North Dakota
Oil & Gas Research Council

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Bakken “Core” Inventory Map from 2000

In the year 2000...
“Core” Bakken Inventory: 0
“Core” Three Forks Inventory: 0
Years of “Core” Drilling Remaining: 0

What is now proved was once only imagined – William Blake
The “Core” is Expanding…
In Two Years...

- ~1,800+ Square miles of new $60 Acreage in the Bakken
- ~1,200+ Square miles of new $60 Acreage in the Three Forks
- 7,000+ new $60 well locations added in two years
- Only ~1,265 wells completed in the last two years...
Remaining Drilling Inventory (Bakken/Three Forks)

~$60+ Range
~$80 Range

*Assumes 1,280ac Spacing Units
Years of Inventory at 1,100 Wells/Year

~$80 Range
~$60+ Range

*Assumes 1,280ac Spacing Units
Drilling Assumptions – Laterals Per Formation

[Bar chart showing laterals per formation and production zone]
In the Bakken, both fourth quarter and full year 2021 net production were in line with our guidance, averaging 159 thousand and 156 thousand barrels of oil equivalent per day respectively.

We have a robust inventory of approximately 2,100 drilling locations in the Bakken that can generate attractive returns at $60 WTI, representing approximately 70 rig years of activity. In 2022, we plan to operate three rigs and expect to drill approximately 90 gross operated wells and bring approximately 85 new wells online. In the first quarter of 2022, we plan to drill approximately 22 wells and bring 10 new wells online. For the balance of the year, we expect to bring online an average of 25 wells per quarter.

In 2021, our drilling and completion cost per Bakken well averaged $5.8 million, which was $400,000 or 6 percent lower than 2020. In 2022, we expect to fully offset anticipated inflation through lean manufacturing and technology driven efficiency gains, and therefore D&C costs are expected to be flat with last year at approximately $5.8 million per well.

For the full year 2022, we forecast Bakken net production to average between 165 thousand and 170 thousand barrels of oil equivalent per day, a 6 to 9 percent increase over 2021. First quarter net production is forecast to average between 155 thousand and 160 thousand barrels of oil equivalent per day.

Beginning in the second quarter we expect to benefit from the addition of the third rig, which we added last September, and improving weather conditions. Net Bakken production is forecast to steadily ramp over the course of 2022 and to average between 175 thousand and 180 thousand barrels of oil equivalent per day in the fourth quarter.
Clear Priorities for Capital Allocation

Percentage of CFO framework provides shareholders first call on cash flow

**Significant Price Support**
- Return at least 40% of CFO to equity investors; >$1B of capital return annually
- Retire future debt at maturity
- Production growth cap of 5% underscores commitment to discipline and sustainable FCF

**Modest Price Support**
- Return at least 30% of CFO to equity investors; >$600MM of capital return annually
- Retire future debt at maturity
- Production growth cap of 5% underscores commitment to discipline and sustainable FCF

**Conservative Planning Basis**
- Reinvestment rate of ~70% or less at $45/bbl+ WTI
- Return at least 30% of CFO to equity investors at $45/bbl+ WTI and retire future debt at maturity
- Maintain sub 1.5x net debt to EBITDAX assuming this price environment
- Competitive and sustainable base dividend (~10% of CFO assuming this price environment)

**Lower Price Environment**
- Corporate FCF breakeven below $35/bbl WTI solidifies resilience
- Competitive and sustainable base dividend
North Dakota Drilling – 34 Active Rigs (Feb. 18, 2022)
Drilling Rig Breakdown
North Dakota Drilling Rig Efficiency

Drilling Rigs & Spuds

Spuds Per Rig Per Month

EIA Oil Price Outlook

EIA (EIA Forecast)

February 2022
Well Completion Forecast at EIA Price Deck
Yearly Production Change, %

- Base Case Yearly Production Change, %
- Low Case Yearly Production Change, %
- High Case Yearly Production Change, %

NDPA Forecast

Gas
Oil
Yearly Production Change, %

Gas
Oil

Base Case Yearly Production Change, %

Low Case Yearly Production Change, %

High Case Yearly Production Change, %
Williston Basin Oil Production & Export Capacity, BOPD

Barrels Per Day

- Rail Capacity (Capped at 850,000 BPD)
- PROPOSED - Dakota Access Expansion (Up to 350,000 BPD)
- PROPOSED - South Bend Pipeline (175,000 BPD)
- PROPOSED - Davis Refinery (49,500 BPD)
- Existing Pipelines/Refining
- Low (EIA Price -$10/bbl & 75% Activity Level)
- High (EIA Oil Price & 90% Pre-COVID Activity Relationship)
- Base (EIA Oil Price & 75% Activity Level)
Major Residue Gas Pipeline Infrastructure
Natural Gas Update

Production
- Technology
- Markets

Gathering
- Capacity
- Connections

Processing
- Capacity
- Location

Transmission
- Dry Gas
- Natural Gas Liquids
Where Did We(I) Go Wrong on Gas Forecasting?
ND Gas Production: EIA Price Deck

- Base (EIA Oil Price & 75% Activity Level)
- High (EIA Oil Price & 90% Pre-COVID Activity)
- Low (EIA Price -$10/bbl & 75% Activity Level)
ND Gas Production: GOR Assumption
Statewide Bakken Gas/Oil Ratios

Prod. Month

For wells producing at least 1 bpod
Terminal Gas Decline?

