

North Dakota Midstream Outlook



A Complete Natural Gas Solution



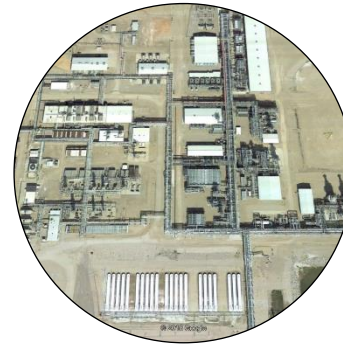
Production

- Technology
- Markets
- Forecasting



Gathering

- Capacity
- Connections
- Compression



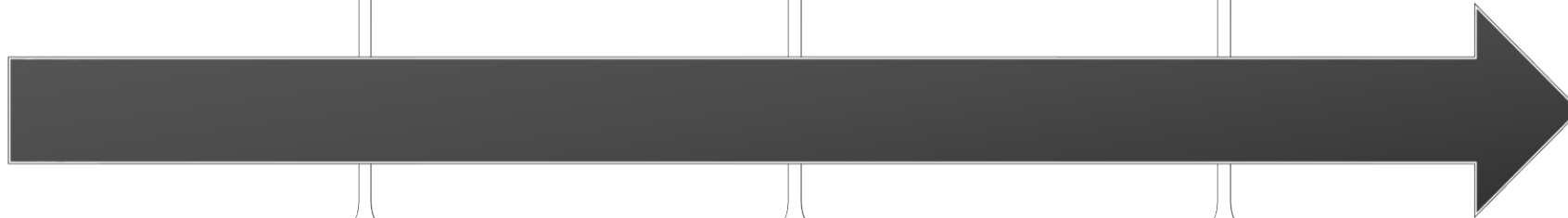
Processing

- Capacity
- Location
- Configuration

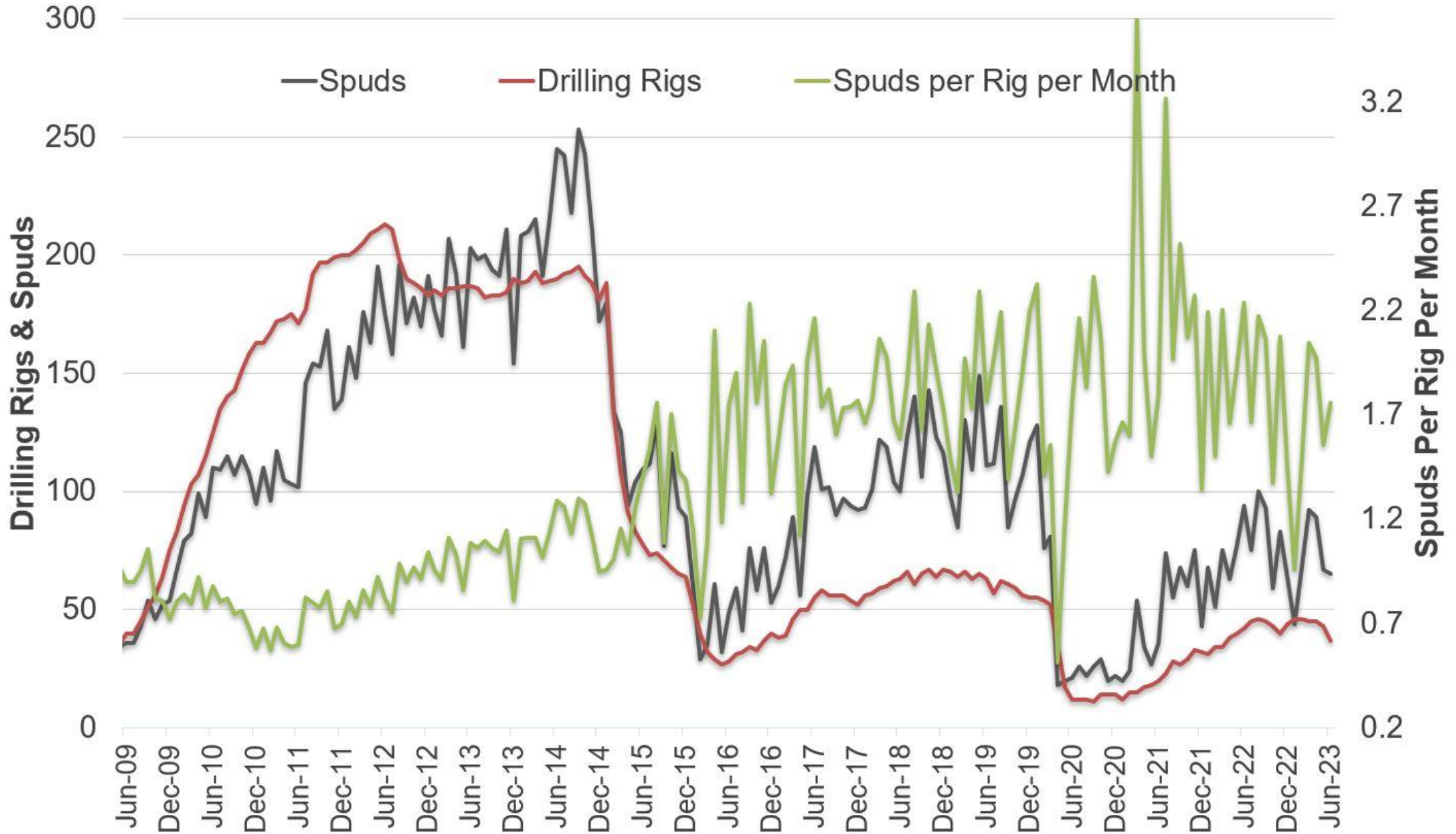


Transmission

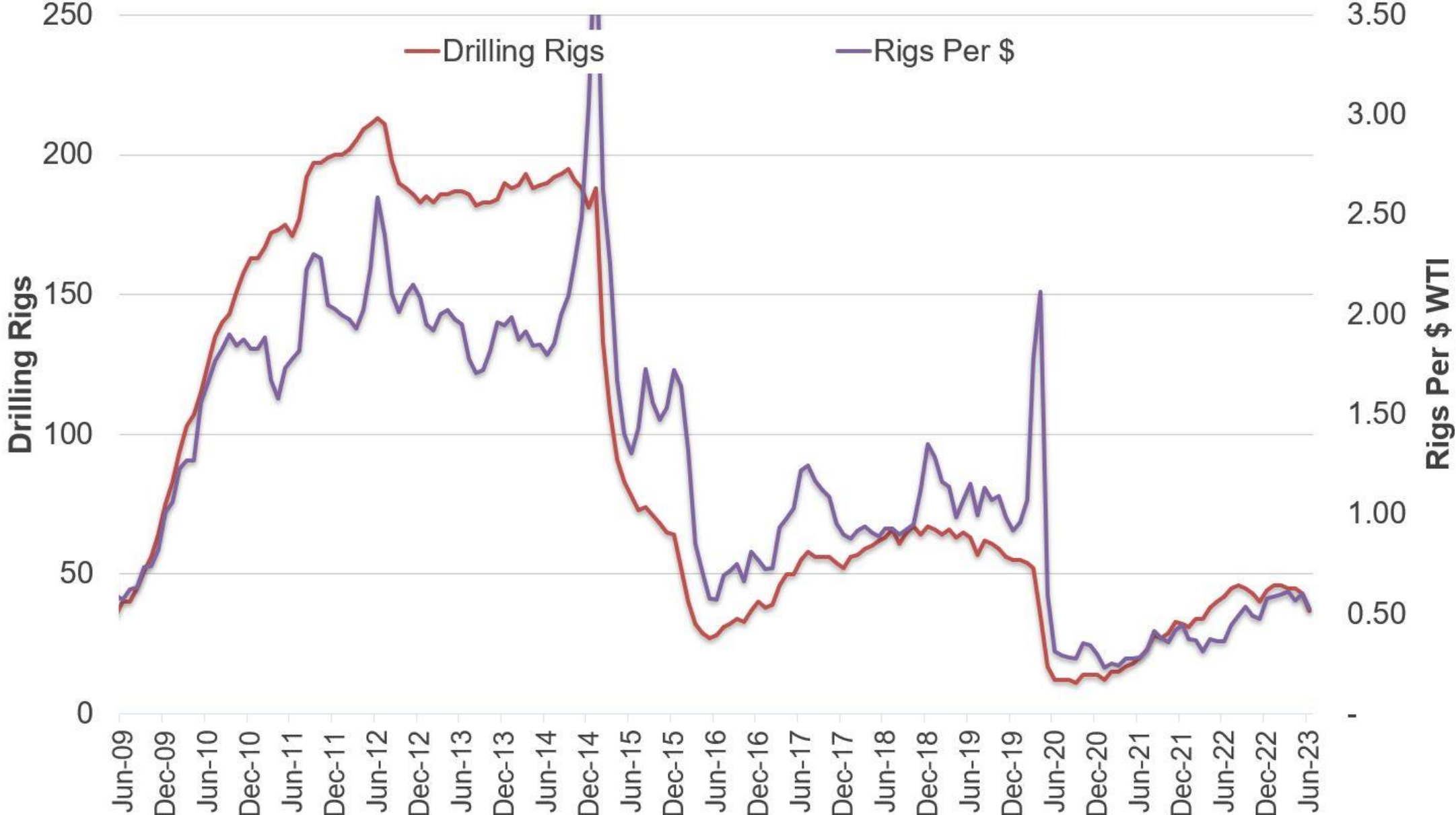
- Dry Gas
- Natural Gas Liquids



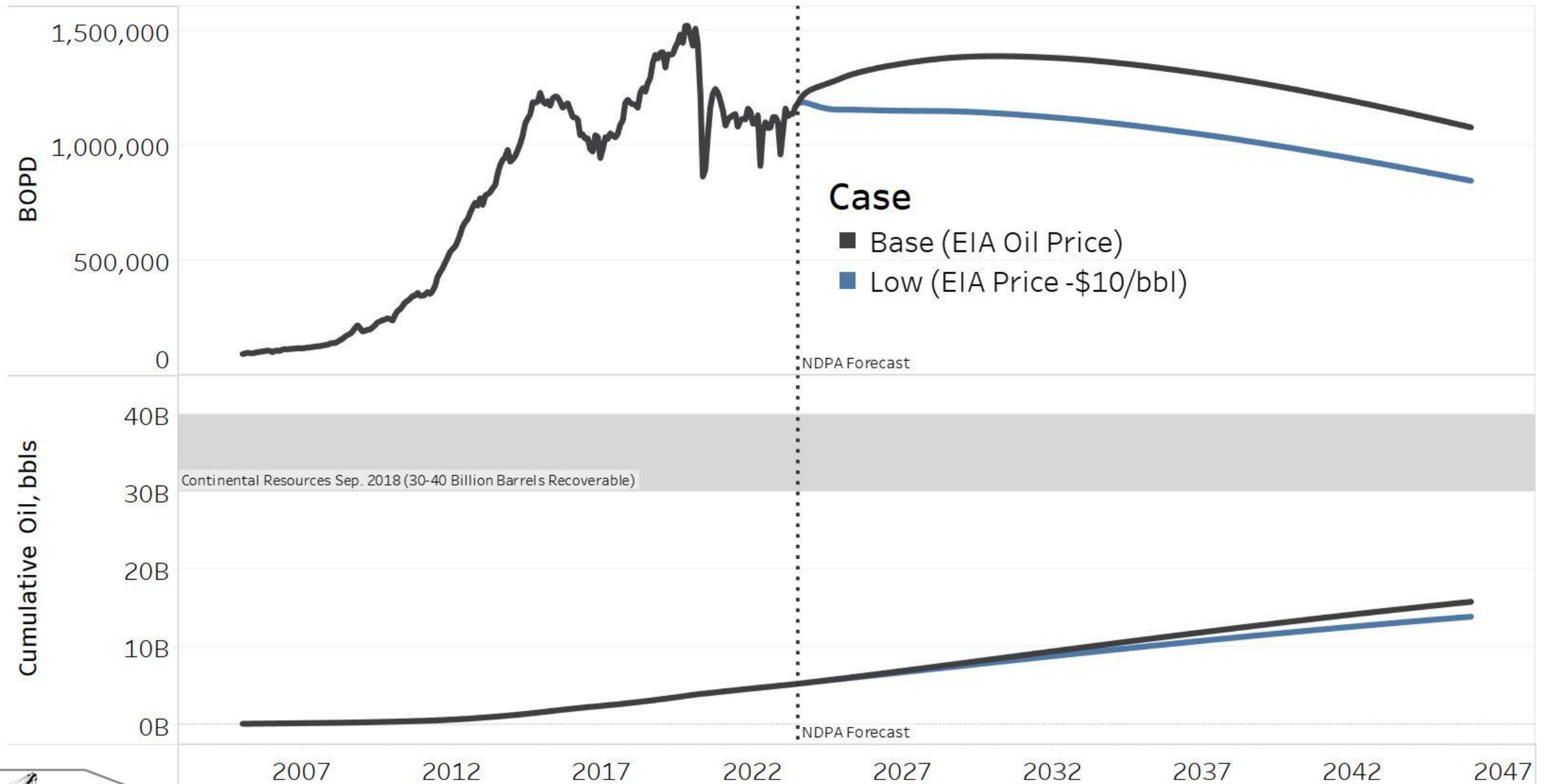
North Dakota Drilling Rig Efficiency



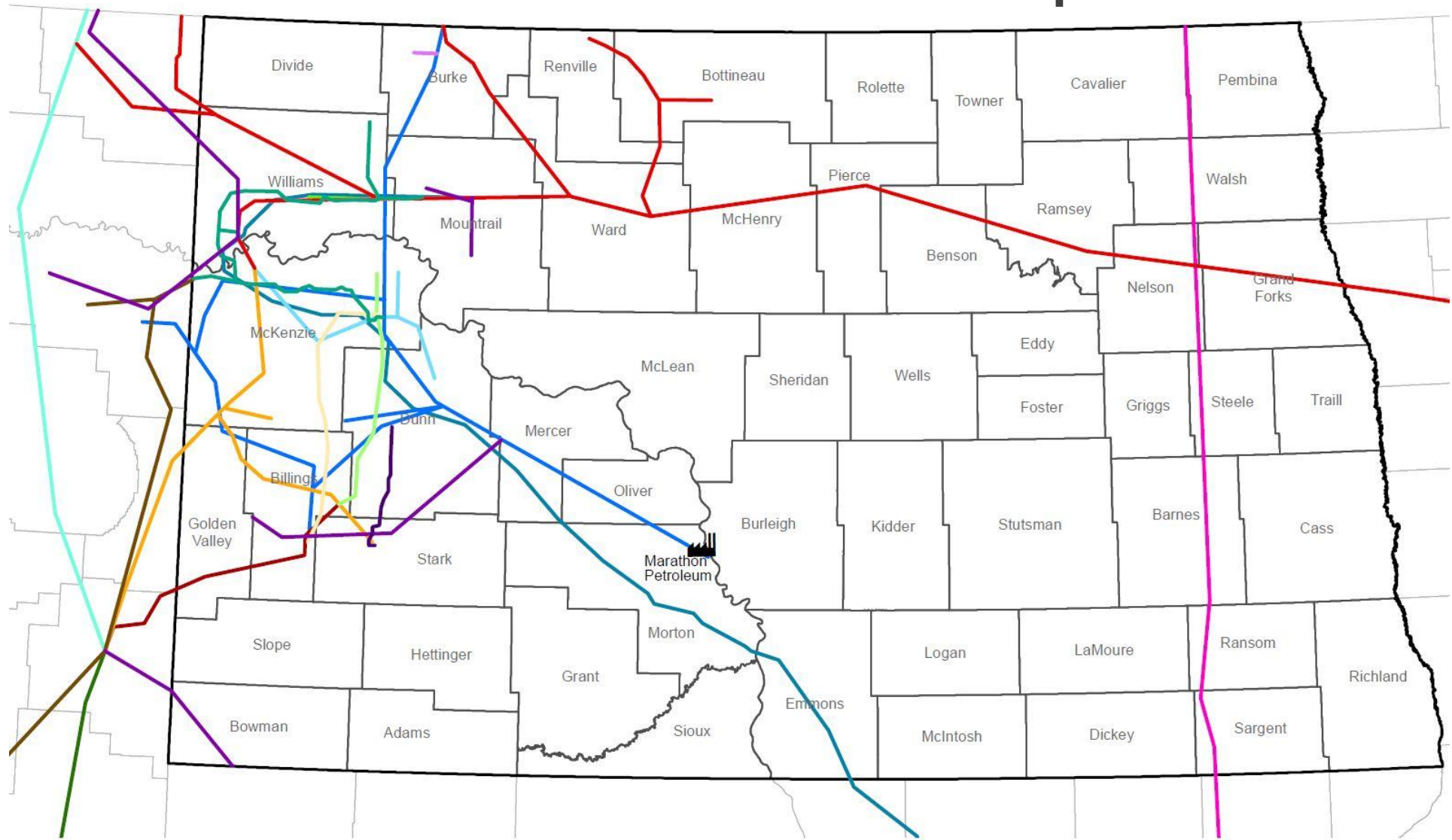
North Dakota Drilling Rig Relationship With Oil Price



ND Oil Production: EIA Price Deck



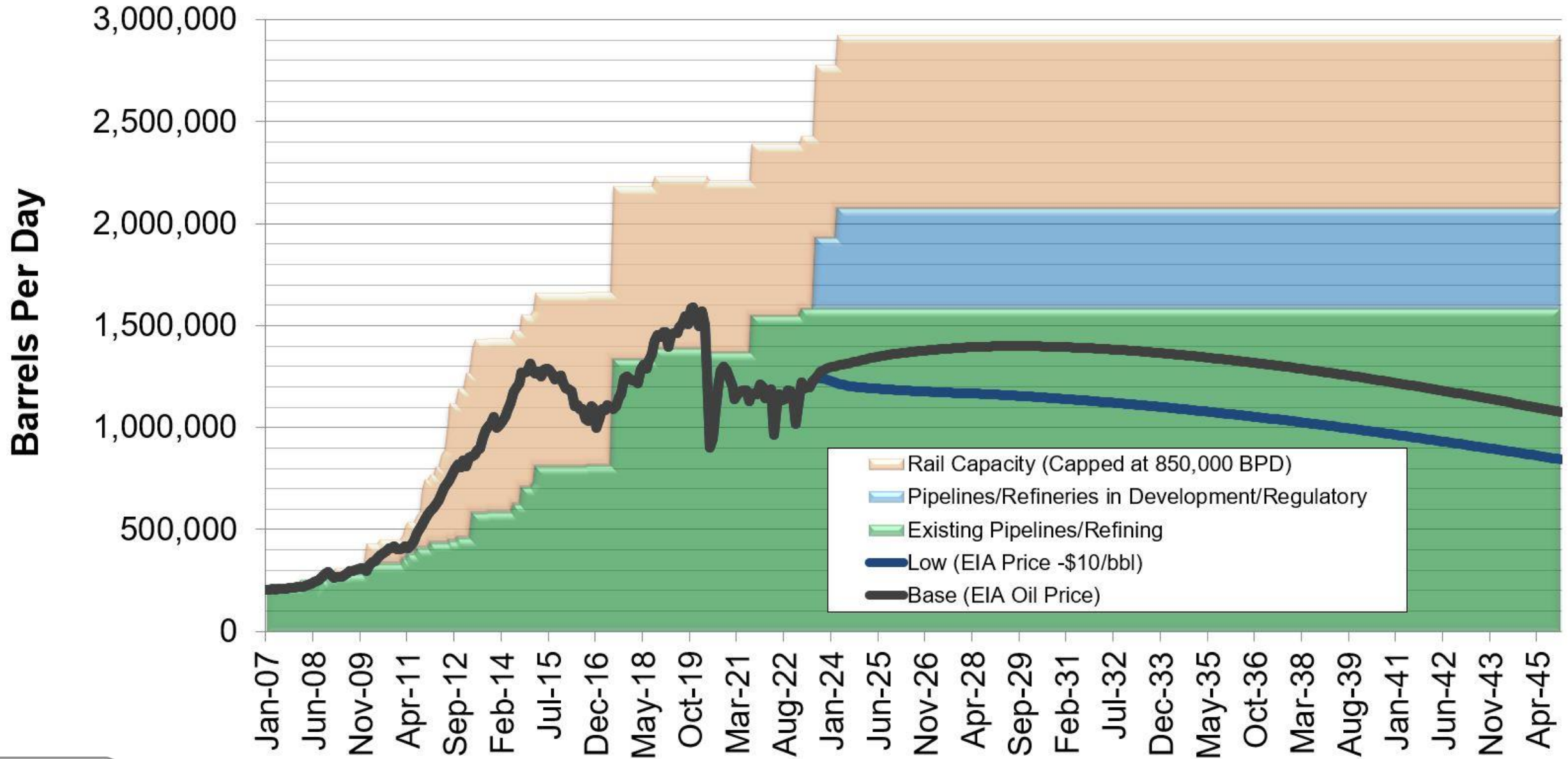
North Dakota Oil Transmission Pipelines



- | | | | | | |
|--------------------|-----------------|---------------|------------|-------------------|----------|
| Refinery | Basin Transload | Butte | Double H | Hiland | Bridger |
| Bakken Oil Express | Belle Fourche | Crestwood | Enbridge | Keystone Pipeline | Targa |
| BakkenLink | Bridger | Dakota Access | Four Bears | Little Missouri | Marathon |



Williston Basin Oil Production & Export Capacity, BOPD



Natural Gas Update



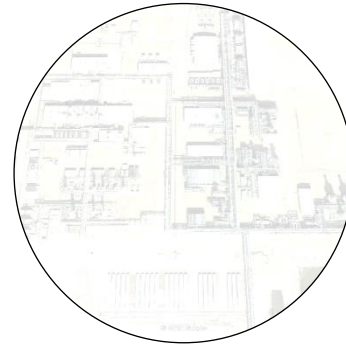
Production

- Technology
- Markets



Gathering

- Capacity
- Connections



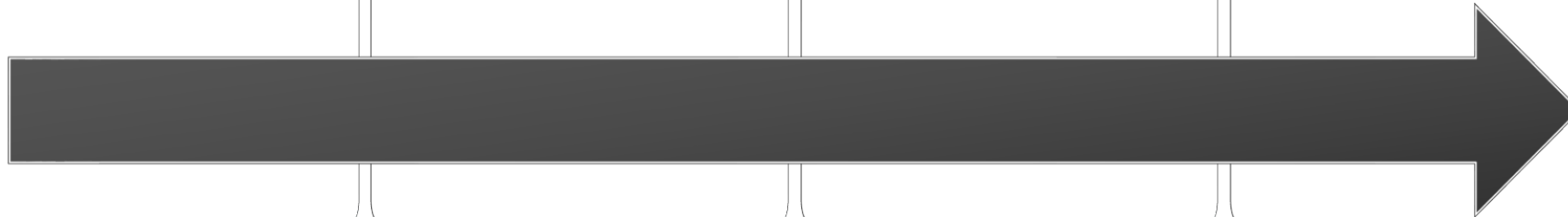
Processing

- Capacity
- Location

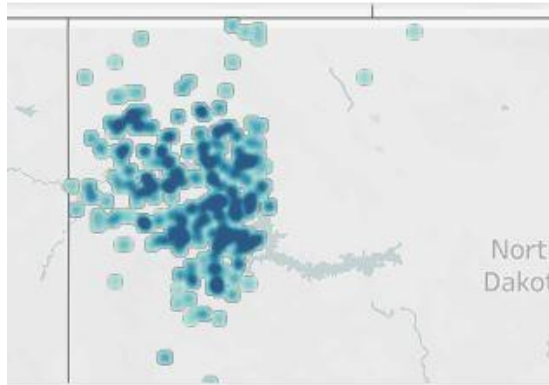


Transmission

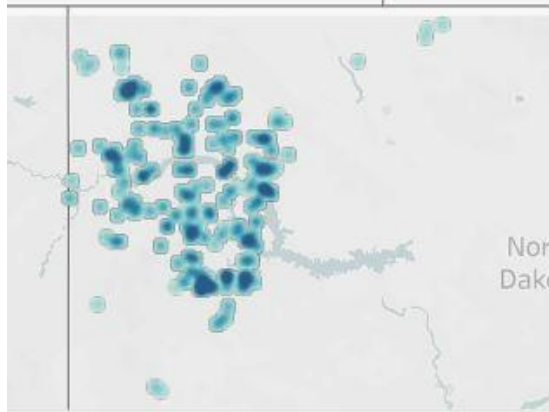
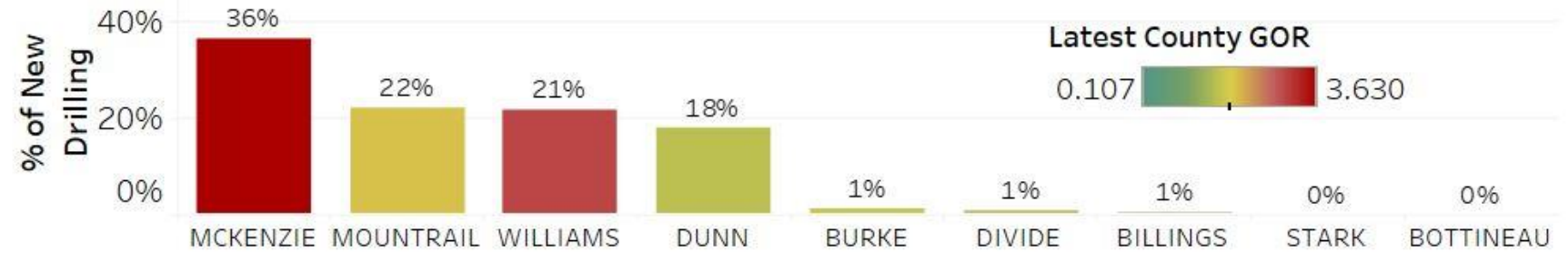
- Dry Gas
- Natural Gas Liquids



