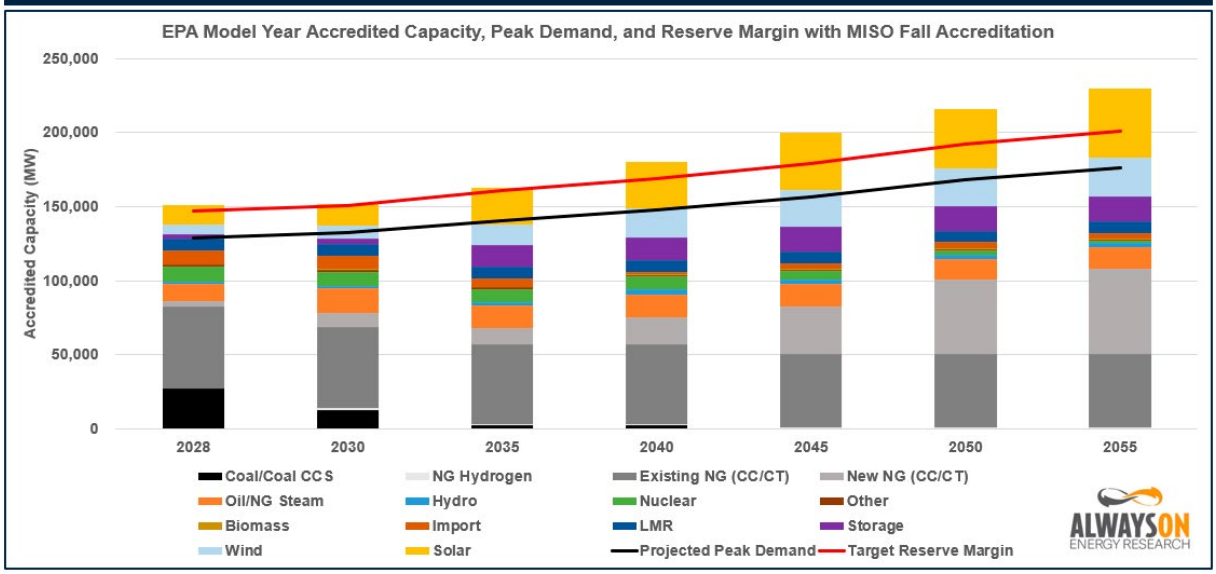
Year	% Intermittent	% Storage	% Dispatchable
2023	6%	2%	131%
2024	7%	2%	128%
2025	9%	3%	122%
2026	13%	4%	112%
2027	14%	4%	109%
2028	16%	4%	104%
2029	18%	4%	98%
2030	18%	4%	97%
2031	19%	5%	92%
2032	19%	4%	91%
2033	19%	4%	89%
2034	19%	4%	87%
2035	19%	4%	85%

Estimated firm capacity using EPA's accreditation values for wind, solar, storage (100%), and thermal resources (100%). EPA assumes a 16.8 percent reserve margin. Different than MISO cleared UCAP (unforced [accredited] capacity). Red indicates intermittent generation is necessary to meet Target Reserve Margins. The rest of the reserve margin not covered in the table consists of load modifying resources.

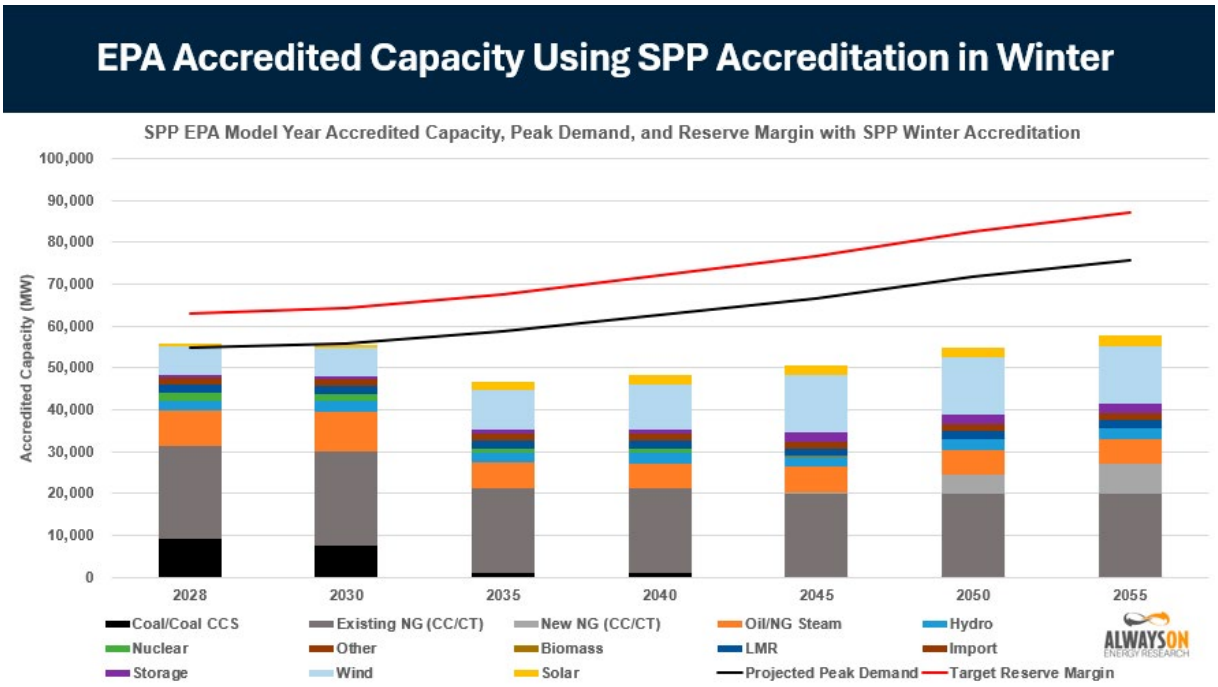
- *2023 – 2025: Adequate dispatchable capacity*
- *2026 – 2028: Reserve margin depends on W/S/B*
- *2029 – 2035: Peak Demand depends on W/S/B*

The second study, Final Carbon rule impact study (click link here), on MISO and SPP manifested even more dire consequences to grid reliability and generation resource adequacy. As noted in the slide below, the study shows that MISO will be dependent on non-dispatchable generation to meet projected peak demand in winter 2028.

EPA Accredited Capacity Using MISO Accreditation in Winter



The study also shows that SPP would have dire consequences from the proposed EPA Carbon Rule; depending on non-dispatchable generation in 2028 for winter peak demand and post 2030…impossible to meet demand.



The third study, the North Dakota Transmission Capacity Study, assessed the capacity of the ND transmission grid. The first phase of the study was completed in February, this phase summarized the current proposed generation and transmission projects in the state and reported their impact on ND transmission capacity. The second phase will provided key analyses of ND transmission capacity: steady-state powerflow analysis. The study developed long-term transmission models to perform steady-state assessments of ND transmission capacity. The study is to be completed in the third quarter of 2024.

GRID RELIABILITY CONCERNS

The MRO Regional Risk Assessment published in February 2024 identified the following risks as high (see table below).

Risk	Priority
Uncertain Energy Availability	EXTREME
Generation Unavailability During Extreme Cold Weather	HIGH
Supply Chain Compromise	HIGH
Inadequate Inverter-based Resource and Distributed Energy Resource Performance and Modeling	HIGH
Material and Equipment Availability	HIGH
Physical Attacks	HIGH
Malicious Insider Threat	HIGH
Loss of Essential Reliability Services	HIGH

This is the first time a risk was ever identified as "extreme"; Uncertain Energy Availability was listed as an extreme priority. The report noted that conventional baseload generation that is available on demand is being retired and replaced with resources that possess limited energy availability due to uncertain fuel supplies that are increasingly weather dependent. New generation resources are largely inverter-based and perform much differently than conventional resources, reducing essential reliability services to the grid. The North American Electric Reliability Corporation (NERC) shared the that NERC's peak generation capacity has decreased by 4% over the last ten years. At the same time, NERC's summer peak demand has risen 3%! A reliable grid cannot be maintained with these opposing trends.

NERC Reliability Risk Assessment's over the last two seasons is alarming (see graphs below). Our region was in the "elevated risk" region for both winter 2023-24 and summer 2024. Elevated risk means that there is potential for insufficient operating reserves in above-normal conditions.

2023-2024 Winter Reliability Risk Area Summary

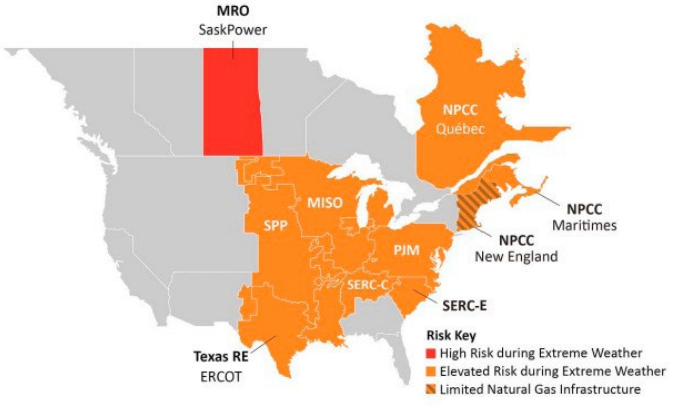


Figure 1: Winter Reliability Risk Area Summary

Seasonal Risk Assessment Summary	
High	Potential for insufficient operating reserves in normal peak conditions
Elevated	Potential for insufficient operating reserves in above-normal conditions
Low	Sufficient operating reserves expected

2024 Summer Reliability Risk Area Summary

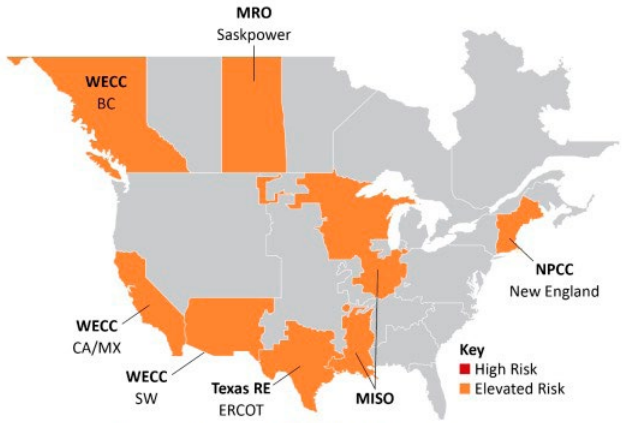


Figure 1: Summer Reliability Risk Area Summary

Seasonal Risk Assessment Summary	
High	Potential for insufficient operating reserves in normal peak conditions
Elevated	Potential for insufficient operating reserves in above-normal conditions
Normal	Sufficient operating reserves expected

The electric grid is a complex machine, reliability begins with the generator; therefore, proper planning, solid maintenance & operation and fuel supply are vital. Transmission line congestion, weather events, equipment failures, and physical/cyber-attacks can have a significant impact on transmission performance. Because we live in a world where power supply is absolutely required for health, safety, food production/preservation, communication and security; the grid must be built with redundancy or multiple paths to keep the lights on.

REGIONAL TRANSMISSION OPERATORS

North Dakota is served by two RTOs, Midcontinent Independent System Operator (MISO) and the Southwest Power Pool (SPP).

The MISO footprint covers the service territories of Otter Tail Power (OTP), Montana-Dakota Utilities (MDU), Great River Energy (GRE), Xcel, Missouri River Energy Services (MRES), and a small amount of transmission assets owned by Upper Missouri Power Cooperative. In addition, MISO has an agreement with Minnkota Power Cooperative that provides them with many of the same services. Western Area Power Administration (WAPA) and Basin Electric Power Cooperative (BEPC) are members of the Southwest Power Pool. SPP BEPC members Mountrail-Williams Electric Cooperative and Central Power Electric Cooperative, Roughrider Electric Cooperative and Mor-Gran-Sou Electric Cooperative have also joined SPP individually due to their transmission ownership.

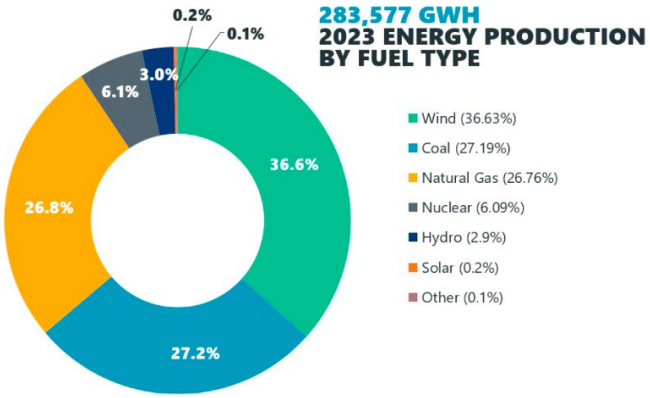
Combined, North Dakota utilities and transmission developers are part of an extremely complex system that oversees the transmission of over 40 million MWhs/year of electricity across 100,000 miles of transmission lines so that utilities can deliver power to homes and businesses in all or part of 20 states.

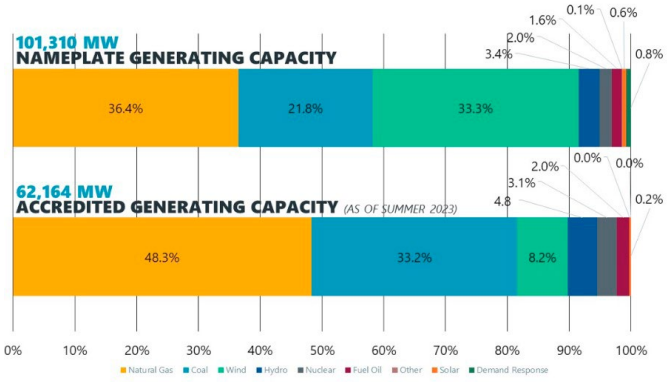
MISO and SPP also operate the power markets in their respective territory. Pricing for selling electricity into the grid and for buying electricity from the grid is managed by them. This process determines which generating units will be providing generation at any point in time and which units will provide various ancillary services to sustain voltage, and assure reliability.

WAPA is the Transmission Operator for the SPP transmission network in North Dakota. ND PSC Commissioner Randy Christmann serves on the SPP Regional State Committee. Victor Shock, Director, Public Utilities Division, Chris Hanson and Leif Clark ND PSC also participate in SPP committee work. ND PSC Commissioner Julie Fedorchak represents the ND PSC on the MISO Advisory Committee. ND PSC staff, Robert Frank and Adam Ranfandt.also participate in MISO committee work.

SOUTHWEST POWER POOL (SPP)

SPP has a diverse fleet of approximately 1,000 generating plants to produce energy to meet the demand of the region. SPP's region spans 14 states, North Dakota being on the far north of the region. Electricity is moved from generation to the customers on a network of 72,820 miles of high voltage transmission lines. The table below shows the energy production in SPP's region by type in 2023.





SPP's nameplate capacity is illustrated above and represents the total potential output of every generating unit registered in SPP's market: 101,310 MW. As of summer 2023, SPP's accredited capacity – the amount of generation SPP can reasonably expect to be available at a given time was 62,164 MW, greater than the region's record peak load of 56,184 MW set on August 21, 2023.

In the past 10 years, SPP's wind capacity has dramatically increased to more than 15,000 turbines at 250 wind resources in the Eastern Interconnection, representing an installed capacity of 33,000 MW. The maximum wind output for 2023 was 23,838 MW on March 16th while the lowest output was 111 MW on June 5, 2023. During these intervals, other generation types like coal, natural gas and nuclear units play a critical role in maintaining reliability.

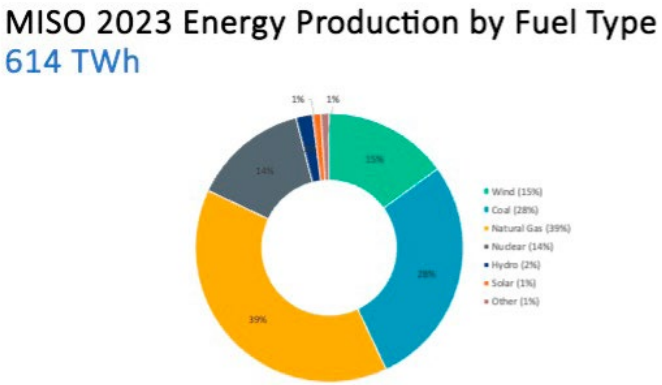
In recent years, SPP's role in ensuring resource adequacy has become more complex as a result of more frequent extreme weather events, load growth and the changing generation mix. SPP stakeholders & staff continue to develop programs/tariffs to assure that reliability, resource adequacy and generation attributes are appropriately acknowledged.

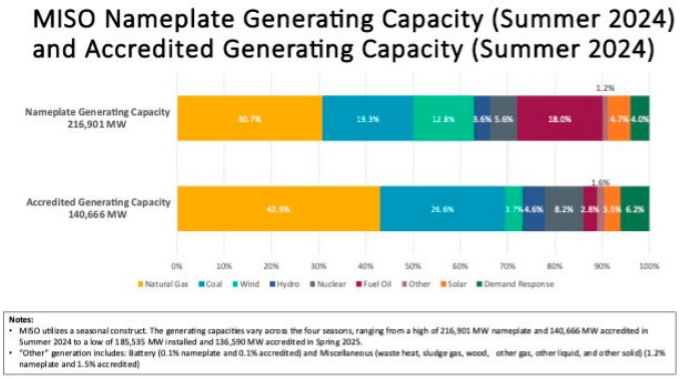
The electric grid is a dynamic machine requiring careful planning to ensure that electrons are available to load in real time. In 2023, 17 transmission upgrades were completed by SPP members at a construction cost of $138 million. Within SPP's comprehensive list of transmission projects for a 20-year planning horizon, there are 76 projects estimated to cost $822 million that will be constructed over the next six years in nine different states.

MID-CONTINENT INDEPENDENT SYSTEM OPERATOR (MISO)

MISO is an independent, not-for-profit, member-based organization focused on managing the flow of high-voltage electricity across its region, facilitating one of the world's largest energy markets, and planning the grid of the future. MISO serves in 15 U.S. states and Manitoba, Canada, providing transmission services to 45 million people. MISO has 2,956 generation units in its footprint and has 75,000 miles of transmission line in its portfolio.

The table below shows the energy production in MISO's region by type in 2023.





MISO's nameplate capacity is illustrated above and represents the total potential output of every generating unit registered in MISO's market: 216,901 MW. As of summer 2024, SPP's accredited capacity – the amount of generation MISO can reasonably expect to be available at a given time was 140,666 MW.

As an independent, not-for-profit organization, MISO does not have authority over resource planning decisions; that is the purview of the states and utilities. However, MISO does play vital roles in helping the states and utilities manage the energy resource mix transformation. MISO leverages its regional perspectives and regional data to provide the data, modeling, analysis, trends, and insights to help inform the decision-making of resource planners. This includes the OMS-MISO Survey results, the MISO Regional Resource Assessment, Futures Planning Scenarios, and the Attributes Roadmap.

MISO's markets provide price signals that incentivize resource adequacy and the mix of needed attributes. Similarly, the annual Planning Resource Auction results help shape investment decisions.

The recent implementation of several key initiatives also supports the effective management of the bulk electric system. The new Seasonal Resource Adequacy Construct better reflects the risks the region now faces in winter and shoulder seasons due to fleet changes, more frequent and severe extreme weather, electrification, and other factors. The Reliability-Based Demand Curve, which is scheduled for full implementation in 2025, will provide accurate capacity price signals to support effective investment and retirement decisions.

MISO's Long-Range Transmission Planning (LRTP) process is facilitating the development of the regional transmission lines necessary to support the growth of new generation.

MISO's primary transmission planning efforts includes the MISO Transmission Expansion Plan (MTEP) and MISO's Long-Range Transmission Planning (LRTP) initiative.

MTEP is a comprehensive planning process consisting of projects proposed by Transmission Owners and MISO's LRTP initiative. MTEP projects include both new transmission lines and upgrading or replacing existing lines.

LRTP is a MISO initiative focused on designing and recommending new transmission projects needed to improve the ability to move electricity across the MISO region from where it is generated to where it is needed, reliability and at the lowest possible cost.

Across the MISO region, MTEP24 includes 186 proposed transmission projects under consideration, including 7 in North Dakota. Seven North Dakota projects have been approved and are awaiting construction – including a MISO-proposed LRTP Tranche 1 project, a 345 kV line between Jamestown and Ellendale, ND.

Tranche 2 is being drafted and is expected to be considered by MISO's Board of Directors in late 2024. The draft portfolio includes several 765 kV lines, which, compared to 345 kV lines, provide greater flexibility for future needs and load growth, optimize right-of-way usage, and better accommodate the transfer of energy over long distances.

Looking forward, MISO is working with stakeholders to develop solutions to the potential scarcity of key system reliability attributes, as the new resources coming online do not possess the same operational characteristics (such as availability, flexibility, and voltage stability) as the generation resources they are replacing. MISO is also working with stakeholders to finalize a FERC filing, planned for mid-2024, to update resource accreditation methodology to better reflect what the system can actually expect from resources during high-risk periods.

MISO has been focusing on resource accreditation as it relates to grid reliability and resource adequacy. MISO held its first seasonal capacity auction in April of 2023. Further, they developed a reliability based demand curve (sloped demand curve) proposal that is being considered at FERC. MISO desires to have this approved and in place for the 2025/2026 planning year.

MISO has proposed changes to their accreditation of resources, based how the class of resources performs and more specifically how well the individual unit performs at critical need times. This change refines accreditation, an important change as the generation resource mix changes. Similarly, MISO has proposed a change in resource accreditation for load modifying resources (a specific type of demand response). MISO wants to limit load modifying resources to those that can respond in 30 minutes versus six hours.

MISO issued an Attributes Roadmap in 2023. They identified three major areas of action, system adequacy, flexibility, and system stability. Much emphasis is on system attributes.

Attributes: Reliability-based risk analysis highlights three key attributes needed for the future resource fleet

GENERATOR INTERCONNECTION (GI) QUEUE

The generation interconnection queue represents new generators who are waiting in line to be analyzed and connected to the grid. These queues have been overwhelming the last few years.

SPP has made great strides in clearing the backlog. SPP processed 93 Generation Interconnection Agreements in 2023, 78 of them in the last two quarters.

