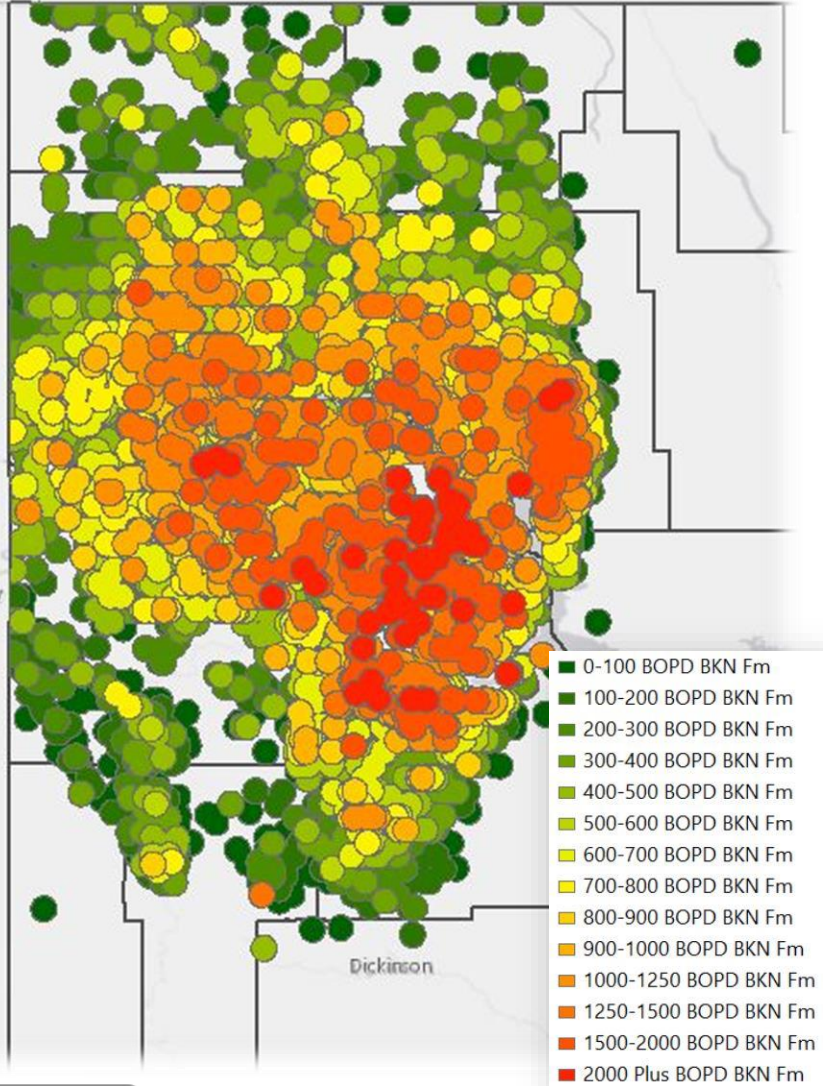


North Dakota Midstream Update

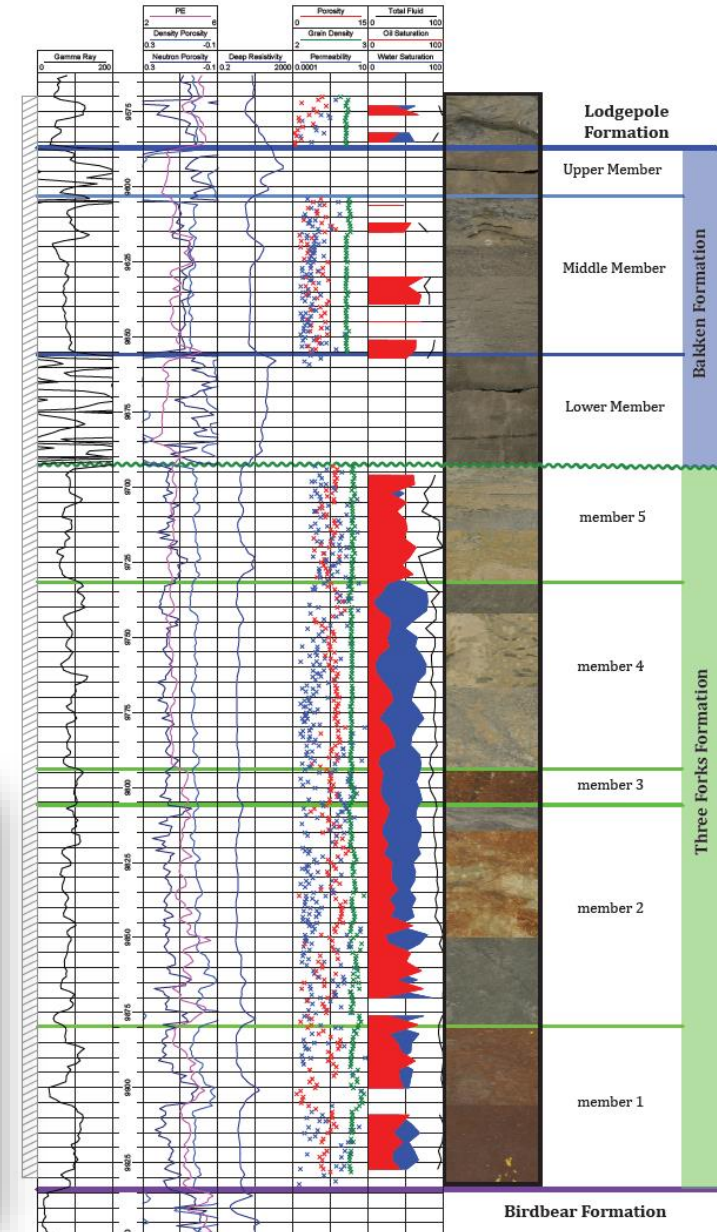
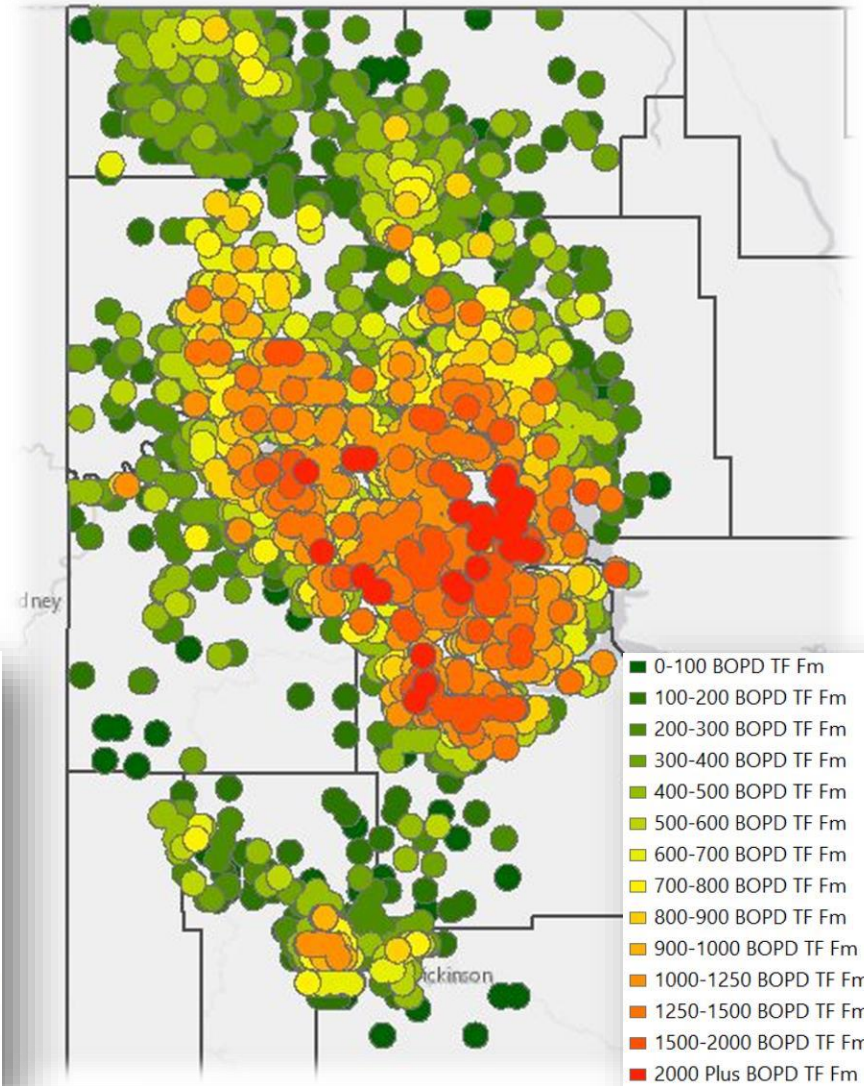