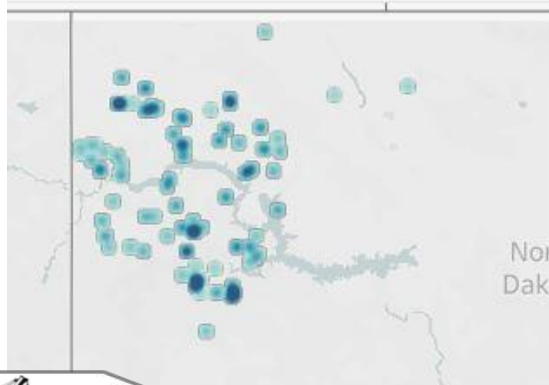
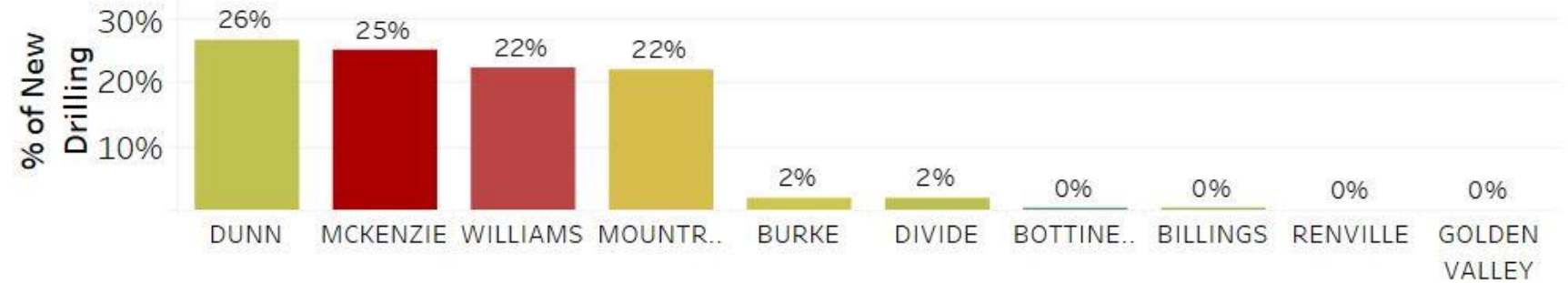
Near-term GOR Influenced by Drilling Location



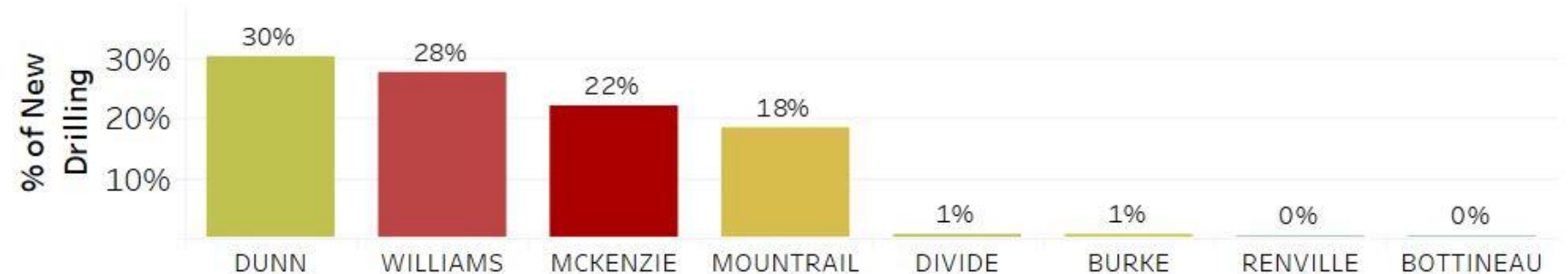
2019 Rig Location and County GOR



2022 Rig Location and County GOR

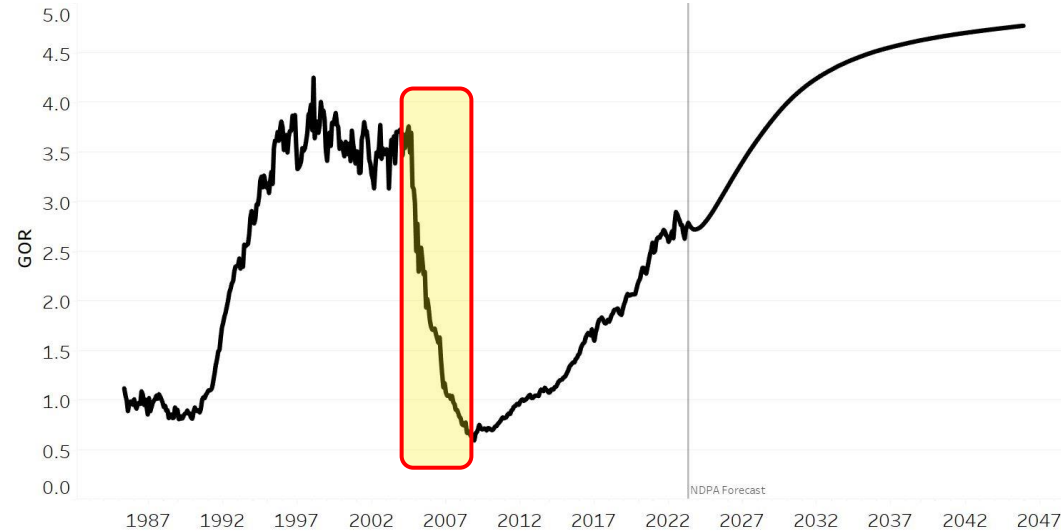
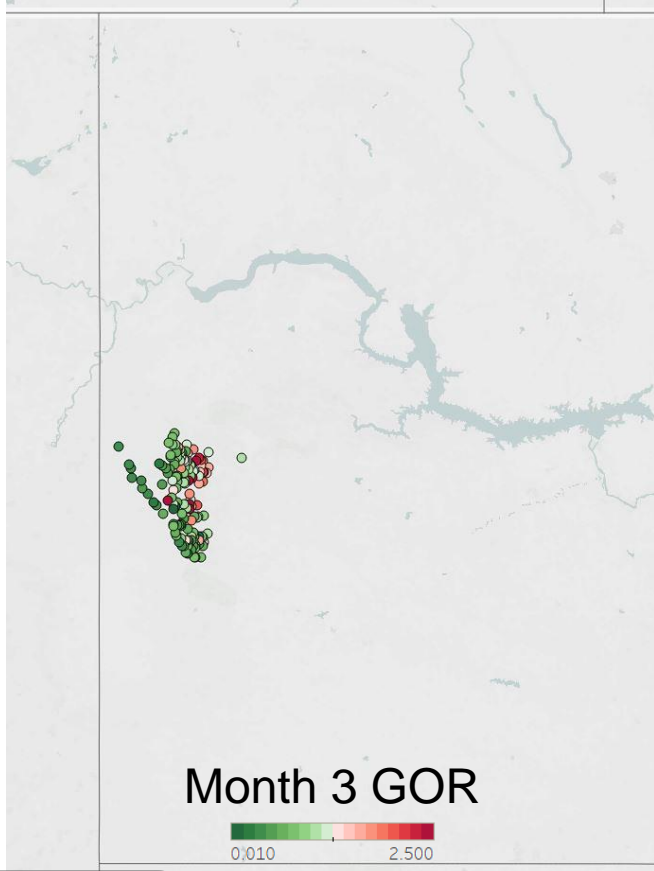


2023 (YTD) Rig Location and County GOR



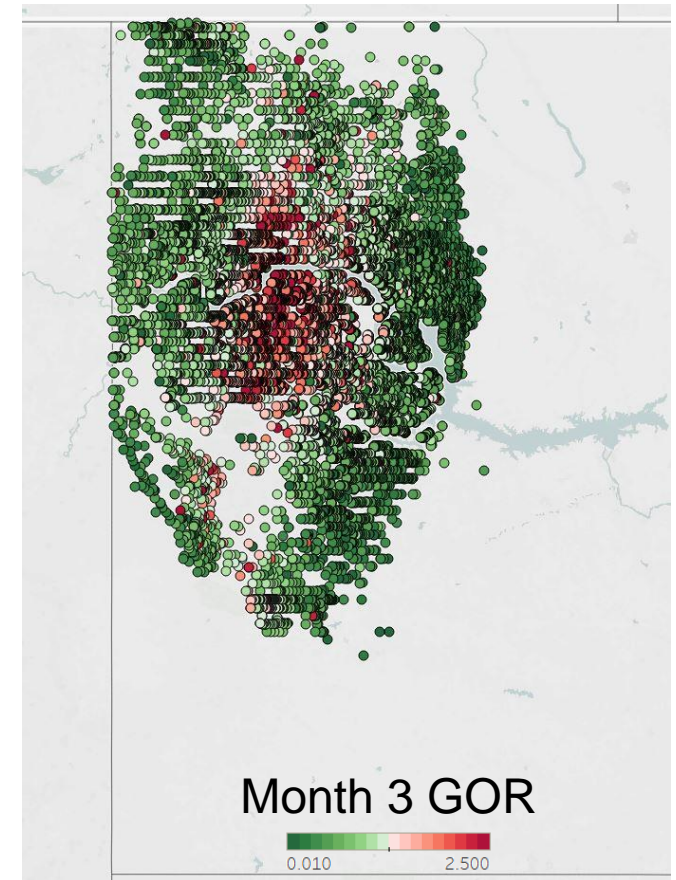
The GOR “Reset” and Forward Expectations

Bakken GOR settles around ~3.6 from 1990’s Bakken development in what is now considered “fringe” acreage

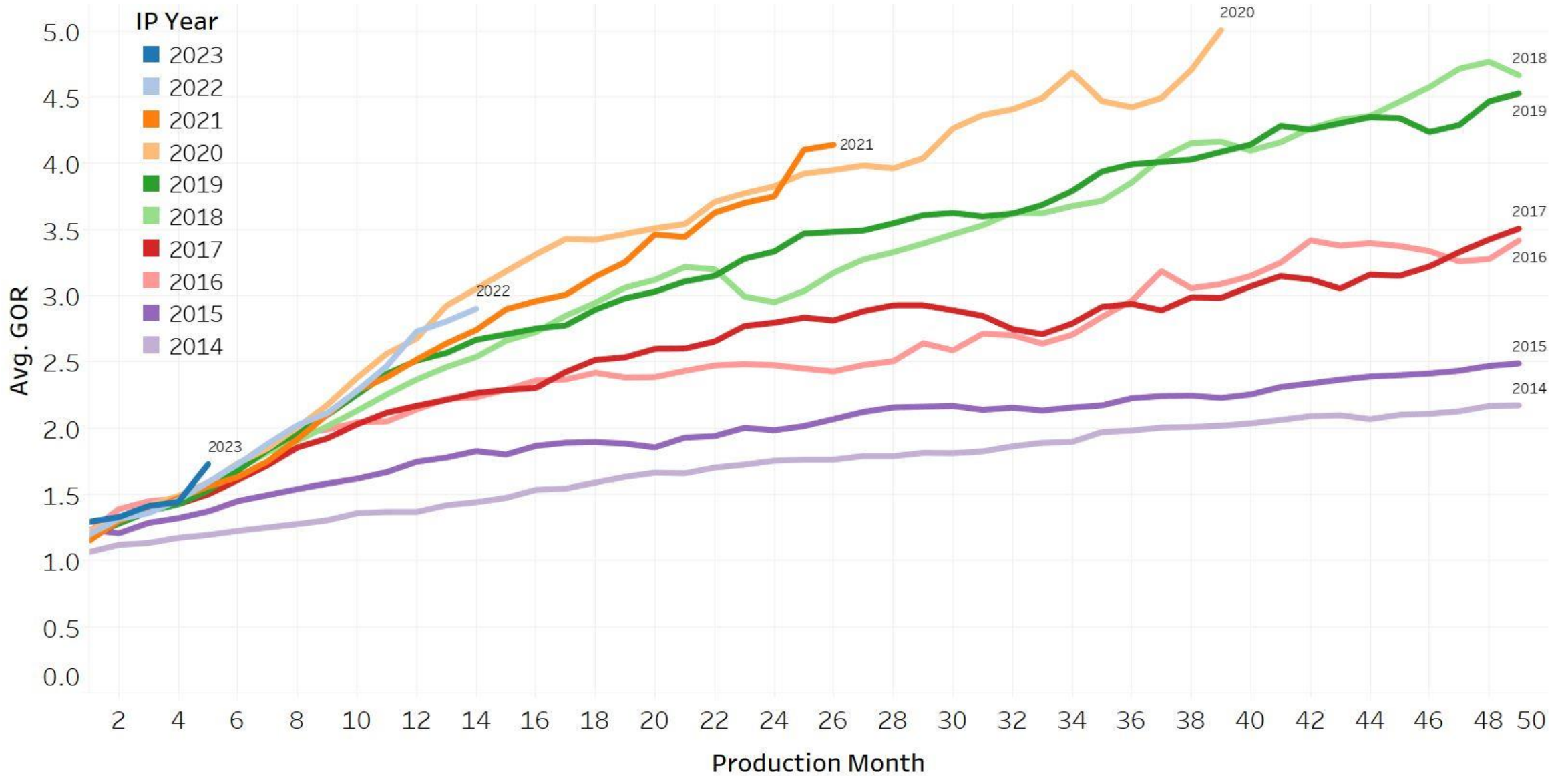


Mid-2000’s: Modern Bakken development begins and statewide average GOR is “reset” with large volumes of new gas production

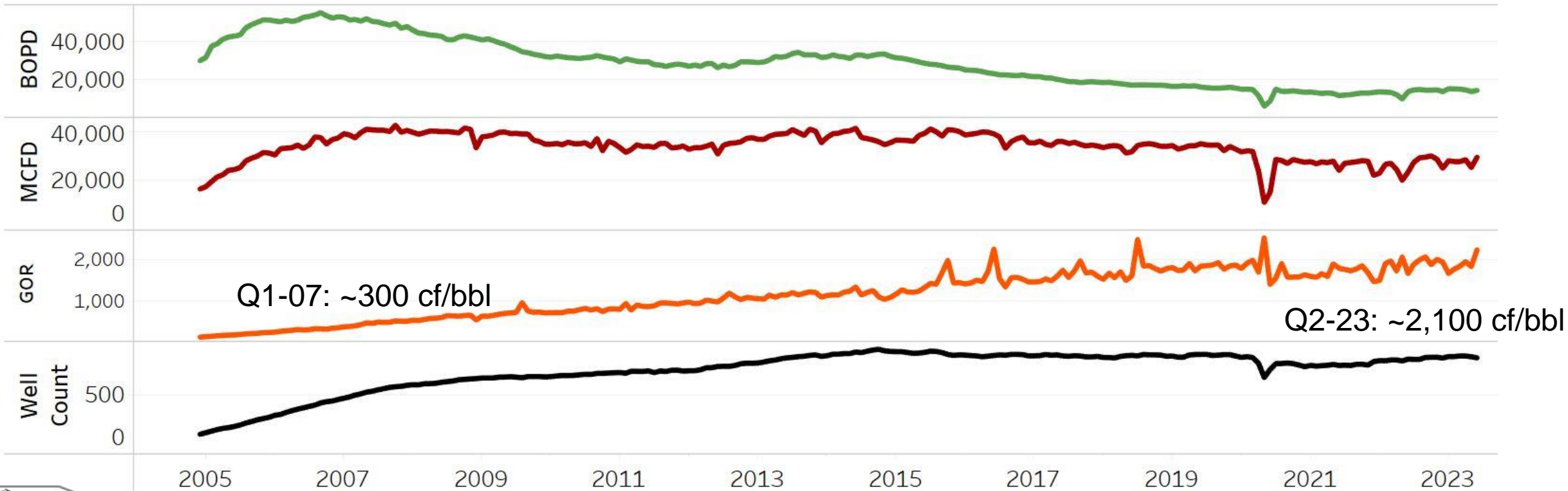
Future GOR will be driven by widespread development including deeper/hotter acreage with higher initial and sustained reservoir GOR