The current SPP queue represents approximately 3,126 MW for North Dakota:	**MISO's generation queue (7,023 MW active queue) for North Dakota is as follows:**
Solar - 35%	Solar - 11.2%
Wind - 32%	Wind - 52.7%
Battery/Storage - 8%	Battery/Storage - 10.7%
Balance Hybrid/Thermal - 25%	Hybrid - 25.4%

MISO has 250MW of wind with an approved Generators Interconnection Agreement but not yet operational

TRANSMISSION PROJECTS

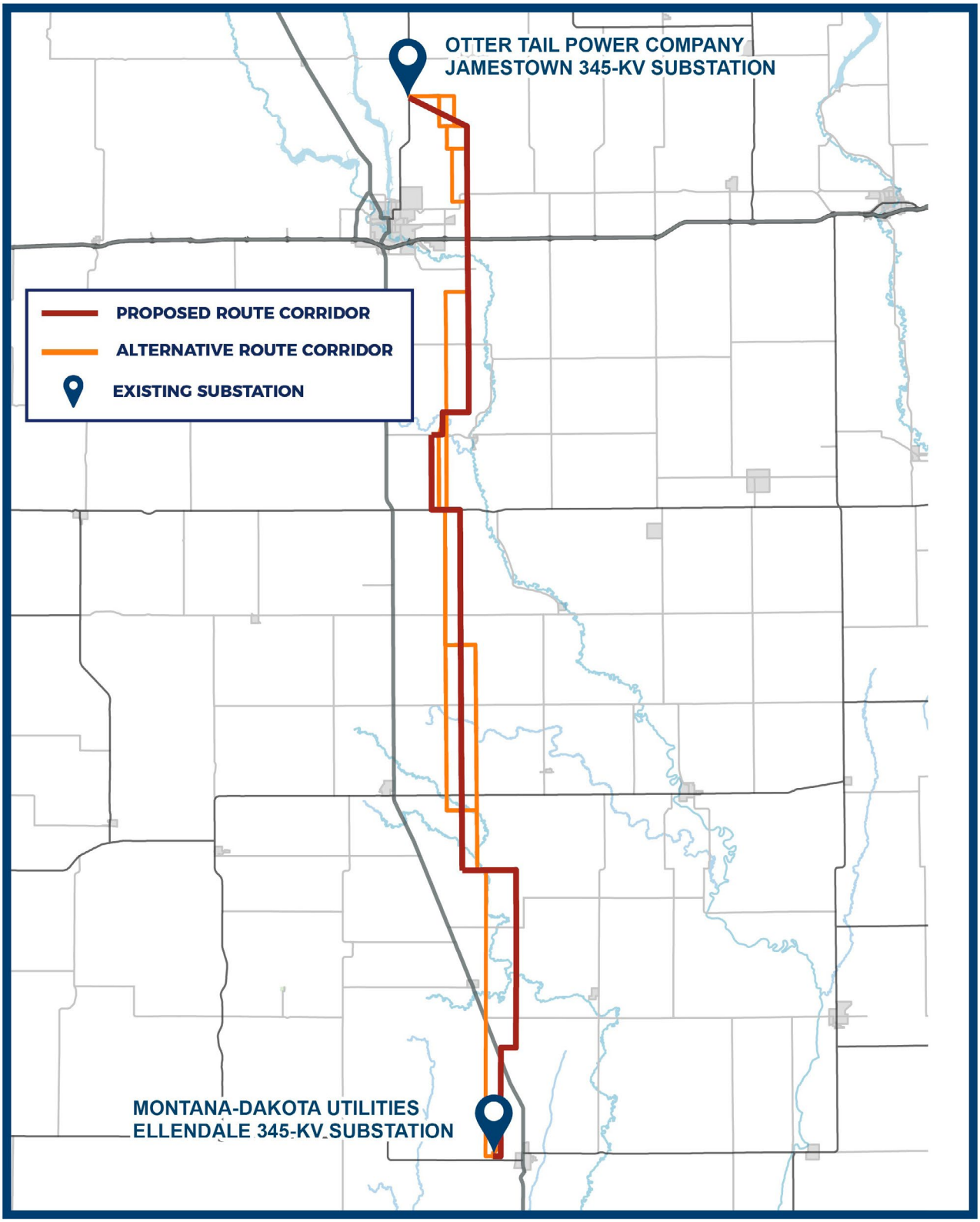
Transmission line development is an exhaustive process, often taking 8-10 years from idea to operation. The load growth, particularly in Western ND has been phenomenal but challenging for the power supplier and transmission developers. Today, there is significant transmission congestion in the Watford City/Williston region as well as in Southeast North Dakota. Fortunately, there are several transmission projects approved and well on their way to construction to alleviate the congestion, accommodate load growth, improve grid reliability and consumer security. The projects are as follows:

BASIN ELECTRIC POWER COOPERATIVE

Round up to Kummer Ridge 345kV– 35 miles	2025
Pioneer Generation Station Additions 583 MW	2025
Leland Olds – Tioga 345kV -175 miles	2026
Wheelock to SK 230kV 50 miles	2027
Tande – SK 230kV 60 miles	2027
Statcom – New Town	

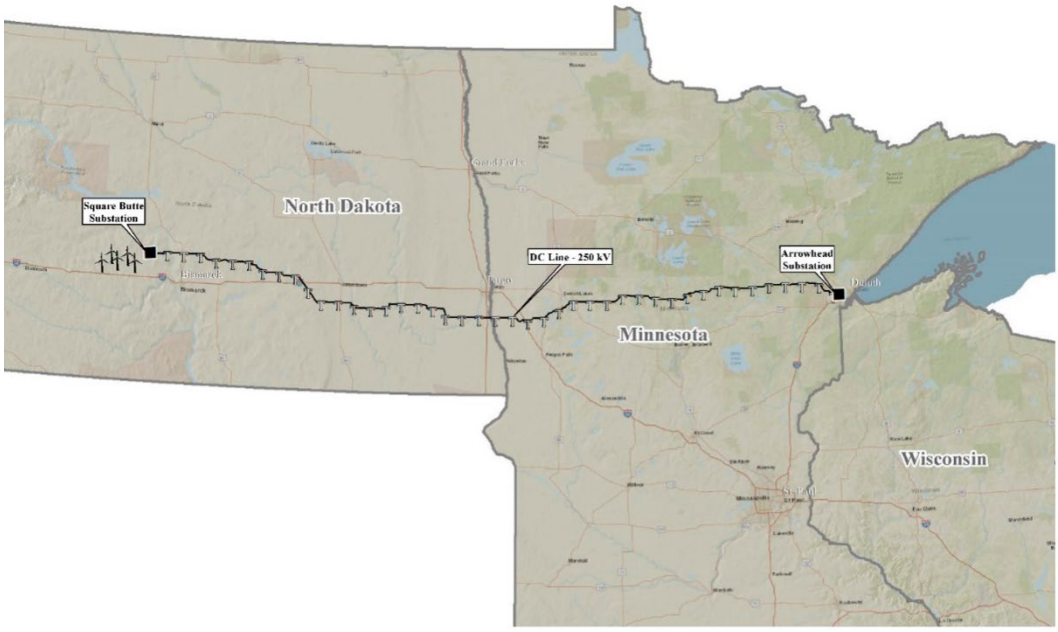
OTTER TAIL POWER COMPANY AND MONTANA DAKOTA UTILITIES

Otter Tail Power Company and Montana Dakota Utilities are jointly developing a 345kV transmission line and substations from Jamestown to Ellendale, named the JETx Project. The project is scheduled to be completed in 2028.



MINNESOTA POWER ALLETE

Minnesota Power Allete has embarked on a HVDC Modernization Project on their HVDC line from Center ND to Duluth, MN; increasing the transmission capacity from 550MW to 900 MW with potential to increase to 1,500 MW. The project work occurs at either end of the HVDC line at the converter stations. The modernization project will also enable electricity to flow either direction and is slated to be complete at the end of the decade.



JOINT TARGETED INTERCONNECTION QUEUE (JTIQ)

JTIQ project is a "seams" project involving both MISO and SPP. The Bison-Hankinson-Big Stone portion of the JTIQ addresses congestion issues in southeast North Dakota. The project was awarded DOE grant funds in 2023. Work continues on cost allocations for the project. The North Dakota portion will likely be a joint project with Xcel Energy and Otter Tail Power Company.

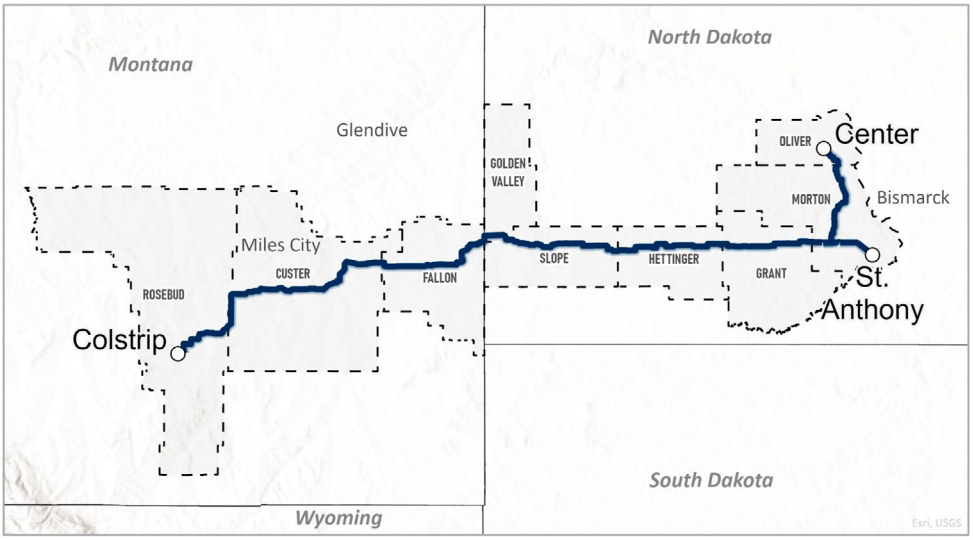
Original JTIQ Portfolio	Location by RTO	2021 Conceptual Cost E&C
Bison – Hankinson – Big Stone South	MISO	$476 M
Lyons Co. – Lakefield (was Brookings - Lakefield*)	MISO	$331 M*
Raun – S3452	MISO – SPP	$144 M
Auburn – Hoyt	SPP	$90 M
Sibley 345 Bus Reconfiguration	SPP	$19 M

**The Brookings Co-Lakefield 345kV in the original JTIQ project portfolio will be replaced by a shorter Lyons Co – Lakefield 345kV project due to an approved MISO MTEP 22 project Brookings Co - Lyons Co 345kV double circuit line.*

Bold = North Dakota substations at Bison and Hankinson

GRID UNITED

Grid United's North Plains Connector Project is a 525kV 400 mile HVDC line that will span two states, from Colstrip MT to St. Anthony ND & Center ND. The line will have 3,000 MW of capacity and connect three electric transmission regions, the West Interconnect, MISO and SPP. The project construction is scheduled to begin in 2027. This is a merchant line, Grid United is not a utility with defined consumers.



RAINBOW ENERGY

Rainbow Energy completed the Arc Substation in November 2023. The Arc Substation has 192 MW capacity and provides service to data processing load on site. Rainbow Energy will be building another substation, the Rainbow Substation on site as well. The Rainbow Substation will have 180 MW capacity and will serve as an aggregation point for wind energy and serve data/AI load.

Rainbow Energy staff present 2023 financial results to the Bank of North Dakota and the North Dakota Transmission Authority at their headquarters in Bismarck– March 2024

WESTERN AREA POWER ADMINISTRATION (WAPA)

WAPA, Upper Great Plains Region (WAPA-UGP), together with Basin Electric, installed Dynamic Line Rating (DLR) sensors on WAPA-UGP Williston 2 – Watford City – Charlie Creek 230 kV line on Mary 15, 2024. As of December 2023, the Watford City – Charlie Creek 230 kV flowgate (#5717) had accumulated over $300 million of Day Ahead congestion. WAPA-UGP recognized the opportunity and value of implementing these DLR sensors on Williston 2 – Watford City – Charlie Creek 230 kV as a least cost solution to relieve congestion. This solution provides WAPA-UGP with the opportunity to assess real-time DLR impacts using a very specific single line scenario. This project is a first-of-its-kind for WAPA and Basin and is anticipated to benefit not only the North Dakota region but also the Southwest Power Pool as a whole.

XCEL ENERGY

Xcel Energy is working to develop the grid of the future to ensure that generation outlet and resource adequacy is met now and into the future. Specifically, Xcel Energy is working on the following projects:

- Xcel Energy is completing the 2nd circuit from the Brookings Co-Twin Cities 345 kV line to help with the congestion concerns in southwest Minnesota.
- Xcel Energy has completed several congestion related projects and have funded several Market Participant Projects outside of Xcel's service territory to help bring immediate congestion relief.
- Xcel Energy is involved with three projects from the MISO Long Range Transmission Plan (LRTP) Tranche 1 projects. These project will help address transfer capabilities across the MISO system from the west to east towards the load centers.
  - MISO LRTP Project #2: Big Stone-Alex new 345 kV line, completion of the 2nd circuit from Alex-Monticello 345 kV CAPX line
  - MISO LRTP Project #4: New 345 kV line from Wilmarth-North Rochester-Tramval
  - MISO LRTP Project #5: New 345 kV line from Tremval-Eau Claire-Jump River
- Xcel Energy is working with stakeholders and MISO to develop the LRTP Tranche 2 portfolio to propose a 765 kV network in the upper Midwest that will help with intra-regional transfer capability, increasing system reliability and resilience.
- Xcel Energy is working on future portfolios with stakeholders and MISO to develop the long-range vision plan post Tranche 2.

NORTH DAKOTA TRANSMISSION AUTHORITY
STATE CAPITAL, 14TH FLOOR
600 E. BOULEVARD AVE. DEPT. 405
BISMARCK, ND 58505-0840
PHONE: 701.355.2189

DISCLAIMER

This report utilizes data from various sources. Those sources are appreciated for their willingness and availability. If users of this report utilize that information, please go to the source to assure the most accurate and up to date information.

Thanks for the Energy Information Administration (EIA), Southwest Power Pool (SPP), Midcontinent Independent System Operator (MISO), area utilities and WIND and their members especially.

RESILIENCE OF THE ELECTRIC GRID IN NORTH DAKOTA

JULY 2024

ANNUAL REPORT

NORTH DAKOTA TRANSMISSION AUTHORITY

OVERVIEW

The North Dakota Transmission Authority (Authority) was created by the North Dakota Legislative Assembly in 2005 at the request of the North Dakota Industrial Commission. The Authority's mission is to facilitate the development of transmission infrastructure in North Dakota. The Authority was established to serve as a catalyst for new investment in transmission by facilitating, financing, developing and/or acquiring transmission to accommodate new lignite and wind energy development. The Authority is a builder of last resort, meaning private business has the first opportunity to invest in and/or build needed transmission.

STATUTORY AUTHORITY

By statute, the Authority membership is comprised of the members of the North Dakota Industrial Commission. Claire Vigesaa was appointed Executive Director of the Authority on July 28, 2023. The Executive Director works closely with the Industrial Commission Administrative Office staff.

The third Annual Report on the status of the Resilience of the Electric Grid in North Dakota has been prepared as directed by the 67th legislative Assembly in Senate Bill No. 2313 and is being provided to the Legislative Council and North Dakota Industrial Commission with copies being sent to the Midcontinent Independent System Operator (MISO) and the Southwest Power Pool (SPP) and Minnkota Power Cooperative (MPC).

The resilience of the Electric Grid is dependent on the generation and transmission portion of the electric grid working together seamlessly. This report explores the adequacy of generation and the ability of the transmission system to deliver the generation to location where it is in demand. The system must also be able to withstand adverse conditions from weather events and from equipment failures.

NORTH DAKOTA INDUSTRIAL COMMISSION

DOUG BURGUM
Governor

DREW H. WRIGLEY
Attorney General

DOUG GOEHRING
Agriculture Commissioner

NORTH DAKOTA TRANSMISSION AUTHORITY

CLAIRE VIGESAA
Executive Director
ND Transmission Authority

ELECTRIC RESILIENCE DEFINED:

They define electric resilience as the ability of the system and its components (both equipment and human) to (1) prepare for, (2) anticipate, (3) absorb, (4) adapt to and (5) recover from non-routine disruptions, including high impact-low frequency (HILF) events in a reasonable amount of time.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Electric supply and demand must always be balanced to maintain relatively constant frequency and voltage. During normal operations, small changes in demand occurring in each moment must be matched by corresponding changes in resource output to maintain balance. If the supply-demand gap becomes too large, this imbalance could lead to emergency operations of the grid. In extreme cases, outages and damage to equipment or appliances could occur.

Every machine, technology and software supplying electricity makes different contributions to grid reliability. Not every resource must provide all types of reliability services, but the entire portfolio must be able to respond appropriately to keep the grid in balance.

To maintain stability, each service available in the portfolio acts in a particular time frame. Fast frequency response occurs in the seconds immediately following a disturbance to slow decline and is followed by primary frequency response which stabilizes frequency. Economic dispatch operates at a five-minute time steps while longer time steps are typically managed by automatic or manual dispatch through market mechanisms.

When major disturbances occur, sufficient disturbance ride-through capabilities to maintain frequency and voltage are needed to keep resources running through instability.

Traditionally, grid operators obtained services from large thermal units and rotating machines such as coal-fired, nuclear, or hydro-electric power plants for stability. The physical attributes of these generation sources provided valuable grid enhancing service. Their large spinning mass provides inertia, contributing to stability. The proposed retirement of dozens of coal plants is raising concerns about the ability to operate the grid without the significant grid enhancing attributes of the large spinning generator mass.

North Dakota investor-owned utilities and cooperatives have a strong history of building and maintaining a dependable grid. The utilities and our communities face challenges to keep the grid reliable in the face of pressures from EPA on fossil fuel generation coupled with the growth in electrical demand for data centers, electrification, increased domestic manufacturing and general economic growth.

RISKS TO GRID RELIABILITY

The North American Electric Reliability Corporation (NERC) has identified five significant evolving and interdependent risks to grid reliability. Those five include:

Energy Policy: With increase legislative focus on decarbonization, decentralization and electrification, energy policy is expected to drive rapid change. NERC emphasizes that there is great need to increase coordination and collaboration among all policy makers, regulators as well as the operators and owners of the bulk electric system. With the higher proportion of variable and renewable fueled resources, resource adequacy and capacity accreditation must be critically assessed.

Grid Transformation: NERC recommends that operators ensure sufficient operating flexibility; ensuring that flexible ramping/balancing capacity is available to meet the changing patterns of variability and new characteristics of system performance.

Extreme Weather Events: As for extreme weather events, NERC recommends that grid operators conduct special assessments of extreme event impacts and creating simulation models to establish protocols/procedures for system recovery and resiliency. Further, planning and construction of transmission infrastructure should be accelerated.

Security: To combat both physical and cyber security threats, recommendations include the facilitation/development of planning approaches, models, and simulation to reduce the number of critical facilities. Ultimately mitigating impacts relative to the exposure to attacks.

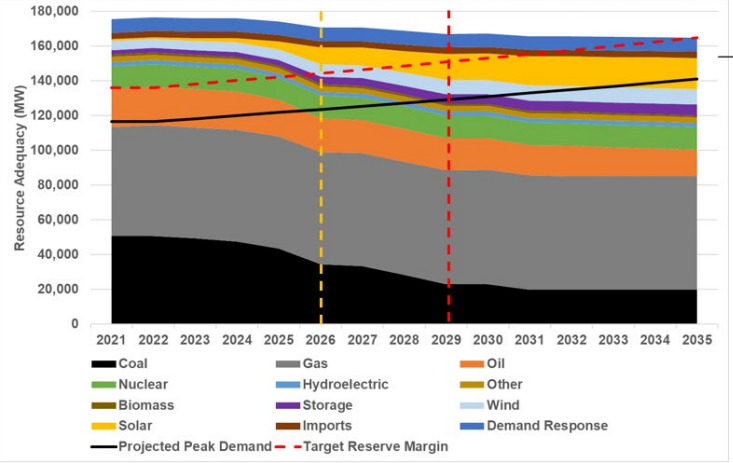
Critical Infrastructure Interdependencies: Recent storm events have exposed weaknesses in the coordination of natural gas supplies as well as water resources and digital communications.

GRID RELIABILITY – GENERATION RESOURCE ADEQUACY STUDIES

The NDTA commissioned three studies this past year. Two of the studies were focused on grid reliability and generation resource adequacy, a response to EPA's proposed MATS and Final Carbon Rule. Both studies indicated dire consequences to grid reliability due to the forced closure of dispatchable coal generation units. The following graph demonstrates the impact in the MISO footprint from the proposed MATS rule, click link here. The graph shows that MISO becomes reliant upon wind, solar, imports or demand response to meet its target reserve margin in 2026, but MISO would still have enough dispatchable capacity to meet its projected peak demand. The percentage of MISO's projected peak demand that will be met by dispatchable resources in 2028 falls to 104 percent in the Full scenario, reflecting the loss of 2,264 MW of lignite power plants in North Dakota.

In this scenario, the MISO region will no longer have enough dispatchable capacity to meet its projected peak demand in 2029, and it will rely on non-dispatchable resources, imports or storage to meet its target reserve margin.

Full Scenario RA is Maintained by Replacing Retiring Capacity with New Resources Using EPA Capacity Values, But…



Year	% Intermittent	% Storage	% Dispatchable
2023	6%	2%	131%
2024	7%	2%	128%
2025	9%	3%	122%
2026	13%	4%	112%
2027	14%	4%	109%
2028	16%	4%	104%
2029	18%	4%	98%
2030	18%	4%	97%
2031	19%	5%	92%
2032	19%	4%	91%
2033	19%	4%	89%
2034	19%	4%	87%
2035	19%	4%	85%

Estimated firm capacity using EPA's accreditation values for wind, solar, storage (100%), and thermal resources (100%). EPA assumes a 16.8 percent reserve margin. Different than MISO cleared UCAP (unforced [accredited] capacity). Red indicates intermittent generation is necessary to meet Target Reserve Margins. The rest of the reserve margin not covered in the table consists of load modifying resources.