Bakken & Three Forks Formations – Feb. 2022

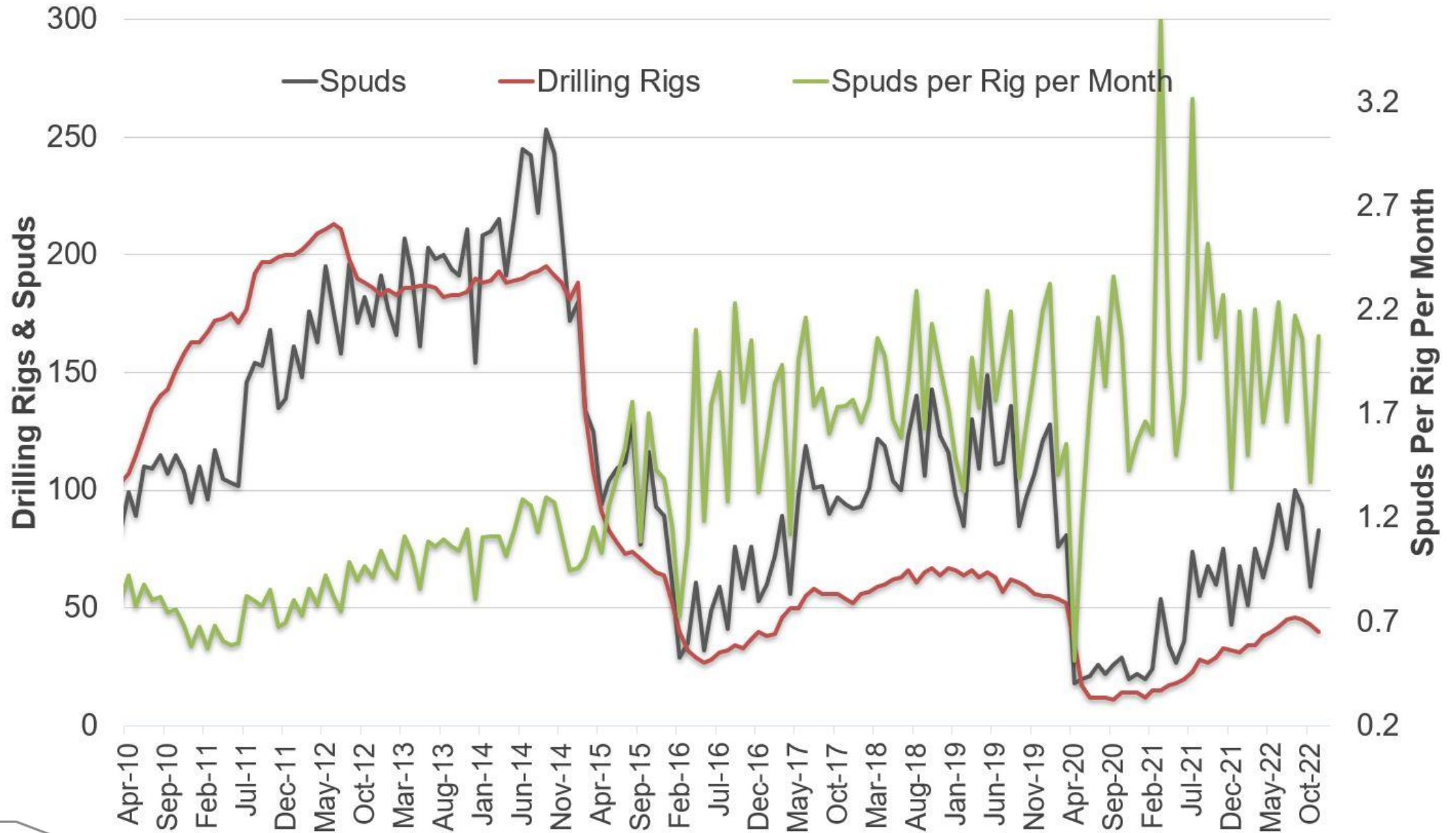
Bakken Formation



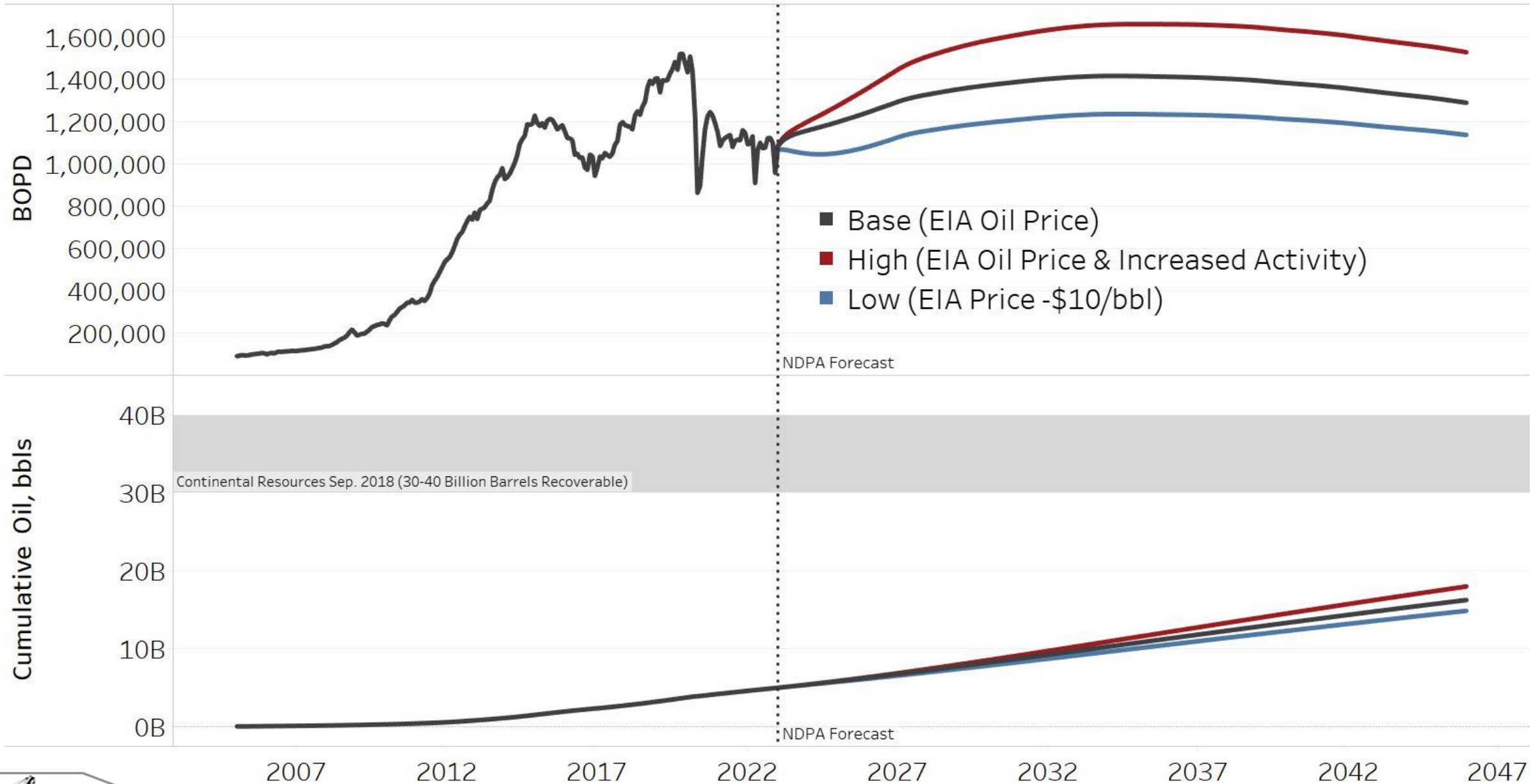
Three Forks Formation



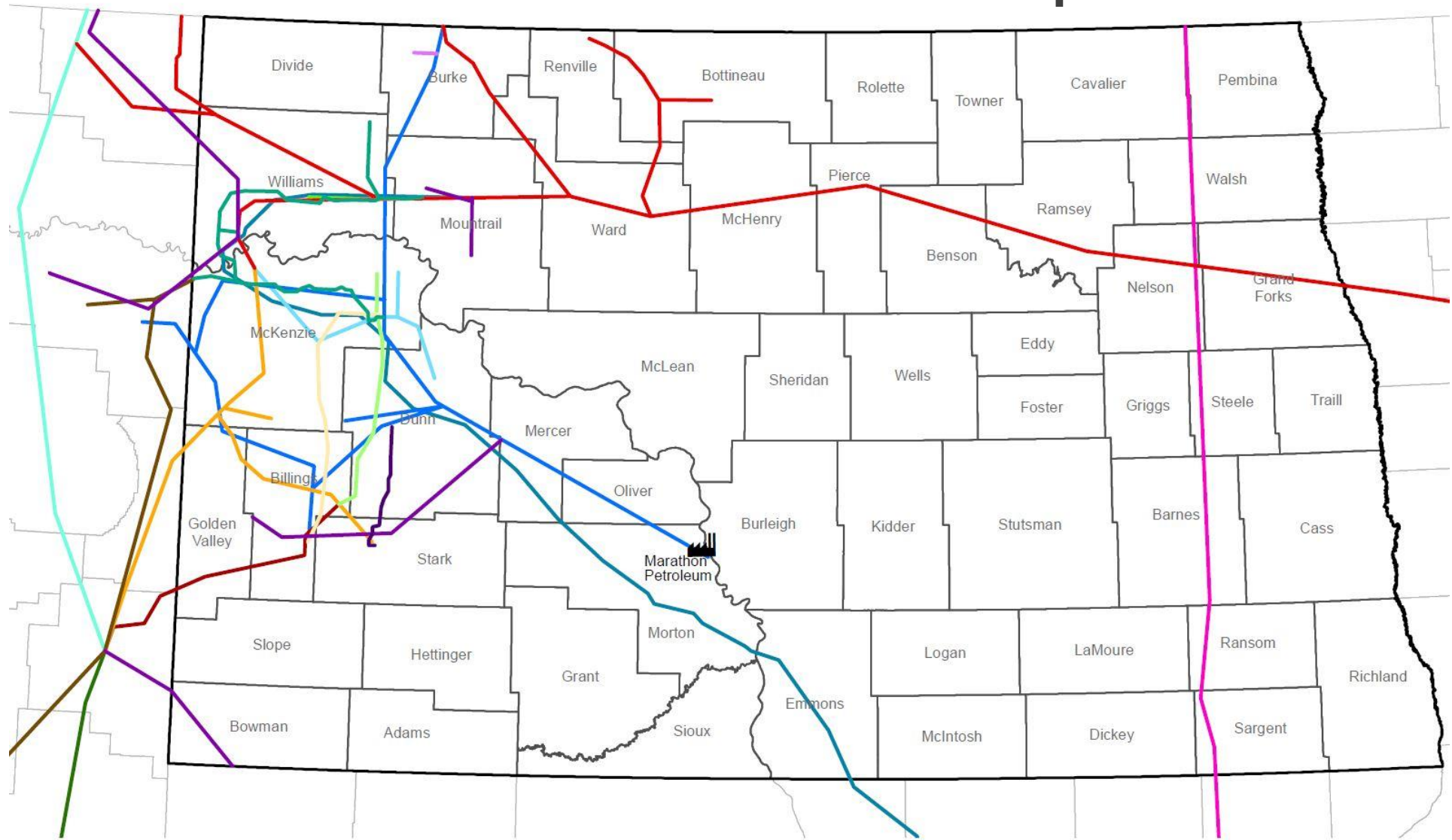
North Dakota Drilling Rig Efficiency