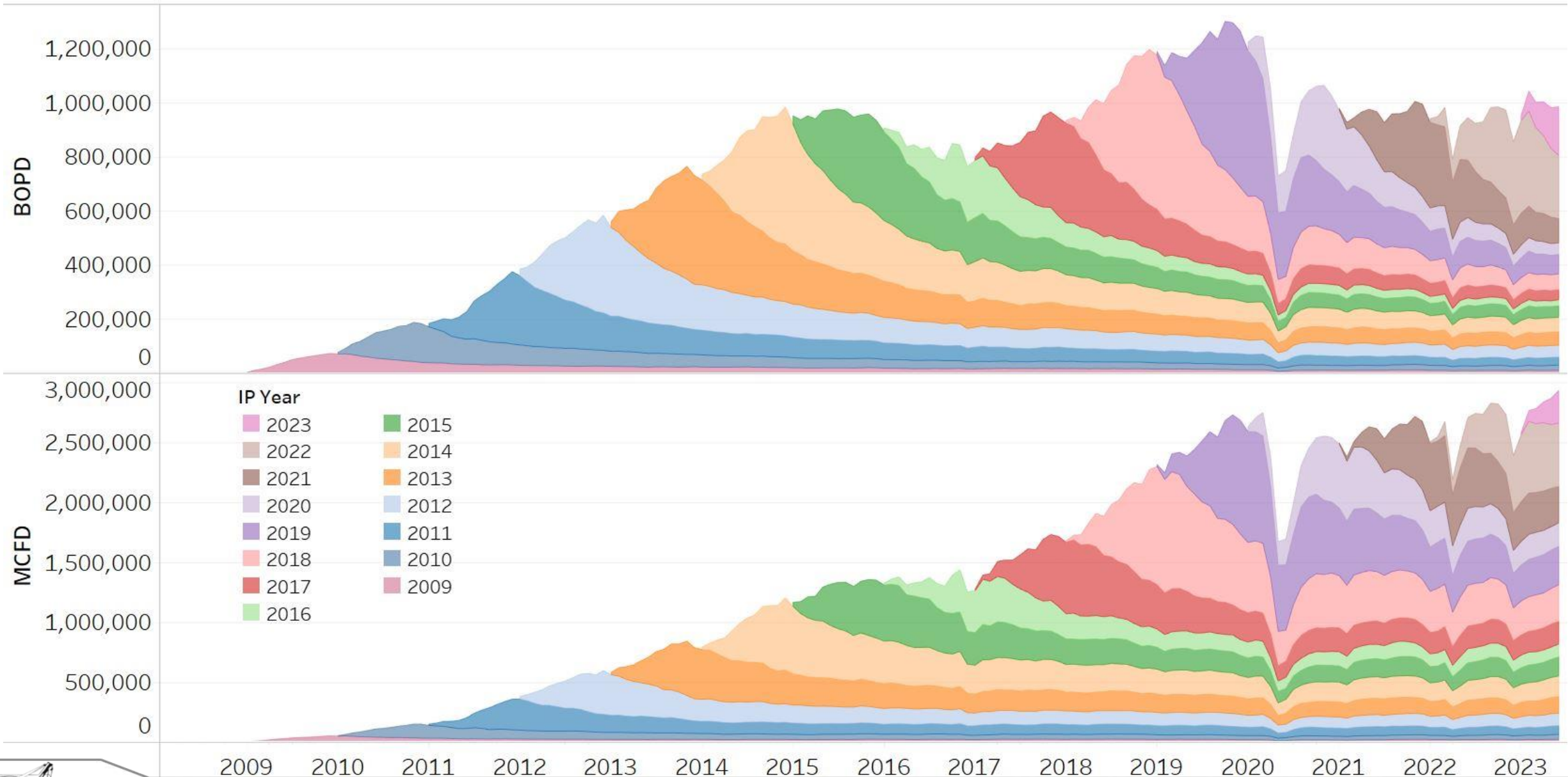
Statewide Bakken Gas/Oil Ratios



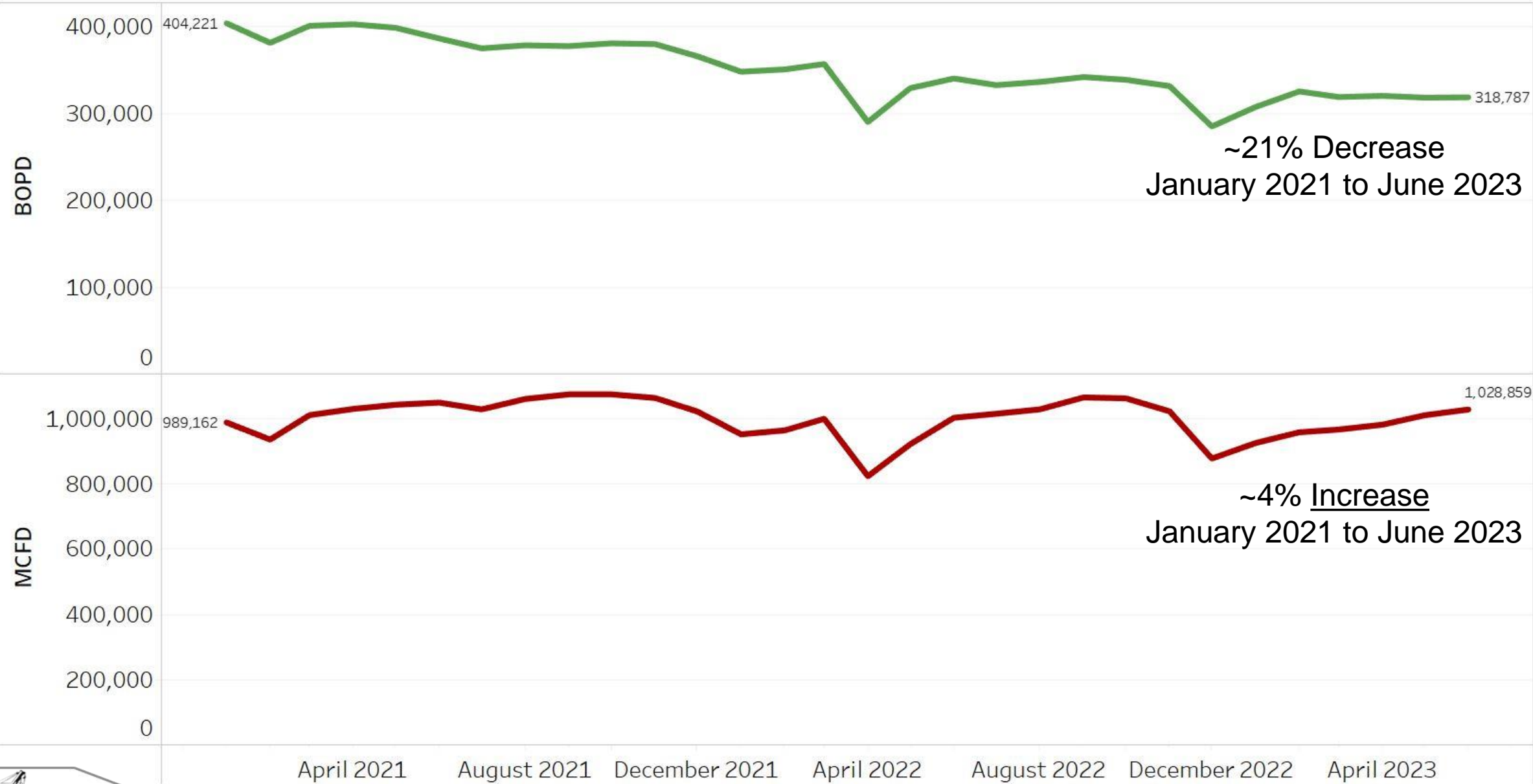
Montana Elm Coulee Gas/Oil Ratios



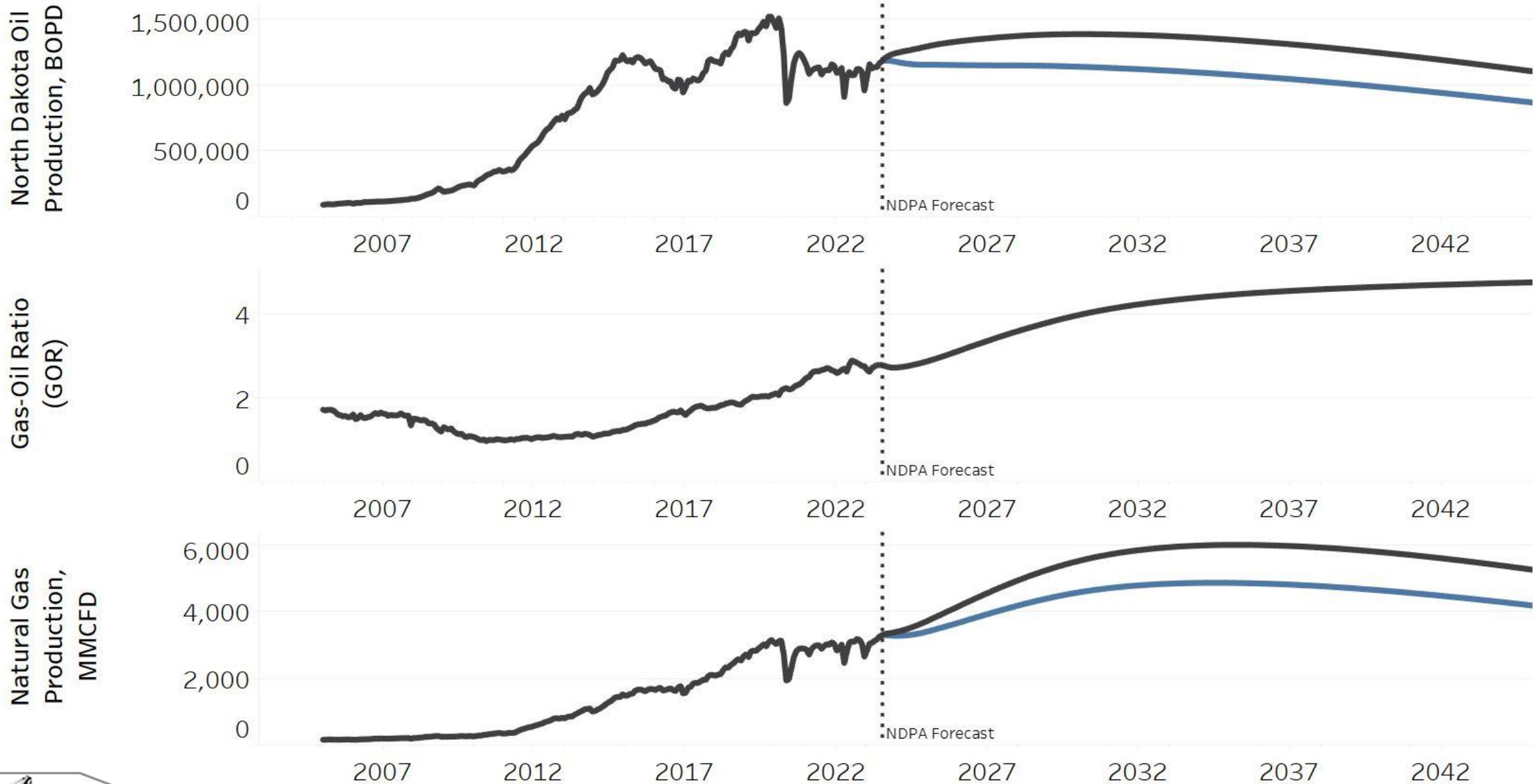
Base Decline By Well Vintage



Base Decline (Incline?): Wells 2017 & Older

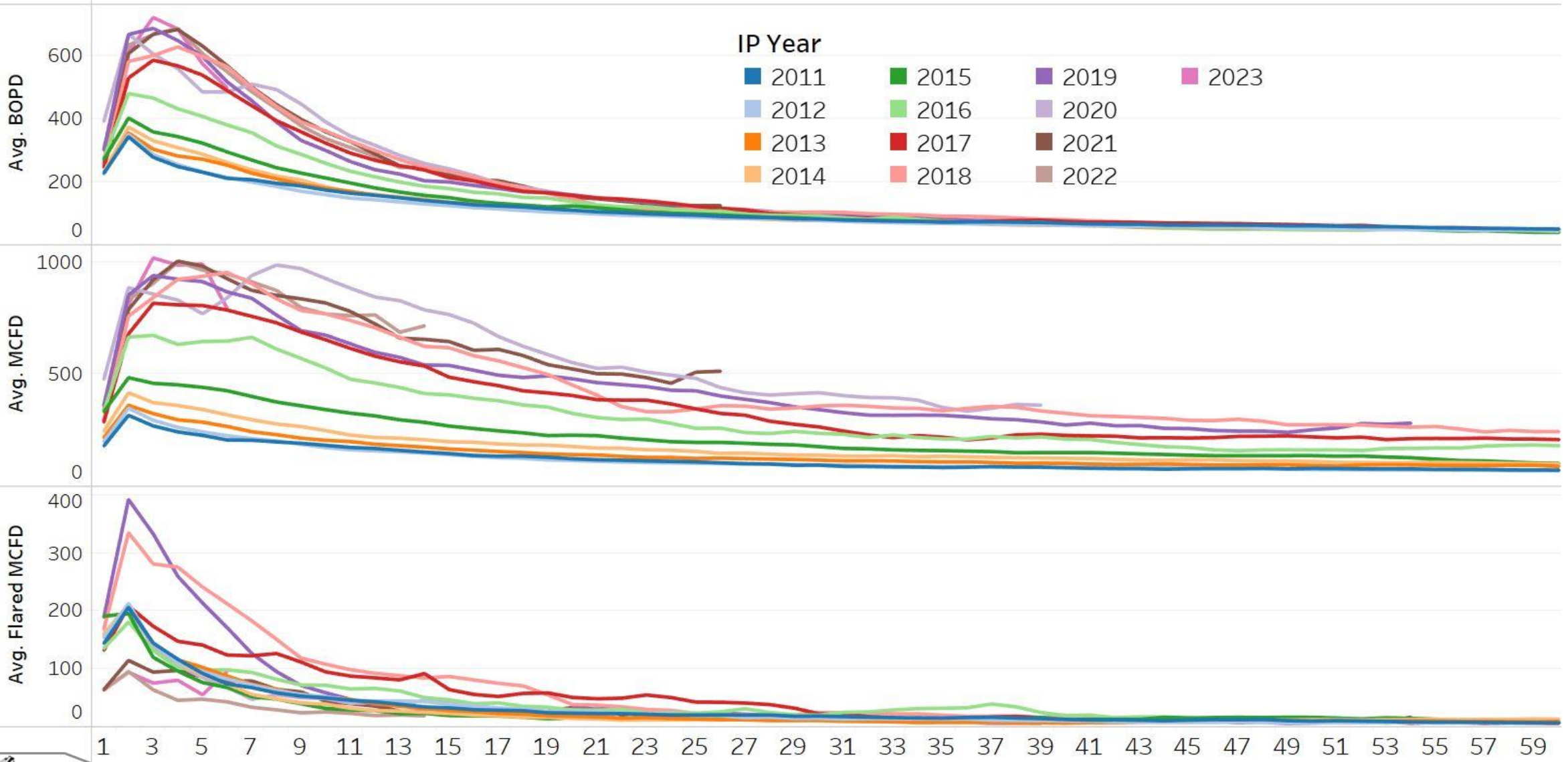


ND Production Forecast: EIA Price Deck

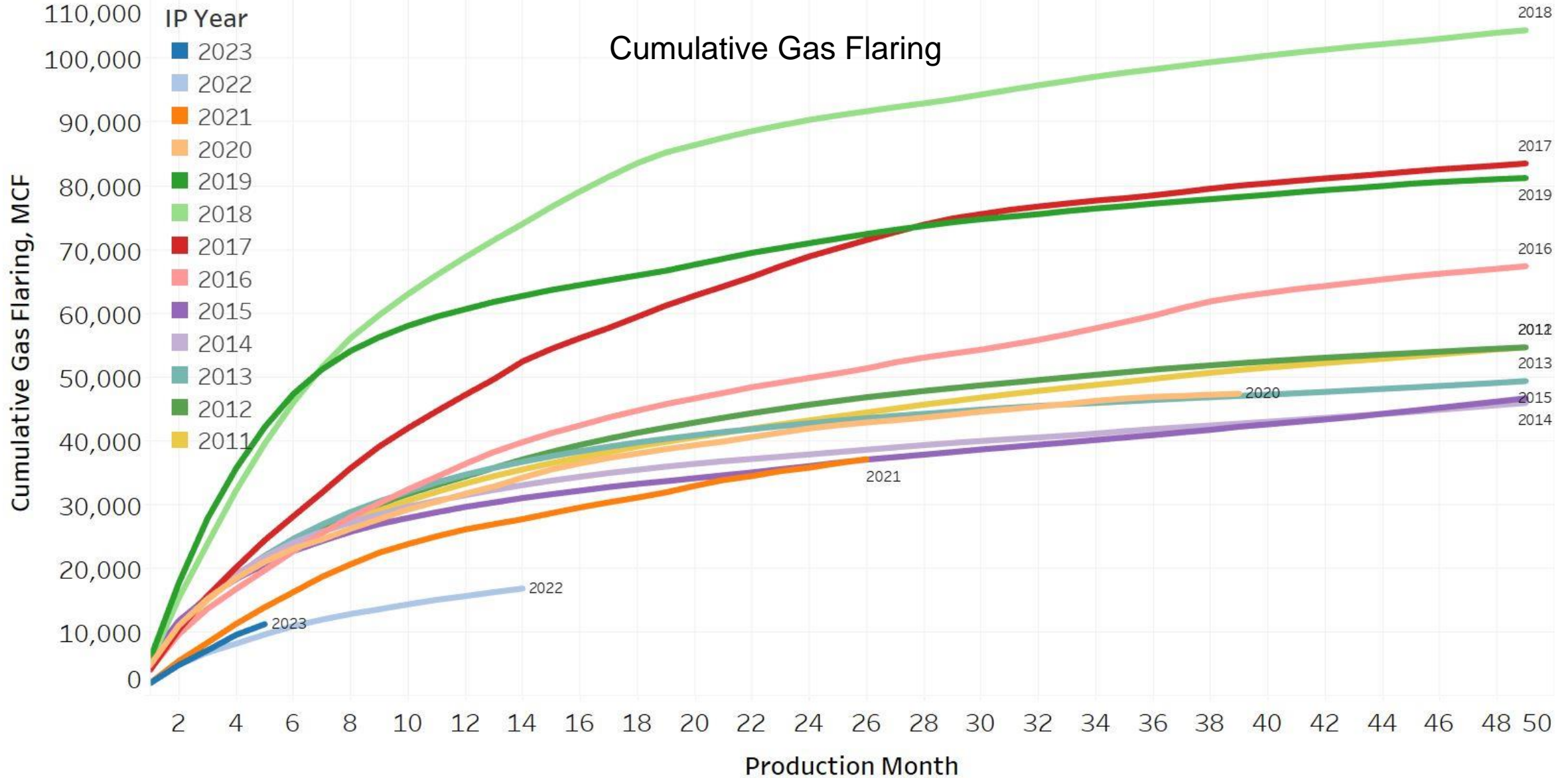


Shifting Early Production Strategies

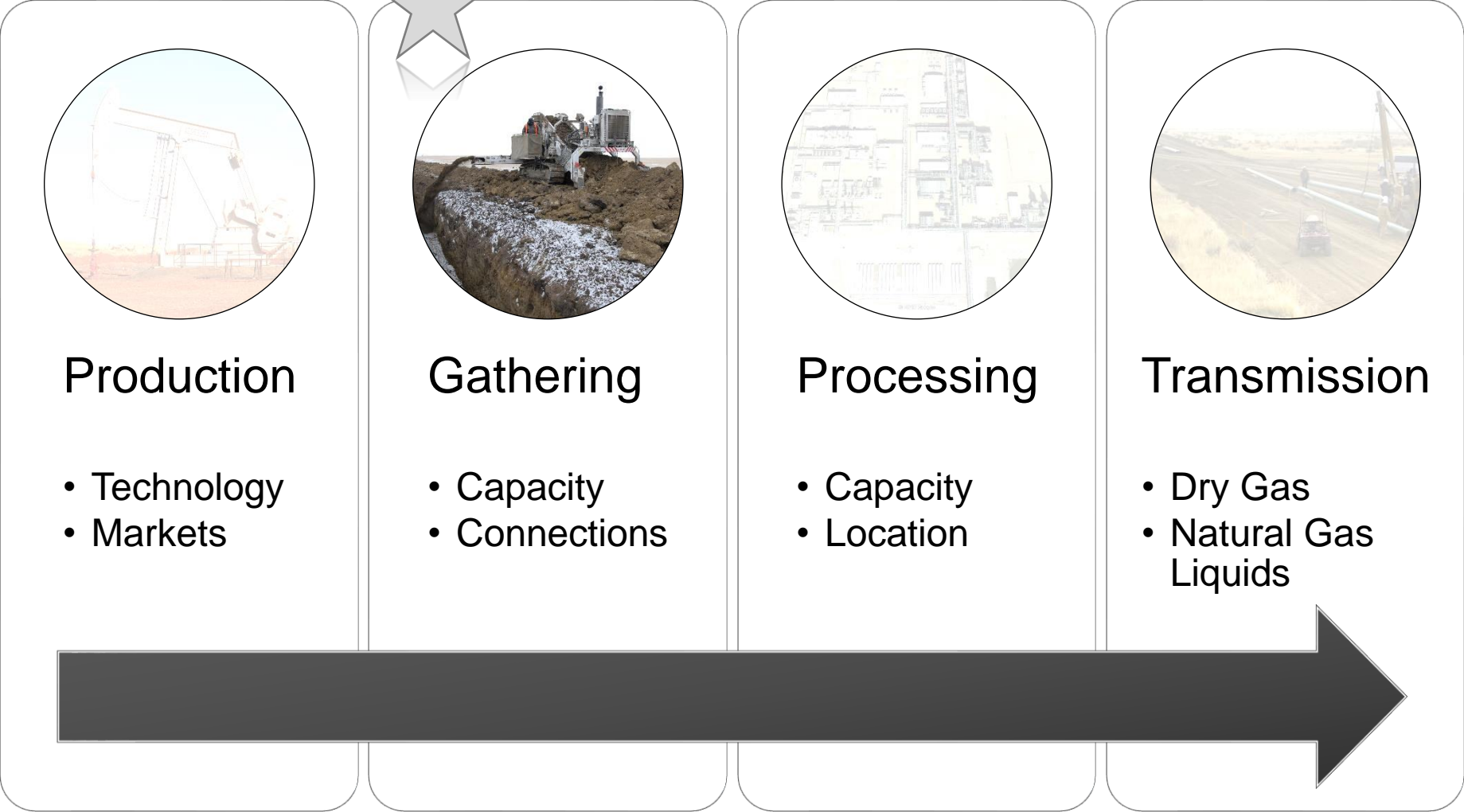
Production Month



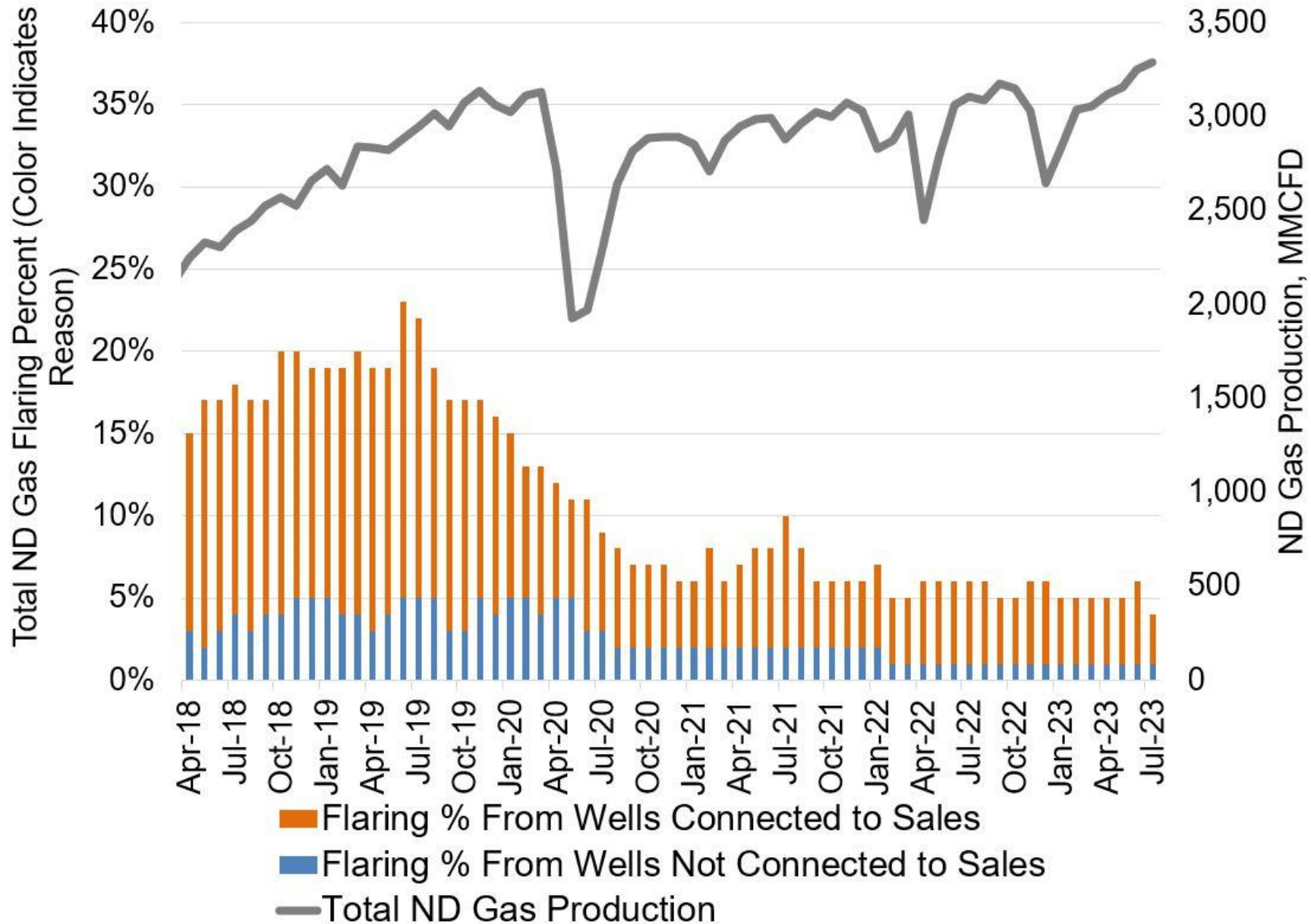
Shifting Early Production Strategies



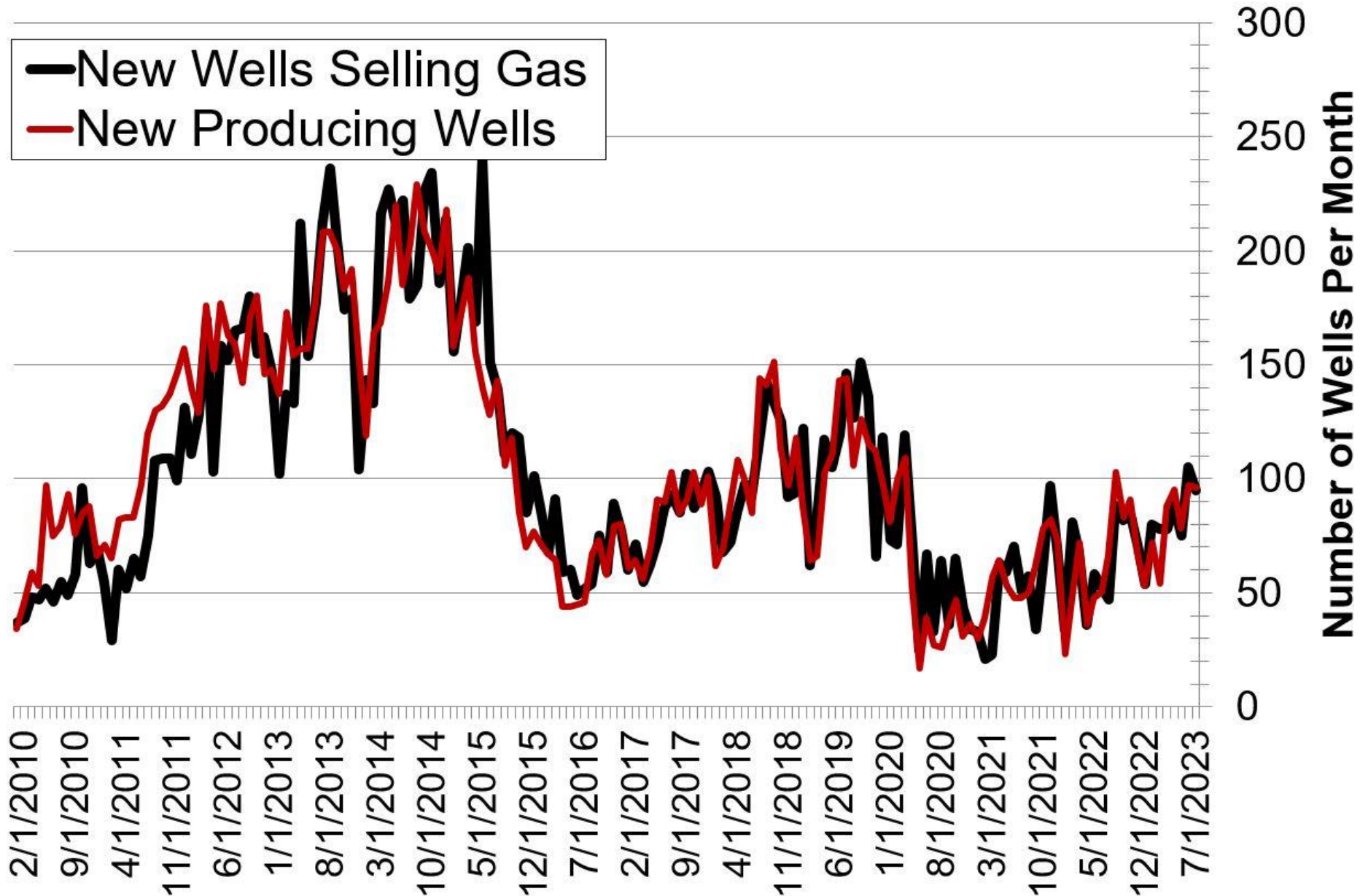
Natural Gas Update



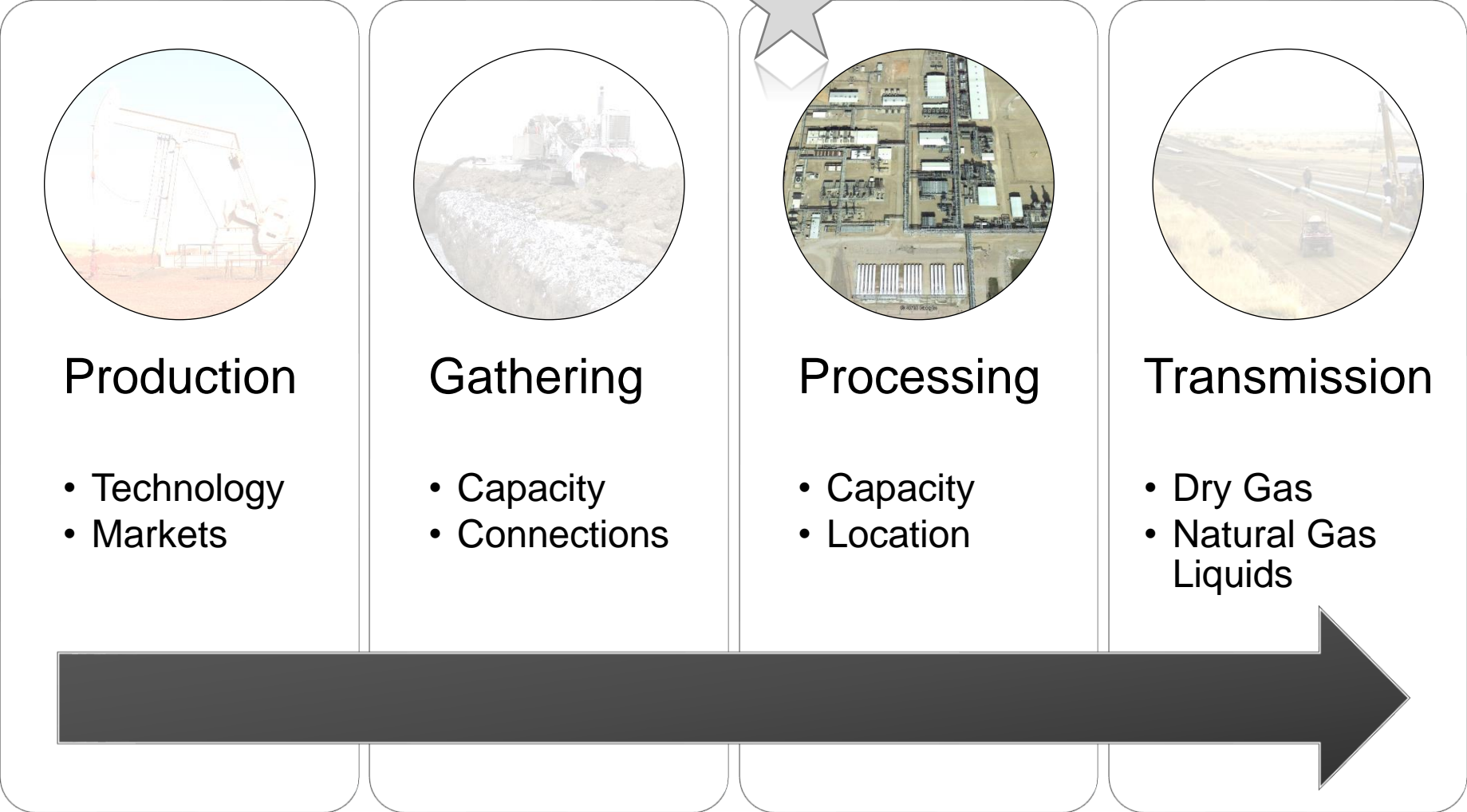
Natural Gas Capture Rates



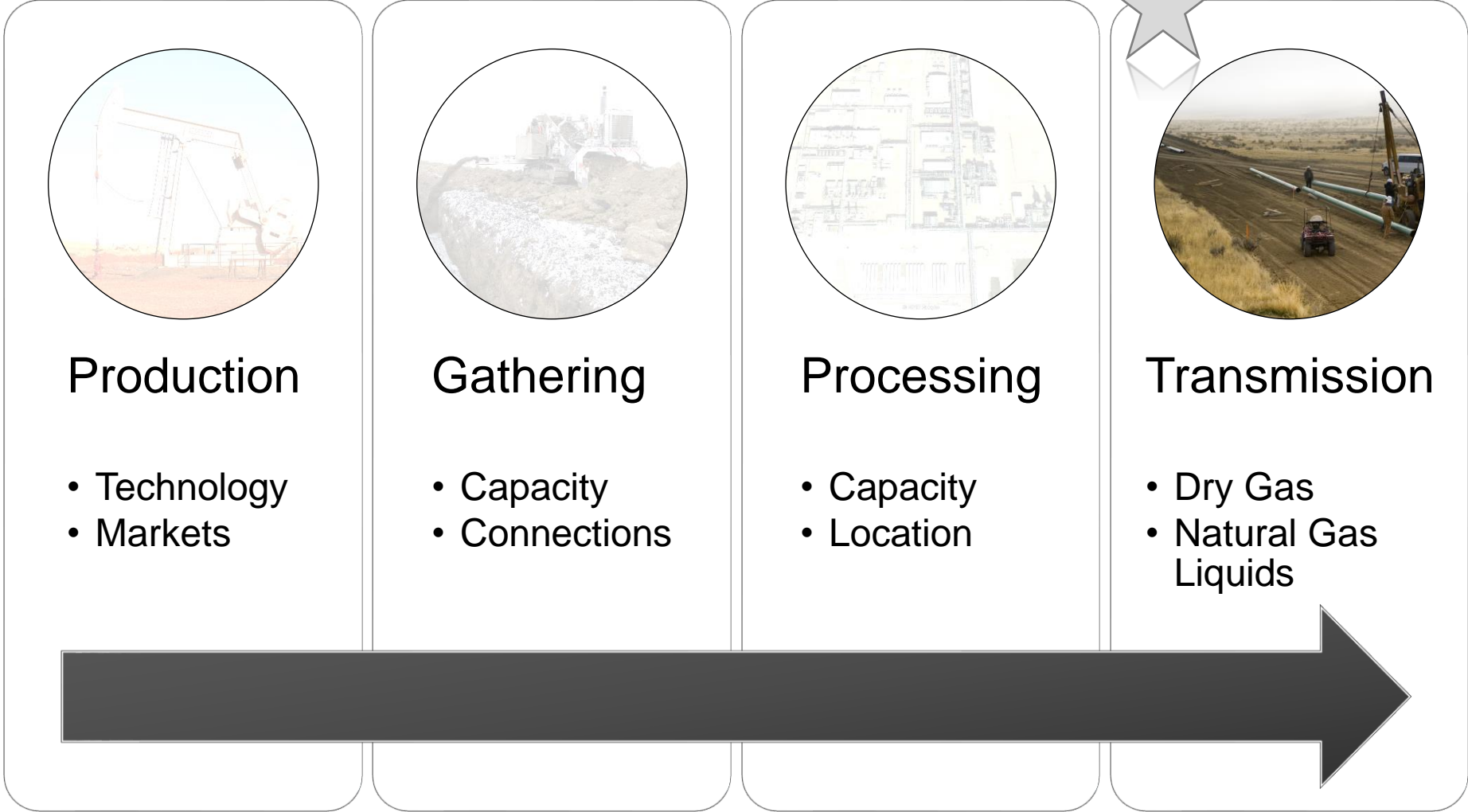
Natural Gas Gathering Connections Keeping Pace