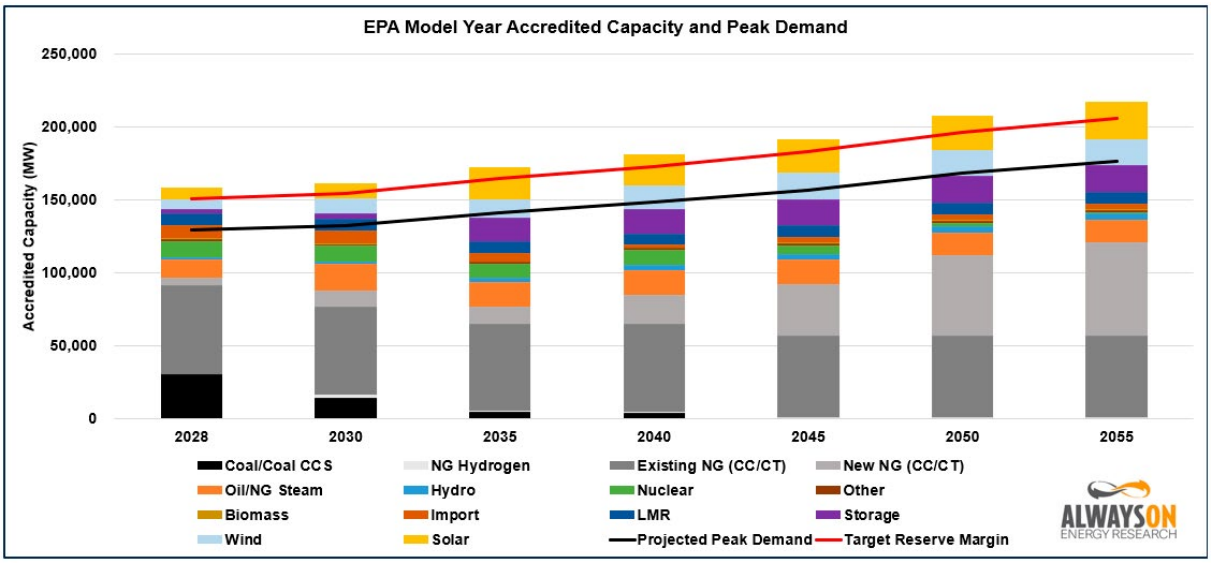
- *2023 – 2025: Adequate dispatchable capacity*
- *2026 – 2028: Reserve margin depends on W/S/B*
- *2029 – 2035: Peak Demand depends on W/S/B*

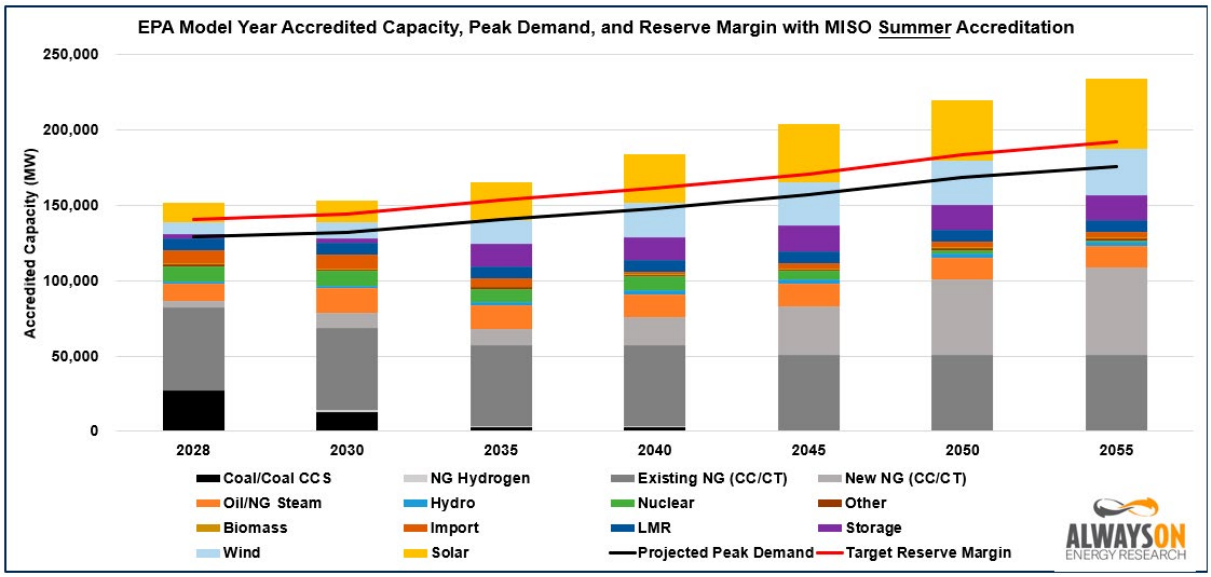
The amount of dispatchable capacity available to meet projected peak demand in 2028 falls to 104 percent in the Full scenario, reflecting the closure of all the lignite capacity in MISO that year.

The NDTA also commissioned a grid impact study upon both MISO and SPP, click link here, with respect to the EPA's proposed Final Carbon Rule. The primary finding, which is drawn substantially from the Rule's administrative record, finalized rule and regulatory impact analysis, is not technologically feasible for lignite-based power generation facilities, will foreseeably result in the retirement of lignite power generation units, and will negatively impact consumers of electricity in the Midcontinent Independent Systems Operator (MISO) and Southwest Power Pool (SPP) systems by reducing the reliability of the electric grid and increasing costs for ratepayers. The analysis builds upon grid reliability data and forecasts from the Federal Energy Regulatory Commission (FERC) and the North American Electric Reliability Corporation (NERC), and it assesses what is likely to happen to grid reliability if the Greenhouse Gas Rule forces some or all of North Dakota's lignite power generation units to retire. We determined that the closure of lignite-fired powered power plants in the MISO & SPP footprints would increase the severity of projected future capacity shortfalls, i.e. rolling blackouts, in the MISO & SPP systems even if these resources are replaced with wind, solar, battery storage, and natural gas plants. In reaching that determination, we have accepted EPA's estimates for capacity values of intermittent and thermal resources.

Moreover, building such replacement resources would come at a great cost to MISO and SPP ratepayers. Replacing the retired coal, natural gas, and nuclear units in EPA's modeled MISO grid with the new wind, solar, battery storage, and natural gas facilities would cost an additional $381.9 billion through 2055 compared to the current operating costs of the existing fleet.

In SPP, replacing the retired coal, natural gas, and nuclear units in EPA's modeled grid with the new wind, solar, battery storage, and natural gas facilities would cost an additional $65.6 billion compared to the costs of operating the existing generation fleet.


EPA Model Year Accredited Capacity and Peak Demand
Accredited Capacity (MW)
250,000
200,000
150,000
100,000
50,000
0
2028
2030
2035
2040
2045
2050
2055
Coal/Coal CCS
NG Hydrogen
Existing NG (CC/CT)
New NG (CC/CT)
Oil/NG Steam
Hydro
Nuclear
Other
Biomass
Import
LMR
Storage
Wind
Solar
Projected Peak Demand
Target Reserve Margin
ALWAYSON
ENERGY RESEARCH


EPA Model Year Accredited Capacity, Peak Demand, and Reserve Margin with MISO Summer Accreditation
Accredited Capacity (MW)
250,000
200,000
150,000
100,000
50,000
0
2028
2030
2035
2040
2045
2050
2055
Coal/Coal CCS
NG Hydrogen
Existing NG (CC/CT)
New NG (CC/CT)
Oil/NG Steam
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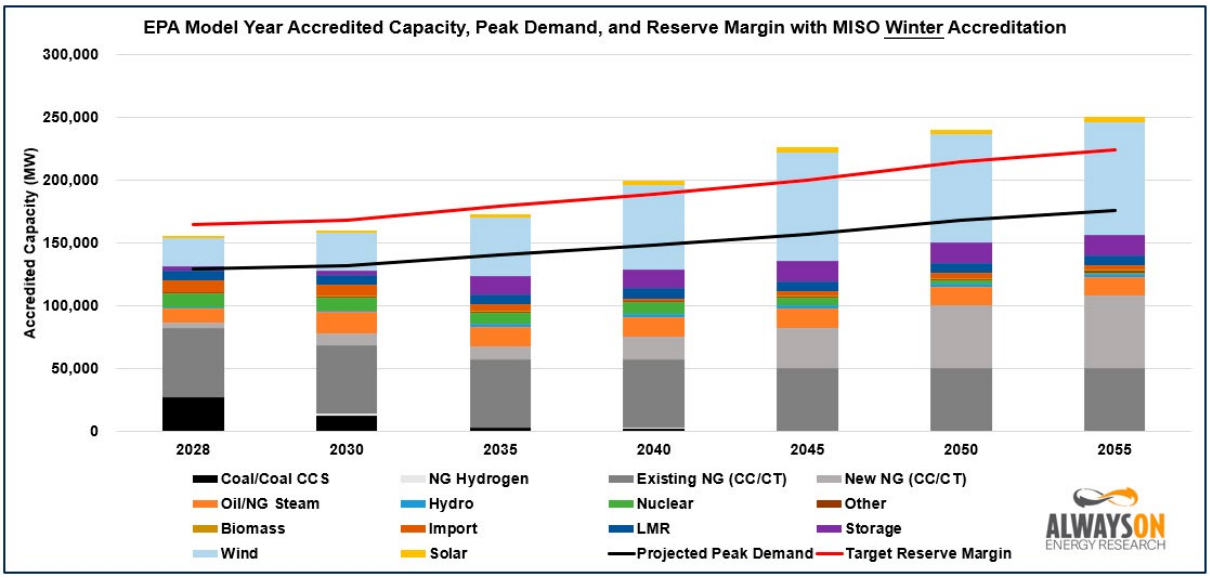
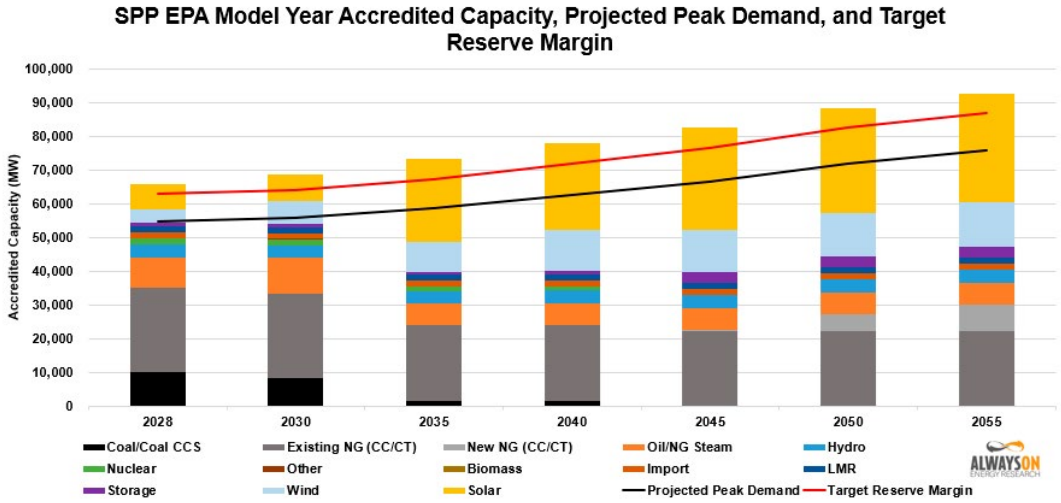
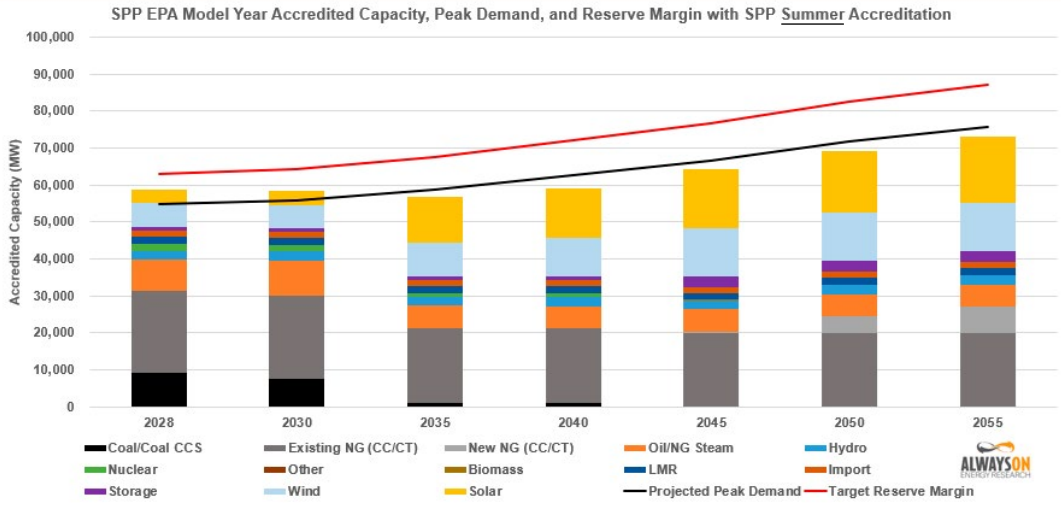
Projected Peak Demand
Target Reserve Margin
ALWAYSON
ENERGY RESEARCH


EPA Model Year Accredited Capacity, Peak Demand, and Reserve Margin with MISO Winter Accreditation
Accredited Capacity (MW)
300,000
250,000
200,000
150,000
100,000
50,000
0
2028
2030
2035
2040
2045
2050
2055
Coal/Coal CCS
NG Hydrogen
Existing NG (CC/CT)
New NG (CC/CT)
Oil/NG Steam
Hydro
Nuclear
Other
Biomass
Import
LMR
Storage
Wind
Solar
Projected Peak Demand
Target Reserve Margin
ALWAYSON
ENERGY RESEARCH

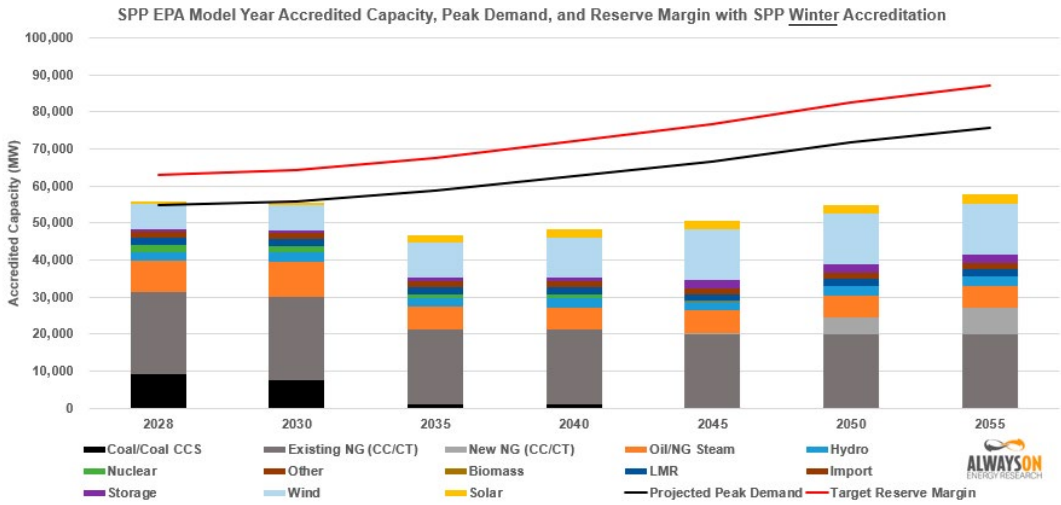
"Firm" Capacity Using EPA's Accreditation



EPA "Firm" Capacity Using SPP Accreditation in Summer



EPA Accredited Capacity Using SPP Accreditation in Winter



TRANSMISSION CAPACITY STUDY

Power Systems Engineering (PSE) was commissioned to complete a North Dakota Transmission Capacity Study. The first phase of the study included research into available recent transmission studies covering North Dakota. PSE reviewed those studies, identified projects, and formulated conclusions based on the results. Included in this phase was a summary of the currently proposed generation and transmission projects in the state and their reported impact on ND transmission capacity.

The second phase of the study focuses on key analyses of ND transmission capacity: steady-state powerflow analysis and optional dynamic stability analyses. PSE will develop near-term, and long-term transmission models to perform steady-state assessments of ND transmission capacity. The study is to be completed in the 3rd quarter of 2024.

REGIONAL TRANSMISSION ORGANIZATION (RTO) WORK ON GENERATION RESOURCE ADEQUACY & GRID RELIABILITY

SOUTHWEST POWER POOL (SPP)

Over the last year, SPP set its sights on advancing the Aspire 2026 strategic plan and achieving key corporate goals, including improving grid resilience, reforming its generator interconnection study processes, and mitigating resource adequacy risks.

Historically, SPP's approach to ensuring resource adequacy has required load-responsible entities to demonstrate that sufficient accredited capacity will be available to meet peak demand and an incremental planning reserve margin. Acknowledging that SPP and its stakeholders must adapt with a changing energy landscape, the organization took major strides in 2023 to assess and modernize its resource adequacy approach.

In a joint effort with the Regional State Committee of state regulators, Board of Directors, and stakeholders, SPP created the Resource and Energy Adequacy Leadership Team (REAL Team) to expeditiously address strategic resource adequacy policies. The team developed a multi-year work plan and has already implemented several resource adequacy improvements:

- Established a framework to create a separate winter season resource adequacy requirement.
- Approved a policy that clarifies expectations for generator availability.
- Created a method to ensure entities can comply with the increased planning reserve margin without overly punitive penalties.
- Completed the 2023 probabilistic study to determine the next summer and winter planning reserve margin requirements.
- Created new policies to change how SPP accredits conventional and renewable generators to ensure energy is available when the system needs it. Conventional generators will be accredited based on past performance, while renewables will be accredited based on how much demand they can effectively serve.
- Improved generation outage policies to allow additional days when SPP can reliably take outages.
- Enhanced transmission planning models to account for new demand and unlock additional capacity during extreme conditions.
- Developed an estimate for the "value of lost load" within the region and evaluating use cases within Resource Adequacy and Transmission Planning for the metric. A "value of lost load" metric represents how much customers would be willing to pay to avoid an outage.

The REAL team's work continues with an ambitious workplan for the next few years to implement further policy improvements.

MIDCONTINENT INDEPENDENT SYSTEM OPERATOR (MISO)

MISO has been working on several fronts to address generation resource adequacy and grid reliability. MISO established a Seasonal Capacity Auction in April 2023. This auction is held once a year for each season. MISO has also proposed a Reliability Based Demand Curve that is pending at FERC. MISO changed the market rules/construct to ensure that there is a 'slope' to the demand curve (so, capacity prices increase as we get tighter in the capacity market) instead of what MISO had previously – which was a 'vertical' demand curve. Prices were either 1) extremely low ($2MW/Day) in a surplus market, or 2) the highest price allowed – Cost of New Entry ($236.66 MW/Day) when MISO was short. If FERC provides a favorable outcome, MISO would implement the capacity market changes in the 2025/2026 planning year.

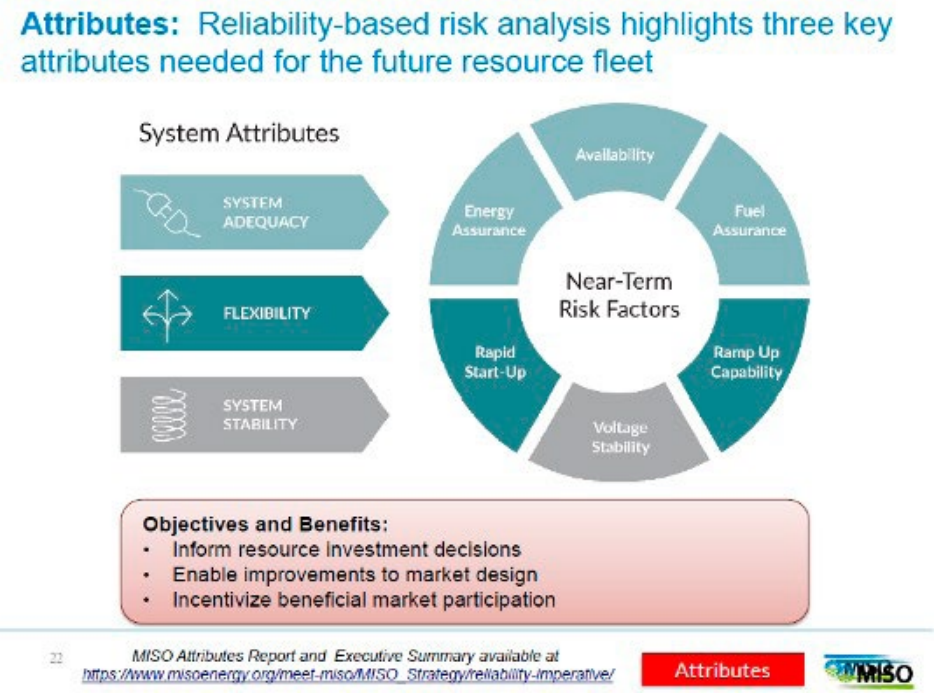
MISO has also proposed changes as to how they accredit resources based on two factors, how the class of resources performs, and then specifically – how well the individual unit performance does during the times MISO needed the resources. This is proposed for all resources type except some demand response. Previously, and when MISO was capacity long, the calculation was varied by resource type and was not as refined. Solar, for example, was given an accreditation of 50%. As the resource mix and times of need is becoming for specific, different, and varied – MISO is narrowing in on more refined calculation.

Because the equation allows for a more 'tightened' calculation of what is needed, even though resources are given a lower accreditation value, the total 'need' and amount need will likely decrease (making this change likely MW neutral across the footprint, however, some utilities will need more, and some less capacity MWs depending on their system mix). MISO has filed at FERC in March 2024 for implementation in the 2028/2029 planning year.

MISO is also addressing Resource Accreditation for Load Modifying Resources (LMR), a specific type of Demand Response. MISO has recently released to stakeholders it's proposal to change accreditation for load modifying resources in the MISO footprint. This change is controversial and affects another potential 'up to' 12 GW on the MISO system. MISO is planning to file at FERC in 3rd quarter 2024 – but is hearing feedback from stakeholders currently. MISO wants to limit load modifying resource (turning down your load) to those that can respond in 30 minutes, where today, it's up to six hour response time.

MISO issued a Attributes Roadmap last in 2023. In the report, MISO identified three major areas of action - System Adequacy, Flexibility, and System Stability as near term actions/needs. MISO further called out 27 areas of action and referred each to MISO subgroups to work on over the next few years:

- System Adequacy (10 Tasks) – Modernize the resource adequacy construct
- Flexibility (7 Tasks) – Focus market signals on emerging flexibility needs
- Voltage Stability (10 Tasks) – Require capabilities to strengthen the grid



NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

The North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority whose mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid. NERC develops and enforces Reliability Standards; annually assesses seasonal and long-term reliability; monitors the bulk power system through system awareness; and educates, trains, and certifies industry personnel. NERC's area of responsibility spans the continental United States, Canada, and the northern portion of Baja California, Mexico. NERC is the Electric Reliability Organization (ERO) for North America, subject to oversight by the Federal Energy Regulatory Commission (FERC) and governmental authorities in Canada. NERC's jurisdiction includes users, owners, and operators of the bulk power system, which serves nearly 400 million people.