ND Oil Production: EIA Price Deck



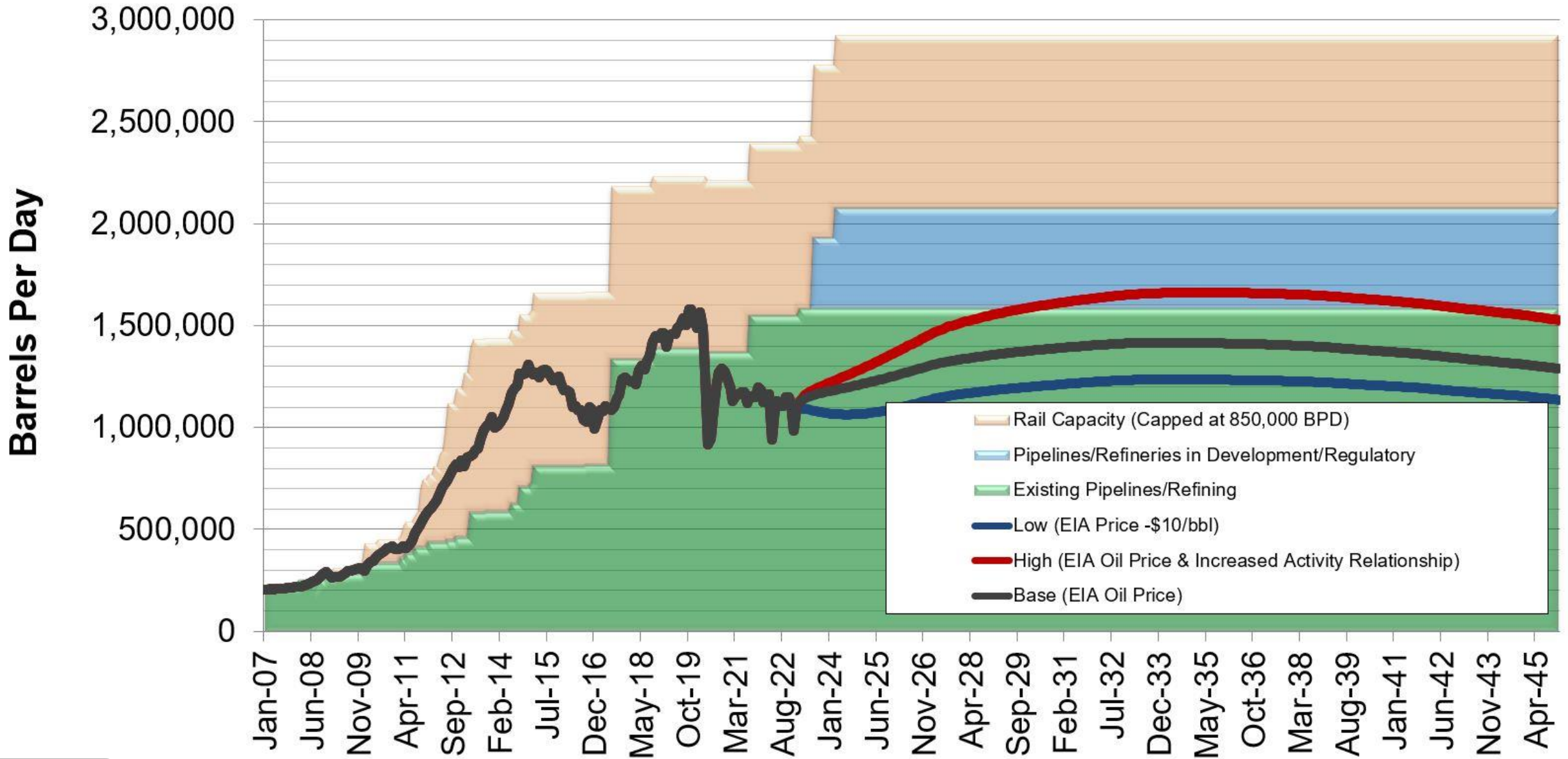
North Dakota Oil Transmission Pipelines

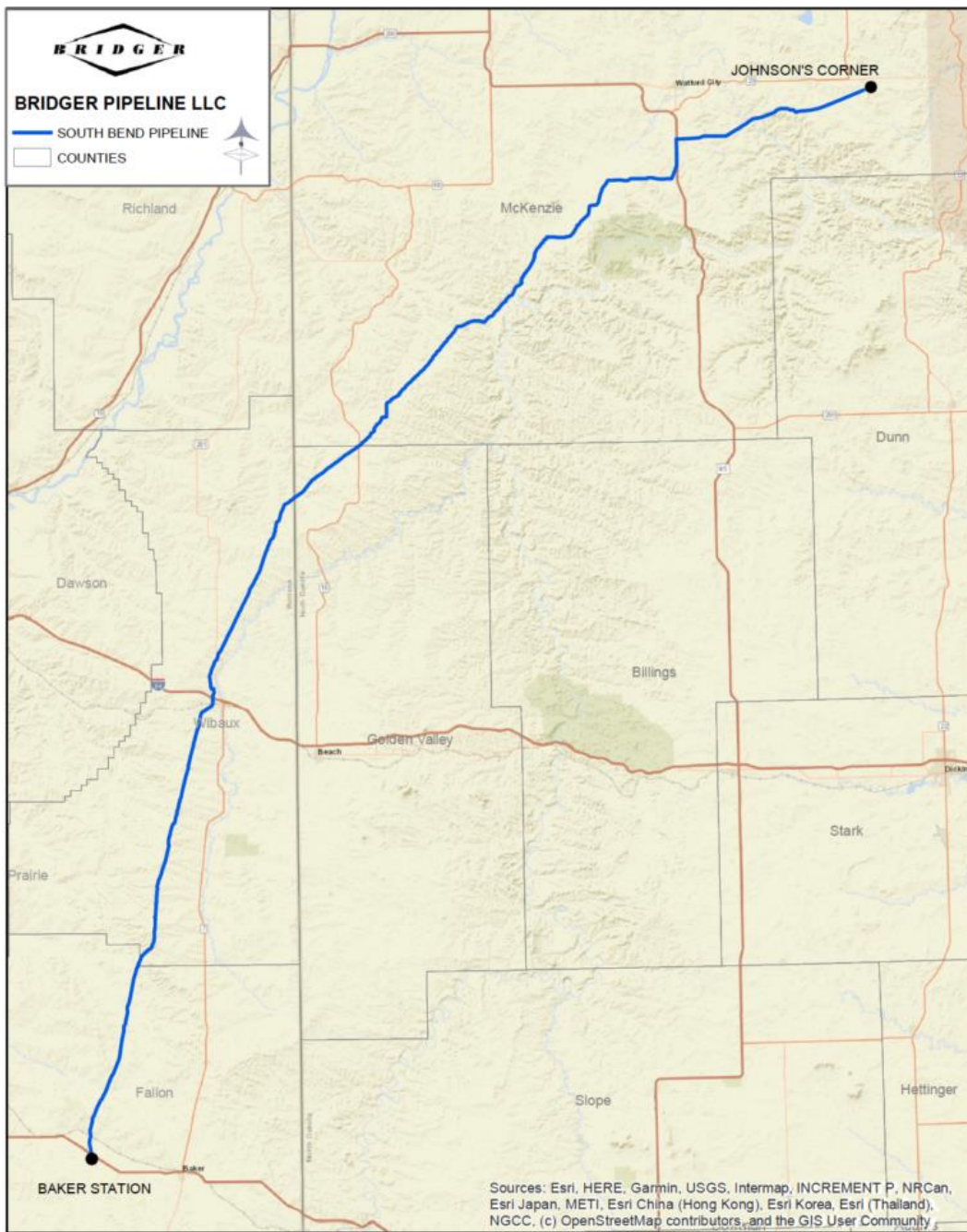


- | | | | | | |
|--------------------|-----------------|---------------|------------|-------------------|----------|
| Refinery | Basin Transload | Butte | Double H | Hiland | Bridger |
| Bakken Oil Express | Belle Fourche | Crestwood | Enbridge | Keystone Pipeline | Targa |
| BakkenLink | Bridger |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