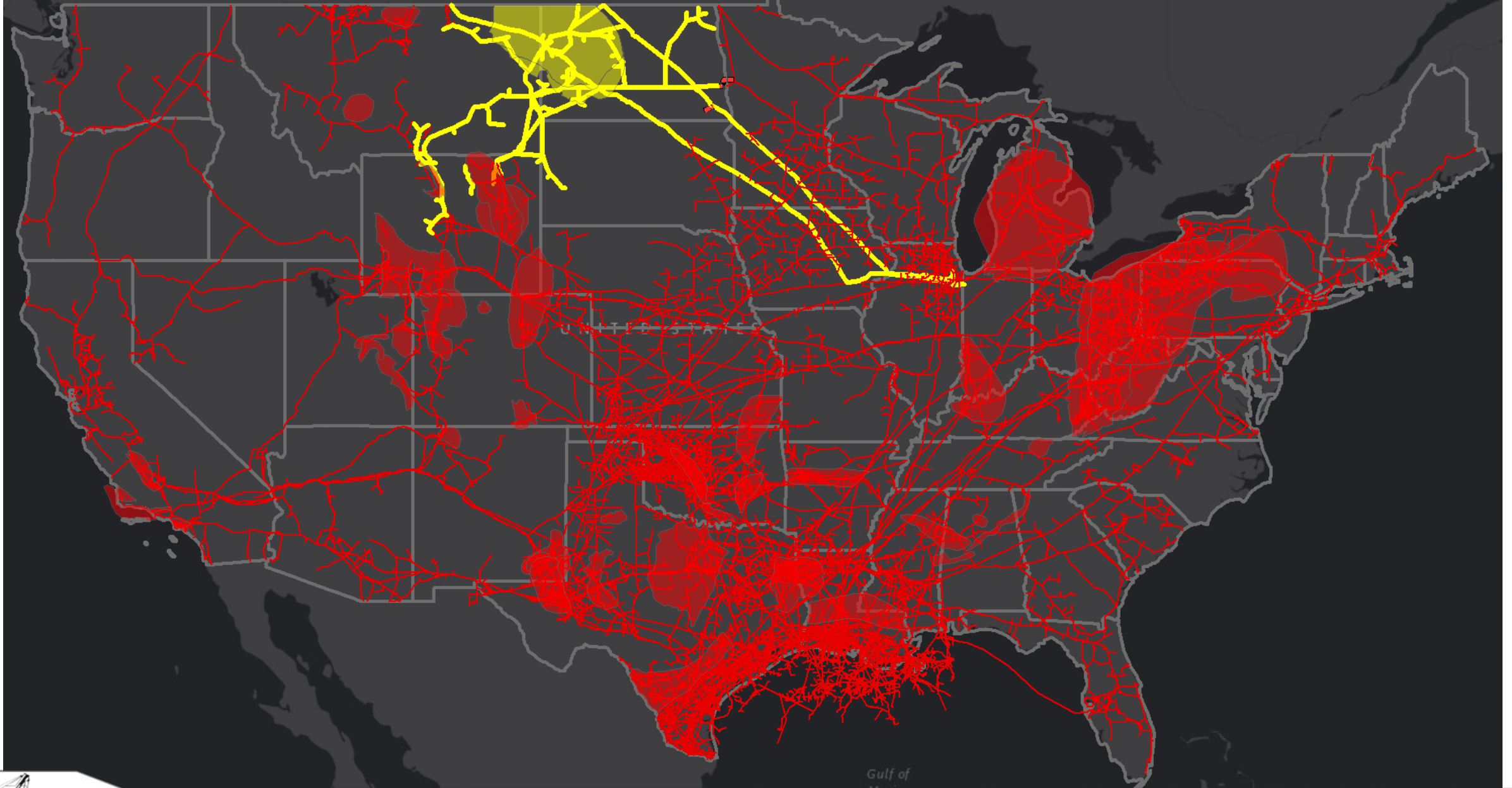
Natural Gas Update



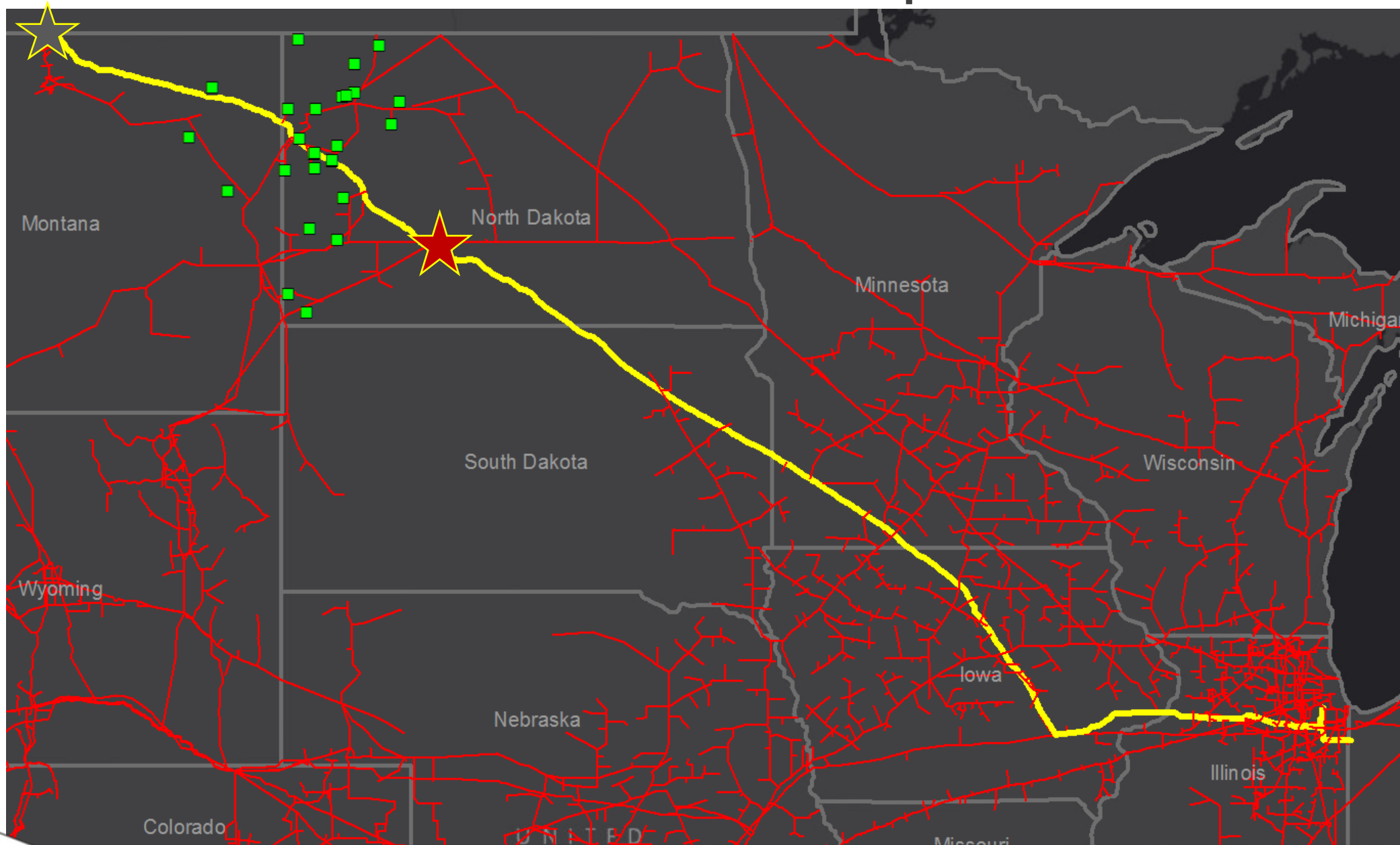
Natural Gas Update



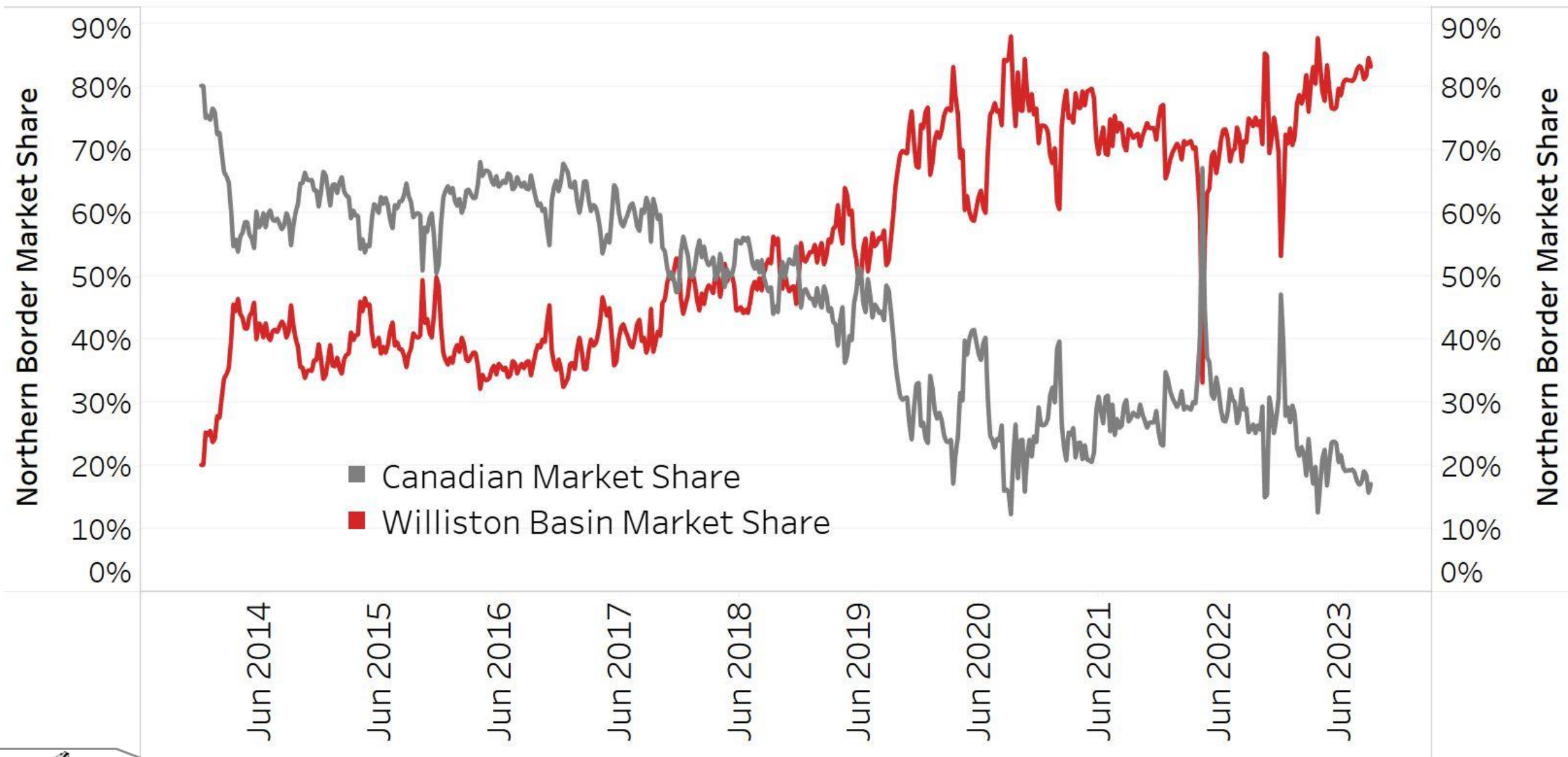
Bakken Natural Gas Infrastructure



Northern Border Pipeline



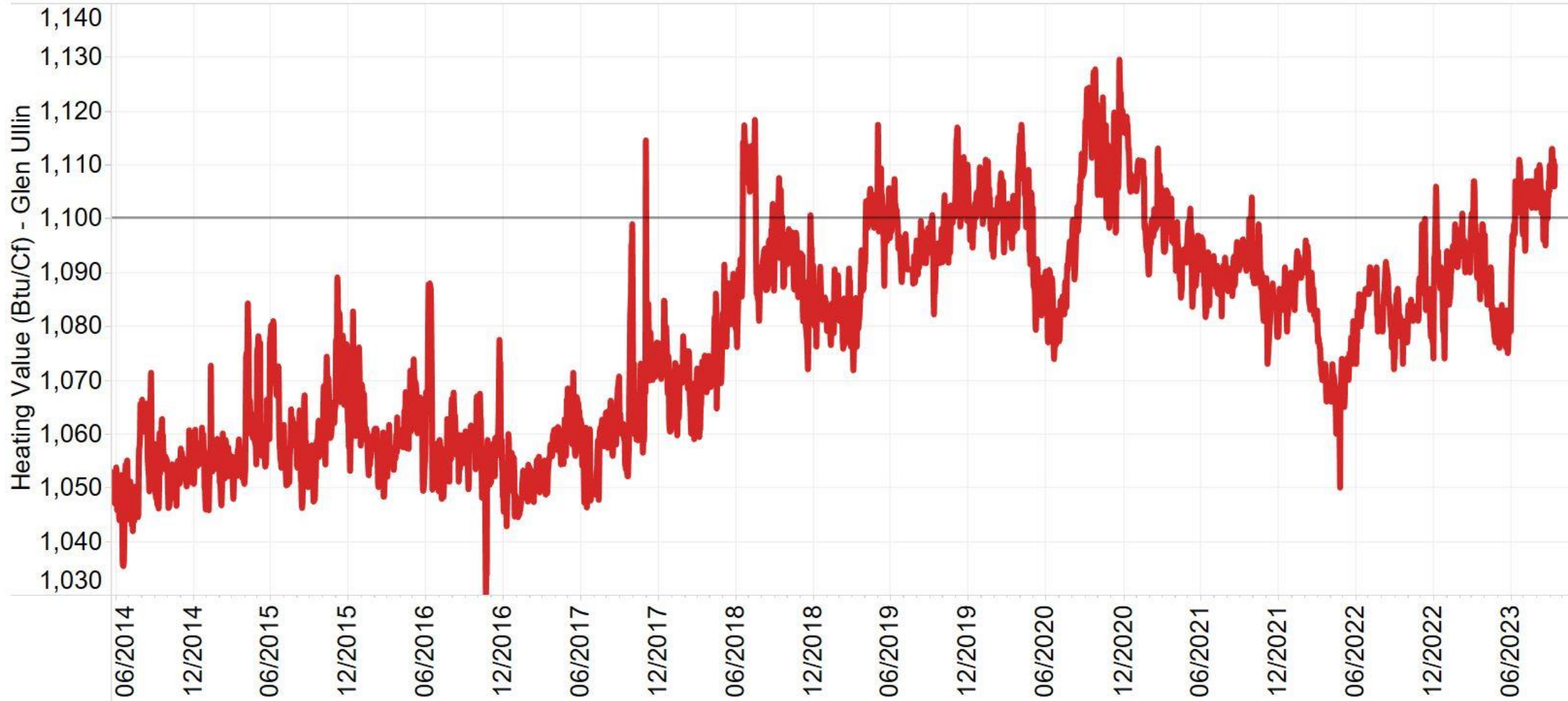
Northern Border Pipeline Market Share



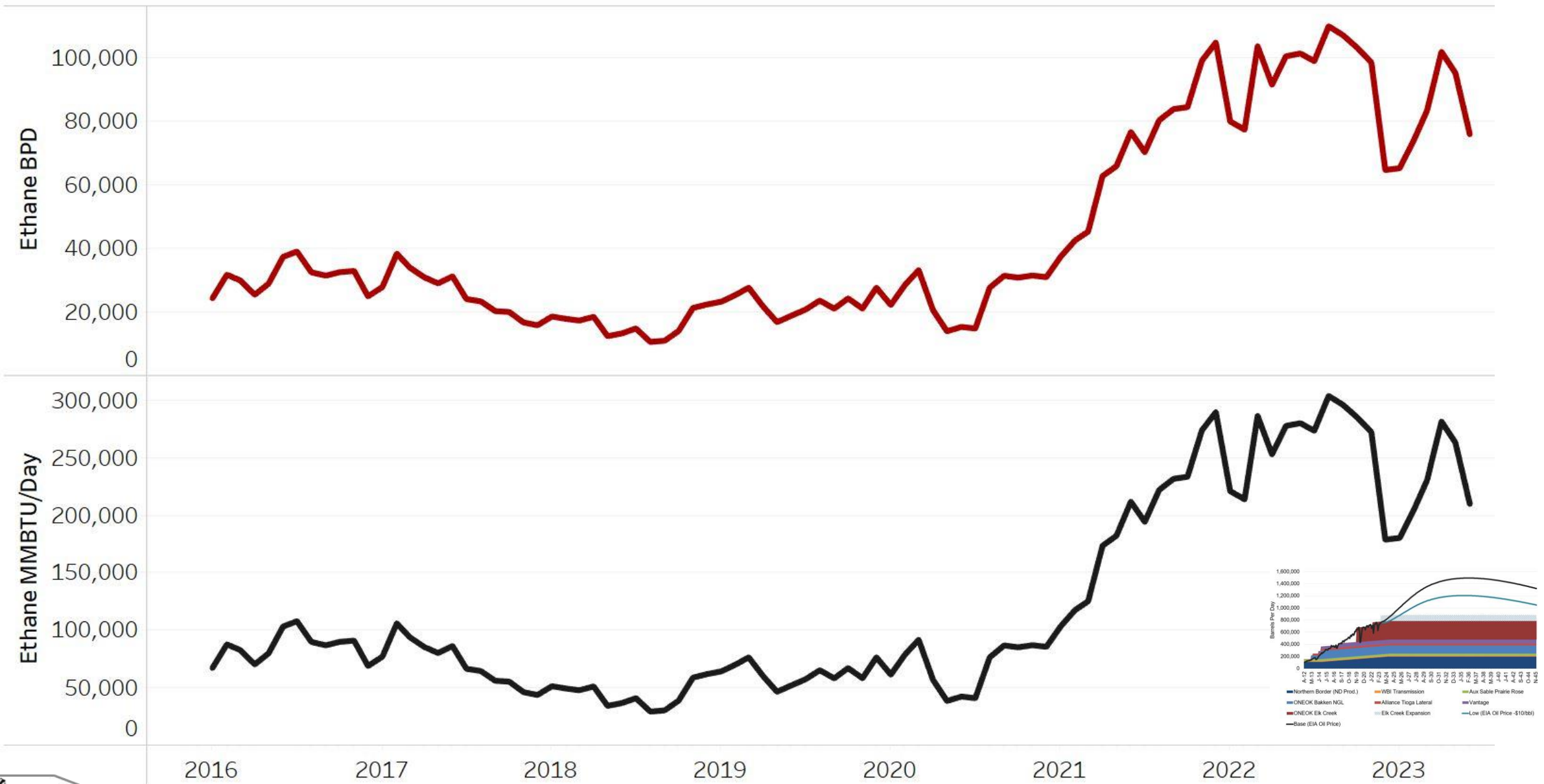
Major Residue Gas Pipeline Infrastructure



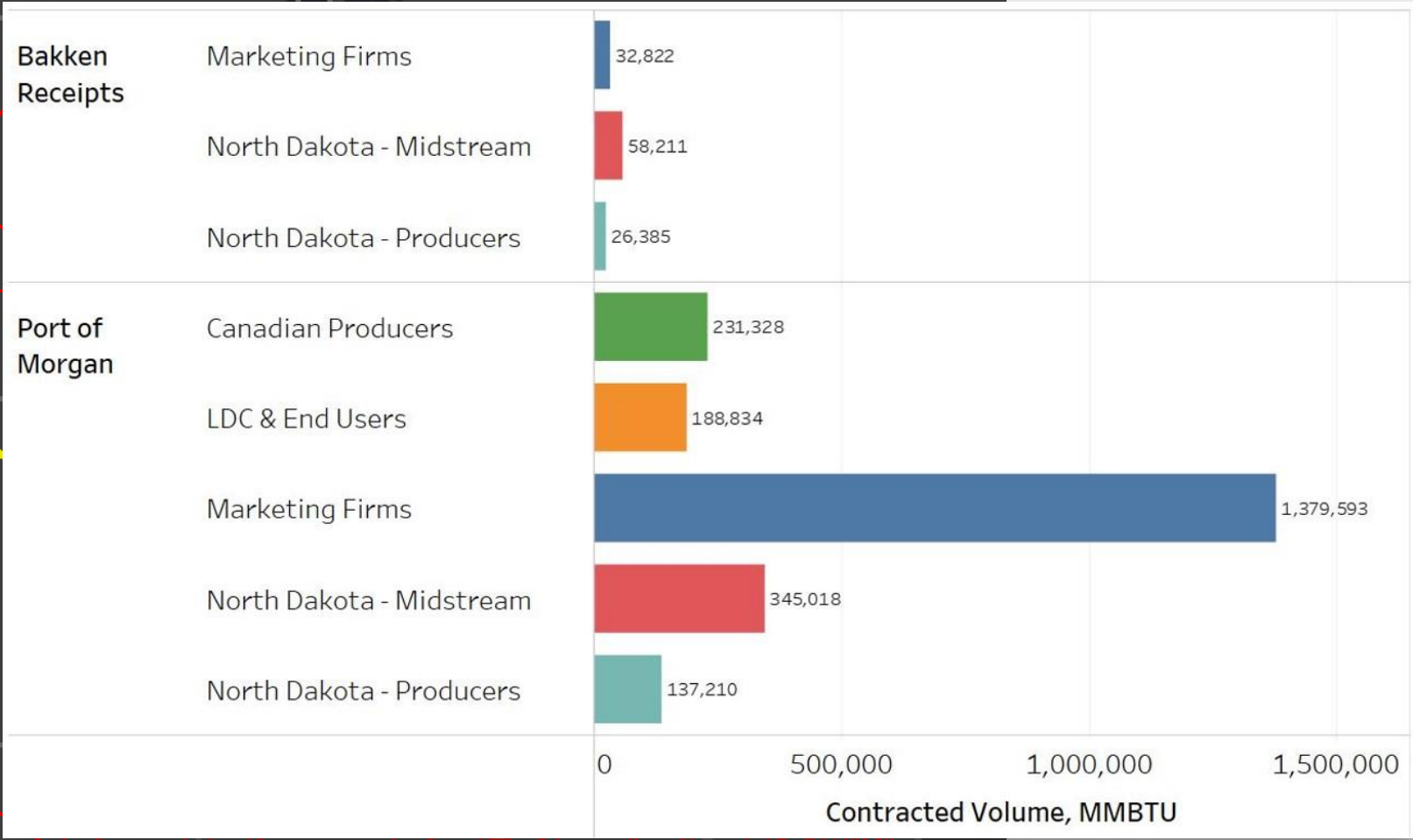
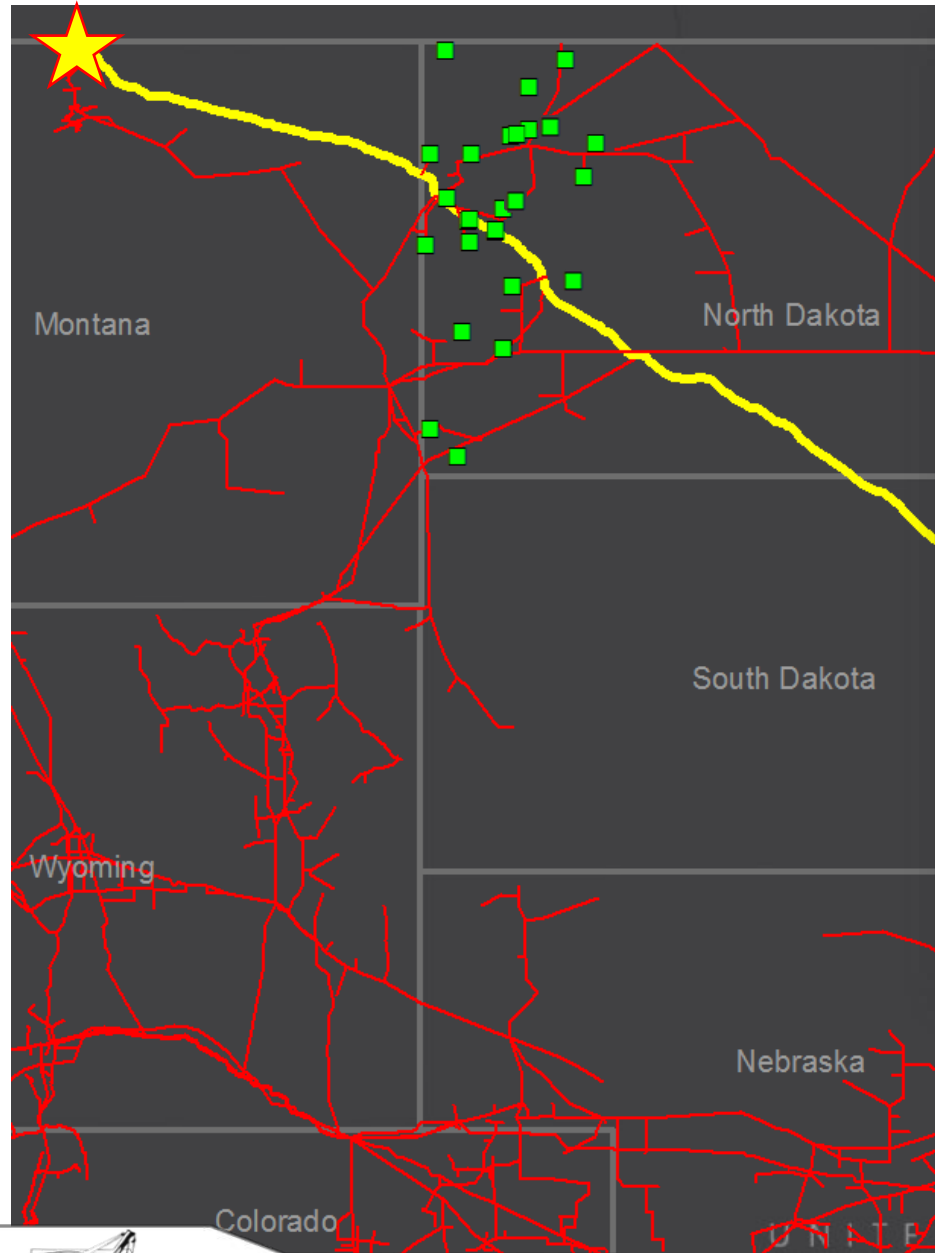
Northern Border BTU at Glen Ullin, ND