Each year, NERC is responsible for independently assessing and reporting on the overall reliability, adequacy, and associated risks that could impact the upcoming summer and winter seasons as well as the long-term, 10-year period. As emerging risks and potential impacts to reliability are identified, special assessments are conducted that provide similar technical framework and insights about the range and specific aspects of these to guide steps that may be warranted. Unbiased judgment of industry's plans for maintaining electric reliability in the future are founded on solid engineering through collaborative and consensus-based assessments.

By identifying and quantifying emerging reliability issues, NERC is able to provide risk-informed recommendations and support a learning environment for industry to pursue improved reliability performance. These recommendations, along with the associated technical analysis, provide the basis for actionable enhancements to resource and transmission planning methods, planning and operating guidelines, and NERC Reliability Standards. The following two graphics represent risk assessments for the nation, winter and summer.

WINTER RELIABILITY RISK AREA SUMMARY – 2023-2024

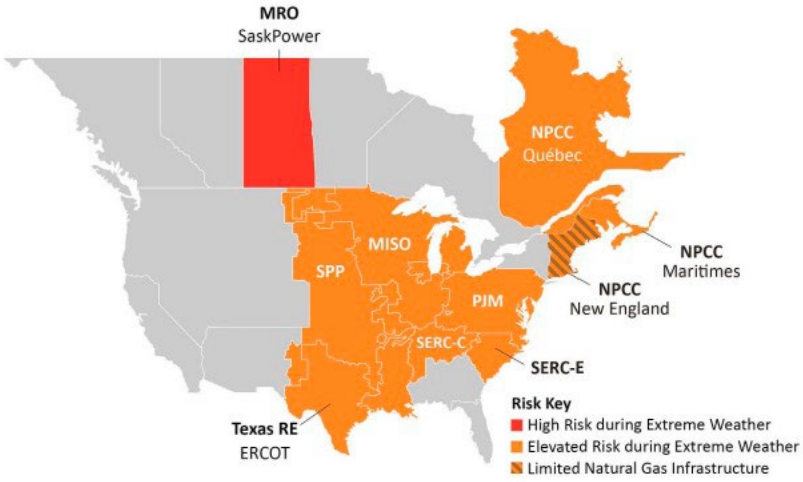


Figure 1: Winter Reliability Risk Area Summary

Seasonal Risk Assessment Summary	
High	Potential for insufficient operating reserves in normal peak conditions
Elevated	Potential for insufficient operating reserves in above-normal conditions
Low	Sufficient operating reserves expected

SUMMER RELIABILITY RISK AREA SUMMARY – 2024

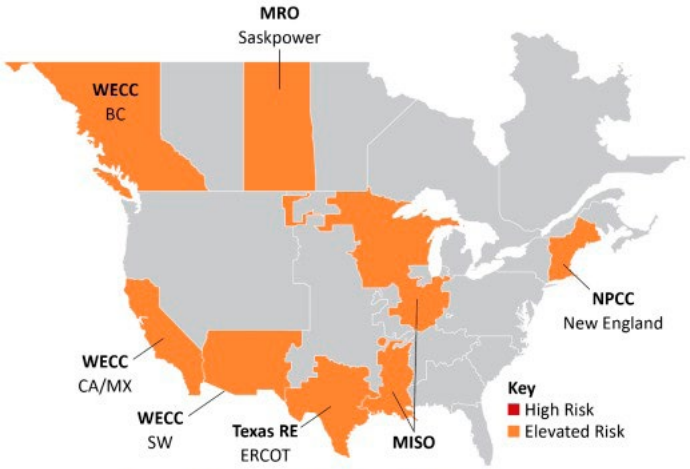


Figure 1: Summer Reliability Risk Area Summary

Seasonal Risk Assessment Summary	
High	Potential for insufficient operating reserves in normal peak conditions
Elevated	Potential for insufficient operating reserves in above-normal conditions
Normal	Sufficient operating reserves expected

MIDWEST RELIABILITY ORGANIZATION (MRO)

The MRO operates as a cross-border Regional Entity headquartered in Saint Paul, Minnesota. The MRO region spans the provinces of Saskatchewan and Manitoba, and all or parts of the states of Arkansas, Illinois, Iowa, Kansas, Louisiana, Michigan, Minnesota, Missouri, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wisconsin. The region includes approximately 225 organizations that are involved in the production and delivery of electric power, including municipal utilities, cooperatives, investor-owned utilities, transmission system operators, federal power marketing agencies, Canadian Crown Corporations, and independent power producers.

MRO's primary responsibilities are to: ensure compliance with mandatory reliability standards by entities who use, own, or operate the North American bulk power system; conduct assessments of the grid's ability to meet electric power demand in the region; and analyze regional system events. Additionally, MRO creates an open forum for stakeholder experts in the region to discuss important topics related to addressing risk and improving reliable operations of the grid. MRO serves as a vital link between grid owners, users, operators, and other stakeholders who share common reliability interests in the region.

The North Dakota Transmission Authority became a member of this organization for the first time in November 2023. The NDTA Executive Director participates in the "adjunct sector" of the organization. North Dakota transmission utilities are participants and members of the organization. The MRO provides a valuable forum to discuss grid reliability and generation resource adequacy risks.

ND GRID RESILIENCY REPORT

The NDTA supports the development of the ND Grid Resiliency Plan, a section in the North Dakota State Energy Security and Resiliency Plan. The report is updated annually with help from the EERC staff. Threats to North Dakota's electric grid include extreme weather events, changing generation fuel mix, resource adequacy, supply chain interruptions, aging infrastructure, and physical/cyber-attacks. This report provides information that will help communities ensure that the electric grid infrastructure is more resilient when catastrophic events occur. North Dakota utilities have a long history of expeditious and safe system restorations following floods, winds and ice storms. The 2023 December Ice Storm manifested the collaborative spirit among investor-owned utilities and cooperatives working to safely restore vital electric service to North Dakotans.

NORTH DAKOTA TRANSMISSION AUTHORITY
STATE CAPITAL, 14TH FLOOR
600 E. BOULEVARD AVE. DEPT. 405
BISMARCK, ND 58505-0840
PHONE: 701.355.2189

DISCLAIMER

This report utilizes data from various sources. Those sources are appreciated for their willingness and availability. If users of this report utilize that information, please go to the source to assure the most accurate and up to date information.

Thanks for the Energy Information Administration (EIA), Southwest Power Pool (SPP), Midcontinent Independent System Operator (MISO), area utilities and WIND and their members especially.

North Dakota Mill & Elevator
FY 2024 Transfers

	Dollars	Percent
FY 2024 Profit	$ 20,795,168	
Ag Product Utilization Fund	$ 1,039,758.41	5.0%
General Fund	$ 9,877,704.85	50% of remaining profits
Total Transfers	$ 10,917,463.26	

* Transfers made Monday, July 22, 2024

North Dakota Mill
Quarterly Income Statement Summary
For the Twelve Months Ending Sunday, June 30, 2024

	4th Qtr					
	Jun 2024	Jun 2023	Change	Fiscal Year 2024	Fiscal Year 2023	Change
GROSS SALES	$122,415,824	$125,978,112	($3,562,287)	$504,415,675	$532,743,300	($28,327,625)
SALES DEDUCTIONS	(25,633,425)	(21,347,144)	(4,286,281)	(94,092,579)	(86,902,223)	(7,190,356)
NET SALES	$96,782,399	$104,630,967	($7,848,568)	$410,323,096	$445,841,077	($35,517,981)
COGS	($75,948,229)	($82,524,110)	$6,575,882	($334,686,221)	($375,142,839)	$40,456,617
GROSS MARGIN	$20,834,171	$22,106,857	($1,272,686)	$75,636,874	$70,698,238	$4,938,636
Gross Margin	17.0%	17.5%	-0.5%	15.0%	13.3%	1.7%
OPERATING EXPENSES						
PRODUCTION	($10,849,216)	($10,956,708)	$107,491	($39,434,680)	($36,244,800)	($3,189,879)
QUALITY CONTROL	(405,849)	(377,165)	(28,684)	(1,489,802)	(1,453,738)	(36,064)
MARKETING	(810,294)	(766,403)	(43,891)	(2,858,699)	(2,713,319)	(145,380)
GENERAL & ADMIN	(1,996,124)	(2,775,295)	779,171	(6,443,522)	(8,075,646)	1,632,124
TOTAL OPERATING EXPENSES	($14,061,483)	($14,875,571)	$814,088	($50,226,703)	($48,487,503)	($1,739,200)
per cwt production	$3.03	$3.72	-$0.69	$2.86	$3.03	-$0.17
OPERATING INCOME	$6,772,687	$7,231,286	($458,598)	$25,410,172	$22,210,735	$3,199,436
OTHER INCOME	$167,368	$93,201	$74,167	$614,360	$126,259	$488,100
OTHER EXPENSES	(1,172,839)	(1,401,241)	228,402	(5,229,363)	(5,098,729)	(130,634)
NET INCOME	$5,767,217	$5,923,246	($156,029)	$20,795,168	$17,238,265	$3,556,903
PRODUCTION - CWTS.						
SPRING WHEAT FLOUR	4,254,725	3,688,180	566,545	16,079,499	14,691,475	1,388,024
% to total	91.8%	92.3%	(0.5%)	91.5%	91.8%	(0.3%)
DURUM FLOUR/SEMO	379,860	306,351	73,509	1,495,485	1,315,218	180,267
% to total	8.2%	7.7%	0.5%	8.5%	8.2%	0.3%
TOTAL CWTS.	4,634,585	3,994,531	640,054	17,574,984	16,006,693	1,568,291
SALES - CWTS.						
SPRING WHEAT	4,153,485	3,682,147	471,338	16,016,114	14,631,039	1,385,075
% to total	91.5%	92.3%	(0.8%)	91.4%	91.8%	(0.4%)
DURUM & BLENDS	387,410	307,871	79,539	1,513,068	1,300,013	213,055
% to total	8.5%	7.7%	0.8%	8.6%	8.2%	0.4%
TOTAL CWTS.	4,540,895	3,990,018	550,877	17,529,182	15,931,052	1,598,130
BY-PRODUCTS	67,823	60,476	7,348	261,432	242,224	19,208
Price per ton	$88.52	$164.55	-$76.03	$132.64	$169.92	-$37.28

North Dakota Mill
Review of Operations
4th Quarter Ended June 30, 2024
Pre-Audit

SUMMARY

Operations in the 4th Quarter led to a profit of $5,767,217 compared to a profit of $5,923,246 in last year's 4th Quarter. For the year we had a profit of $20,795,168 compared to $17,238,265 last year.

	Quarter		Year to date	
	6/24	**6/23**	**6/24**	**6/23**
Profits	$5,767,217	$5,923,246	$20,795,168	$17,238,265
Sales	122,415,824	125,978,112	504,415,675	532,743,300
Cwt. Shipped				
Spring	4,153,485	3,682,147	16,016,114	14,631,039
% to Total	91.5%	92.3%	91.4%	91.8%
Durum/Blends	387,410	307,871	1,513,068	1,300,013
Total	**4,540,895**	**3,990,018**	**17,529,182**	**15,931,052**
Bulk Shipments	3,744,386	3,354,110	14,496,511	13,365,879
% to Total	82.5%	84.1%	82.7%	83.9%
Bag Shipments	760,890	602,636	2,861,867	2,392,876
% to Total	16.7%	15.1%	16.3%	15.0%
Tote Shipments	35,618	33,272	170,804	172,297
% to Total	.8%	.8%	1.0%	1.1%
Family Flour Shipments	151,471	77,467	542,274	277,036
% to Total	3.3%	1.9%	3.1%	1.7%
Organic Flour Shipments	21,884	31,108	113,639	124,384
% to Total	.5%	.8%	.6%	.8%

Grain Purchased:				
Spring	8,610,264	7,954,726	33,917,108	32,530,184
Durum	827,543	569,439	3,308,422	2,828,148
Total	**9,437,807**	**8,524,165**	**37,225,530**	**35,358,332**

SALES

4th Quarter

Sales for the 4th Quarter were $122,415,824 compared to $125,978,112 last year. Shipments of 4,540,895 are 550,877 cwts. more than last year's 4th Quarter. Bag shipments for the 4th Quarter are 760,890 cwts. compared to 602,636 cwts. last year. Tote shipments are 35,618 cwts. compared to 33,272 cwts. last year. Family flour shipments of 151,471 cwts. is 74,004 cwts. higher than last year's 4th Quarter. Organic flour shipments of 21,884 cwts. is 9,224 cwts. below last year.

Year-to-Date

Sales for the fiscal year came in at $504,415,675. This is 5.3% less than last year. The price of grain settled is $2.01 per bushel less than last year. Shipments of 17,529,182 cwts. are 1,598,130 cwts. more than last year. Year-to-date bag shipments are 2,861,867 cwts. or 468,991 cwts. more than last year. Year-to-date tote shipments are 170,804 cwts. compared to172,297 cwts. last year. Family flour shipments for the year are 542,274 cwts., which is a 95.7% increase from last year. Organic flour shipments are 113,639 cwts. compared to 124,384 cwts. last year.

OPERATING COSTS

4th Quarter

Operating costs for the 4th Quarter are $14,061,483 compared to $14,875,571 last year, a decrease of 5.5%. The mill experienced an additional pension expense of $328,914 in the last fiscal year. Operating cost per cwt. of production is $3.03 compared to $3.72 last year, a decrease of 18.5%.

Year-to-Date

Year-to-date operating costs are $50,226,703 compared to $48,487,503 last year, an increase of $1,739,200. Operating costs per cwt. of production for the year are $2.86 compared to $3.03 last year.

PROFITS

4th Quarter

For the 4th Quarter we experienced a profit of $5,767,217 compared to a profit of $5,923,246 last year. Gross margins as a percent of gross sales for the Quarter was 17.0% compared to 17.5% last year, a decrease of .5%.

Year-to-Date

For the year we had a profit of $20,795,168 compared to profits of $17,238,265 last year. Gross margins as a percentage of gross sales for the year were 15.0% compared to 13.3% last year, an increase of 1.7%.

Risk Management Position

The table below shows our hedge ratio by futures month going forward. A hedge ratio shows the relationship between our net cash position and our futures position. The mill does remain at risk for the basis.

Position Report
30-July-24

Period		Hedge Ratio
Sep-24		1.0
Dec-24		1.0
Mar-25		1.0
May-25		1.0
July-25		1.0
Sept-25		1.0
Net Position		1.0

NORTH DAKOTA MILL
Capital Expenditures for FY 2024
August 27, 2024

Capital Expense Item	Approved / Remaining Budget	Net Capital Cost	Under / (Over)	Completed Project Cost
Plant				
Phase II Bulk Flour Storage Upgrade	192,978	191,494	1,484	283,516
Retail Mixes Line Blending System	192,276	(12,724)	205,000	-
C Mill Wheat Delivery System	96,827	95,043	1,784	153,216
* Grain Terminal Belt Conveyor Upgrades	457,514	-	457,514	
* Midds Storage and Handling System Phase I, II, & III	40,821,731	20,860,599	19,961,132	
A Mill Roll Conversion	312,612	221,756	90,856	379,144
* K Mill High Pressure Fans	450,000	-	450,000	
* Packing Flour Transfer Upgrade	372,970	211,320	161,650	
A Mill Purifier and Flour Collection Conveyor Upgrade	273,641	267,486	6,155	318,846
* Flour Transfer B Filter and Conveyor	167,872	104,167	63,706	
Mill PLC Upgrades (6 Mills A, B, C, K, E, WW)	128,697	88,858	39,839	220,161
* Old Warehouse, Lab and SC 3 Roofs	165,000	111,171	53,829	
* Door Upgrades	114,651	1,925	112,726	
Fork Lifts	65,000	62,963	2,037	62,963
Rail Car Opener	9,004	3,114	5,890	39,110
G Mill Roof Replacement	53,220	44,897	8,323	186,780
* Fire Protection Water Pump	188,260	87,827	100,433	
* Electrical Generation	2,517,200	63,225	2,453,975	
Industrial Vacuum	175,000	173,981	1,019	173,981
Track 1, 2, 3 Upgrades	1,200,000	1,200,000	-	1,200,000
* Sifters	800,000	620,225	179,775	
* B Mill Reflow	700,000	294,400	405,600	
* K Mill Upgrades	650,000	158,172	491,828	
* E Mill Upgrades	450,000	63,731	386,269	
* Regrind System Capacity Increase	450,000	-	450,000	
* A, B, C Mill Combistoners	450,000	127,500	322,500	
* Air Makeup System Fans	350,000	11,286	338,714	
* B & K Mill Tempering Systems	300,000	72,645	227,355	
* Plant Lighting	300,000	-	300,000	
* WW Mill Upgrades	250,000	23,372	226,628	
* Lab & K Mill HVAC Upgrades	250,000	56,264	193,736	
* Semolina Bin Bottoms	200,000	-	200,000	
* D Mill Cleaning Ductwork	100,000	-	100,000	
* G Mill Farina System	75,000	-	75,000	
Forklifts	75,000	65,630	9,370	65,630
* Loadout Software	500,000	39,538	460,462	
Computers/Technology				
Systems Improvements, Replacements, and Upgrades	300,000	135,736	164,264	
Property Surveillance				135,736
Other	500,000	413,405	86,595	
Drag Conveyor Tail Section				59,364
Binwhip				62,551
Germ Metal Detector				57,456
Track 1,2,3 Upgrade Supplemental				151,534
Roll Cart				82,500
Total Capital Expenditures	**$ 54,654,453**	**$ 25,859,006**	**$ 28,795,447**	**$ 3,632,488**

* Carried over to Fiscal Year 2025

FY 2025 Capital Projects for Consideration

1 **Terminal Leg Head and Boot Replacements Engineering** **550,000**

Obtain the services of an engineering firm(s) to design a project that would include fabrication, and installation of 7 - 20,000 bu. per hour bucket elevators by extending trunking through the roof and installing new head sections, drives, boots, belts and cups. The engineering firm would determine the electrical cost and develop a plan to address issues with the aspiration system in the terminal elevator. Additional work would include the determination of the appropriate way to replace the obsolete conveyor belts in the Terminal Elevator basement. The present bucket elevator legs and basement conveyor belts have a capacity of 12,000 bu. per hour. This modernization project will further speed up truck and rail grain unloading, transferring and mixing operations, increase reliability and improve sanitation and safety conditions throughout the terminal elevator.

2 **B Mill Upgrades** **1,700,000**

Replace 2 flour worn out flour collection conveyors with stainless steel units and necessary spouting. Replace 21 obsolete roller mill electronic control systems, and spouting.

3 **K-Mill Tanks & Splitters** **110,000**

Reconfigure 2 K-Mill reclaim tanks and purchase and install 2 new stream splitters in the K Mill.

4 **H-Mill and Cleaning House Upgrades** **220,000**

Purchase and install a new higher capacity rebolt sifter and blower package for the H Mill. Install additional suction ducting in the cleaning house to improve efficiency of the milling unit.

5 **D-Mill Bucket Elevator & Cleaning House Upgrades** **350,000**

Purchase and install new conveyors and rebuild an existing bucket elevator to mechanically convey wheat to the temper mixer to increase reliability and reduce energy costs.

6 **G & I Mill Impactors** **140,000**

Purchase 9 new impactors for G & I Mills to increase grinding capacity.

7 **A-Mill Rollstand Components** **180,000**

Purchase and install new air cylinders and related components to rebuild 20 existing roll stand engagement systems.

8 **Tote Packers (2)** **350,000**

Purchase and install a new tote packer to replace our existing unit and add a new tote packing system in the East Warehouse to increase tote packing capacity.

9 **Small Packing Line Shrink Tunnel** **110,000**

Current shrink tunnel is worn out to the point where replacement is required.

10 **C Mill Rollstand Controllers** **250,000**

Purchase new updated rollstand controllers to replace 18 obsolete existing units.

11 **Rotex Screeners** **200,000**

Purchase and install 2 new 20,000 bu. per hour Rotex Screeners to replace the worn out, existing units in the Terminal Elevator.

12 **A/B Mill 9th Floor Project Engineering** **250,000**

Obtain the services of an engineering firm to design a 9th floor addition to the A/B mill building to provide space to replace and/or relocate 2 obsolete air make-up units and 14 worn out purifier, high pressure, plant suction air filters.