Williston Basin Oil Production & Export Capacity, BOPD





South Bend Pipeline

Project Highlights

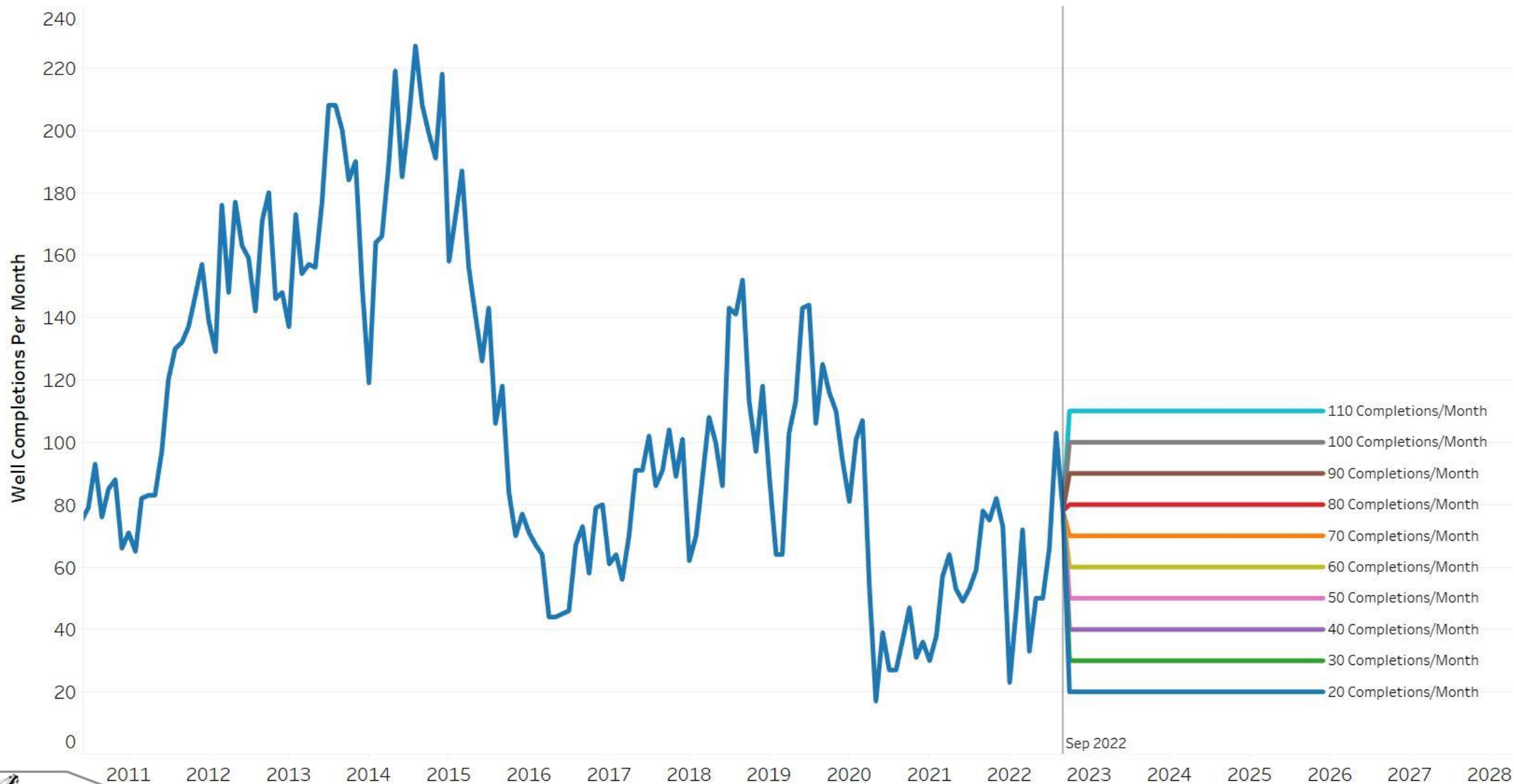
- 145 Miles of New 16" Pipe (~80 Miles in ND)
- Initial Capacity 105,000 BOPD (Up to 250,000)
- Direct Access to Baker, MT Hub (Q4-22/Q1-23)
- Existing Pipe Capacity: Baker, MT to Hulett, WY
- Joint Tariff With Tallgrass Seahorse Pipeline
 - Committed Rate - ND to OK \$4.25/BBL
 - Uncommitted Rate - ND to OK \$8.15/BBL

Construction Update

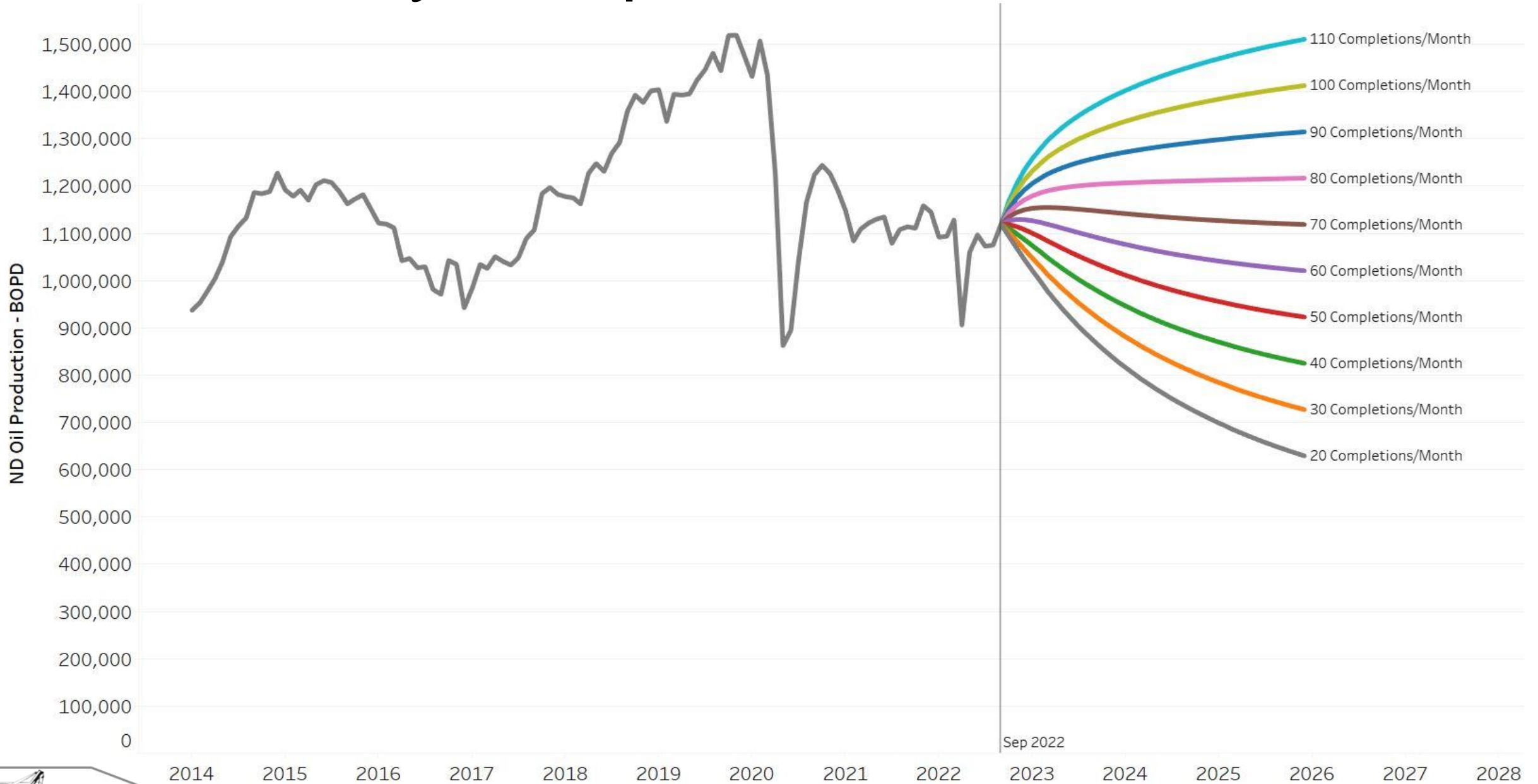
- Three Active Construction Spreads (260+ Crew)
- Pipe Strung: 100%
- Welded: 100%
- Trenched: 100%
- Lowered: 100%
- Reclaimed: 84%
- Hydrotesting: 68%