Rockies NGL Pipes Driving Down NB BTU & Market Share



Northern Border Pipeline P.O.M. Shipper Mix: 2023



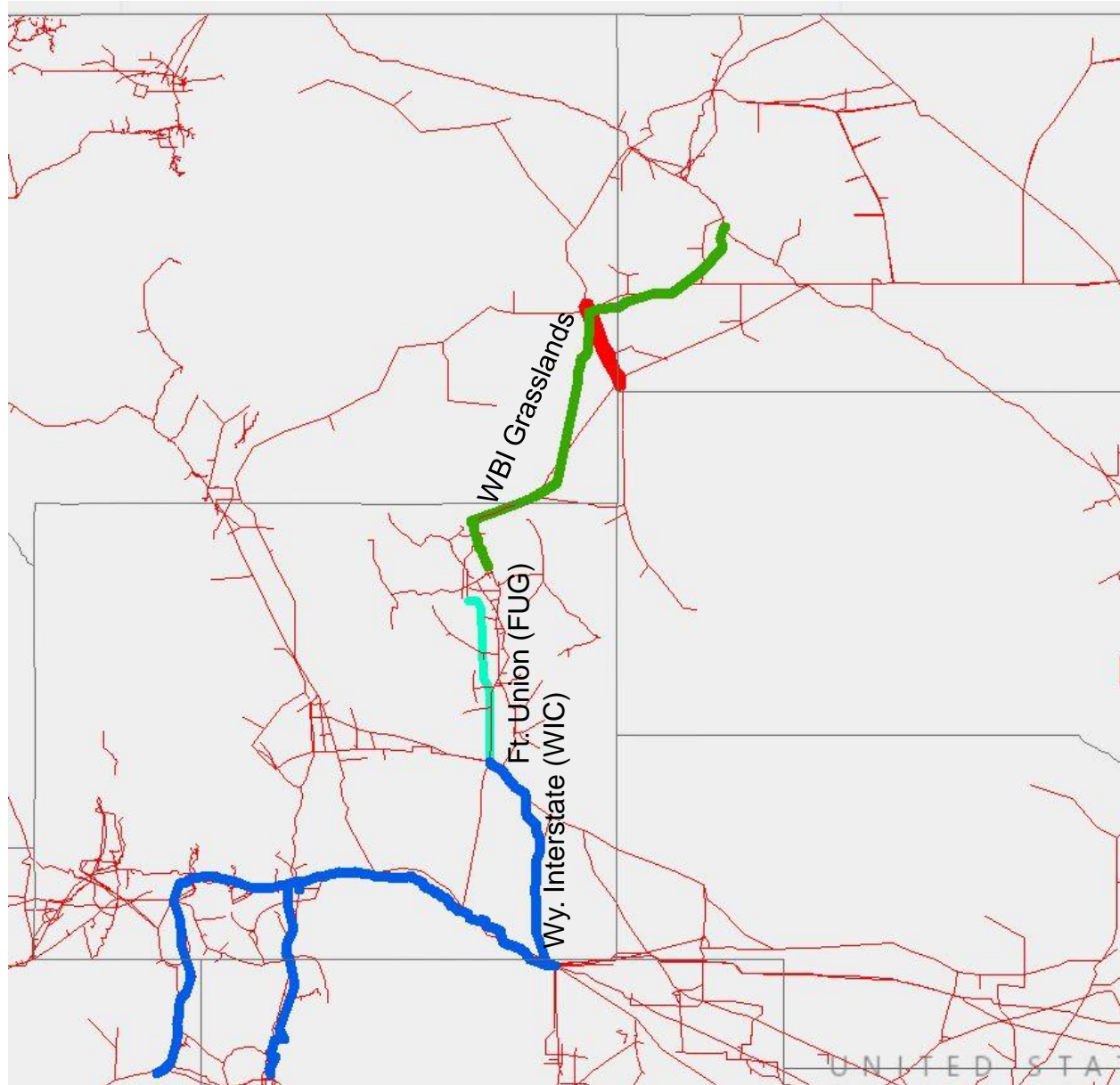
WBI Energy – Grasslands South Project

Project Highlights

- Binding open season Jan 10 – Feb 25, 2022
- Repurpose Grasslands Pipeline (16")
- Proposed Capacity 94,000 Dth/Day
- Access to Baker storage field
- Q4 2023 proposed completion
- Seeking commitments 10yrs or Longer
- Fort Union Gas Gathering and Wyoming Interstate Company provide further transport to Cheyenne hub.

Proposed Tariff Rates

- WBI \$0.32356/Dth + Fuel/Elec to WIC/FUG Interconnect
- FUG/WIC to Cheyenne \$0.2899/Dth + Fuel/Elec



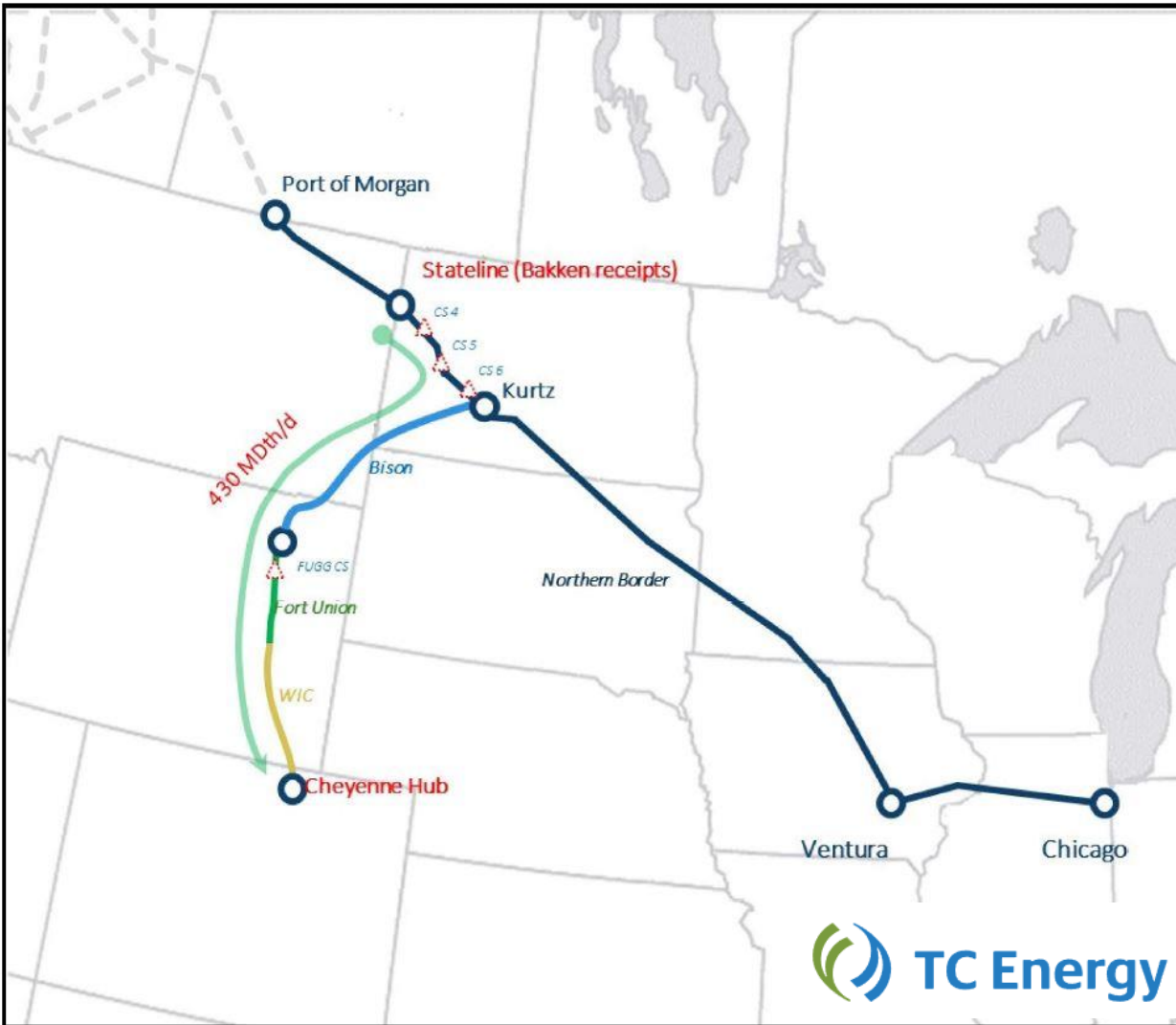
TC Energy / Kinder Morgan: Bakken xPress Project

Project Highlights

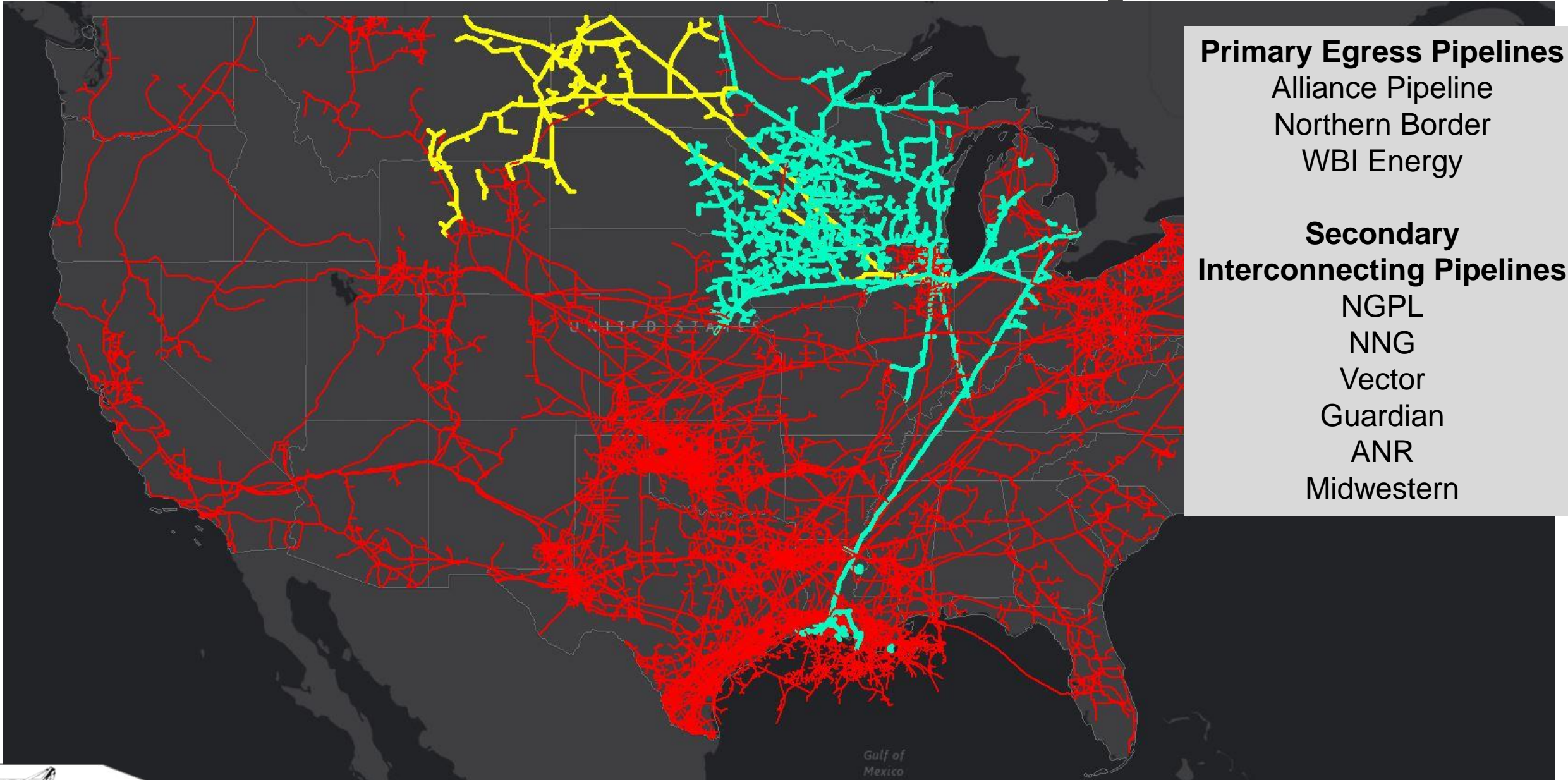
- Non-binding open season April 4 - May 6, 2022
- Binding Open Season: June 1-30, 2023
- Three compressor upgrades in North Dakota
- Reverse the idle Bison Pipeline (30" – 302 Mile)
- Capacity 300,000 Dth/Day
- March 2026 targeted in-service date
- Fort Union Gas Gathering and Wyoming Interstate Company provide further transport to Cheyenne hub.
- Seeking commitments 10yrs or Longer

Proposed Tariff Rates

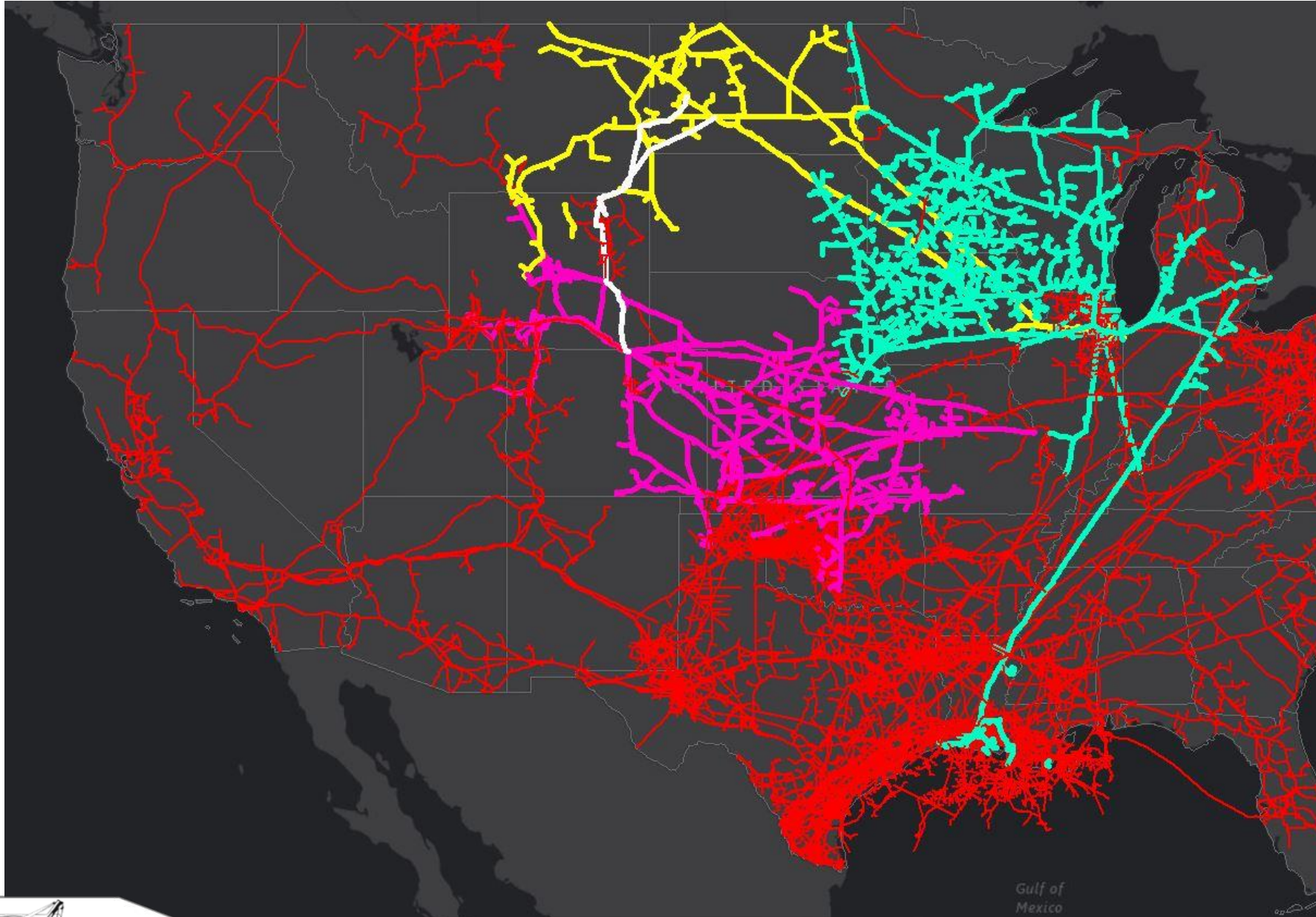
- NBPL/Bison \$0.45/Dth + Fuel/Elec to WIC/FUG Interconnect
- WIC/FUG to Cheyenne \$0.30/Dth + Fuel/Elec
- Anchor Shipper Minimum: 50,000 Dth/Day



Bakken Market Connectivity - Current



Bakken Market Connectivity – 2024+



New Egress Pipelines

WBI Grasslands- 93,000 Dth/D

Bison – Up to 430,000 Dth/D

New Secondary Interconnecting Pipelines

Cheyenne Plains

Public Service Co. of CO

CO Interstate Gas Co.

Southern Star Central

Trailblazer

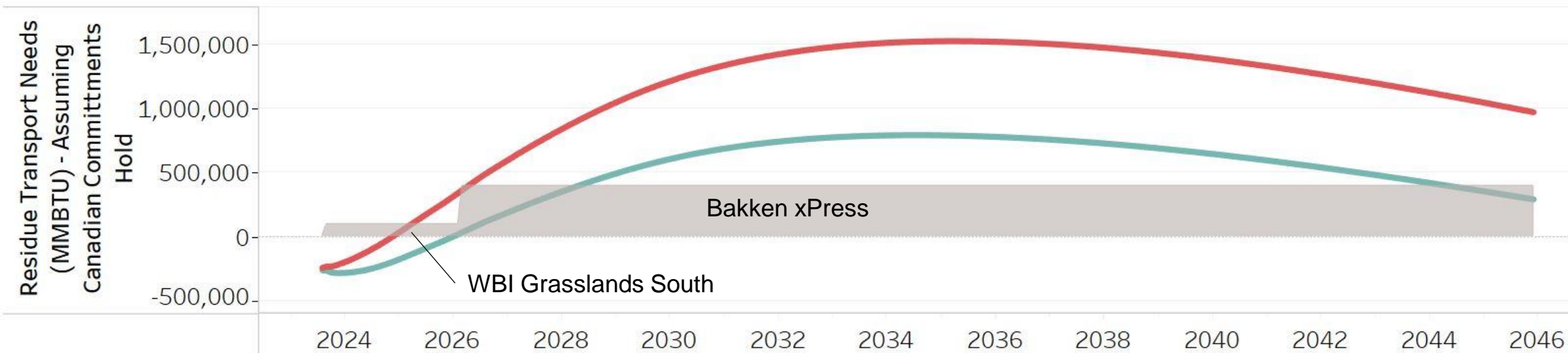
Tallgrass

Rockies Express (REX)

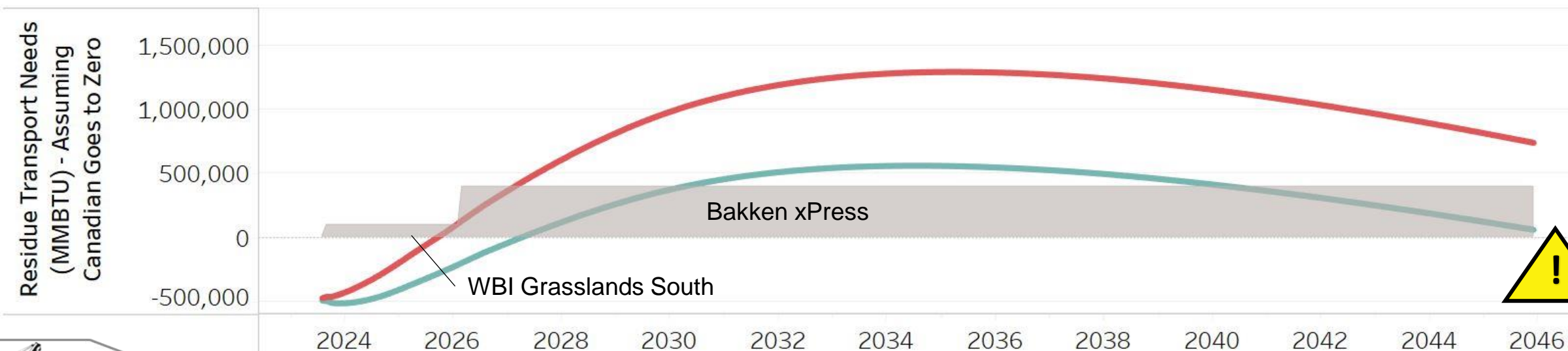


Residue Capacity Needs : Glen Ullin 1,100 BTU

Residue Capacity Need: Port of Morgan at Contract Level: Glen Ullin BTU 1,100

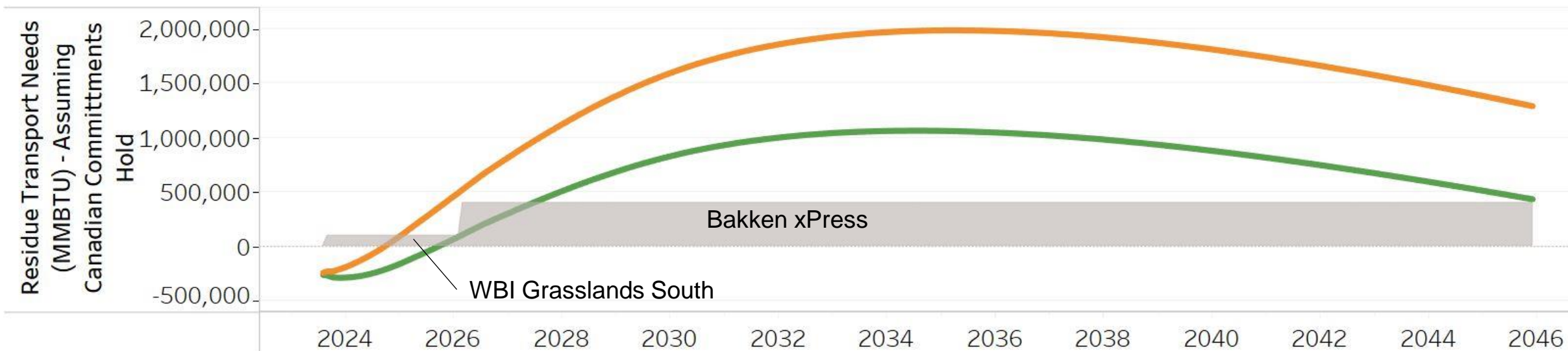


Residue Capacity Need: Port of Morgan Goes to Zero: Glen Ullin BTU 1,100

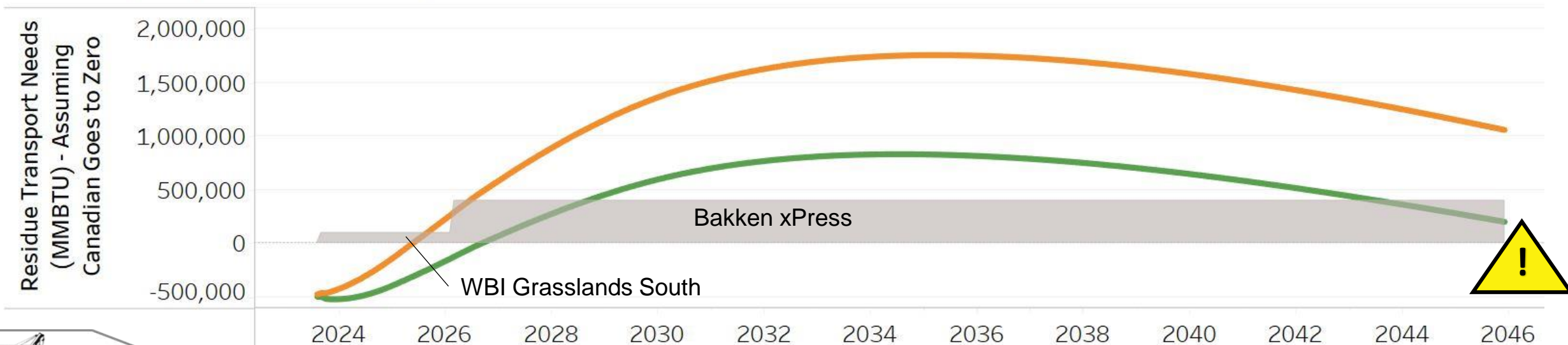


Residue Capacity Needs : Glen Ullin 1,150 BTU

Residue Capacity Need: Port of Morgan at Contract Level: Glen Ullin BTU 1,150



Residue Capacity Need: Port of Morgan Goes to Zero: Glen Ullin BTU 1,150



Key Topics Being Watched/Considered



Currently ~200,000 MMBTU/Day incremental ethane capture. What happens if/when NGL pipes hit capacity or market conditions shift?