13	**Track 3 Flour Loadout Engineering**	**250,000**
	Obtain the services of an engineering firm to develop a preliminary concept and design to add additional rail and truck flour loadout bins above our track 3. These are areas previously used for rail and truck millfeed loadout.	
14	**Roof Replacements**	**1,050,000**
	Replace the worn out and leaking roofs over the Elevator Terminal driveway and Service Center 1 building.	
15	**Road & Lot Upgrades**	**350,000**
	Install concrete paving to upgrade the gravel area Northwest of the grain receiving building and regrade the shuttle track access road.	
16	**Rail Track Upgrades**	**1,250,000**
	Perform necessary upgrades on 7 track areas and upgrade several old tracks from 90 to 115 lb. rail to prevent derailments.	
17	**Lockers & Bathrooms Upgrade**	**150,000**
	Replace employee lockers and upgrade bathrooms with new fixtures, ceiling tile, paint and flooring.	
18	**Lab Equipment**	**170,000**
	Purchase 2 new falling number machines, 1 new infra analyzer unit, 1 new starch damage analyzer and a petri film reader.	
19	**Front End Payloader**	**400,000**
	Trade in one of our two payloaders, that is worn out to the point where replacement is required on a new unit.	
20	**Skidsteer**	**100,000**
	Trade in 1 of our 2 skid steer units that is worn out to the point where replacement is required on a new unit.	
21	**Air Compressors (3)**	**150,000**
	Purchase and install three A/B Mill 50 hp air compressors to replace units that are at end-of-life.	
22	**Spare Transformers (2)**	**250,000**
	Purchase two 2500 kva high voltage transformers to be used as spares for 6 of our active transformers.	
23	**Switchgear Replacements**	**450,000**
	Purchase 15 replacements for obsolete main switches including buss bars in our electrical rooms.	
24	**Computers / Technology**	**300,000**
	Several system improvements, replacements and upgrades are required on our management information system.	
25	**Other Capital**	**500,000**
Total New Capital Projects	**$**	**9,780,000**

NORTH DAKOTA MILL
Capital Plan for FY 2025
August 27, 2024

Capital Expense Item	Remaining Budget
Carryover from FY 2024	
Plant	
Grain Terminal Belt Conveyor Upgrades	$ 457,514
Midds Storage and Handling System Phase I, II, & III	19,961,132
K Mill High Pressure Fans	450,000
Packing Flour Transfer Upgrade	161,650
Flour Transfer B Filter and Conveyor	63,706
Old Warehouse, Lab and SC 3 Roofs	53,829
Door Upgrades	112,726
Fire Protection Water Pump	100,433
Electrical Generation	2,453,975
Sifters	179,775
B Mill Reflow	405,600
K Mill Upgrades	491,828
E Mill Upgrades	386,269
Regrind System Capacity Increase	450,000
A, B, C Mill Combistoners	322,500
Air Makeup System Fans	338,714
B & K Mill Tempering Systems	227,355
Plant Lighting	300,000
WW Mill Upgrades	226,628
Lab & K Mill HVAC Upgrades	193,736
Semolina Bin Bottoms	200,000
D Mill Cleaning Ductwork	100,000
G Mill Farina System	75,000
Loadout Software	460,462
Total Carryover Capital Expenditures	**$ 28,172,832**

FY 2025 Capital Expense Item	Plan
Plant	
Terminal Leg Head and Boot Replacements Engineering	550,000
B-Mill Improvements	1,700,000
K-Mill Tanks & Splitters	110,000
H-Mill & Cleaning House Upgrades	220,000
D-Mill Bucket Elevator & Cleaning House	350,000
G & I Mill Impactors	140,000
A-Mill Rollstand Components	180,000
Tote Packers (2)	350,000

Small Packing Line Shrink Tunnel	110,000
C Mill Rollstand Controllers	250,000
Rotex Screeners	200,000
A/B Mill 9th Floor Project Engineering	250,000
Track 3 Flour Loadout Engineering	250,000
Roof Replacements	1,050,000
Road & Lot Upgrades	350,000
Rail Track Upgrades	1,250,000
Lockers & Bathrooms Upgrade	150,000
Lab Equipment	170,000
Front End Payloader	400,000
Skidsteer	100,000
Air Compressors (3)	150,000
Spare Transformers (2)	250,000
Switchgear Replacements	450,000
Computers/Technology	
Systems Improvements, replacements, and upgrades	300,000
Other	500,000
Total New Capital Expenditures	**$ 9,780,000**
Total Capital Expenditures	**$ 37,952,832**

North Dakota Mill & Elevator
Major Capital Projects

Projects in Progress:	Budget Amt	Amt Remaining
Grain Terminal Belt Conveyor Upgrades	$ 460,000.00	$ 457,513.76
Midds Storage & Handling Phase I & II	$ 56,000,000.00	$ 19,961,132.00
K Mill High Pressure Fans	$ 450,000.00	$ 450,000.00
Packing Flour Transfer Upgrade	$ 375,000.00	$ 161,650.00
Flour Transfer B Filter & Conveyor	$ 310,000.00	$ 63,706.00
Electrical Generation	$ 3,500,000.00	$ 2,453,975.00
Sifters	$ 800,000.00	$ 179,775.35
B Mill Reflow	$ 700,000.00	$ 405,600.00
K Mill Upgrades	$ 650,000.00	$ 491,828.00
E Mill Upgrades	$ 450,000.00	$ 386,268.90
Regrind System Capacity Increase	$ 450,000.00	$ 450,000.00
A, B, C Mill Combistoners	$ 450,000.00	$ 322,500.00
Air Makeup System Fans	$ 350,000.00	$ 338,714.37
B & K Mill Tempering Systems	$ 300,000.00	$ 227,355.00
Plant Lighting	$ 300,000.00	$ 300,000.00
WW Mill Upgrades	$ 250,000.00	$ 226,627.85
Lab & K Mill HVAC Upgrades	$ 250,000.00	$ 193,735.69
Loadout Software	$ 500,000.00	$ 460,462.00
Total Projects in Progress	**$ 66,545,000.00**	**$ 27,530,843.92**

Fiscal Year 2024:	Completed Amt
Phase II Bulk Flour Storage Upgrade	$ 283,516.00
A Mill Roll Conversion	$ 379,144.00
A Mill Purifier & Flour Collection Conveyor	$ 318,846.00
Mill PLC Upgrades (6 Mills)	$ 220,161.00
Track 1, 2, 3 Upgrades	$ 1,200,000.00

Fiscal Year 2023:	
Freight Elevator Upgrade	$ 837,577.75
Upper Bulk Flour Storage Renovation	$ 619,369.68
H & I Mills Expansion	$ 24,571,696.41
D Mill Product Transfer System	$ 767,018.27
Rail Track Crossing & Drainage Upgrades	$ 748,488.74
Electrical Substation Upgrade	$ 260,000.00
Asphalt & Concrete Paving	$ 349,727.00
K, C, and A Mill Sifter Upgrades	$ 644,726.50

Fiscal Year 2022:	Completed Amt
Terminal Receiving Scales & Conveyors	$ 8,303,962.00
Automated Flour Packing System	$ 2,346,862.00
PT 1 Packing System Upgrade	$ 419,995.00
Fiscal Year 2021:	
Phase II Shuttle Track & Grain Storage	$ 24,677,424.48
Fiscal Year 2020:	
Grain Receiving Land & Engineering	$ 3,336,704.25
Transformers and Electrical Room	$ 321,852.59
Rail Track & Crossing Upgrade	$ 582,871.65
Fiscal Year 2019:	
Transfer Conveyors & Grain Cleaner	$ 484,176.50
Yield Management System Upgrade	$ 324,565.97
Roll Corrugation Equipment	$ 335,718.47
A, B, and K Mill Sieve Replacement	$ 289,740.46
Fiscal Year 2018:	
High Speed Rail/Track Wht Unloading System	$ 9,298,127.85
Pellet Mill	$ 439,939.56
Old Warehouse Roof Upgrade	$ 299,083.60
Grain Inspection Building Canopy	$ 312,960.23
Grain Separator Replacement	$ 424,664.30
CompuWeigh System	$ 553,990.91
Automated Flour Packing System	$ 1,941,996.26
Rail Track Upgrades & Drainage Improvements	$ 348,044.44
Fiscal Year 2017:	
G Mill Expansion Project	$ 34,354,005.22
Flour Tank Expansion	$ 4,385,125.55
Storm Sewer/Drainage Upgrade	$ 4,447,896.45
Rail Cleaning Shed Extension & Doors	$ 350,941.38
Rail Track Refurbishment	$ 250,900.92
Total Investment - Last 8 Fiscal Years	**$ 130,031,821.39**

NORTH DAKOTA MILL
GAIN SHARING PROGRAM
FY20254

- **Eligibility – all full-time employees on June 30, 20254 ~~that worked a minimum of 1,000 hours during the program year~~ are eligible.**

- **No pay out of any bonuses if profit before gain sharing expense accrual and any unknown adjustments (Pension, etc.), positive or negative does not exceed 5.0 million dollars.**

- **No payout on the profit part of the plan if profit before gain sharing expense accrual and any unknown adjustments (Pension, etc.), positive or negative does not exceed 107.0 million dollars.**

- **Payout will be calculated as a percent of employee compensation ~~earnings~~ from July 1, 2024~~3~~ to June 30, 20254.**

- **Goal numbers were set to reflect current realities for the new plan year.**

- **Goal numbers were set by the President and CEO and are attainable with effort.**

The plan consists of two independent parts. 4% potential payout is from exceeding gain sharing goals and an un-capped potential payout is from profits.

For the year ending June 30, 2025~~4~~ the goals are as follows: Gain Sharing 1st Part – 4% Bonus Potential*

Goals

Cwt./man-hour (includes all hours)	**41.0~~39.5~~**
Cost per cwt. (pre gain sharing exp. and pension adjust.)	**$2.75**
Yield	**77.8%**
Safety Record	**172 Points**

***4% bonus potential if all numbers are met or exceeded. Each goal is worth 1% of the 4%.**

Gain Sharing 2nd Part – Uncapped Bonus Potential

Profits (before gain sharing expense accrual and pension adjustments):

10.0~~7.0~~ million = 5~~7~~.0% bonus pay out
Each additional 1.0 million in profits = 1.0% additional bonus payout.

NOTE: The 1st Part of the gain sharing goals begin to payout at a profit (before gain sharing expense accrual and any unknown adjustments - Pension, etc. , positive or negative) level greater than $5.0 million. The 2nd Part of the gain sharing goals begin to payout at a profit (before gain sharing expense accrual) level greater than $10~~7~~.0 million.

EXAMPLE #1:
The mill makes $5.0 million profit (before gain sharing expense accrual and any unknown adjustments - Pension, etc. , positive or negative) and we exceed the goal for cwt./man-hour and cost/cwt. but not the safety record or yield. The total bonus received would be 2% for goals + 0% for profit = 2.0%.

EXAMPLE #2:
The mill makes $10~~7~~.0 million profit (before gain sharing expense accrual and any unknown adjustments - Pension, etc., positive or negative) and we exceed the goal for cwt./man-hour, cost/cwt., and the safety record but not the yield. The total bonus received would be 3% for goals + 5~~7~~.0% for profit = 8~~10~~.0%.

NORTH DAKOTA MILL
GAIN SHARING PROGRAM
FY2025

- **Eligibility – all full-time employees on June 30, 2025 are eligible.**

- **No pay out of any bonuses if profit before gain sharing expense accrual and any unknown adjustments (Pension, etc.), positive or negative does not exceed 5.0 million dollars.**

- **No payout on the profit part of the plan if profit before gain sharing expense accrual and any unknown adjustments (Pension, etc.), positive or negative does not exceed 10.0 million dollars.**

- **Payout will be calculated as a percent of employee compensation from July 1, 2024 to June 30, 2025.**

- **Goal numbers were set to reflect current realities for the new plan year.**

- **Goal numbers were set by the President and CEO and are attainable with effort.**

The plan consists of two independent parts. 4% potential payout is from exceeding gain sharing goals and an un-capped potential payout is from profits.

For the year ending June 30, 2025 the goals are as follows: Gain Sharing 1st Part – 4% Bonus Potential*

Goals

Cwt./man-hour (includes all hours)	**41.0**
Cost per cwt. (pre gain sharing exp. and pension adjust.)	**$2.75**
Yield	**77.8%**
Safety Record	**172 Points**

***4% bonus potential if all numbers are met or exceeded. Each goal is worth 1% of the 4%.**

Gain Sharing 2nd Part – Uncapped Bonus Potential

Profits (before gain sharing expense accrual and pension adjustments):

10.0 million = 5.0% bonus pay out
Each additional 1.0 million in profits = 1.0% additional bonus payout.

NOTE: The 1st Part of the gain sharing goals begin to payout at a profit (before gain sharing expense accrual and any unknown adjustments - Pension, etc. , positive or negative) level greater than $5.0 million. The 2nd Part of the gain sharing goals begin to payout at a profit (before gain sharing expense accrual) level greater than $10.0 million.

EXAMPLE #1:
The mill makes $5.0 million profit (before gain sharing expense accrual and any unknown adjustments - Pension, etc. , positive or negative) and we exceed the goal for cwt./man-hour and cost/cwt. but not the safety record or yield. The total bonus received would be 2% for goals + 0% for profit = 2.0%.

EXAMPLE #2:
The mill makes $10.0 million profit (before gain sharing expense accrual and any unknown adjustments - Pension, etc., positive or negative) and we exceed the goal for cwt./man-hour, cost/cwt., and the safety record but not the yield. The total bonus received would be 3% for goals + 5.0% for profit = 8.0%.

June 30, 2024

BND

Bank of North Dakota

Performance Highlights

BANK OF NORTH DAKOTA
BALANCE SHEET - COMPARATIVE DATA
JUNE 30, 2024 - UNAUDITED

(In Thousands)

	6/30/2024	Budget	Difference	% Change	6/30/2023
Cash	$ 285,081	$ 434,981	$ (149,900)	-34.46%	$ 354,349
Due from Banks	216,733	225,000	(8,267)	-3.67%	228,061
Federal funds sold	37,735	55,000	(17,265)	-31.39%	74,520
Securities	4,173,304	3,607,428	565,876	15.69%	4,137,338
Loans					
Commercial	3,859,286	4,051,623	(192,337)	-4.75%	3,363,405
Agriculture	768,805	734,910	33,895	4.61%	732,764
Residential	301,722	295,655	6,067	2.05%	332,174
Student Loans	1,040,784	1,037,400	3,384	0.33%	1,081,520
	5,970,597	6,119,588	(148,991)	-2.43%	5,509,863
Less allow for credit loss	(105,633)	(100,240)	(5,393)	-5.38%	(94,602)
	5,864,964	6,019,348	(154,384)	-2.56%	5,415,261
Other assets	160,613	161,325	(712)	-0.44%	141,032
Total assets	$ 10,738,430	$ 10,503,082	$ 235,348	2.24%	$ 10,350,561
Deposits -					
Non-interest bearing	$ 459,645	$ 475,000	$ (15,355)	-3.23%	$ 486,421
Interest bearing	8,794,331	8,639,798	154,533	1.79%	8,569,216
	9,253,976	9,114,798	139,178	1.53%	9,055,637
Federal funds purchased and repurchase agreements	312,907	275,000	37,907	13.78%	170,175
Short term borrowings	-	-	-	0.00%	150,000
Off Balance Sheet Reserve Allowance	10,259	12,847	(2,588)	-20.14%	14,172
Other Liabilities	14,680	26,814	(12,134)	-45.25%	13,649
Total Liabilities	9,591,822	9,429,459	162,363	1.72%	9,403,633
Equity	1,146,608	1,073,623	72,985	6.80%	946,928
Total Liabilities and Equity	$ 10,738,430	$ 10,503,082	$ 235,348	2.24%	$ 10,350,561

BND's primary financial objective is to generate a consistent financial return to the State of North Dakota while maintaining the strength and financial integrity of the Bank. BND intends to produce strong returns while protecting its balance sheet by following strategies that focus on income generation, risk mitigation, and expense control.

- Second quarter 2024 ended with assets of $10.7 billion driven by continued growth in the loan porfolio.
- The Securities portfolio is a source of both income and liquidity for BND. As the Bank identifies excess funds and the portfolio runs off, maturities can be reinvested, utilized to fund new loans, or reduce short and long-term borrowings.
- The loan portfolio grew to nearly $6.0 billion. The timing of funding in the State Institution loan program as well as BND's Match program did not meet budget expectations in the Commercial Loan category. This was partially offset by increased volumes from budget in Commerical particiapation and Flex Pace programs. Activity in the Farm and Ranch program led the Ag Portfolio to strong results. Residential loan runoff continues to slow due to the rise in interest rates. The student loan portfolio continues to focus on state-sponsored DEAL loans.
- Changes in the Bank's Equity position are a result of net income, changes in unrealized gain/loss positions, allocations of capital to various legislative programs, and distributions to the State's General Fund. As of June 2024, the Bank has transferred $20.0 million to the Statewide Interoperable Radio Network, $13.0 million to buydown programs and $2.3 million to other state programs. During 2023, the Bank transferred $140 million to the General Fund, $30.5 million to buydown programs, $52 million to the infrastructure Revolving Loan fund and $5.7 million to other state programs.

BANK OF NORTH DAKOTA
INCOME STATEMENT - COMPARATIVE DATA
JUNE 30, 2024 - UNAUDITED

(In Thousands)

	6/30/2024	Budget	Difference	% Change	6/30/2023
Interest Income	$ 215,081	$ 209,661	$ 5,420	2.6%	$ 174,972
Interest Expense	95,311	83,295	12,016	-14.4%	59,913
Net Interest Income	119,770	126,366	(6,596)	-5.2%	115,059
Provision for Credit Losses	5,615	4,900	715	-14.6%	5,574
Net Interest Income After Provision	114,155	121,466	(7,311)	-6.0%	109,485
Non-Interest Income	3,846	3,453	393	11.4%	3,000
Non-Interest Expense					
Salaries and benefits	10,505	10,830	(325)	3.0%	9,270
Occupancy and equipment	348	434	(86)	19.8%	420
IT & System Costs	3,612	4,944	(1,332)	26.9%	3,411
Other Operating Expenses	3,512	4,037	(525)	13.0%	3,157
	17,977	20,245	(2,268)	11.2%	16,258
Net Income	$ 100,024	$ 104,674	$ (4,650)	-4.4%	$ 96,227

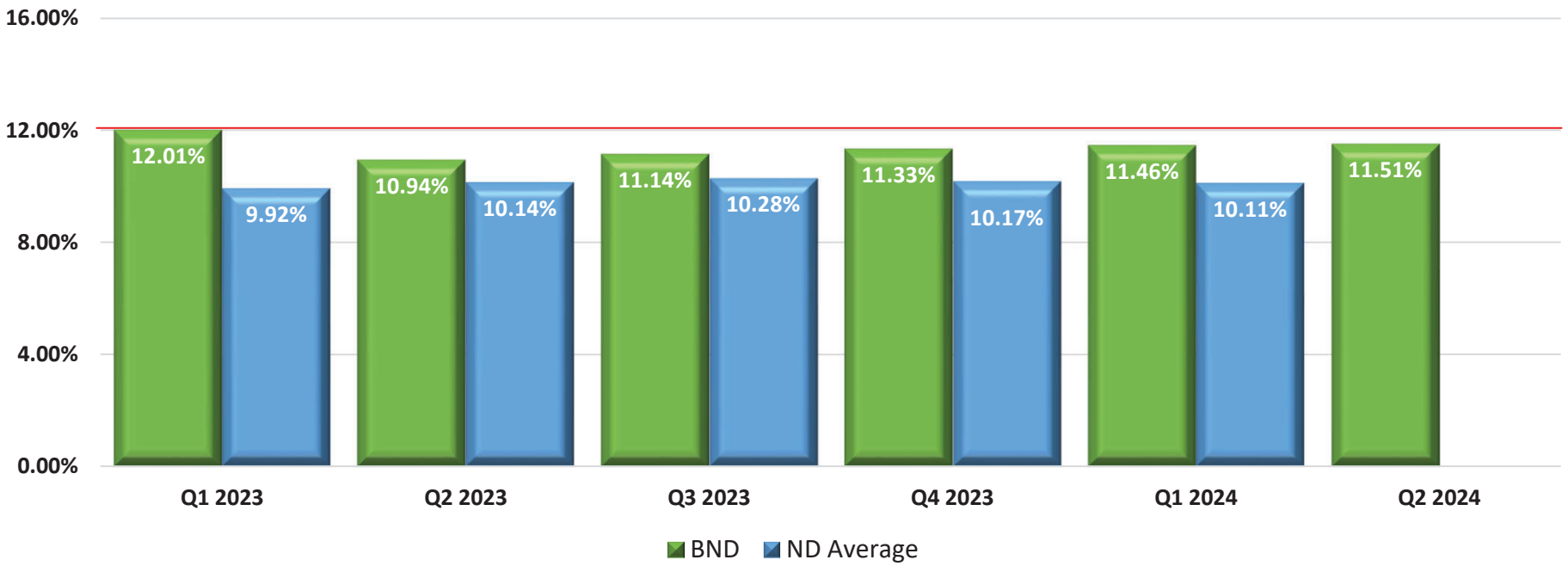
BND's primary objective is to generate a consistent financial return to the State of North Dakota while maintaining the strength and financial integrity of BND.

Commentary:

- Year-to-Date net income as of June, was $100.0 million. Interest Income exceeded budget by $5.4 million primarily due to higher rates on securities as well as rates and volumes in the commercial participation program offset by lower than budgeted balances at the Federal Reserve. A combination of higher average deposit balances, rates and larger Federal funds purchased contributed to the higher interest expense.

- Non-Interest Expense is $2.3 million under budget. This consists of several operating components largely due to timing of incurrences, specifically with IT projects, loan servicing expenses, legal and other service related expenses.

Leverage Ratio



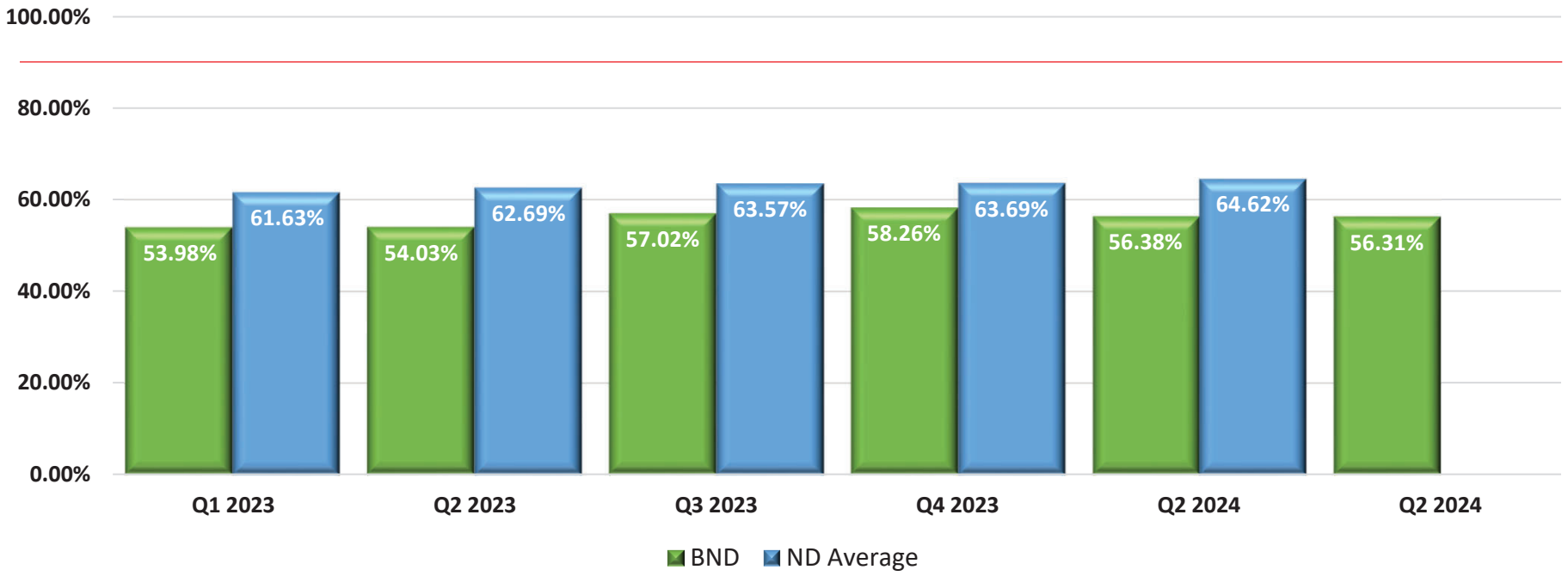
- Leverage ratio is a measure of financial strength. It is calculated by dividing Tier One Capital by average assets for the quarter. As of June 30, 2024, average asset size is $10.5 billion compared to $10.2 billion one year ago. State dollars received from American Rescue Plan funding and increased state tax revenues in the state has attributed to the increased assets size over the last three years by providing liquidity to increase the security and loan portfolio. Tier One Capital is $1.2 billion compared to $1.1 billion last year. Fluctuating quarterly ratios are the result of the Bank's quarterly earnings offset by capital transfers, including $140 million to the General Fund, $43.5 million to buydown programs, $52 million to the infrastructure revolving loan fund, $20 million to statewide interoperable radio network and $7.9 million to other state programs in the last 6 quarters.