Base Decline

Number of Wells

BoD

M\&D

IP Year

2021
2020
2019
2018
2017
2016
2015
2014
2013
2012
2011
2010
2009
2008
2007
2006

Statewide Bakken Gas/Oil Ratios

New Parent Well - Original Reservoir Pressure

Future – Entire Reservoir Below Bubble Point

High Reservoir Pressure

Bubble Point Pressure

Low Reservoir Pressure
New GOR Research Released: July 2021

Bakken Unconventional Well Gas-Oil Ratio (GOR) Behavior Characterization


URTeC: 5358

Old completion well GOR forecast

GOR prediction

GOR (scf/b)

Less aggressive drawdown scenario

GOR prediction

GOR (scf/b)

More aggressive drawdown scenario
Gas-Oil Ratio Update

Prod. Month

GOR (MCF/BBL)

Number of Wells

IP Year
- 2021
- 2020
- 2019
- 2018
- 2017
- 2016
- 2015
- 2014
- 2013
ND Gas Production: EIA Price Deck

- Base (EIA Oil Price & 75% Activity Level)
- High (EIA Oil Price & 90% Pre-COVID Activity)
- Low (EIA Price -$10/bbl & 75% Activity Level)

- NDPA Forecast

Natural Gas Production, MMCFD

2007  2012  2017  2022  2027  2032  2037  2042  2047
Natural Gas Update

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Solving the Flaring Challenge

- Flaring % From Wells Connected to Sales
- Flaring % From Wells Not Connected to Sales
- Total ND Gas Production

Graph showing Total ND Gas Flaring Percent (Color Indicates Reason) and ND Gas Production, MMCFD.
Shifting Early Production Strategies
Public/Private Flaring is Shifting
Natural Gas Update

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Solving the Flaring Challenge

Legend:
- Planned Plant Capacity
- Existing Plant Capacity
- Historical Sold, MMCFD
- Historical Flared, MMCFD
- High (EIA Oil Price & 90% Pre-COVID Activity)
- Low (EIA Price -$10/bbl & 75% Activity)
- Base (EIA Oil Price & 75% Activity Level)
- Targets Base Case (Sold)
- Targets Base Case (Flared)
Natural Gas Update

Production
- Technology
- Markets

Gathering
- Capacity
- Connections

Processing
- Capacity
- Location

Transmission
- Dry Gas
- Natural Gas Liquids
Bakken Natural Gas Infrastructure
Northern Border Pipeline

*Data Source: Northern Border*
Northern Border Pipeline Market Share

- Canadian Market Share
- Williston Basin Market Share

NDPA Calculations Using Northern Border Data
Northern Border BTU at Glen Ullin, ND
Northern Border – BTU Calculations*

- Base Case: Ethane Capture - NB Net 1,100 BTU - ~80 mbpd C2 Capture Required
- Low Case: Ethane Capture - NB Net 1,100 BTU - ~80 mbpd C2 Capture Required

*Includes Proposed 2020 Tariff Timeline to 1,100
Gas Transmission Expected to Limit Oil Production

- ND Gas Capped 4.475 BCFGD (250 MMCFGD Residue Solution)
- ND Gas Capped 4.1 BCFGD (Current Capacity)
- GOR

Slide from 2021 Special Legislative Session

NDPA Base Forecast
Gas Transmission Expected to Limit Oil Production

- Oil Production: Gas Capped at 4.475 BCFD
- Oil Production: Gas Capped at 4.1 BCFD
- Incremental Oil With 250MMCFD Residue Solution

Slide from 2021 Special Legislative Session
Incremental Oil & Gas Taxes*: 250 MMCFD Residue Gas Solution

Slide from 2021 Special Legislative Session
Incremental Oil & Gas Taxes*: 250 MMCFD Residue Gas Solution

*NDPA Calculation at $65 Wellhead Oil
The Industrial Commission was directed by the Sixty-seventh Legislative Assembly of North Dakota to establish a natural gas pipeline grant program to allow for the transportation of natural gas for utilization in eastern North Dakota thereby expanding the North Dakota economy, increasing employment, stimulating economic activity, augmenting sources of tax revenue, and fostering economic stability.
Legislative Appropriation:
Senate Bill 2345 Section 1, subsection 1