Seasonal storage swings of +/- 200,000 (or more) MMBTU/Day. Continued support for projects that enhance regional storage assets.



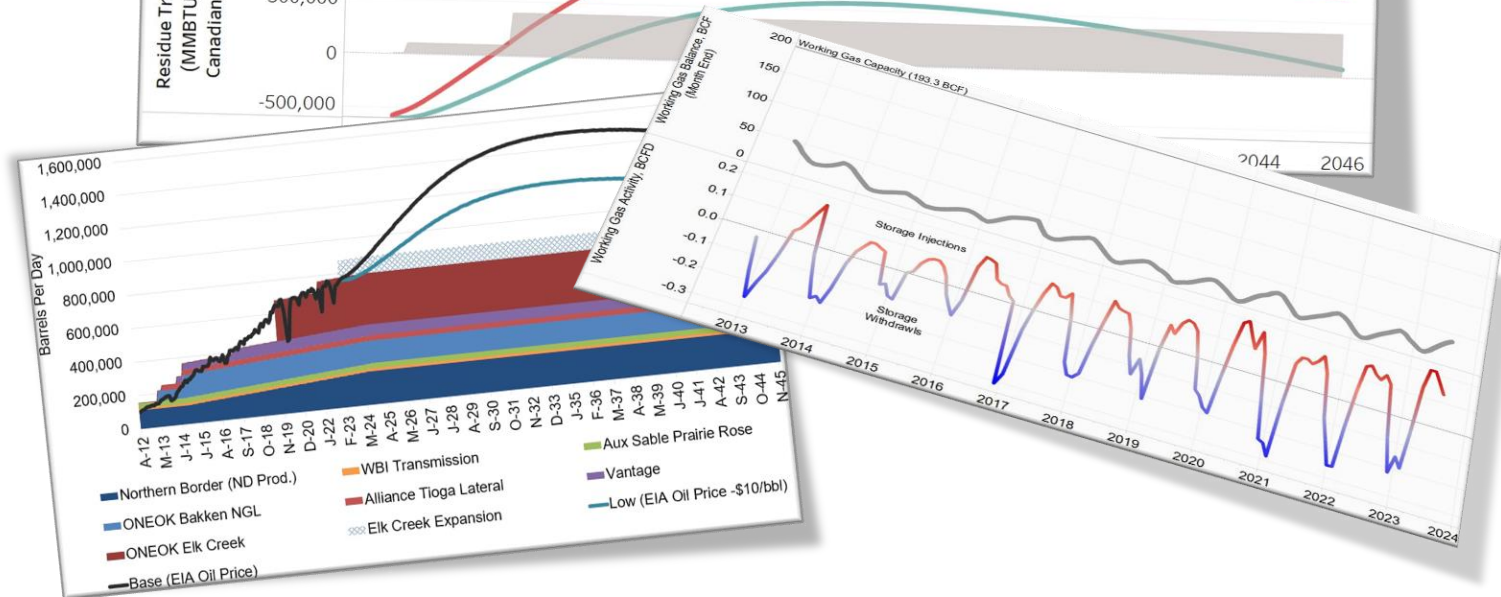
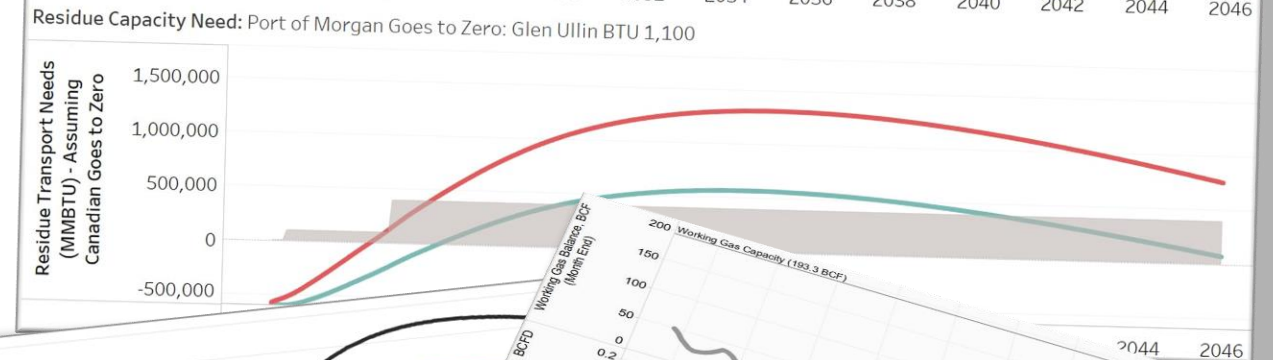
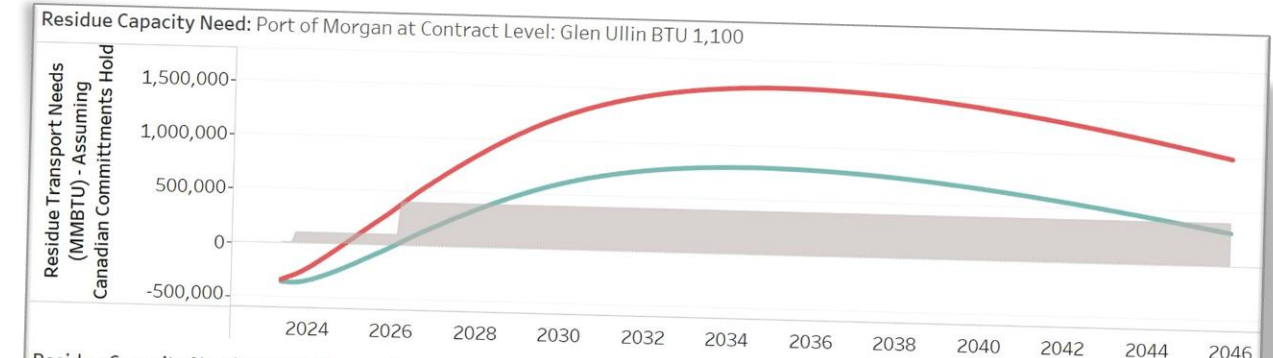
What if Port of Morgan “stickiness” is greater than 232,000 MMBTU/Day?



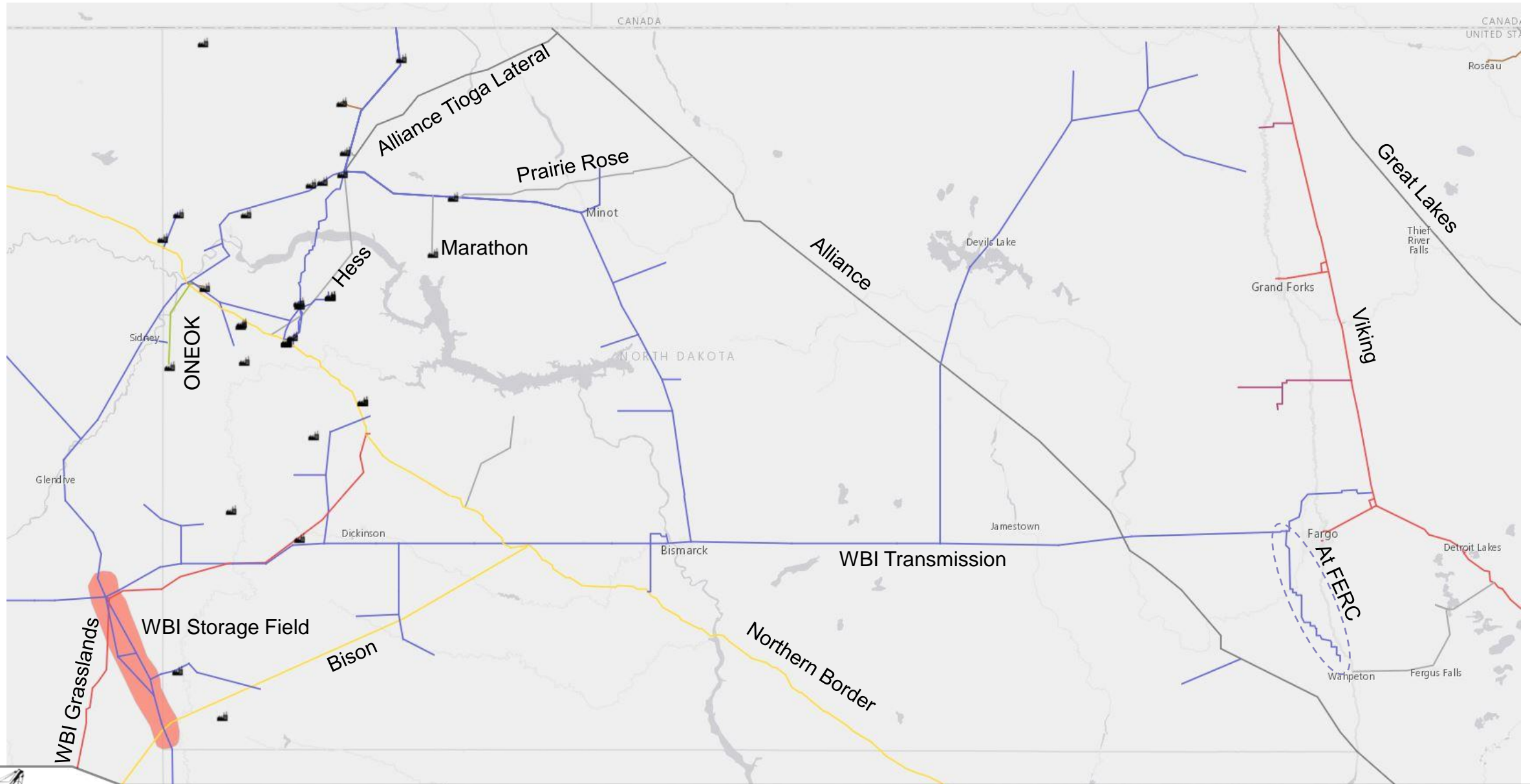
Could market conditions at Cheyenne attract more competition from Port of Morgan Shippers?



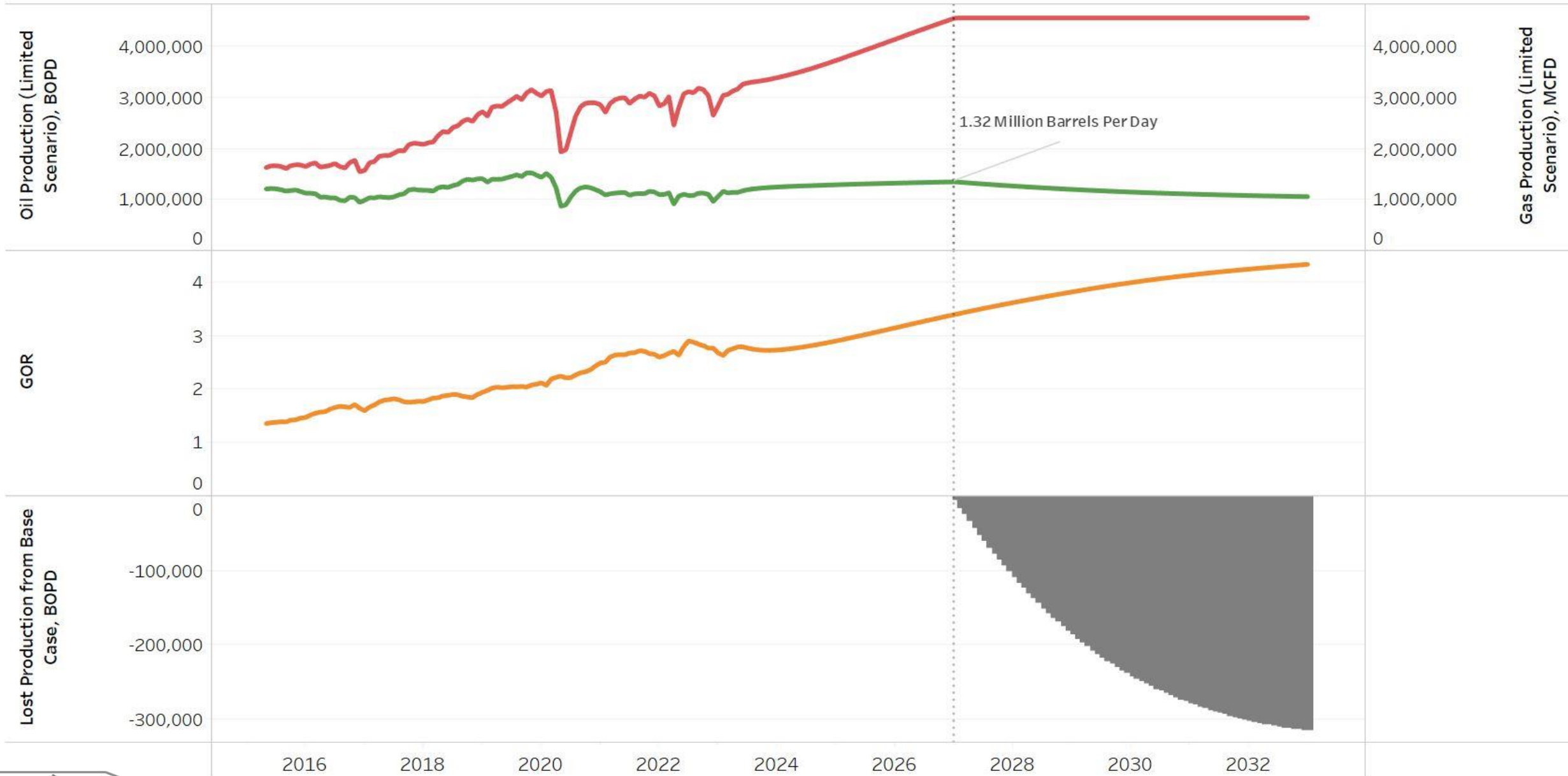
Will downstream markets desire a Northern Border BTU limit?



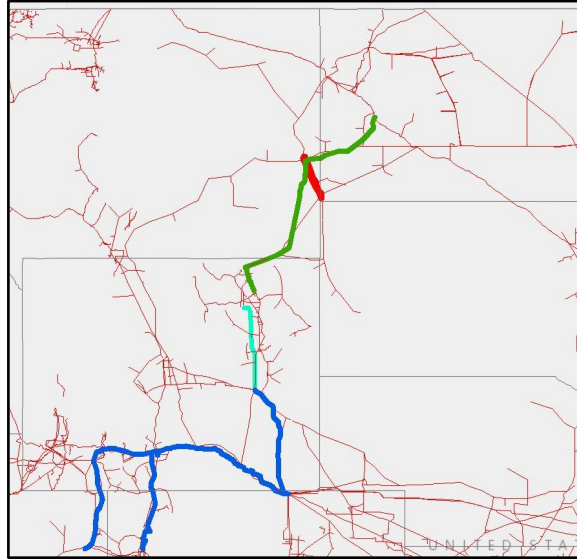
Major Residue Gas Pipeline Infrastructure



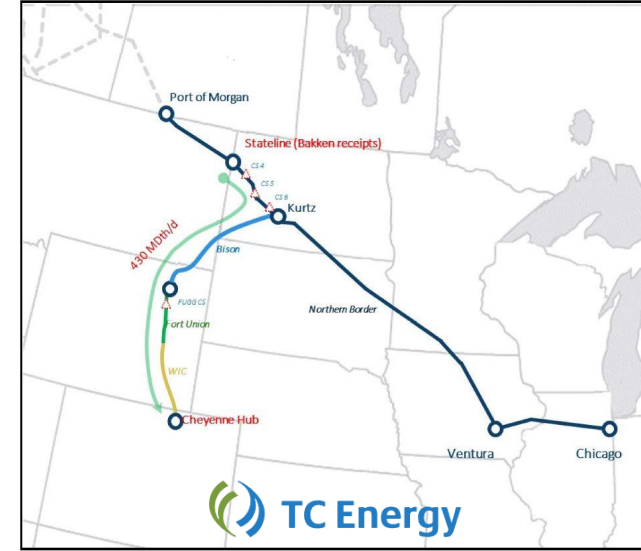
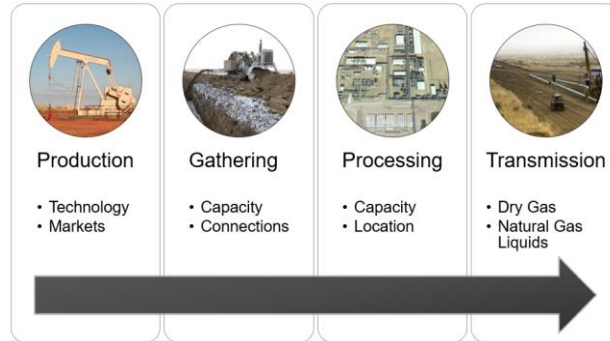
Gas Limitations Would Force Oil Production Down As GOR Rises



Value of a Dekatherm (MMBTU)



WBI Grasslands
94,000 Dekatherms
Per Day



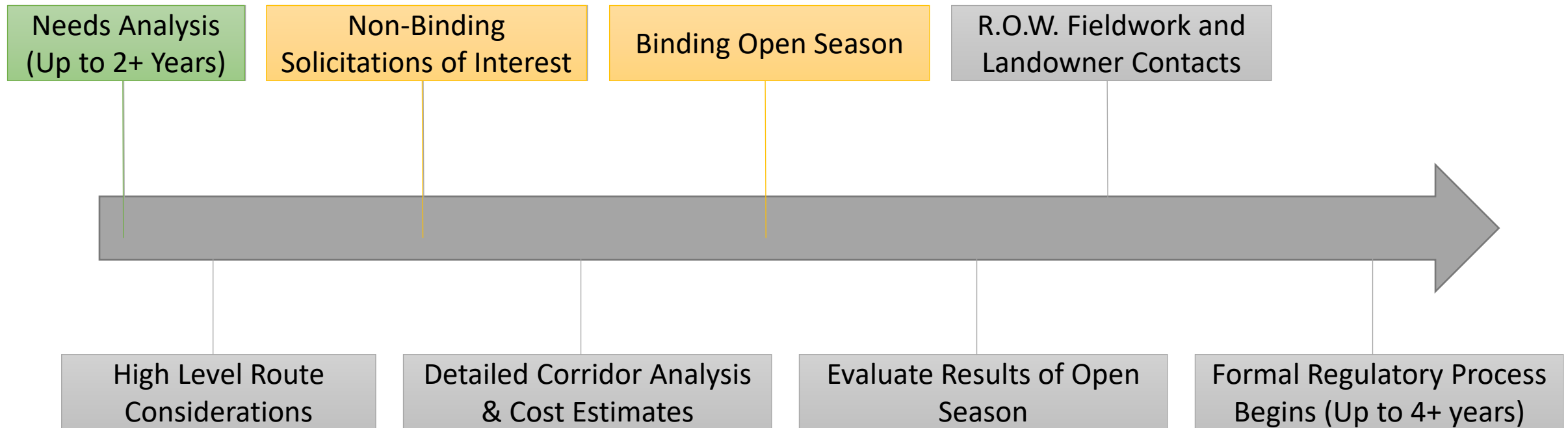
Bison XPress
430,000 Dekatherms
Per Day

Combined Oil and Natural Gas Tax Value

- Combined 524,000 Dekatherms per day of needed gas takeaway capacity
- \$3.30* in oil/gas tax value per Dekatherm x 524,000 Dekatherms = \$1,745,400 per day
- **\$637+ Million per year in oil and natural gas taxes to the State of North Dakota**



Early Stages of Pipeline Development



HB 1014 – NDPA Related Sections

SECTION 18. AMENDMENT. Section 6-09.7-05 of the North Dakota Century Code is amended and reenacted as follows:

6-09.7-05. Establishment and maintenance of adequate guarantee funds - Use of strategic investment and improvements fund.

The Bank of North Dakota shall establish and at all times maintain an adequate guarantee reserve fund in a special account in the Bank. The Bank may request the director of the office of management and budget to transfer funds from the strategic investment and improvements fund created by section 15-08.1-08 to maintain one hundred percent of the guarantee reserve fund balance. Transfers from the strategic investment and improvements fund may not exceed a total of eightyone hundred forty million dollars. Moneys in the guarantee reserve fund are available to reimburse lenders, including the Bank, for guaranteed loans in default. The securities in which the moneys in the reserve fund may be invested must meet the same requirements as those authorized for investment under the state investment board. The income from such investments must be made available for the costs of administering the state guarantee loan program and income in excess of that required to pay the cost of administering the program must be deposited in the reserve fund. The amount of reserves for all guaranteed loans must be determined by a formula that will assure, as determined by the Bank, an adequate amount of reserve.

SECTION 30. EFFECTIVE DATE. Section 18 of this Act becomes effective July 1, 2025.



HB 1014 – NDPA Related Sections

SECTION 20. AMENDMENT. Section 54-17.7-01 of the North Dakota Century Code is amended and reenacted as follows:

54-17.7-01. North Dakota pipeline authority - Legislative intent.

There is created the North Dakota pipeline authority, which shall be governed by the industrial commission. It is the intent of the legislative assembly that the pipeline authority consider the operations, finances, and market positions of private entities engaged in pipeline activities while carrying out the purposes of this chapter to avoid competing with private entities to the extent possible.

SECTION 21. AMENDMENT. Subsection 3 of section 54-17.7-04 of the North Dakota Century Code is amended and reenacted as follows:

3. Acquire, purchase, hold, use, lease, license, sell, transfer, and dispose of an undivided or other interest in or the right to capacity in any pipeline system or systems, including interconnection of pipeline systems, within or without the state of North Dakota in order to facilitate the production, transportation, distribution, or delivery of energy-related commodities produced in North Dakota as a purchaser of last resort. ~~The obligation of the state may not exceed ten percent of the pipeline authority's acquisition or purchase of a right to capacity in any pipeline system or systems, or interconnection of pipeline systems, and the state's obligation is limited to the funding available from the oil and gas research fund.~~ If the authority acquires, purchases, holds, uses, or leases capacity positions, the authority shall sell, transfer, release, or dispose of the capacity positions at intervals that are no more frequent than monthly and in an amount that is equal to or greater than the market rate, but only if the sale, transfer, release, or disposal of the capacity positions is sufficient to cover the expenses and obligations incurred. The authority's contract obligations for the capacity positions are limited to the capacity rates, charges, and terms.