- BND's current internal benchmark is 12.00% (red line). As of June 30, 2024, the Bank's leverage ratio increased to 11.51%.

- As of March 31, 2024, the leverage ratio for all insured commercial banks in the state is 10.11%.

The North Dakota average is obtained from the Federal Financial Institutions Examination Council (FFIEC) who tabulates input from commercial banks in North Dakota. *Note*: The North Dakota average for the current quarter has not yet been determined, as the FFIEC publishes this data approximately 60 days after the completion of each calendar quarter.

Net Loans to Earning Assets

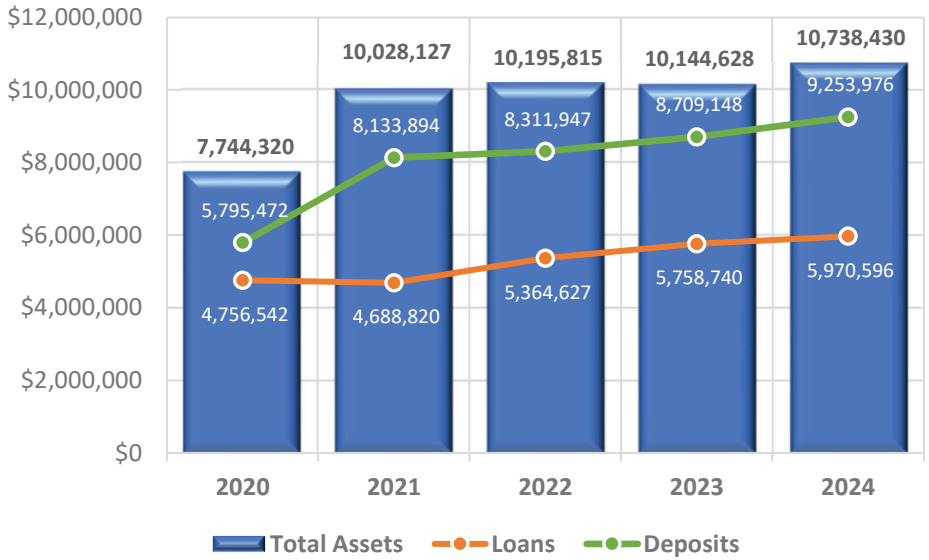


- Net Loans to Earning Assets is a ratio used to measure the liquidity of a financial institution.
- BND has established an internal guideline for the Net Loans to Earning Assets Ratio to be 90% or lower (red line).
- As shown above, BND is well within this limit at 56.31%, a decrease from 56.38% as of the previous quarter.
- As of March 31, 2024, the ratio for all insured commercial banks in the state is 64.62%.

The North Dakota average is obtained from the Federal Financial Institutions Examination Council (FFIEC) who tabulates input from commercial banks in North Dakota. *Note:* The North Dakota average for the current quarter has not yet been determined, as the FFIEC publishes this data approximately 60 days after the completion of each calendar quarter.

Five-Year History

(In Thousands)



- The increase in asset and deposit size from 2020 to 2021 was primarily due to $1.25 billion of Federal CARES ACT dollars, $1.0 billion of American Rescue Plan funds and higher correspondent bank deposits related to government issued COVID-19 relief payments, and additional funds received by the state from increased oil and sales tax revenue.

- The Bank assets were $10.7 billion for the second quarter of 2024. Adequate liquidity has allowed the Bank to continue to grow its loan portfolio and reinvest in its investment portfolio as securities mature.

- The loan portfolio has grown 26% from $4.8 billion in 2020 to $6.0 billion as of June 30, 2024, continuing the Bank's mission to deliver quality, sound financial services that promote agriculture, commerce, and industry in North Dakota.

Bank of North Dakota Peer Group Comparison

Bank of North Dakota Peer Group Comparison			
As of 03/31/2024	**BND**	**Banker's Bank Peer Composite**	**ND Bank's Peer Composite**
Efficiency Ratio	14.56	68.23	71.93
NPLs/Loans	0.62	0.26	0.65
ROAA	1.88	0.93	0.84
ROAE	18.32	8.29	9.56
Tier One Leverage Capital	11.46	12.02	9.25
Net Interest Margin	2.34	2.10	2.37

Banker's Bank Peer Group
Banker's Bank
First National Banker's Bank
Pacific Coast Bankers' Bank
TIB, National Association
United Bankers Bank

ND Bank's Peer Group
Bell Bank
First International Bank
Alerus Financial
Choice Financial Group

- BND established a peer group for the purpose of measuring performance. Though a pure-play peer group does not exist, BND selected five national banker's banks with assets greater than $1.0 billion and four North Dakota banks with assets greater than $3.0 billion.

- BND's efficiency ratio exemplifies the Bank's ability to maintain low operating costs relative to its income.

- The Bank's ROAA and ROAE exceed the Peer Composite ratios as BND efficiently deploys capital and manages costs.

- The Bank's profits are utilized in 3 ways: appropriated through the State Legislature to fund the General Fund, mission driven programs and retained in BND Capital. BND's ratios will fluctuate as the organization maintains a balance between adequate liquidity and capital while managing the volatility of its deposit base.

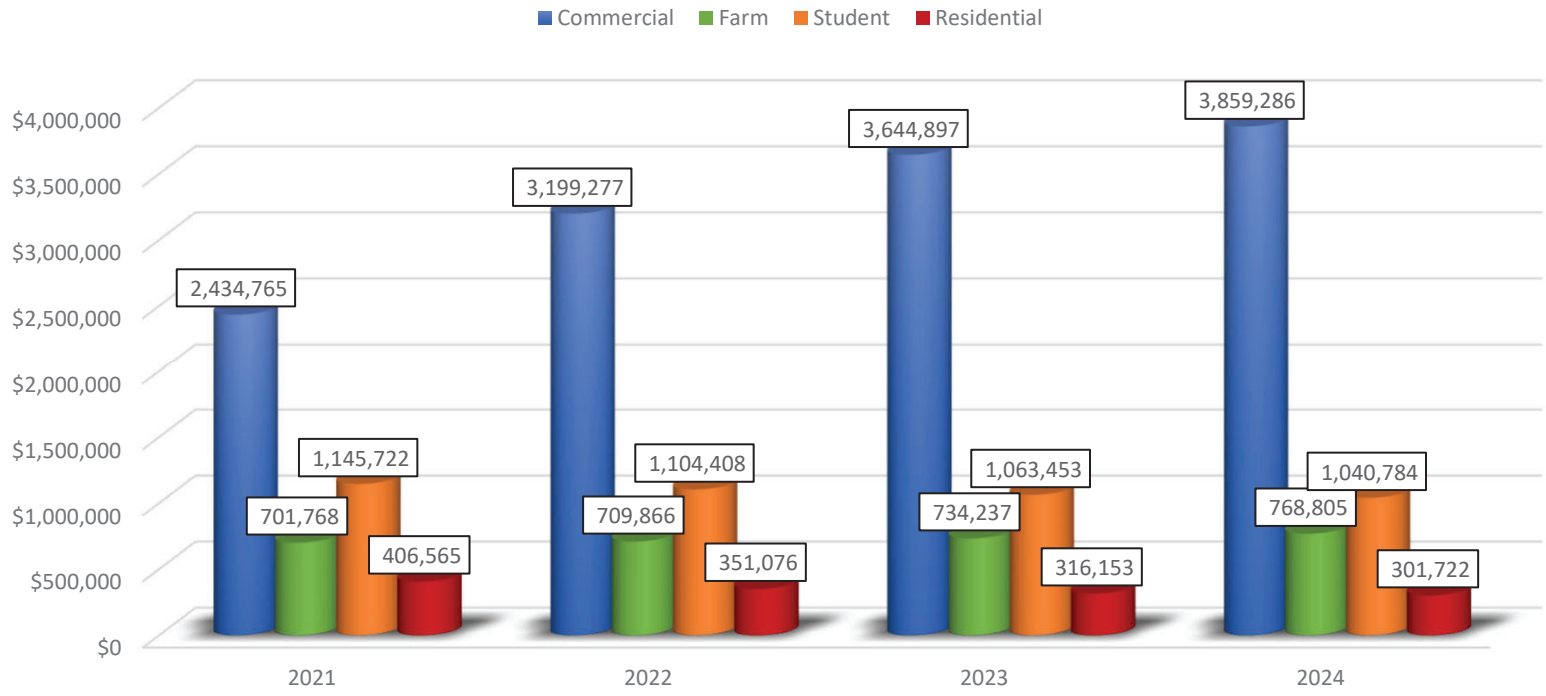
Loan Originations

(includes renewals)
Year to Date

	June 30, 2024		June 30, 2023		Variance	
	###	$$$	###	$$$	###	$$$
Bank Participations - Commercial	118	496,415,403	106	570,958,657	12	(74,543,254)
State Institution	4	189,432,000	3	129,276,228	1	60,155,772
Bank Stock	12	78,769,946	33	30,364,674	(21)	48,405,272
Match	1	60,000,000	0	0	1	60,000,000
Flex PACE	95	37,219,687	92	31,120,750	3	6,098,937
PACE	4	31,608,625	5	13,499,000	(1)	18,109,625
Business Development	30	9,370,160	19	4,866,614	11	4,503,546
COVID-19 PACE Recovery	1	3,691,819	0	0	1	3,691,819
Accelerated Growth	2	2,250,000	1	2,997,000	1	(747,000)
Flex PACE w/ADD buydown	1	1,200,000	1	409,150	0	790,850
Biofuels PACE	3	328,927	1	185,543	2	143,384
Affordable Housing Flex PACE	1	217,750	2	948,411	(1)	(730,661)
Small Business Administration	0	0	3	3,122,725	(3)	(3,122,725)
Biofuels PACE w/ADD buydown	0	0	1	1,600,000	(1)	(1,600,000)
Bank Participations - Commercial w/ADD buydown	0	0	2	1,000,000	(2)	(1,000,000)
Total Commercial Loans	**272**	**910,504,317**	**269**	**790,348,752**	**3**	**120,155,565**
Farm & Ranch	98	122,964,523	65	91,172,189	33	31,792,334
Established Farmer	19	13,168,926	8	6,992,620	11	6,176,306
Ag Pace	50	4,643,619	33	3,160,958	17	1,482,661
Beginning Farmer Real Estate	14	4,385,987	31	11,496,432	(17)	(7,110,445)
Beginning Farmer Chattel	57	3,678,653	62	3,542,869	(5)	135,784
Farm Service Agency	4	1,648,593	1	522,500	3	1,126,093
Farm Operating	12	1,176,000	12	890,095	0	285,905
Family Farm	0	0	1	186,300	(1)	(186,300)
Farm Disaster/Drought Programs	0	0	128	11,962,000	(128)	(11,962,000)
Total Agricultural Loans	**254**	**151,666,301**	**341**	**129,925,963**	**(87)**	**21,740,338**
DEAL Loans	4,418	29,461,791	4,972	31,423,598	(554)	(1,961,807)
DEAL One	40	1,472,837	45	2,196,747	(5)	(723,910)
DEAL Consolidation	16	669,859	13	775,599	3	(105,740)
Purchased Student Loans	4	117,269	8	131,359	(4)	(14,090)
Total Student Loans	**4,478**	**31,721,756**	**5,038**	**34,527,303**	**(560)**	**(2,805,547)**
Total Bank of North Dakota Loans	**5,004**	**1,093,892,374**	**5,648**	**954,802,018**	**(644)**	**139,090,356**
Legislatively Directed Loan Programs						
Infrastructure RLF	9	74,566,000	13	25,281,102	(4)	49,284,898
Clean Sustainable Energy	1	17,000,000	1	40,000,000	0	(23,000,000)
School Construction	1	8,085,000	3	30,000,000	(2)	(21,915,000)
Fuel Production Facility/Value Add Guarantee	2	5,800,000	2	12,000,000	0	(6,200,000)
Legacy Investment Technology Loan Fund	11	5,632,600	0	0	11	5,632,600
Beginning Entrepreneur Loan Guarantee	19	1,419,050	18	1,314,100	1	104,950
Bulk Propane Storage Tank RLF	1	149,425	0	0	1	149,425
Department of Water Resources RLF	0	0	1	1,100,000	(1)	(1,100,000)
Innovation Loan Fund	0	0	6	5,000,000	(6)	(5,000,000)
Legislatively Directed	**44**	**112,652,075**	**44**	**114,695,202**	**0**	**(2,043,127)**

Consolidated Loan Portfolio

(In Thousands)



COMMERCIAL - The commercial loan portfolio increased by $214 million during the first half of 2024 with BND funding and renewing $911 million of loans. The largest area of activity was in commercial participations with BND funding and renewing $496 million. The commercial portfolio increased by 5.9% primarily due to commercial participations and state institution loans.

AGRICULTURE - The farm loan portfolio increased by $35 million during the first half of 2024 with BND funding and renewing $152 million of loans. Farm and Ranch loans led the way with $123 million, followed by Established Farmer which funded $13 million in loans.

STUDENT - The student loan portfolio decreased by $23 million in the first half of 2024. BND disbursed $32 million in DEAL loans in 2024. DEAL Loan origination has decreased due to more favorable federal rates.

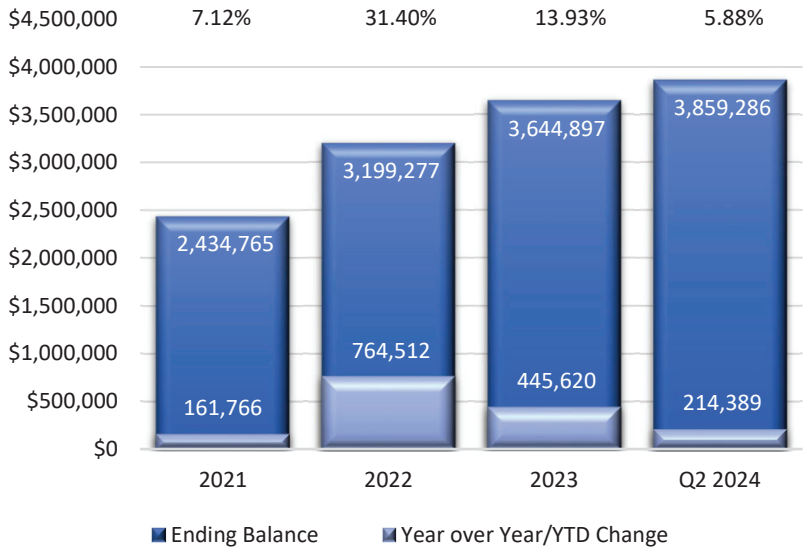
RESIDENTIAL - Transition of all residential originations to Housing Finance Agency occurred on August 1, 2021, and the transition of nearly all residential servicing and collections to Housing Finance Agency occurred on October 1, 2021. As a result, the residential loan portfolio decreased by $105 million since year end 2021.

Commercial Loan Portfolio

(In Thousands)

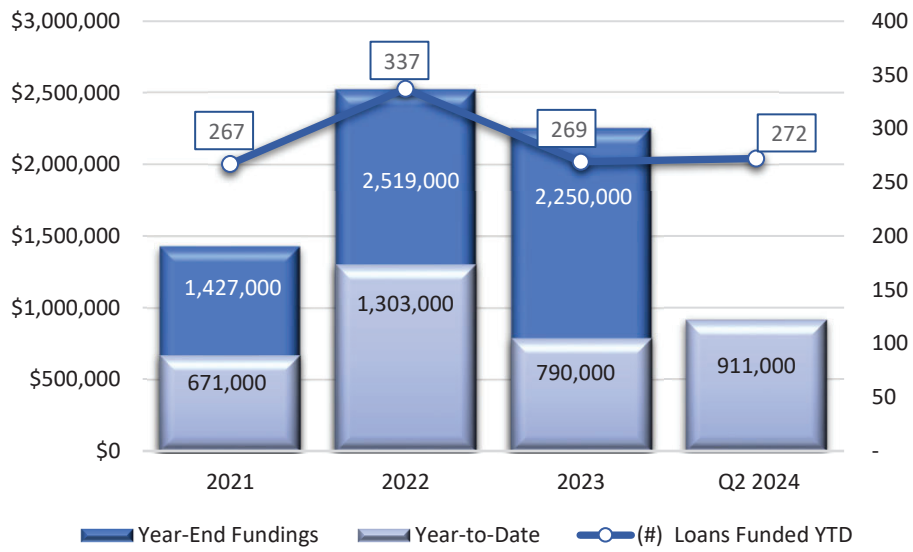
Total Commercial Portfolio

Year over Year/YTD Change



Loans Funded

Year-End & Year-to-Date



Portfolio Composition				
Loan Type	**2021**	**2022**	**2023**	**2024**
Bank Participation	52%	55%	60%	61%
PACE Loans	15%	13%	14%	14%
Bank Stock	14%	11%	11%	10%
State & Pol. Subs	8%	8%	4%	3%
Other	11%	13%	11%	12%

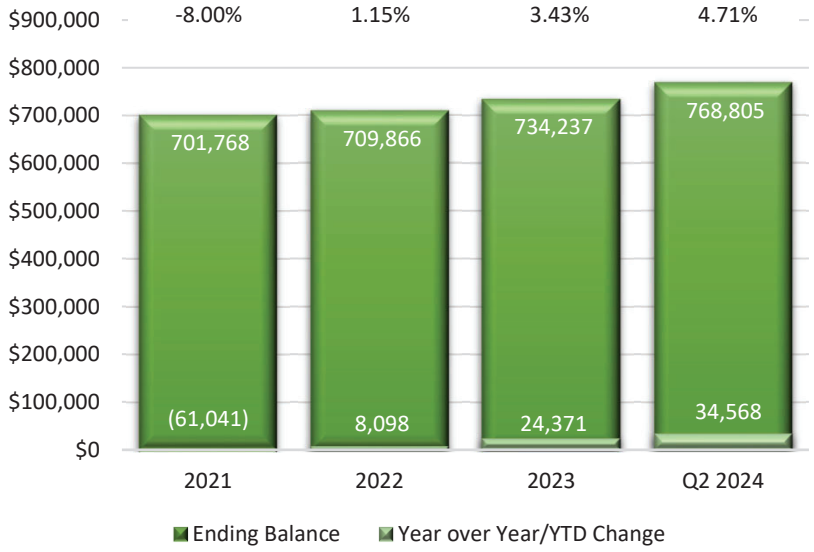
- The commercial loan portfolio increased by $214 million with BND funding and renewing $911 million of loans in the first half of 2024.
- The largest areas of activity were in commercial participations funding and renewing $496 million in loans and state institutions funding and renewing $189 million.

Agriculture Loan Portfolio

(In Thousands)

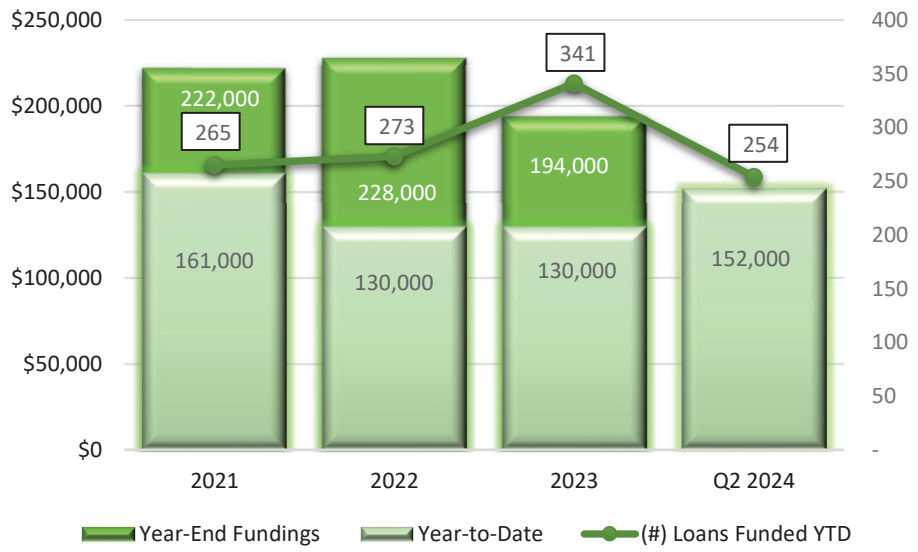
Total Agriculture Portfolio

Year over Year/ YTD Change



Loans Funded

Year-End & Year-to-Date



Portfolio Composition				
Loan Type	**2021**	**2022**	**2023**	**2024**
Farm & Ranch	18%	19%	22%	27%
Beginning Farmer	28%	32%	30%	27%
Established Farmer	28%	26%	25%	25%
Farm Financial Stability/Farm Disaster	19%	19%	13%	12%
Other	7%	4%	9%	9%

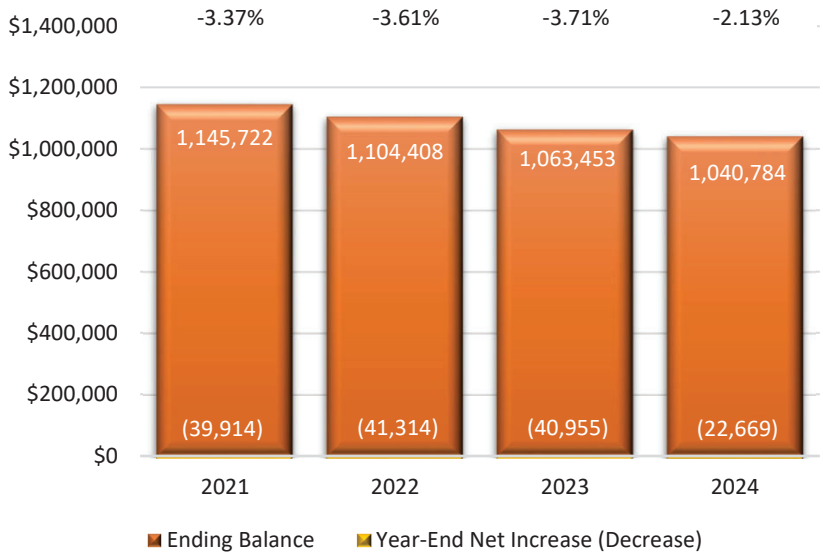
- The agriculture portfolio increased by $35 million with BND funding and renewing $152 million of loans during the first half of 2024.
- The largest areas of activity were Farm and Ranch loans with $123 million and $13 million in Established Farmer during the first half of 2024.