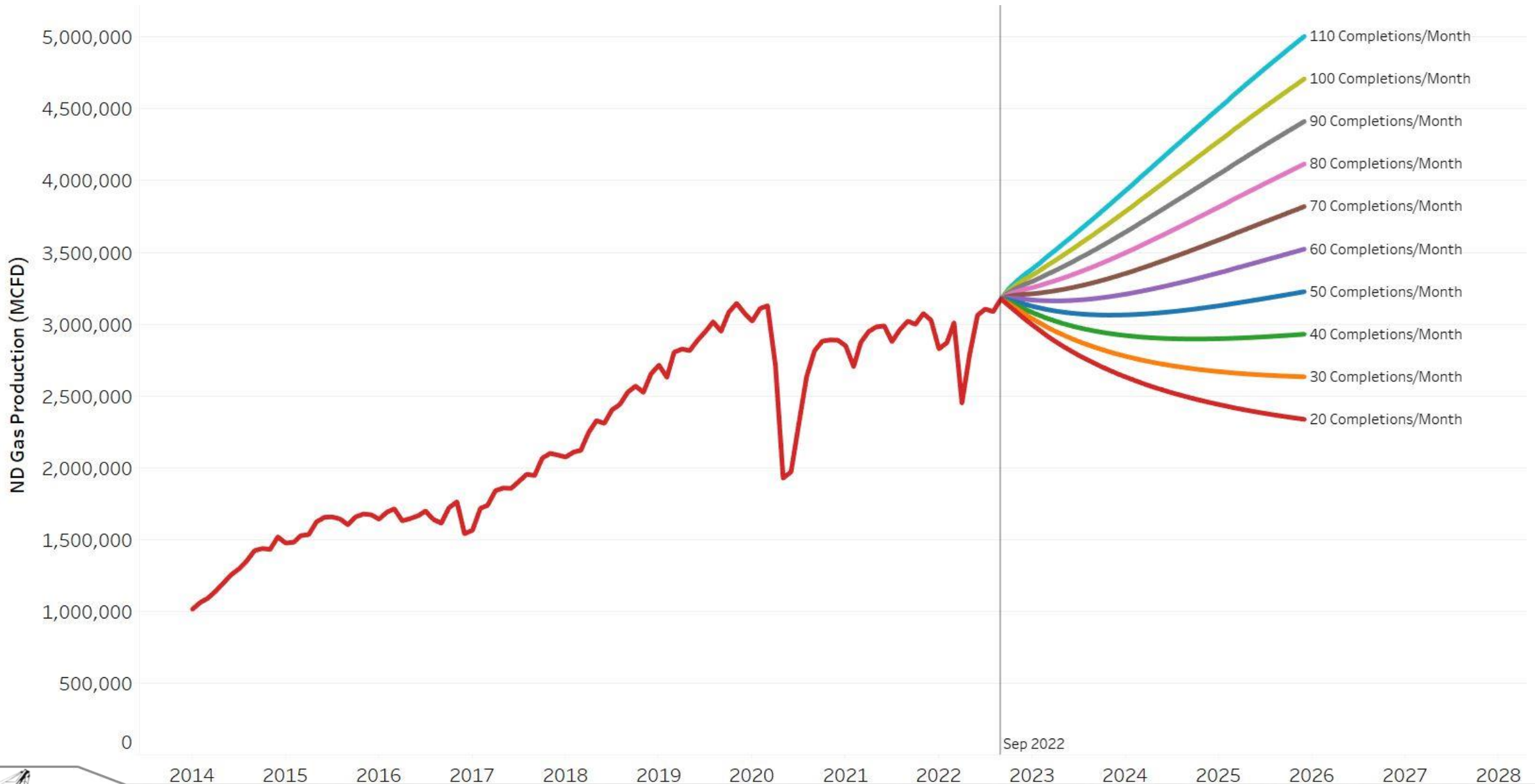
Completions Per Month Exercise



Monthly Completion Scenarios - Oil



Monthly Completion Scenarios - Gas



Sep 2022



Natural Gas Update



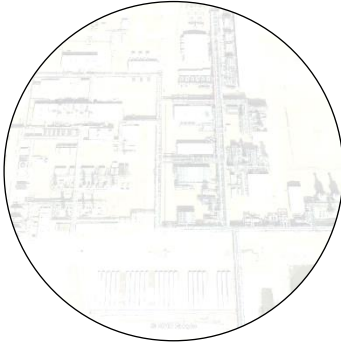
Production

- Technology
- Markets



Gathering

- Capacity
- Connections