There is appropriated from federal funds derived from the state fiscal recovery fund, not otherwise appropriated, the sum of $150,000,000, or so much of the sum as may be necessary, to the Industrial Commission for the purpose of pipeline infrastructure grants to allow for the transportation of natural gas to eastern North Dakota for the period beginning December 1, 2021 and ending June 30, 2023. Of the funds appropriated in this subsection, at least $10,000,000 must be used for a project to transport natural gas to areas in Grand Forks County.
Legislative Intent Statement:
Senate Bill 2345 Section 9

It is the intent of the Sixty-seventh Legislative Assembly that the Sixty-Eighth Legislative Assembly consider providing additional funding for continuing the development of high-pressure transmission pipeline infrastructure for the transportation and competitive selling of natural gas to eastern North Dakota.
Timeline for $10 Million: Grand Forks County

November 2021
Legislative Action

November 2021/December 2021
Guidelines Developed and Approved by Industrial Commission

March 2022
Application Deadline of March 1st
Grant Review Committee Meets

April 2022
Grant Review Committee makes recommendation by April 15. Industrial Commission considers funding at April 26th meeting.

No later than August 26, 2022
Awardee must verify sufficient shipper commitments and final investment decision prior to contract.

March 1, 2023
Awardee must show that project will be completed by December 30, 2026 or State funding is withdrawn, and funds reappropriated.
Timeline for $140 Million

- November 2021
  Legislative Action

- November 2021/December 2021
  Guidelines Developed and Approved by Industrial Commission

- May 2022
  Application Deadline of May 1st
  Grant Review Committee Meets

- June 2022
  Grant Review Committee makes recommendation by June 15. Industrial Commission considers funding at June 29th meeting.

- No later than November 29, 2022
  Awardee must verify sufficient shipper commitments and final investment decision prior to contract.

- March 1, 2023
  Awardee must show that funds will be expended by December 30, 2026 or State funding is withdrawn and funds reappropriated.
Application Review Committee

- Pipeline Authority Director (Chair)
- Oil & Gas Division Director
- Bank of ND President (or designee)
- Commerce Commissioner
- Clean Sustainable Energy Authority Director
NGP – 1.02 Definitions

1. “Commission” means the North Dakota Industrial Commission.

2. "Natural gas” means residue natural gas for end use consumption.

3. “Natural Gas Pipeline Grant Program” or “NGP Program “means a grant program to expand the North Dakota economy by facilitating the development of pipeline facilities to support the transportation of natural gas for utilization in eastern North Dakota, thereby increasing employment, stimulating economic activity, augmenting sources of tax revenue, fostering economic stability, and improving the state's economy.

4. “Natural Gas Pipeline Grant Review Committee” or “Review Committee” means the Department of Mineral Resources Director, Pipeline Authority Director, Bank of North Dakota President or his designee, Clean Sustainable Energy Authority Director, Department of Commerce Commissioner. The Pipeline Authority Director shall serve as Chair of the Review Committee.

5. "Pipeline facilities" means pipelines, pumps, compressors, storage, and all other facilities, structures, and properties incidental and necessary or useful in the interconnection of high-pressure pipelines or the transportation of natural gas commodities to points of transfer located within and outside the state. “Pipeline facilities” do not include local distribution infrastructure.

6. “Transportation Rate Buy Down” means all grant funding shall be used exclusively for the purpose of offsetting project capital expenditures resulting in a lower natural gas transportation rate while not increasing the rate of return on equity for the recipient.
NGP – 2.02 Eligibility Criteria

1. Be recommended by the Natural Gas Pipeline Grant Review Committee.

2. Upon grant award approval, the recipient must demonstrate within five months that sufficient shipper commitments on the pipeline have been obtained.

3. Have a minimum 60% private sector funding.

4. Achieve the priorities and purposes of the NGP Program.

5. Operate as a common carrier pipeline.

6. Certify funds be used exclusively to lower or “buy down” the transport rate through a fixed return on equity basis.
NGP – 4.01 Application Evaluation – Criteria

- **Degree to which the application meets the Program objectives:**
  - Expanding the North Dakota economy by facilitating the development of pipeline facilities to support the transportation of natural gas for utilization in eastern North Dakota.
  - Increasing employment.
  - Stimulating economic activity.
  - Augmenting sources of tax revenue.
  - Fostering economic stability.