Student Loan Portfolio

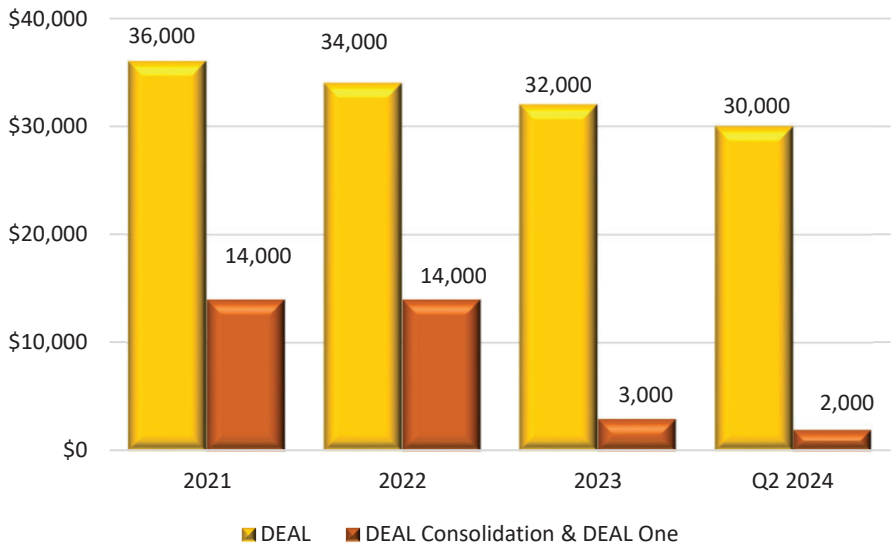
(In Thousands)

Total Student Portfolio

Year over Year Increase (Decrease)



DEAL Loans Funded YTD



Portfolio Composition				
Loan Type	**2021**	**2022**	**2023**	**2024**
DEAL	54%	56%	57%	58%
DEAL One	41%	39%	38%	37%
DEAL Consolidation	5%	5%	5%	5%

History of DEAL Rates (In-State)				
Interest Rate	**2021**	**2022**	**2023**	**2024**
Fixed	3.98%	6.46%	6.43%	6.58%
Variable	1.71%	6.24%	6.86%	6.84%

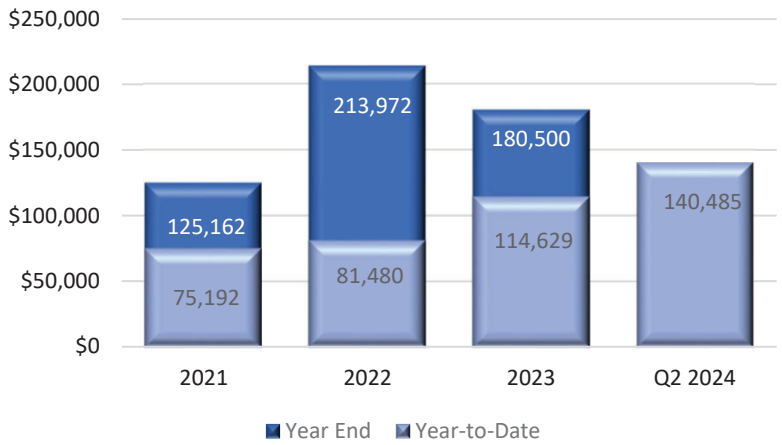
- The student loan portfolio decreased by $23 million during the first half of 2024, with BND disbursing $32 million in DEAL loans.
- BND's fixed rate is currently higher than the federal student loan rate for undergraduate students. The federal rate is set annually in July and the current rate is 6.53%, compared to BND's in-state fixed rate of 6.58% which is set quarterly.

Commercial PACE

(In Thousands)

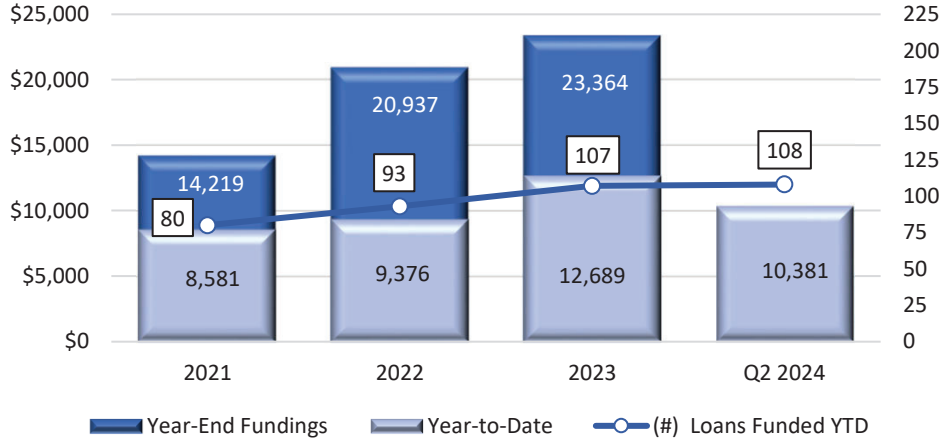
PACE Loan Amounts

Year-End & Year-to-Date



PACE Buydown Funded

Year-End & Year-to-Date



Loan Type	2021	2022	2023	2024
Pace	19%	26%	25%	22%
Flex Pace	53%	56%	60%	65%
Affordable Housing	15%	12%	9%	8%
Biofuels	9%	3%	3%	3%
Medical Pace	4%	4%	3%	2%

2023-2025 Biennium Buydown Funding (Commercial)					
	Pace	**Flex**	**Housing**	**Biofuels**	**Total**
Total Available	$18,000	$20,000	$1,000	$1,000	$40,000
Funded/ Committed	$3,227	$17,342	$0	$936	$21,505
Remaining Buydown	$14,773	$2,658	$1,000	$64	$18,495
*Remaining buydown may be transferred between funds as needed.					

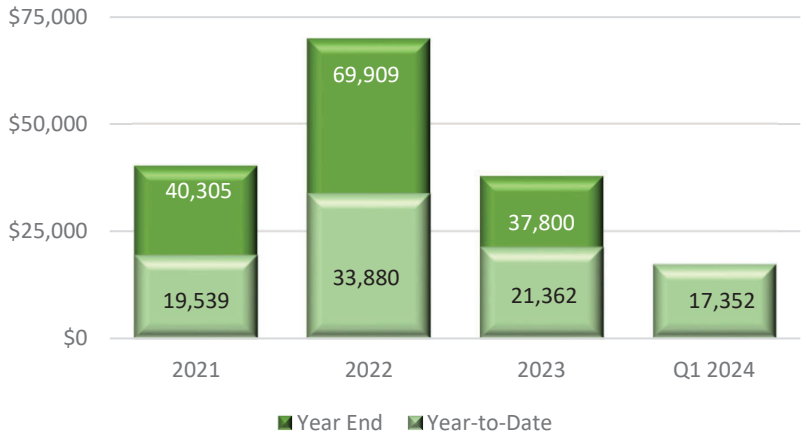
- A total of 100 Flex PACE loans were funded in the first half of 2024 for a total of $111 million compared to 96 in 2023. Flex PACE buydown demand continues due to the financing of essential community services and community approved businesses throughout North Dakota.
- A total of 4 PACE loans were funded in the first half of 2024 for a total of $27 million compared to 7 in 2023. Additional PACE loans funded were 1 Affordable Housing for $2 million and 3 biofuels for $1 million.

Ag PACE & Beginning Farmer

(In Thousands)

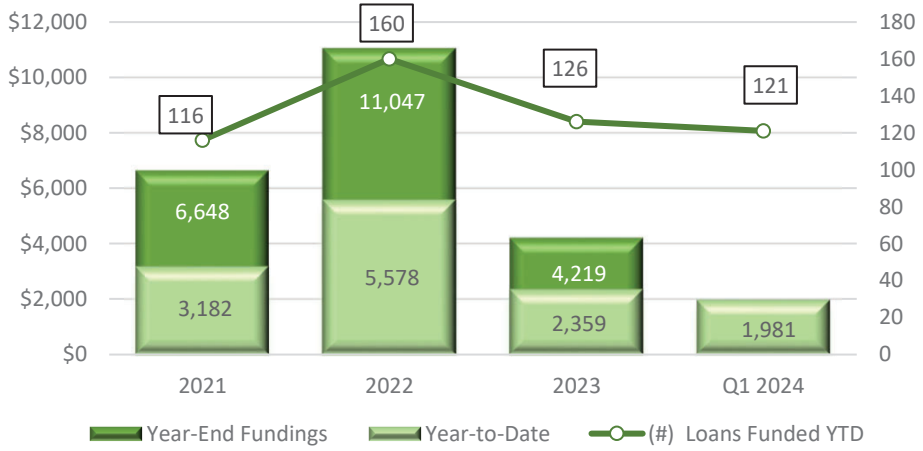
Loan Amounts

Year-End & Year-to-Date



Buydown Funded

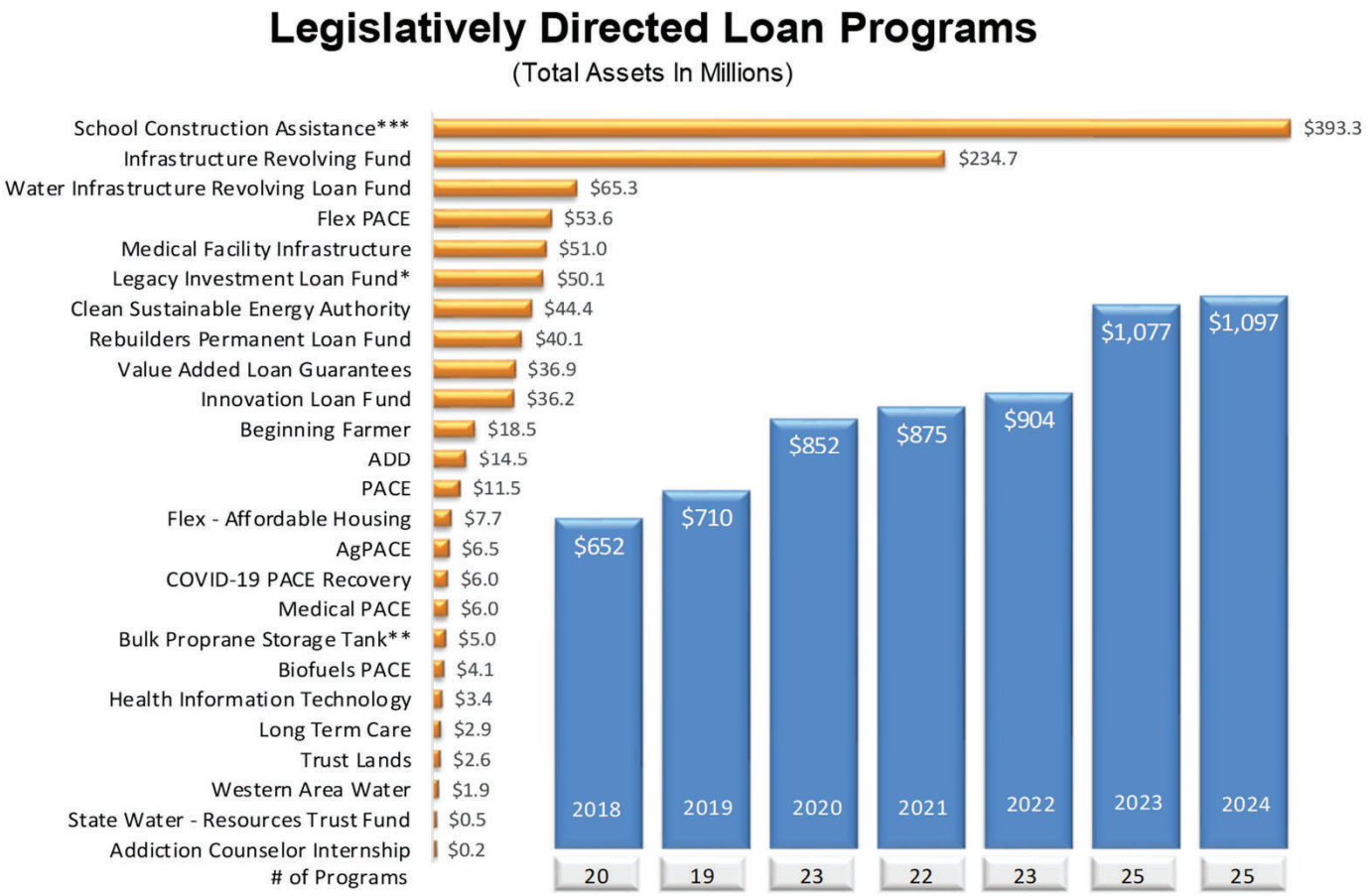
Year-End & Year-to-Date



Loan Type	2021	2022	2023	2024
Ag Pace	23%	26%	46%	54%
Beginning Farmer - Real Estate	67%	65%	39%	25%
Beginning Farmer - Chattel	10%	9%	15%	21%

2023-2025 Biennium Buydown Funding (Agriculture)		
	Ag Pace	Beginning Farmer
Total Available	$5,000	$15,000
Funded/Committed	$2,219	$2,397
Remaining Buydown	$2,781	$12,603

- There were 50 Ag PACE loans funded in the first half of 2024 compared to 33 in 2023. The Production Enhancement Program (PEP) has also created more opportunity for field tiling projects. A total of 70% or 35 of the projects were for field tiling.
- A total of 14 Beginning Farmer Real Estate loans were funded in the first half of 2024 compared to 31 in 2023. Decreased volume is attributed to higher interest rates.
- A total of 57 Beginning Farmer Chattel loans were funded in the first half of 2024 compared to 62 in 2023.



- BND currently administers $1.1 billion in net assets for legislatively directed loan programs. These programs serve a wide range of purposes, including school construction, water projects, general and medical infrastructure, and disaster recovery.

- *Legacy Investment Loan Fund created in December 2023. Loans purchased from Infrastructure Revolving Loan Fund.

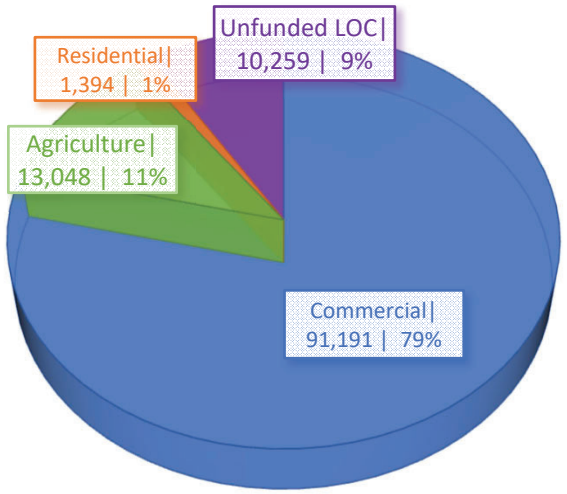
- ** SB 2242 created the Bulk Propane Storage Tank Revolving Loan Fund (BPST) during the 68th Legislative Session. This special fund was established by transferring $5 million in cash from the Strategic Investment and Improvements Fund (SIIF).

- ***SB 2282 appropriated $75 million to be transferred from Foundation Aid Stabilization fund to the School Construction Assistance Revolving Loan Fund (SCARLF). This transfer was completed in July 2023.

Credit Quality

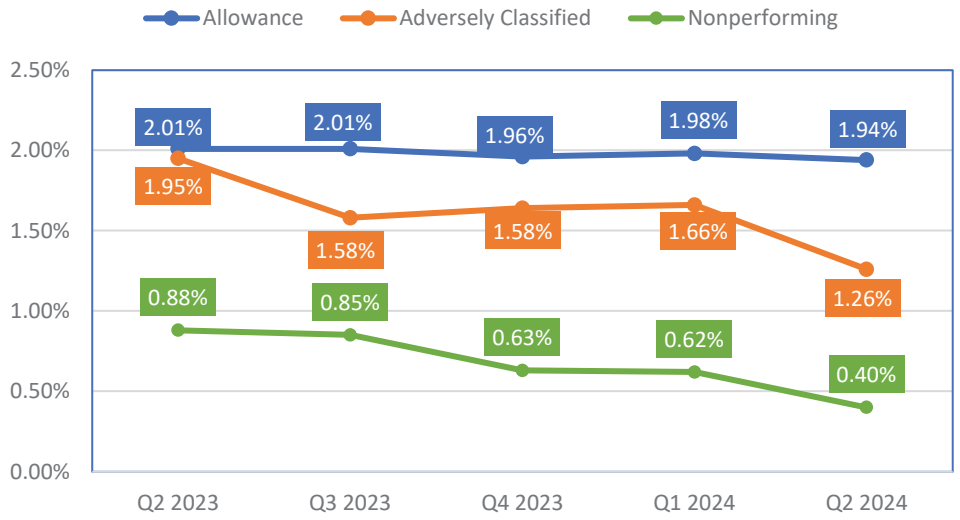
(In Thousands)

Allowance of $115,892 on Portfolio of $5,970,597 or 1.94%



Quarterly Credit Quality Ratios

(As a Percentage of Total Loans)



Quarter	Allowance for Credit Losses	Loan Portfolio	Allowance %	North Dakota Average
June 2024	$115,892	$5,970,597	1.94%	TBD
March 2024	$115,806	$5,846,071	1.98%	1.27%
December 2023	$112,712	$5,758,740	1.96%	1.24%
September 2023	$112,345	$5,583,909	2.01%	1.26%
June 2023	$110,652	$5,509,863	2.01%	1.29%

- BND adopted the CECL Accounting Standard as of January 1, 2023. As of June 30, 2024, BND's total allowance as a percentage of total loans is 1.94%, higher than the most recently posted North Dakota average of 1.27%. BND's allowance percentage can be attributed to the Bank's mission driven nature of our loan portfolio. BND continues to evaluate the need to adjust allowance provision based on the changing economic conditions.

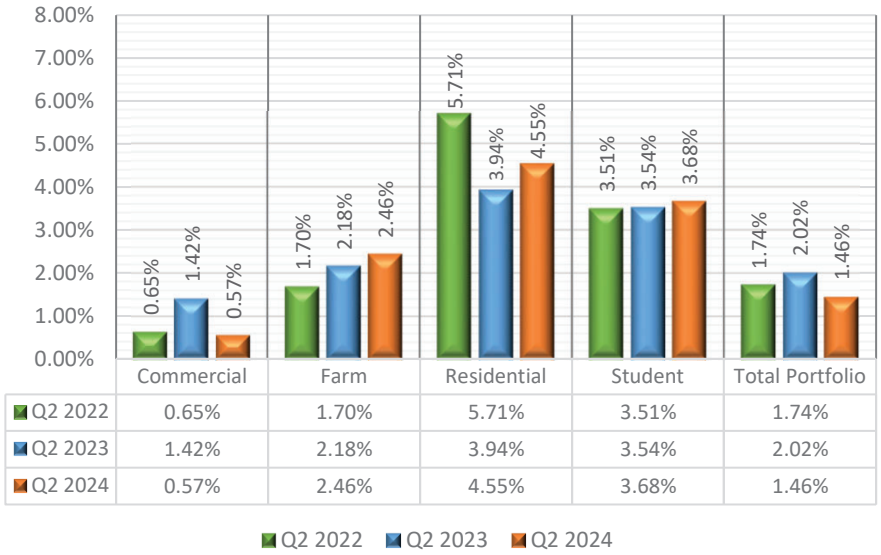
- Excluding the DEAL Student Loan portfolio, which is reserved for separately through the Guarantee Agency, BND's total allowance as a percentage is 2.34%. BND's total allowance as a percentage of all non-guaranteed loans is 2.50%.

- As of June 30, 2024, the percent of non-performing loans is 0.40%, a decrease from last quarter, and lower than the most recently posted North Dakota average of 0.88%. Non-performing ratio adjusted to exclude the $4.9 million of loans with government guarantees would decrease to 0.32%. Adversely classified loans as a percentage of total loans equaled 1.26%, moderately lower than last quarter. The most recent North Dakota average of adversely classified loans was 1.32%.