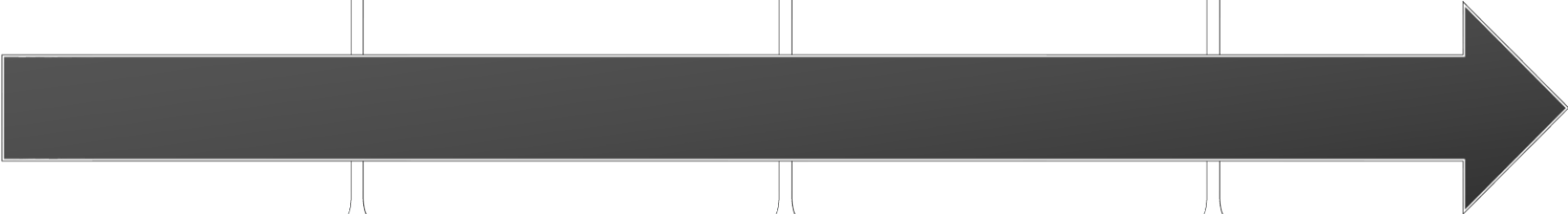
Processing

- Capacity
- Location



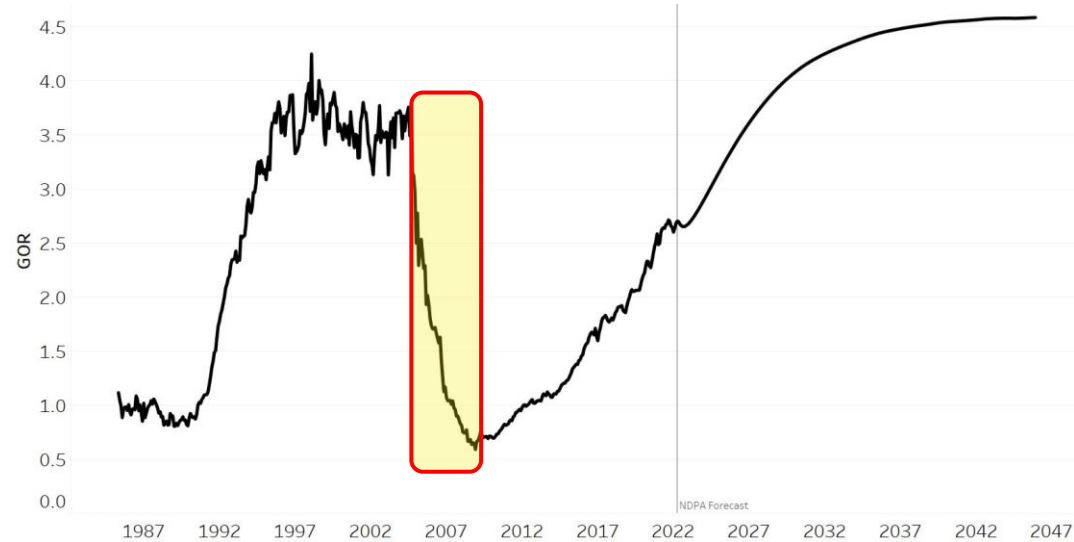
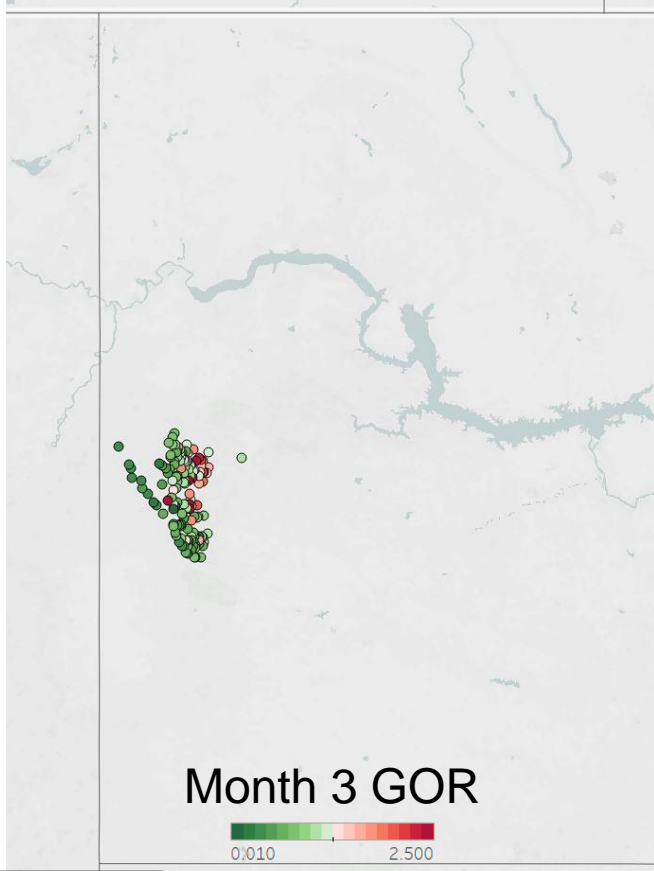
Transmission

- Dry Gas
- Natural Gas Liquids



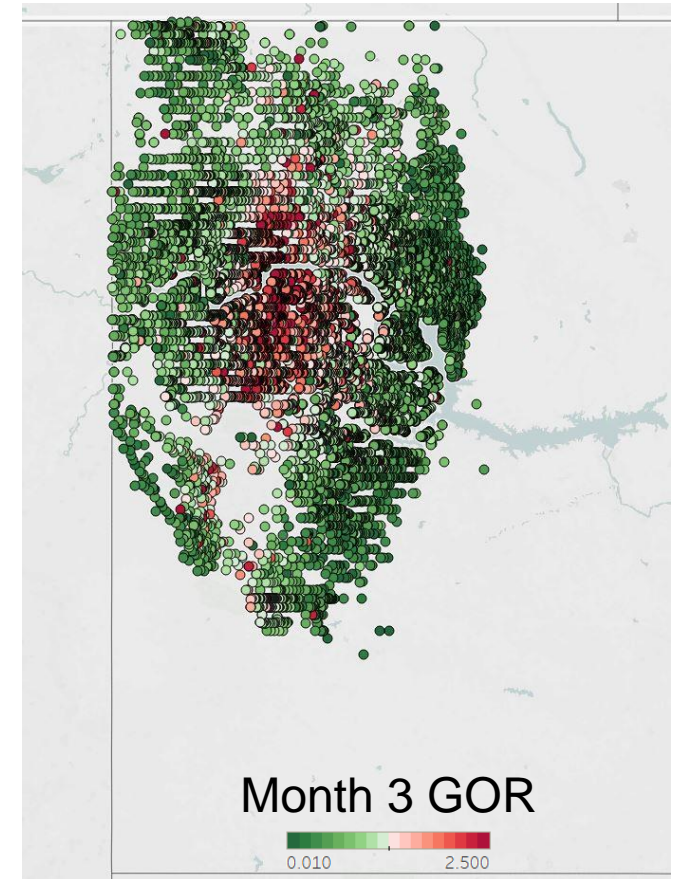
The GOR “Reset” and Forward Expectations