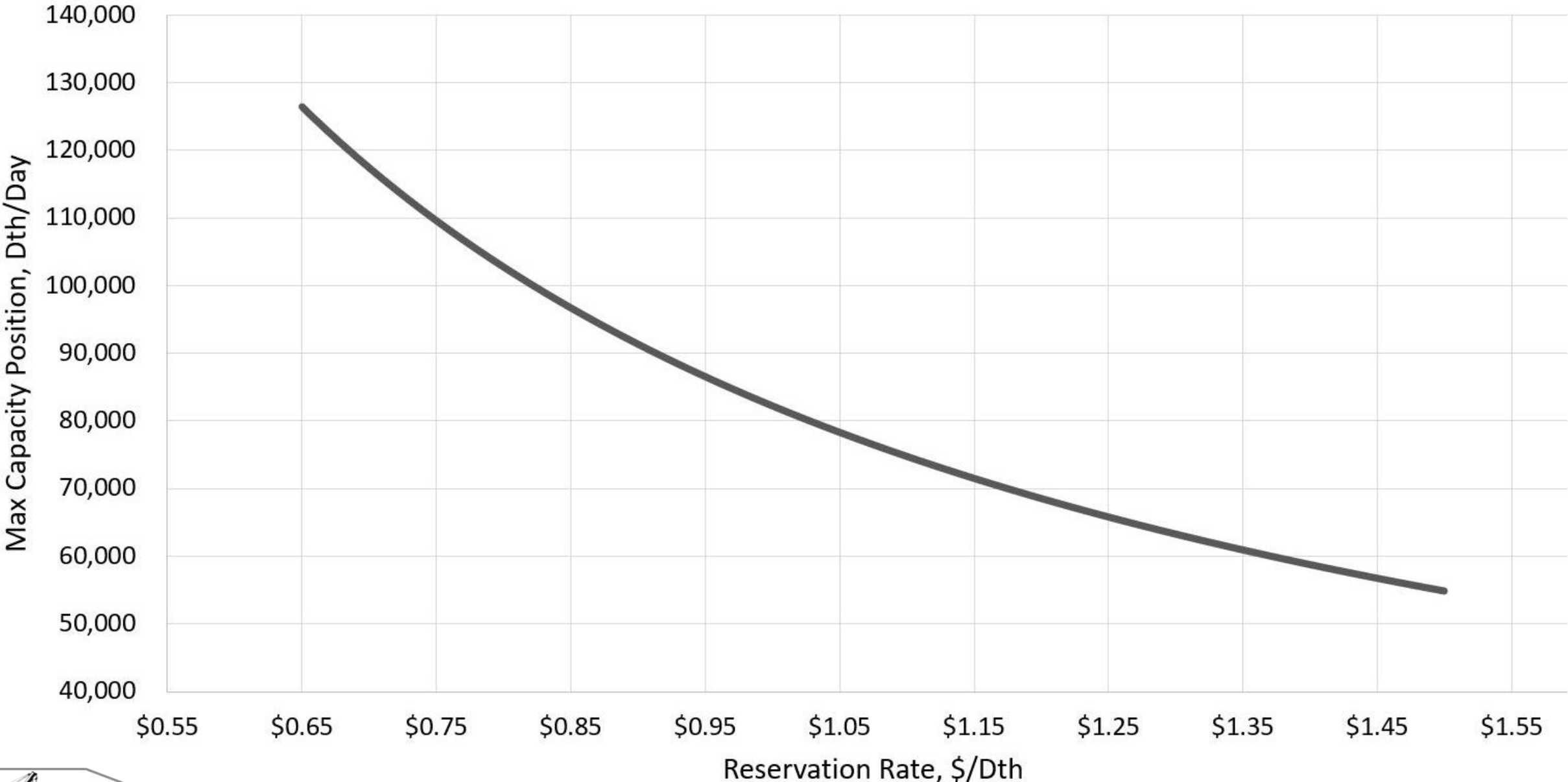
HB 1014 – NDPA Related Sections

SECTION 22. AMENDMENT. Subsection 4 of section 54-17.7-04 of the North Dakota Century Code is amended and reenacted as follows:

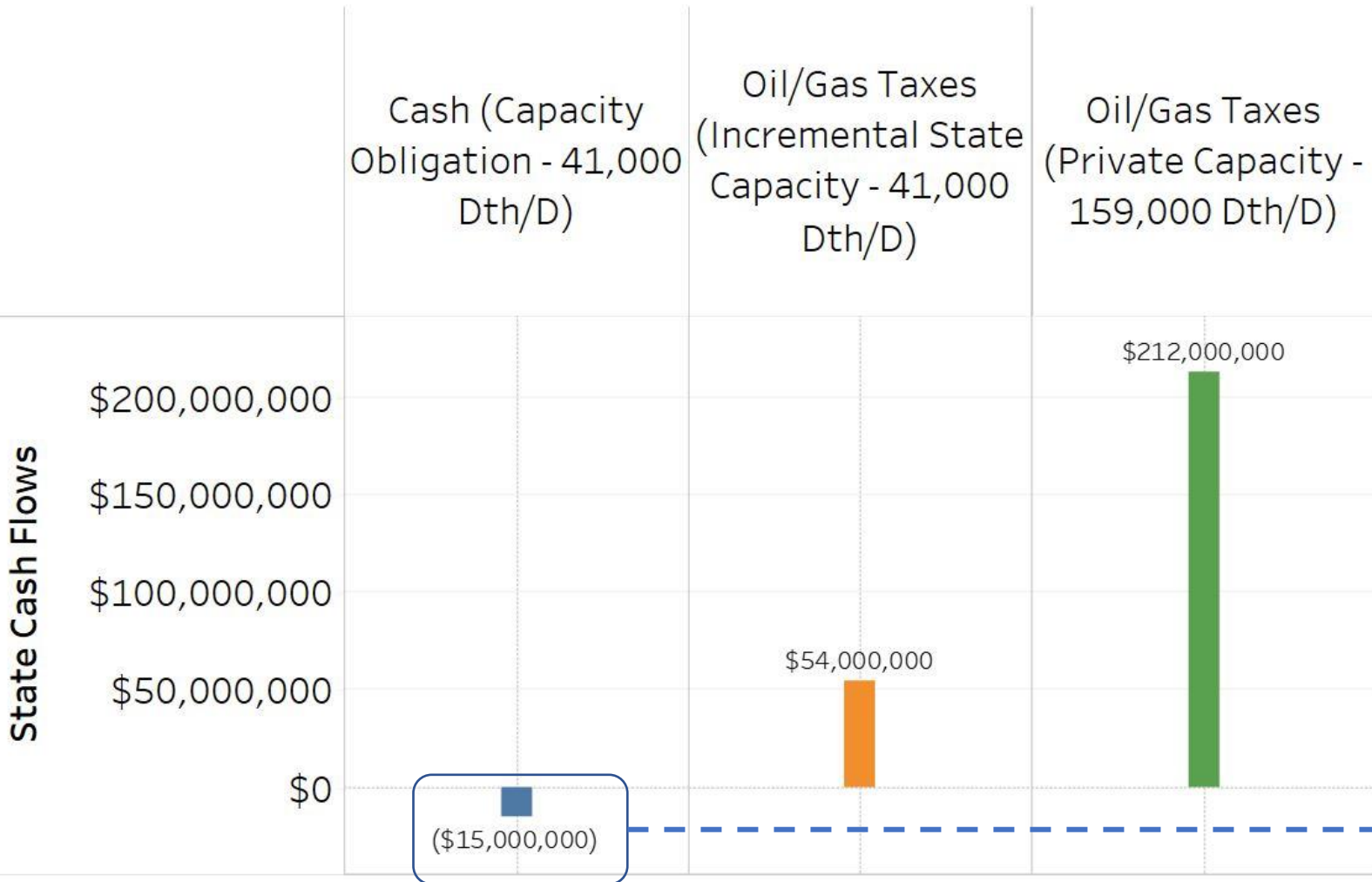
4. Borrow money and issue evidences of indebtedness as provided in this chapter, including borrowing from the Bank of North Dakota.
 - a. The authority may borrow up to sixty million dollars through a line of credit from the Bank. The interest rate on the line of credit must be the prevailing interest rate charged to North Dakota governmental entities.
 - b. The line of credit must be guaranteed by reserves under section 6-09.7-05.
 - c. The line of credit may be used to support activities under subsection 3.
 - d. The authority shall repay the line of credit from amounts available. If the amounts available on June 30, 2027, are not sufficient to repay the line of credit, the authority shall notify the director of the office of management and budget, and the director of the office of management and budget shall transfer funds from the strategic investment and improvements fund to the Bank for the repayment pursuant to section 6-09.7-05 based on the amount certified by the Bank.



Capacity and Reservation Rate at \$30M/Yr



Example Operating Project Cashflows



Hypothetical Project Needs 200,000 Dth/D Capacity Commitment to Move Forward

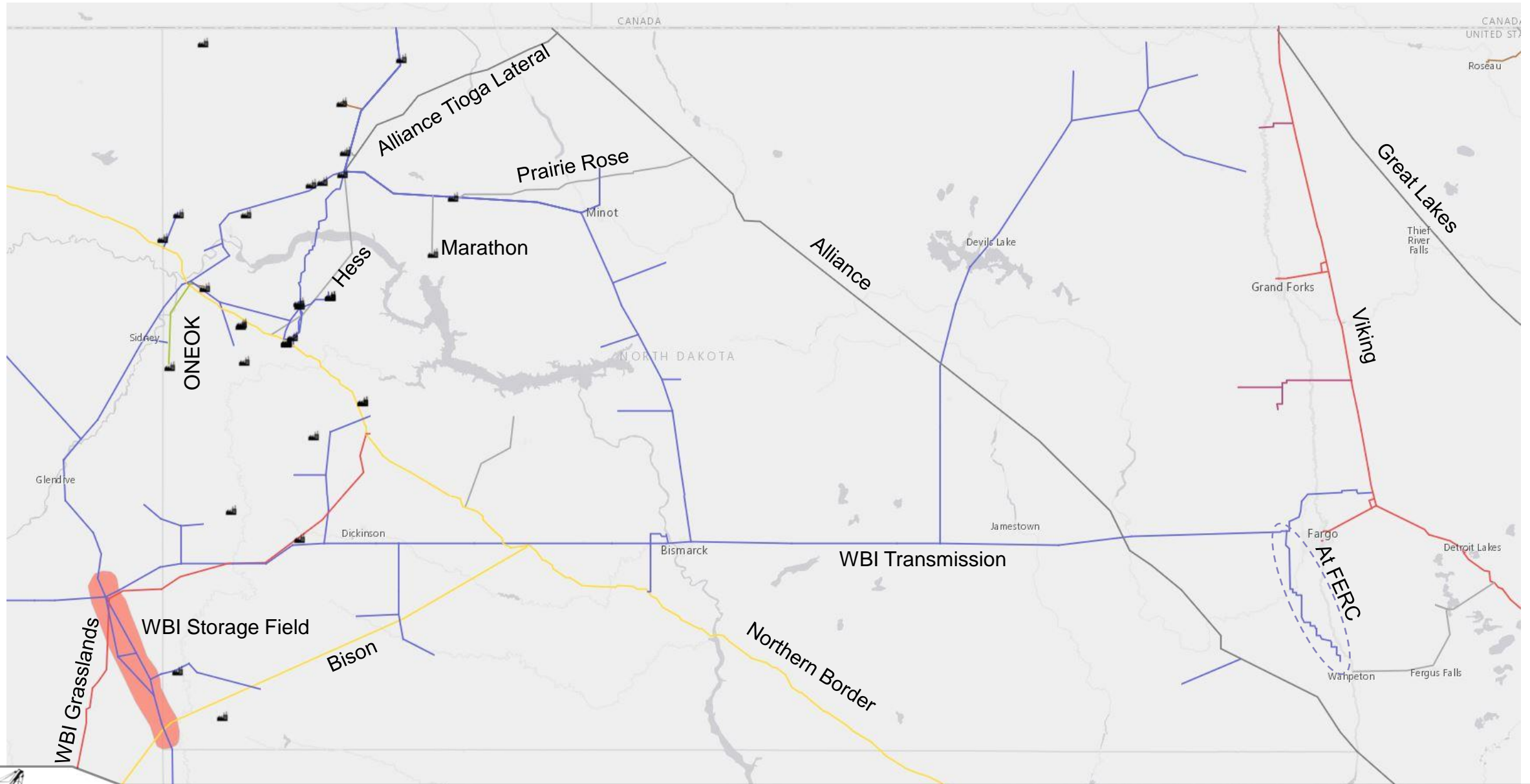


Options for State Capacity Obligation

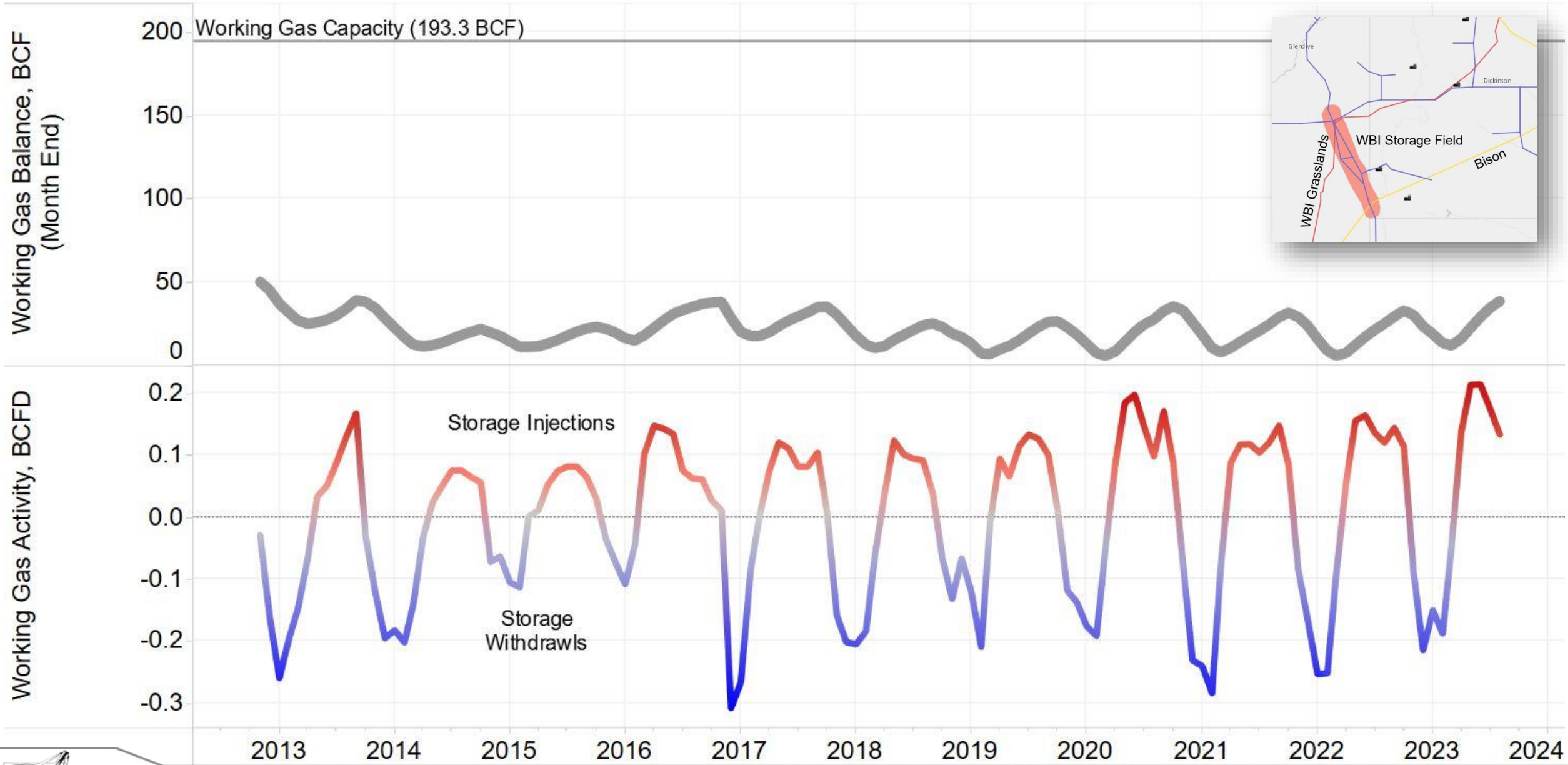
- Release (full or partial) to private sector
- Monetize capacity through asset management agreement (AMA)
- Worst case – Continue to pay obligations without recovery or release on 41,000Dth



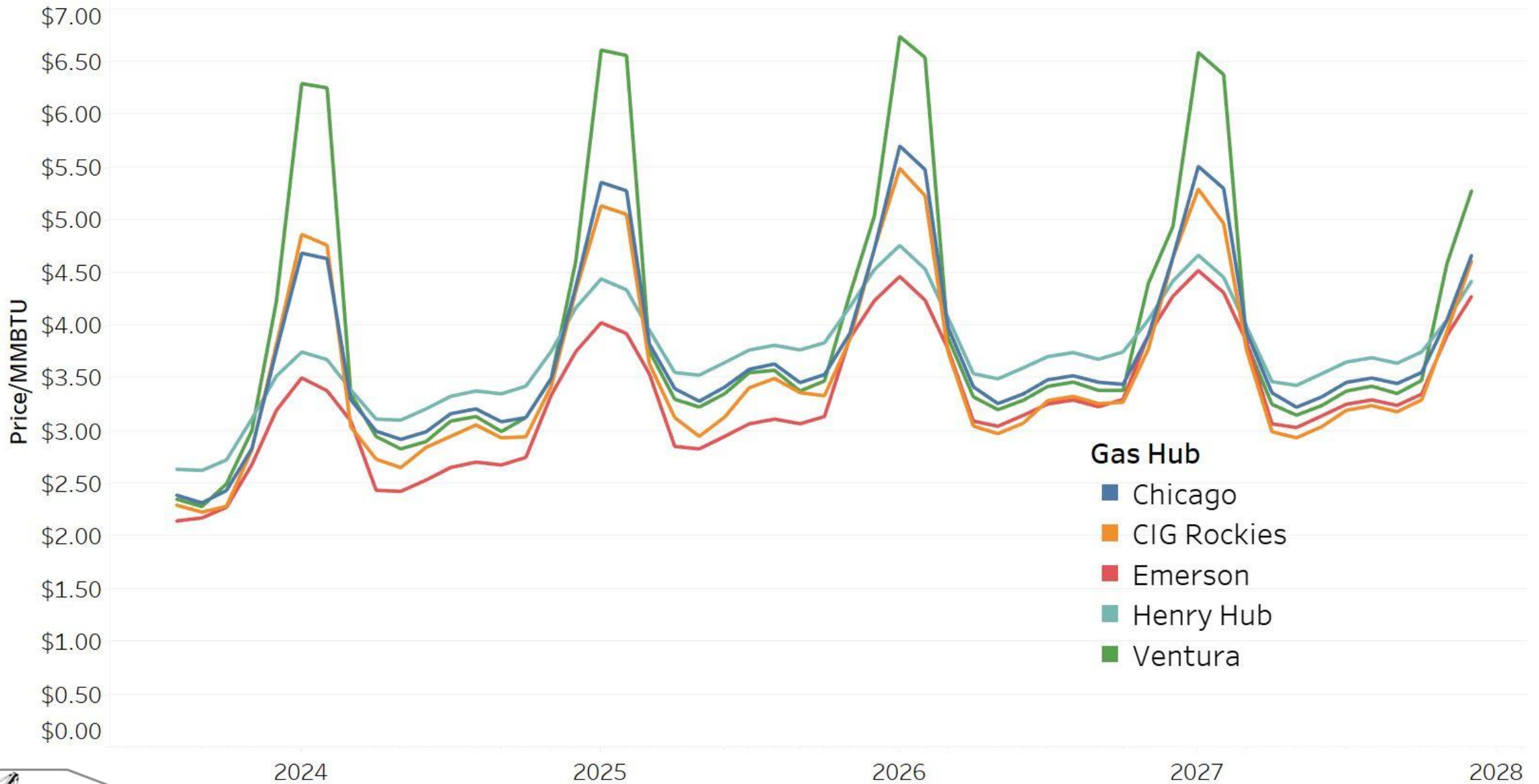
Major Residue Gas Pipeline Infrastructure



Residue Gas Storage – WBI Energy*



Regional Gas Hub Pricing*

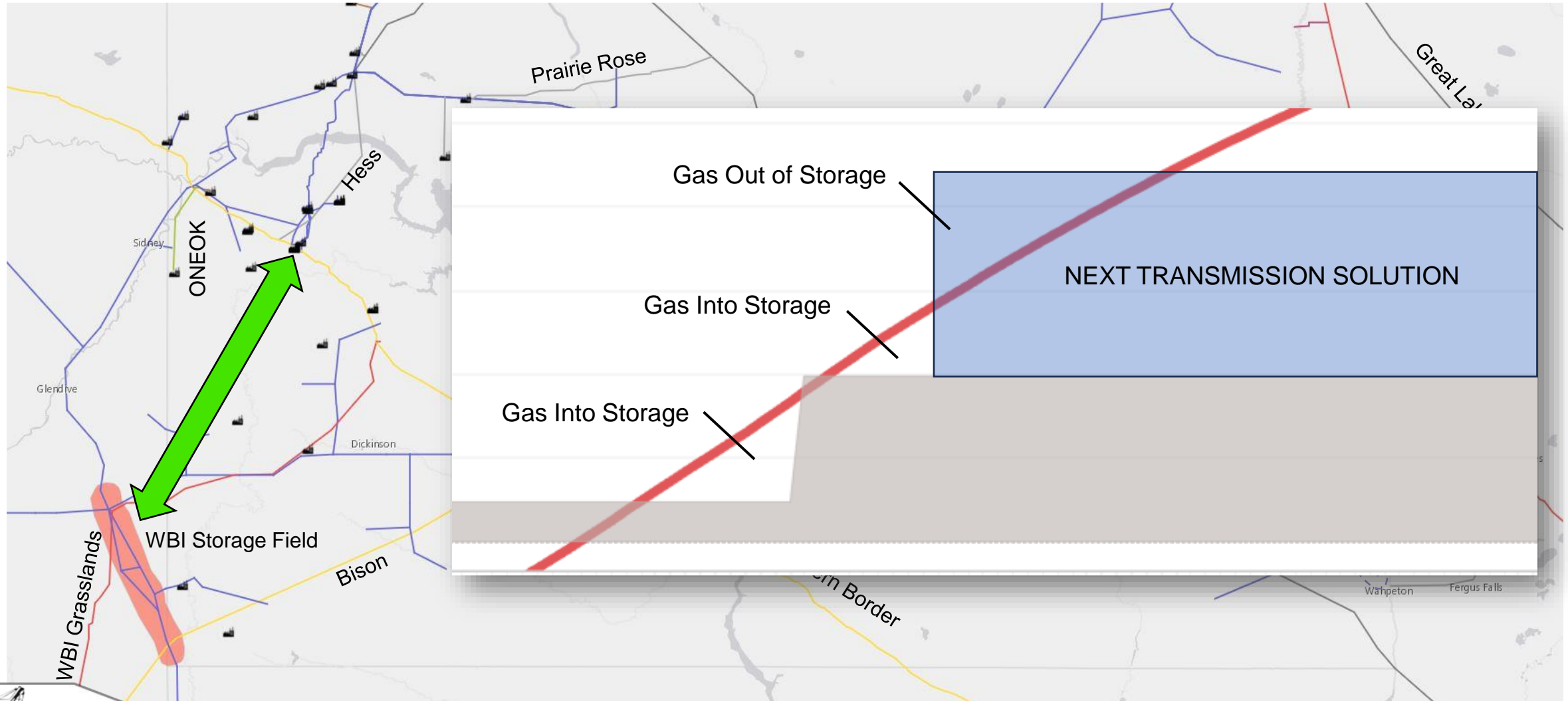


Gas Hub

- Chicago
- CIG Rockies
- Emerson
- Henry Hub
- Ventura



Could Regional Gas Storage Buy Time and Support the Next Transmission Solution?



Enhancing Access to Storage?

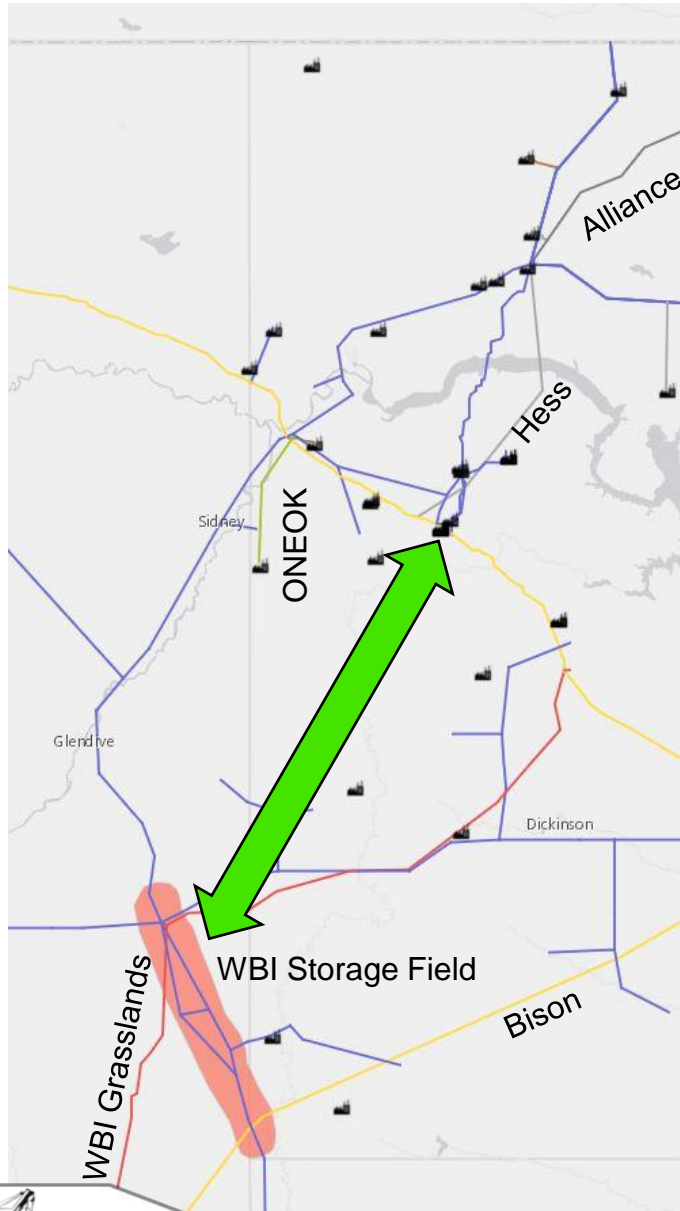
The Big Idea / Considerations

- Storage capacity immediately available (150+ BCF)
- Storage gas used to backstop future expansions or play seasonal price swings (assuming takeaway available)
- Current limitation is high volume delivery to and into storage

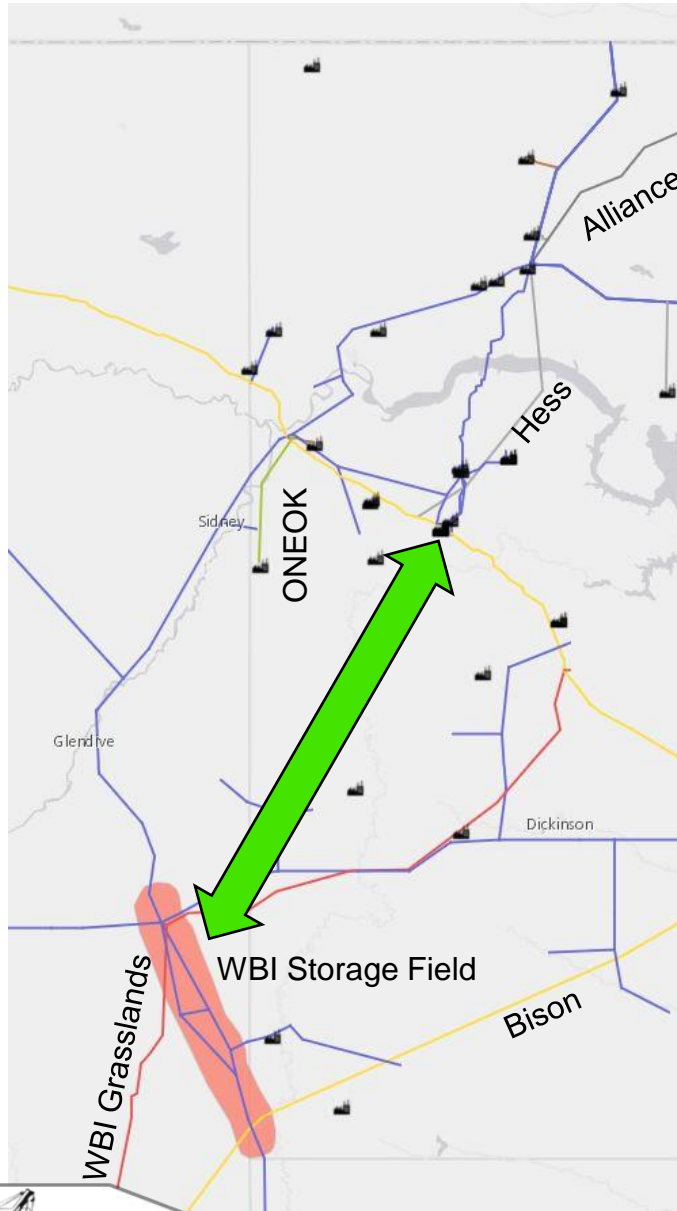
Potential Paths Forward

Option 1: Private shippers and/or NDPA take capacity to expand access to storage. NDPA releases capacity to private shippers as requested. (AKA: Private sector anticipates seeing fiscal upside from storage)

Option 2: If private sector is unable/unwilling to pay transport/storage fees, NDPA can take custody of the gas and pay transport/storage. This supports oil production volumes and builds inventory to commit to a future transmission project. (AKA: Private sector anticipates no fiscal upside for residue gas due to unknowns about future gas pricing and duration in storage. Economic upside is continuing to produce/sell oil and NGL's)



Enhancing Access to Storage?