- **Priority will be given to applications that:**
  - Clearly define how grant funds will lower or “buy down” the transport rate through a fixed return on equity basis.
  - Have a higher proposed match ratio.
  - Have a higher level of potential customer support.
Review Committee Scoring Form

Name: _______________ Application Number: _______________

Natural Gas Pipelines Grant Program

Review Committee Scoring Form

1. How well does the proposed project meet the grant program objectives?
   - Limited: 1 2 3 4 5 Extremely Well

2. How well does the proposed project meet required timelines of producers, customers, and funding requirements?
   - Limited: 1 2 3 4 5 Extremely Well

3. Rate the ability of the applicant to execute on the proposed project timeline.
   - Limited: 1 2 3 4 5 Extremely Well

4. Rate the ability of the applicant to execute on the proposed project budget.
   - Limited: 1 2 3 4 5 Extremely Well

5. Rate the experience level of the applicant’s project management team.
   - Limited: 1 2 3 4 5 Significant

6. The level of applicant’s matching funds.
   - Limited: 2 4 6 8 10 Significant

7. The short-term and long-term benefits to the State, including the diversification and growth of the State’s economy.
   - Limited: 1 2 3 4 5 Significant

8. The short-term and long-term benefits to the oil and natural gas producing sector of the State’s economy.
   - Significant

9. Rate the level of industry and customer support for the proposed project.
   - Significant

10. Rate the applicant’s approach to use matching funds to lower the project’s transportation fees through a fixed return on equity model.
    - Significant

Total Points Awarded = __________ [Maximum 65]

Recommenation: Consider Funding

Mark Selection/Score

- Consider Funding w/Conditions
- Consider Funding

This is a public document.
Marketplace is Expected to Naturally Narrow Applicants

Multiple Companies Approaching Potential Customers

Company A

Company B

Company C

Preliminary Market Discussions

Applicants to NGPGP
Company Revenue* and Grant Contribution

*Assumes Fixed Return on Equity
Grant Contribution Vs. Transport Fee

- **Rate Too High**
  - Necessary Shippers, End Users, and Pipeline Companies Look Elsewhere

- **Rate Lower Than Necessary**

$\text{Pipeline Fee}^*$

\[ X\% = \text{Fixed Return on Equity} \]

\[ X\% = \text{Fixed Return on Equity} \]

Sweet Spot

*Assumes Fixed Return on Equity*
WBI Energy Transmission, Inc.
Wahpeton Expansion Project
Sale of Firm Capacity
Commencing September 1, 2021

Binding Open Season

WBI Energy Transmission, Inc. announces a Binding Open Season for the sale of long term, firm natural gas transportation capacity to new delivery locations in southeastern North Dakota.

Length of Open Season

The Open Season will commence on September 1, 2021 and conclude at 4:00 PM Central Time on September 15, 2021. The Open Season is available to any party. All related Precedent Agreements must be executed no later than September 30, 2021, unless WBI Transmission agrees, in its sole discretion, to extend such deadline.

Bids

To properly respond to this Open Season, bidders must complete an Open Season Bid Sheet that includes the delivery location, quantity requested, length of term and desired rate (attached). Completed Open Season Bid Sheets can be e-mailed to mark.anderson@wbienergy.com or mailed (to ensure receipt by WBI Transmission prior to the end of the bid period) to WBI Energy Transmission, Inc., Market Services Department, P.O. Box 5601, Bismarck, ND 58506-5601.

Shippers have the option of requesting the Rate Schedule FT-1 project recourse rate or a mutually agreeable negotiated rate for the firm transportation capacity associated with this Open Season. The project recourse rate is estimated to be $1.53584 per dekatherm on a 100% load factor basis based on the current project cost estimate and a project design capacity of 20,600 dkl/d. It is estimated that the project recourse commodity rate will be equal to the maximum Rate Schedule FT-1 Commodity Rate as set forth in WBI Transmission’s Tariff, as such may be in effect from time to time.

The project recourse rate and negotiated rate options will be subject to all applicable surcharges, fuel use, lost and unaccounted for gas and electric power charges as set forth in WBI Transmission’s Tariff, as such may be in effect from time to time.

During this Open Season, both the contract term and rates are negotiable. It is projected that a minimum term of ten (10) years from commencement of service may be necessary to support the capital expenditures required to construct the facilities associated with the Project.
WBI Energy – North Bakken Expansion Project

Project Highlights
- ~60 Miles - 24” Pipeline
- ~30 Miles - 12” Pipeline
- $260+ Million
- Preliminary Capacity 250,000 MCFD
- Expandable to 600,000 MCFD
- Q4 2021 Proposed Completion
- Residue Gas Service From North of Lake Sakakawea to Northern Border Pipeline in McKenzie County
North Dakota Captured* NGL’s

*Non-flared NGL’s
ND Ethane Capture Driving Northern Border BTU Lower
Total Liquids Production (Oil & Non-flared NGL)

Base Case

Low Case

ND Oil & Non-Flared NGL, BPD

NDPA Forecast

Total Liquids (Oil & NGL)

NDPA Forecast
Hydrogen/Residue Gas Blending
Carbon Dioxide Pipeline Infrastructure

Dakota Gasification

Project Tundra (Concept)

Summit Carbon Solutions

Summit Carbon Solutions
Contact Information

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