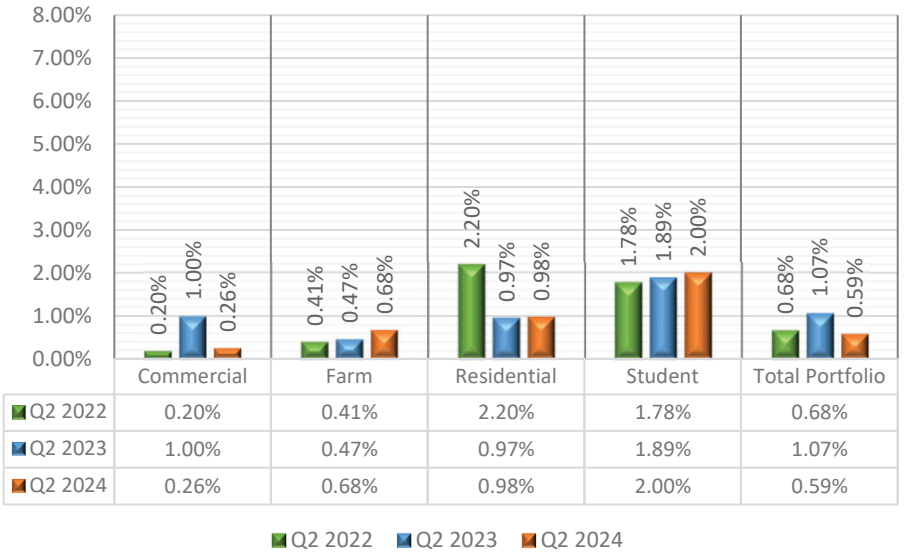
Credit Quality

(Year over Year)

Delinquencies over 30 Days



Delinquencies over 90 Days

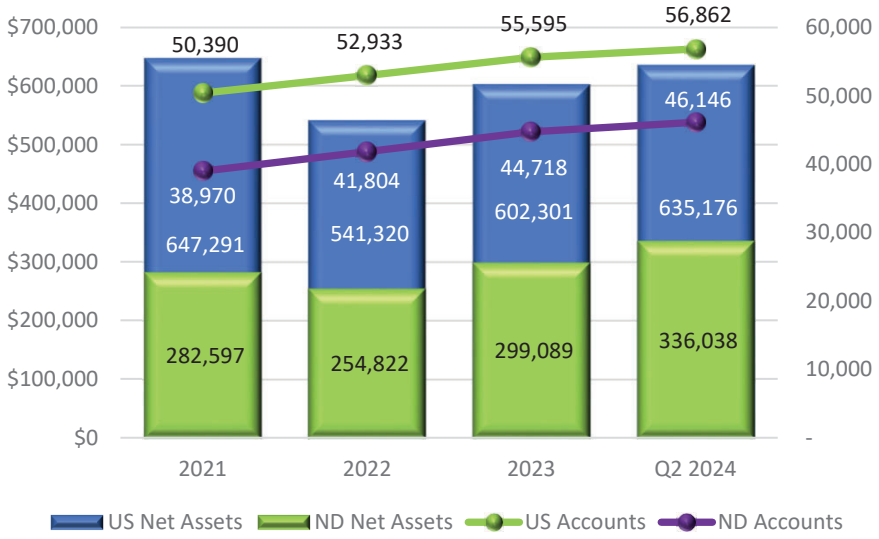


(In $000's)	Q2 2024	Q2 2023	Q2 2024	Q2 2023
	> 30 days	> 30 days	> 90 days	> 90 days
Commercial	$21,822	$47,746	$10,024	$33,760
Farm	$18,933	$15,996	$5,227	$3,408
Residential	$13,713	$13,069	$2,940	$3,232
Student Loans	$29,235	$29,066	$15,862	$15,518
Totals	$83,703	$105,877	$34,053	$55,918

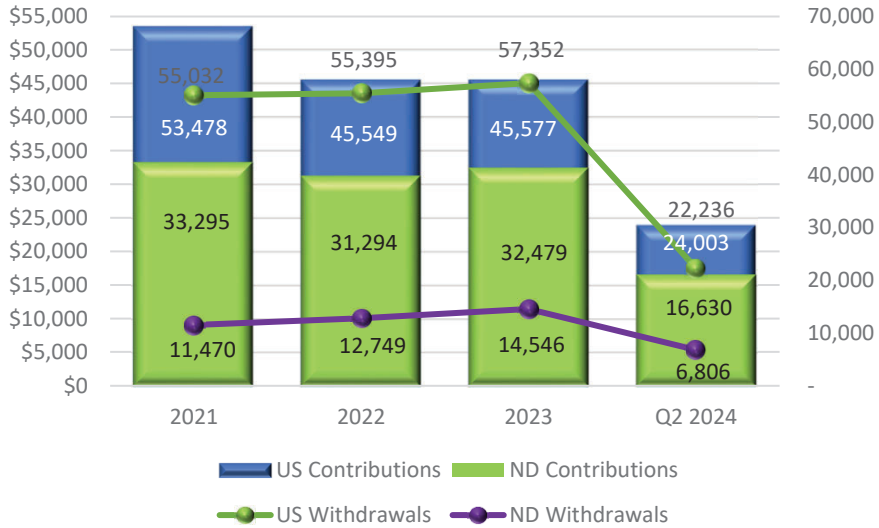
- Commercial delinquencies were 0.57% of which 0.26% were delinquent over 90 days. This is a decrease to 30 day delinquencies compared to June 30, 2023 of 1.42% and 1.00% over 90 days. Delinquencies were lower than the North Dakota average of 1.50%.
- Farm delinquencies were 2.46% of which 0.68% were delinquent over 90 days. Delinquencies were higher than the prior year and higher than the North Dakota average of 1.15%. Delinquencies over 90 days at June 30, 2024 were slightly higher than compared to the prior two years.
- Residential delinquencies were 4.55% of which 0.98% were delinquent over 90 days. FHA delinquencies of 7.19% are lower than the North Dakota 30-day average of 8.31% and over 90-day delinquencies of 1.51% is lower than the average of 2.55%. Nearly all residential delinquencies represent federally guaranteed loans.
- The overall student loan portfolio has a delinquency rate of 3.68% with 2.00% of the loans being over 90 days. The $15.9 million delinquent over 90 days is an increase from $15.5 million as of June 30, 2023.

College Save

Net Assets ($000) and Total Accounts (#)

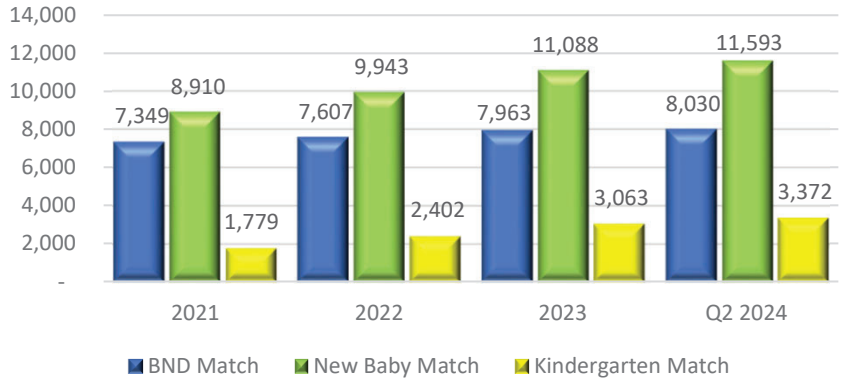


Contributions & Withdrawals ($000)



BND, New Baby, Kindergarten Match

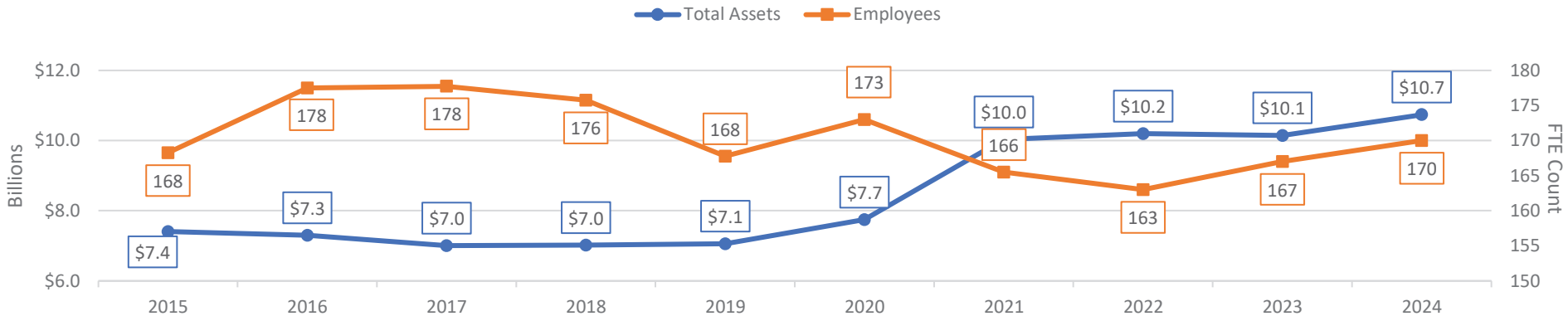
(# of Accounts)



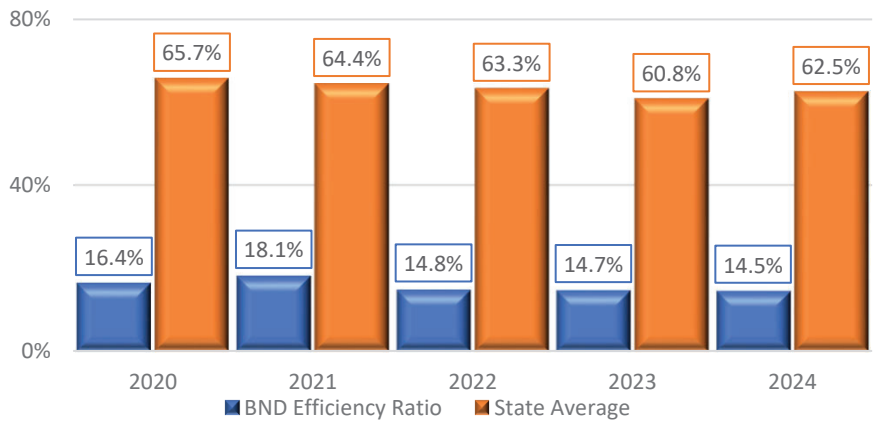
- North Dakota assets have surpassed 50% of total assests, while seeing record distributions.
- College SAVE has a record 22,995 match accounts for North Dakota residents; $500,000 has been distributed from the acounts since it was established.

Human Resources

Total Assets & Employees



Efficiency Ratio - Comparative



Assets & Earnings per Employee

- From 2015 to present, assets have grown 45% to $10.7 billion, annualized earnings are projected to increase 54% while total employees have only grown 1%. Earnings per employee have increased from $777 thousand in 2015 to nearly $1.2 million or 43%. The efficiency ratio measures a bank's overhead costs as a percentage of its revenue, the lower the ratio, the better. BND's efficiency ratio has historically been three to four times better than the state average.

- The Bank was authorized an additional 14 FTEs for the 2023-25 Biennium, bringing the total up to 187 authorized FTEs.

BANK OF NORTH DAKOTA
FINANCE AND CREDIT COMMITTEE
NONCONFIDENTIAL MINUTES
Wednesday, April 15, 2024 – 10:00 a.m. CT

MEMEBRS PRESENT: Brenda Foster, Chairman
Christie Obenauer
Bill Price

ALSO PRESENT: Sara Schumacher, BND
Rob Pfennig, BND
Kirby Evanger, BND
Craig Hanson, BND

Chairman Foster called the meeting to order at 10:00 a.m.

Chairman Foster adjourned the nonconfidential portion of the meeting at 10:00 a.m. and the Advisory Board went into Executive Session pursuant to N.D.C.C. 6-09-35 to discuss those items on the agenda under Bank of North Dakota Confidential Business.

****

The Executive Session began at 10:00 a.m. and was attended by Christie Obenauer, Bill Price, Sara Schumacher, Rob Pfennig, Kirby Evanger, Kaylen Hausauer, Kelvin Hullet, Gus Staahl

The following items were considered during Executive Session:

- Problem Loans as of 04/30/2024
- Concentrations of Credit as of 03/31/2024

The Executive Session adjourned at 10:50 a.m.

****

Chairman Foster reconvened the Nonconfidential portion of the meeting.

Kirby Evanger presented the following items for review and discussion:

- Key Balance DEAL Fund 03/31/2024

Rob Pfennig presented the following items for review and discussion:

- April 2024 Monthly Financial Summary
- BND Annual Report
- Liquidity Review

Consent Agenda

- Loan Portfolio Dashboard Report 03/31/2024

A recommendation will be made to the Advisory Board Committee to approve the consent agenda as presented.

The next Advisory Board Finance and Credit Committee meeting will be held Tuesday, June 18, 2024.

Being no further Bank of North Dakota business, Chairman Foster adjourned the nonconfidential portion of the meeting at 11:10 a.m.

_____
Sara Schumacher, Executive Assistant

BANK OF NORTH DAKOTA
FINANCE AND CREDIT COMMITTEE TELECONFERENCE
NONCONFIDENTIAL MINUTES
Tuesday, June 18, 2024 – 1:30 p.m. CT

MEMEBRS PRESENT VIA PHONE:	Brenda Foster, Chairman Bill Price
MEMBERS ABSENT:	Christy Obenauer
ALSO PRESENT VIA PHONE:	Sara Schumacher, BND Rob Pfennig, BND Kim Swenson, BND Kelvin Hullet, BND Craig Hanson, BND Courtney Heiser, BND Annie Bergrud, BND

Chairman Foster called the meeting to order at 1:30 p.m.

Chairman Foster adjourned the nonconfidential portion of the meeting at 1:30 p.m. and the Advisory Board went into Executive Session pursuant to N.D.C.C. 6-09-35 to discuss those items on the agenda under Bank of North Dakota Confidential Business.

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The Executive Session began at 1:30 p.m. and was attended by Brenda Foster, Bill Price, Sara Schumacher, Rob Pfennig, Kelvin Hullet, Craig Hanson, Jackie Duke, Andrew Tweet, Gus Staahl, Annie Bergrud

The following items were considered during Executive Session:

- Recommendations of Loan Applications to the Advisory Board Committee
- Problem Loan as of 05/31/2024

The Executive Session adjourned at 2:05 p.m.

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Chairman Foster reconvened the Nonconfidential portion of the meeting.

Summary of Recommendations (Confidential Session):

- A recommendation will be made to the Advisory Board Committee to approve the loan application 1 as presented.
- A recommendation will be made to the Advisory Board Committee to approve the loan application 2 as presented.

Kelvin Hullet presented for approval a Pilot Program on Rural – Workforce Initiative to Support Housing. A recommendation will be made to the Advisory Board Committee to approve the pilot program as presented.

Kim Swenson and Courtney Heiser presented amendments to General Loan Policy. A recommendation will be made to the Advisory Board Committee to approve the amendments as presented.

Rob Pfennig presented the May 2024 Monthly Financial Summary.

The next Advisory Board Finance and Credit Committee meeting will be held Wednesday, July 17, 2024.

Being no further Bank of North Dakota business, Chairman Foster adjourned the nonconfidential portion of the meeting at 2:30 p.m.

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Sara Schumacher, Executive Assistant

BANK OF NORTH DAKOTA
LEADERSHIP DEVELOPMENT ANDCOMPENSATION COMMITTEE
NONCONFIDENTIAL MINUTES
Thursday, May 16, 2024 – 8:30 a.m. CT

MEMEBRS PRESENT: Jean Voorhees, Acting Chairman
Christy Obenauer

MEMBERS ABSENT: Karl Bollingberg , Chairman

ALSO PRESENT: Kirby Evanger, BND
Sara Schumacher, BND
Lori Leingang, BND

Acting Chairman Voorhees called the meeting to order at 8:30 a.m.

Lori Leingang presented the First Quarter 2024 Strategic Initiative Update.

The next Advisory Board Leadership Development and Compensation Committee meeting will be held Thursday, August 15, 2024.

Being no further Bank of North Dakota business, Acting Chairman Voorhees adjourned the nonconfidential portion of the meeting at 9:00 a.m.

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Sara Schumacher, Executive Assistant

BANK OF NORTH DAKOTA
ADVISORY BOARD TELECONFERENCE
NONCONFIDENTIAL MINUTES
Thursday, May 16, 2024 – 10:00 a.m. CT

MEMBERS PRESENT:	Dennis Johnson, Acting Chairman Pat Clement Christie Obenauer Jean Voorhees
MEMBERS PRESENT VIA PHONE:	Bill Price Brenda Foster
MEMBERS ABSENT:	Karl Bollingberg, Chairman
ALSO PRESENT:	Todd Steinwand, BND Sara Schumacher, BND Rob Pfennig, BND Alison Anderson, BND Kirby Evanger, BND Lori Leingang, BND Christy Steffenhagen, BND Kelvin Hullet, BND Craig Hanson, BND Karen Tyler, Industrial Commission

Acting Chairman Johnson called the meeting to order at 10:00 a.m.

Acting Chairman Johnson adjourned the Nonconfidential portion of the meeting at 10:00 a.m. and the Advisory Board went into Executive Session pursuant to N.D.C.C. 6-09-35 & 44-04-27 to discuss those items on the agenda under Bank of North Dakota Confidential Business.

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The Executive Session began at 10:00 a.m. and was attended by Dennis Johnson, Pat Clement, Christie Obenauer, Jean Voorhees, Bill Price, Brenda Foster, Todd Steinwand, Sara Schumacher, Rob Pfennig, Alison Anderson, Kirby Evanger, Lori Leingang, Christy Steffenhagen, Kelvin Hullet, Craig Hanson, Jenni Lang, Karen Tyler

The following items were considered during Executive Session:

- Finance and Credit Committee Reports Recap
- First Quarter 2024 Suspicious Activity Report (Special Reporting)
- Confidential Finance and Credit Committee Minutes (April 17, 2024)
- Confidential Audit and Risk Management Committee Minutes (April 18, 2024)
- Confidential Advisory Board Minutes (April 18, 2024)
- Confidential Investment Committee Minutes (April 03, 09, 10, 16, 24, 2024)

The Executive Session adjourned at 10:15 a.m.

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Acting Chairman Johnson reconvened the Nonconfidential portion of the meeting.

Summary of Motions (Confidential Session)

- A motion was made my Ms. Obenauer to approve the consent agenda as presented. Seconded

by Ms. Clement. Members Johnson, Clement, Obenauer, Voorhees, Price, Foster voted aye. Motion carried.

Finance and Credit Committee made a recommendation to approve the following:

- Consent Agenda (see Finance and Credit Committee agenda)

A motion was made by Ms. Foster to approve the items as presented. Seconded by Ms. Obenauer. Members Johnson, Clement, Obenauer, Voorhees, Price, Foster voted aye. Motion carried.

Brenda Foster provided a Finance and Credit Committee Reports Recap.

Jean Voorhees provided a Leadership Development and Compensation Reports Recap for Karl Bollingberg.

BND Advisory Board Members presented a report of activity in their region of ND.

BND Executive Members had no Service Area Updates.

Consent Agenda

- Nonconfidential Finance and Credit Committee Minutes (April 17, 2024)
- Nonconfidential Audit and Risk Management Committee Minutes (April 18, 2024)
- Nonconfidential Advisory Board Minutes (April 18, 2024)
- Nonconfidential Investment Committee Minutes (April 03, 09, 10, 16, 24, 2024)

A motion was made by Ms. Voorhees to approve the consent agenda as presented. Seconded by Ms. Clement. Members Bollingberg, Johnson, Clement, Obenauer, Voorhees, Price, Foster voted aye. Motion carried.

An Advisory Board Discussion was held.

The next Advisory Board meeting will be held:

- Finance and Credit Committee Meeting – Tuesday, June 18, 2024, 1:30 p.m., Teleconference
- Group Advisory Board Meeting – Thursday, June 20, 2024, 8:30 a.m., Teleconference

Being no further Bank of North Dakota business, Acting Chairman adjourned the Nonconfidential portion of the meeting at 11:35 a.m.

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Sara Schumacher, Executive Assistant

BANK OF NORTH DAKOTA
ADVISORY BOARD TELECONFERENCE
NON-CONFIDENTIAL MINUTES
Thursday, June 20, 2024 – 8:30 a.m. CT

MEMBERS PRESENT VIA PHONE: Karl Bollingberg, Chairman
Dennis Johnson, Vice Chairman
Pat Clement
Jean Voorhees
Bill Price
Brenda Foster

MEMBERS PRESENT: Christie Obenauer

ALSO PRESENT: Sara Schumacher, BND
Annie Bergrud, BND
Alison Anderson, BND
Kirby Evanger, BND
Christy Steffenhagen, BND
Kelvin Hullet, BND
Craig Hanson, BND

ALSO PRESENT VIA PHONE: Lori Leingang, BND
Karen Tyler, Industrial Commission

Chairman Bollingberg called the meeting to order at 8:30 a.m.

Chairman Bollingberg adjourned the nonconfidential portion of the meeting at 8:30 a.m. and the Advisory Board went into Executive Session pursuant to N.D.C.C. 6-09-35 to discuss those items on the agenda under Bank of North Dakota Confidential Business.

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The Executive Session began at 8:30 a.m. and was attended by Karl Bollingberg, Dennis Johnson, Pat Clement, Christie Obenauer, Jean Voorhees, Bill Price, Brenda Foster Sara Schumacher, Annie Bergrud, Alison Anderson, Kirby Evanger, Lori Leingang, Christy Steffenhagen, Kelvin Hullet, Craig Hanson, Karen Tyler

The following items were considered during Executive Session:

- Recommendation of Loan Applications to the Bank of North Dakota
- Finance and Credit Committee Reports Recap
- Confidential Finance and Credit Committee Minutes (May 15, 2024)
- Confidential Advisory Board Minutes (May 16, 2024)
- Confidential Investment Committee Minutes (May 01, 08, 15, 22, 29, 2024)

The Executive Session adjourned at 9:10 a.m.

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Chairman Bollingberg reconvened the Nonconfidential portion of the meeting.

Summary of Recommendations (Confidential Session):

- A motion was made by Ms. Foster to approve the application 1 as presented. Seconded by Mr. Price. Members Bollingberg, Johnson, Obenauer, Voorhees, Price, Foster voted aye. Clement abstained. Motion carried.
- A motion was made by Ms. Obenauer to approve the application 2 as presented. Seconded by Ms. Foster. Members Bollingberg, Johnson, Clement, Obenauer, Voorhees, Price, Foster voted

aye. Motion carried.
- A motion was made by Ms. Foster to approve the consent agenda as presented. Seconded by Ms. Clement. Members Bollingberg, Johnson, Clement, Obenauer, Voorhees, Price, Foster voted aye. Motion carried.

Finance and Credit Committee made a recommendation to approve the Pilot Program on Rural – Workforce Initiative to Support Housing. A motion was made by Ms. Foster. Seconded by Ms. Obenauer. Members Bollingberg, Johnson, Clement, Obenauer, Voorhees, Price, Foster voted aye. Motion carried.

Finance and Credit Committee made a recommendation to approve the amendments to the General Loan Policy. A motion was made by Ms. Foster. Seconded by Mr. Price. Members Bollingberg, Johnson, Clement, Obenauer, Voorhees, Price, Foster voted aye. Motion carried.

Brenda Foster provided a Finance and Credit Committee Reports Recap.

Karl Bollingberg and Lori Leingang provided a CEO Search Update.

Lori Leingang provided a Retention and Recruitment Update.

Kelvin Hullet presented the following items for review and discussion:
- Cash Management
- ESG Report
- E. Radar Data Pathfinder Program

BND Advisory Board Members presented a report of activity in their region of ND.

BND Executive Team provided services area updates.

Consent Agenda:
- Nonconfidential Finance and Credit Committee Minutes (May 15, 2024)
- Nonconfidential Leadership Development and Compensation Committee Minutes (May 16, 2024)
- Nonconfidential Advisory Board Minutes (May 16, 2024)
- Nonconfidential Investment Committee Minutes (May 01, 08, 15, 22, 29, 2024)

A motion was made by Ms. Clement to approve the consent agenda as presented. Seconded by Ms. Voorhees. Members Bollingberg, Johnson, Clement, Obenauer, Voorhees, Price, Foster voted aye. Motion carried.

An Advisory Board Discussion was held.

The next Advisory Board meetings will be held:
- Finance and Credit Committee Meeting – Wednesday, July 17, 2024, 1:00 p.m.,
- Teleconference
- Audit and Risk Committee Meeting – Thursday, July 18, 2024, 10:00 a.m., 3rd Floor Missouri River Room 301
- Group Advisory Board Meeting – Thursday, July 18, 2024, 1:00 p.m. 3rd Floor Missouri River Room 301

Being no further Bank of North Dakota business, Chairman Bollingberg adjourned the nonconfidential portion of the meeting at 10:40 a.m.

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Sara Schumacher, Executive Assistant