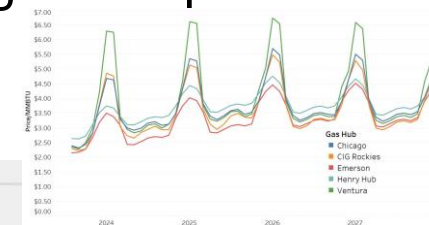


Example Volumes

- Inject: 5 Years @ 80,000 MCFD = ~146 BCF
- Commit storage withdrawals into new egress expansion project(s)
 - 5 Years @ 80,000 MCFD
 - Or 10 Years @ 40,000 MCFD
- Storage withdrawals combine with growing production to backstop new transmission pipeline(s)
- Inject: 5 Years @ 80,000 MCFD = ~\$529+ Million in total value to the state by keeping incremental oil production during that period

Theoretical Outcomes for Capacity Holders (including NDPA)

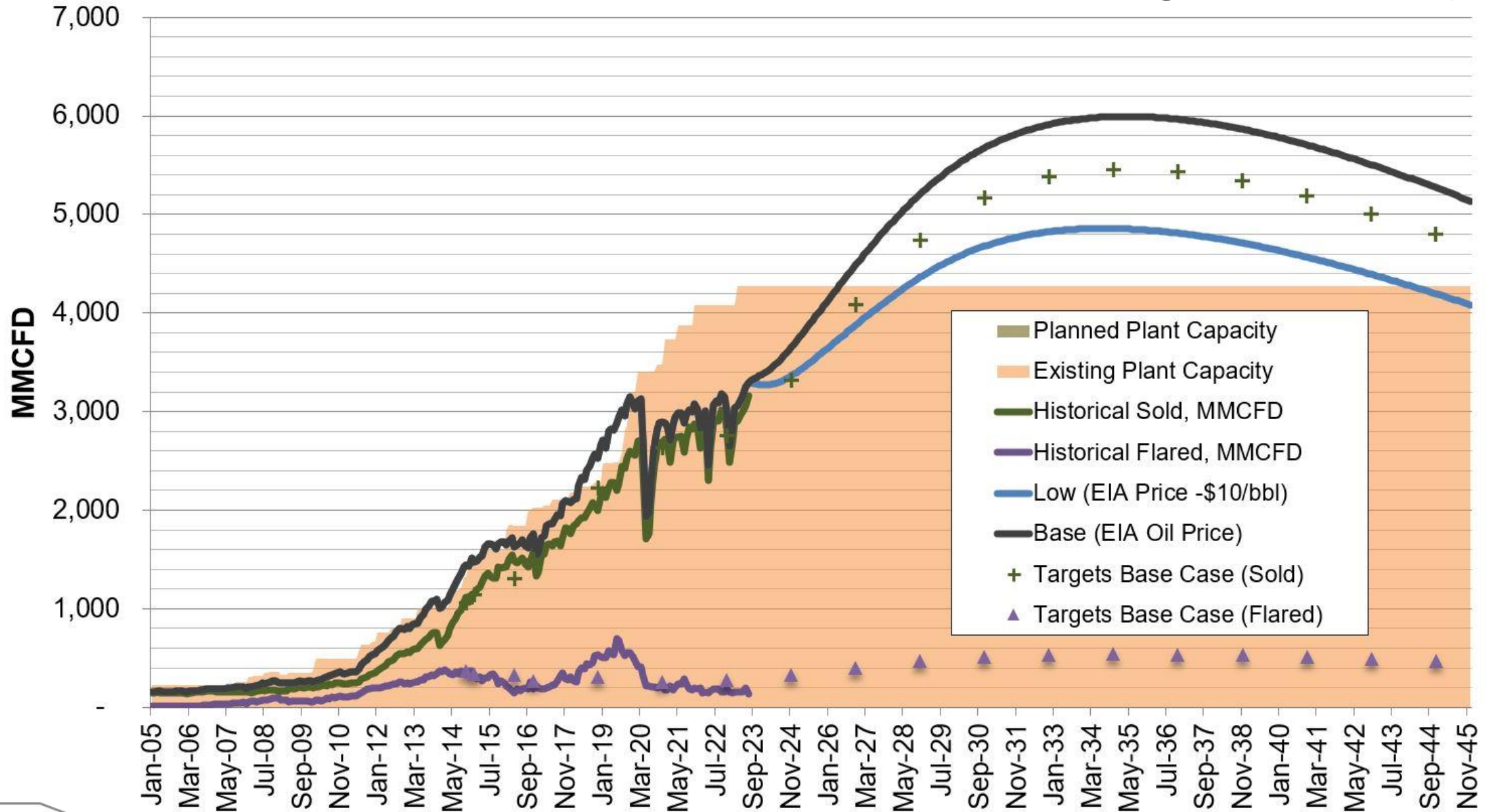
- “Best” Case: Gas without pipeline egress can move and oil flows
- “Worst(?)” Case: Pipeline egress was sufficient, but new/expanded capacity holders can use storage to capitalize on attractive seasonal market swings



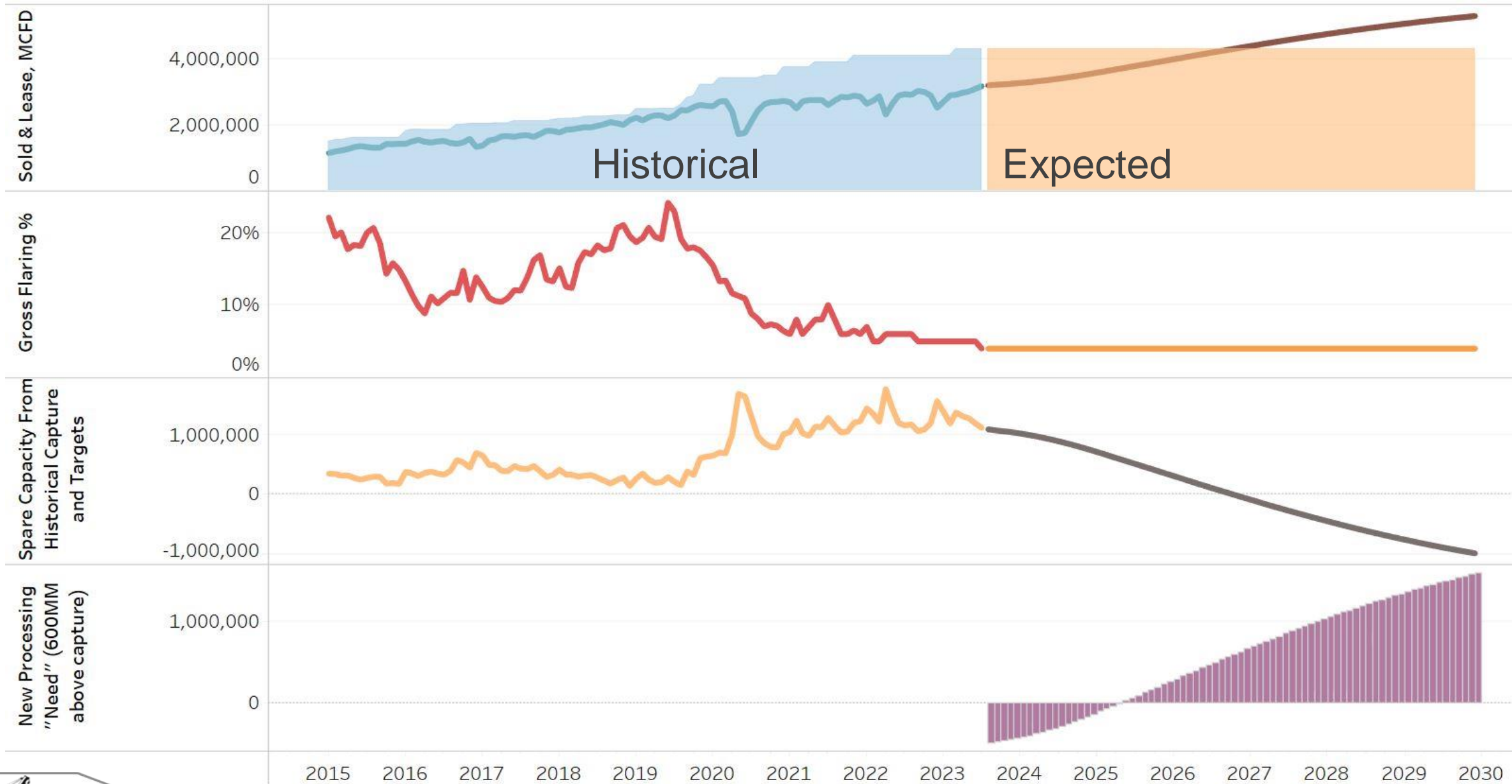
Natural Gas Update



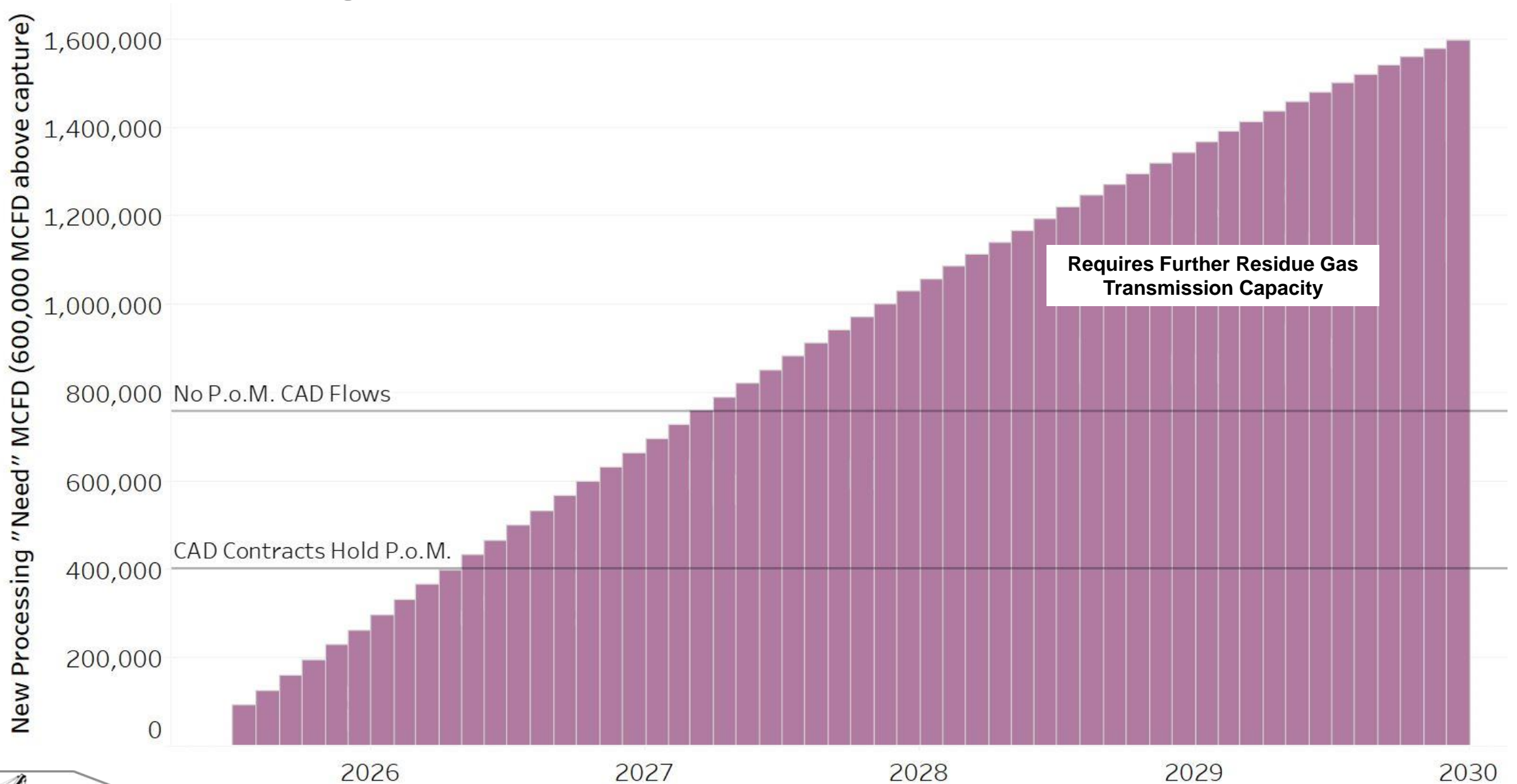
North Dakota Natural Gas Processing Capacity



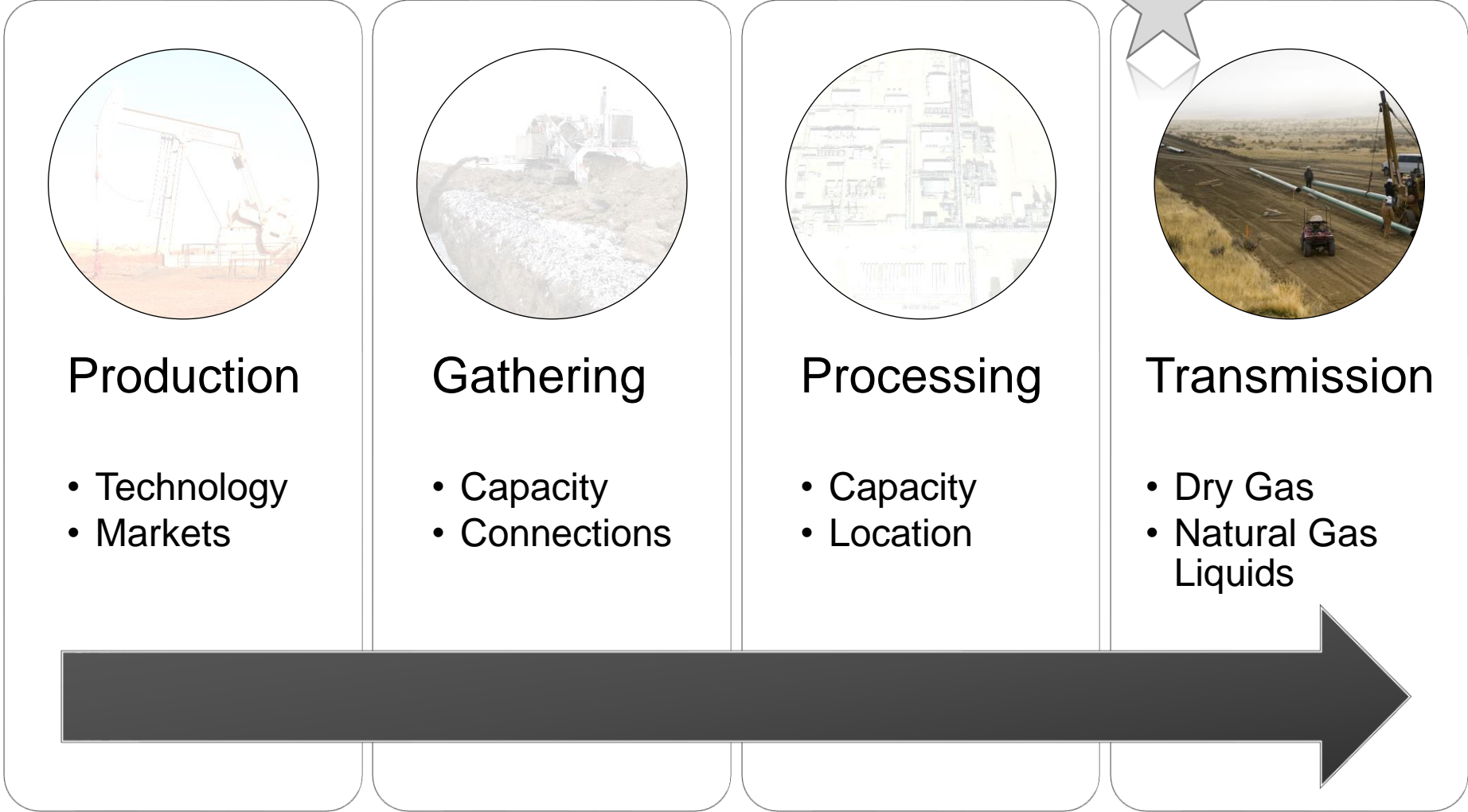
Gas Processing Capacity & Spare Capacity



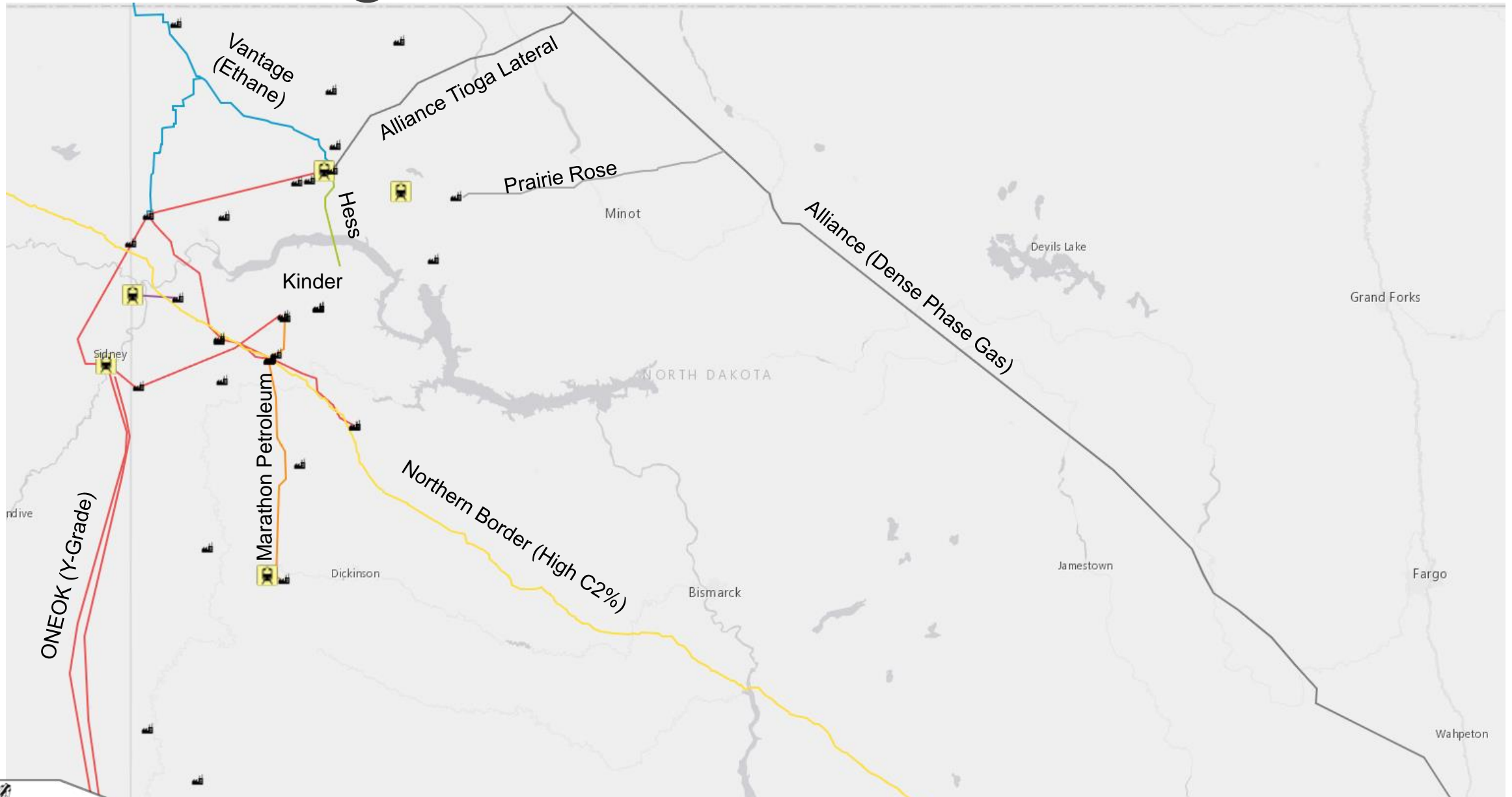
Processing Needs* – With New Cheyenne Pipes



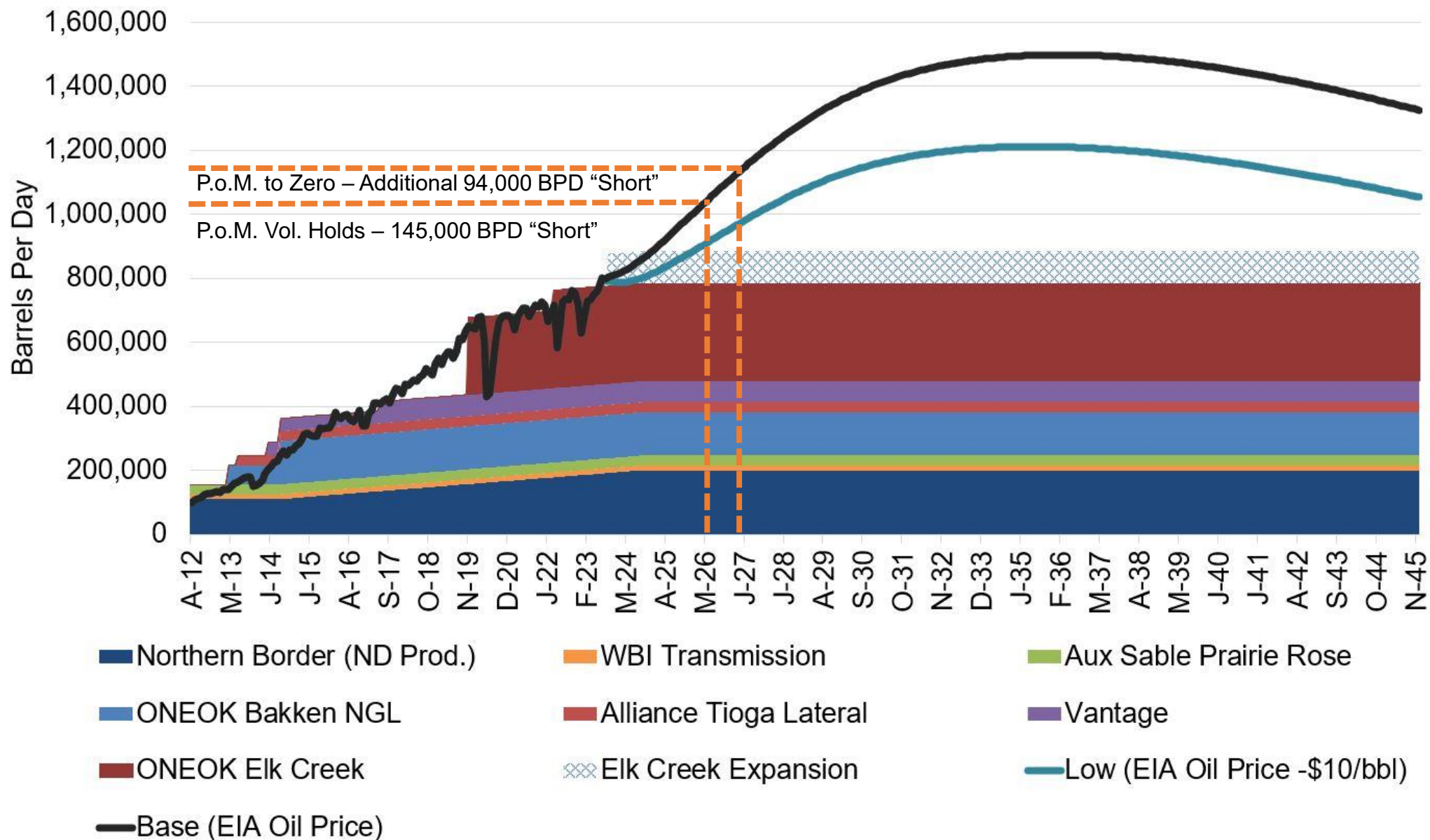
Natural Gas Update



Regional NGL Infrastructure



NGL Transport Needs* – With New Cheyenne Pipes



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