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

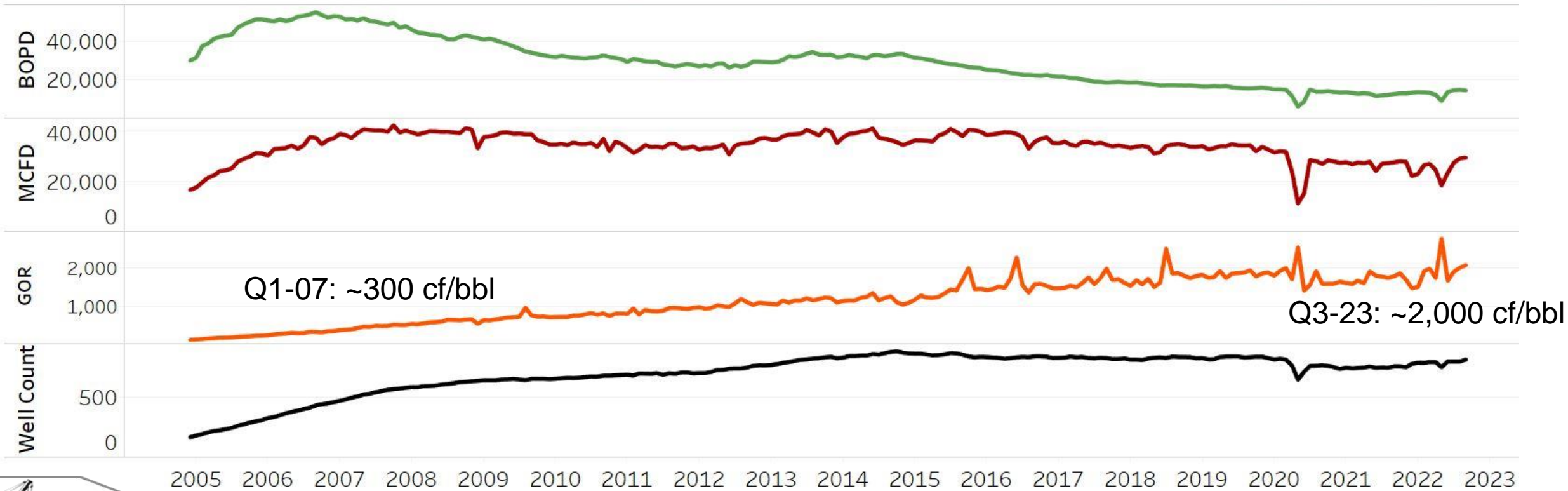
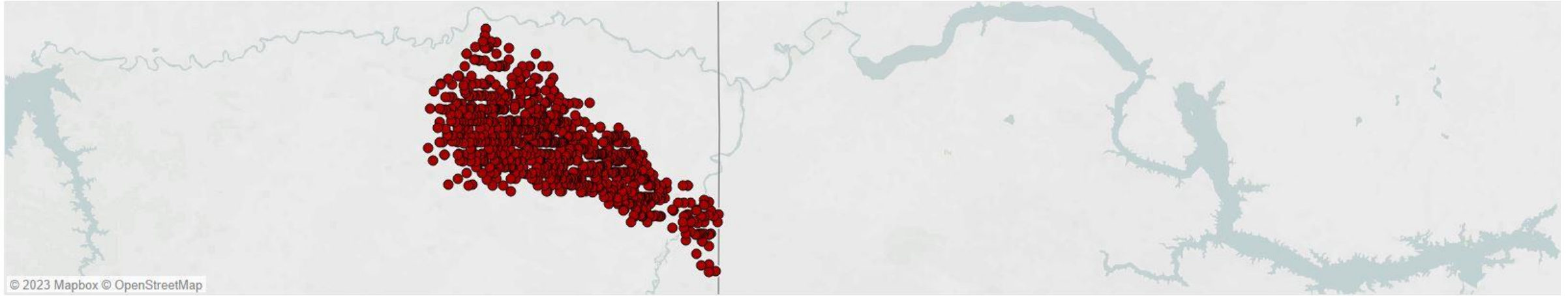


Mid-2000’s: Modern Bakken development begins and statewide average GOR is “reset” with large volumes of new gas production

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

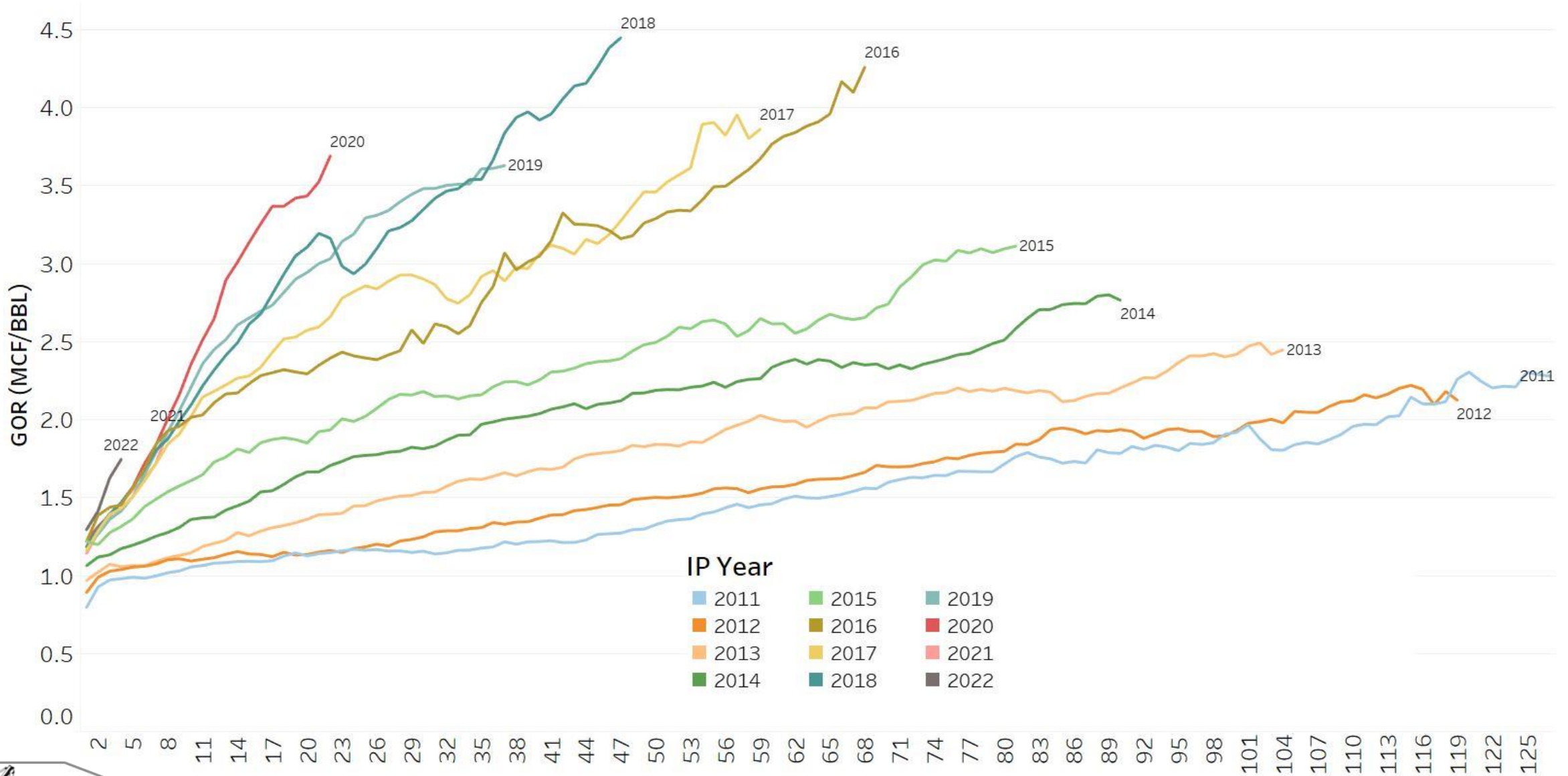


Montana Elm Coulee Gas/Oil Ratios



Statewide Bakken Gas/Oil Ratios

Production Month

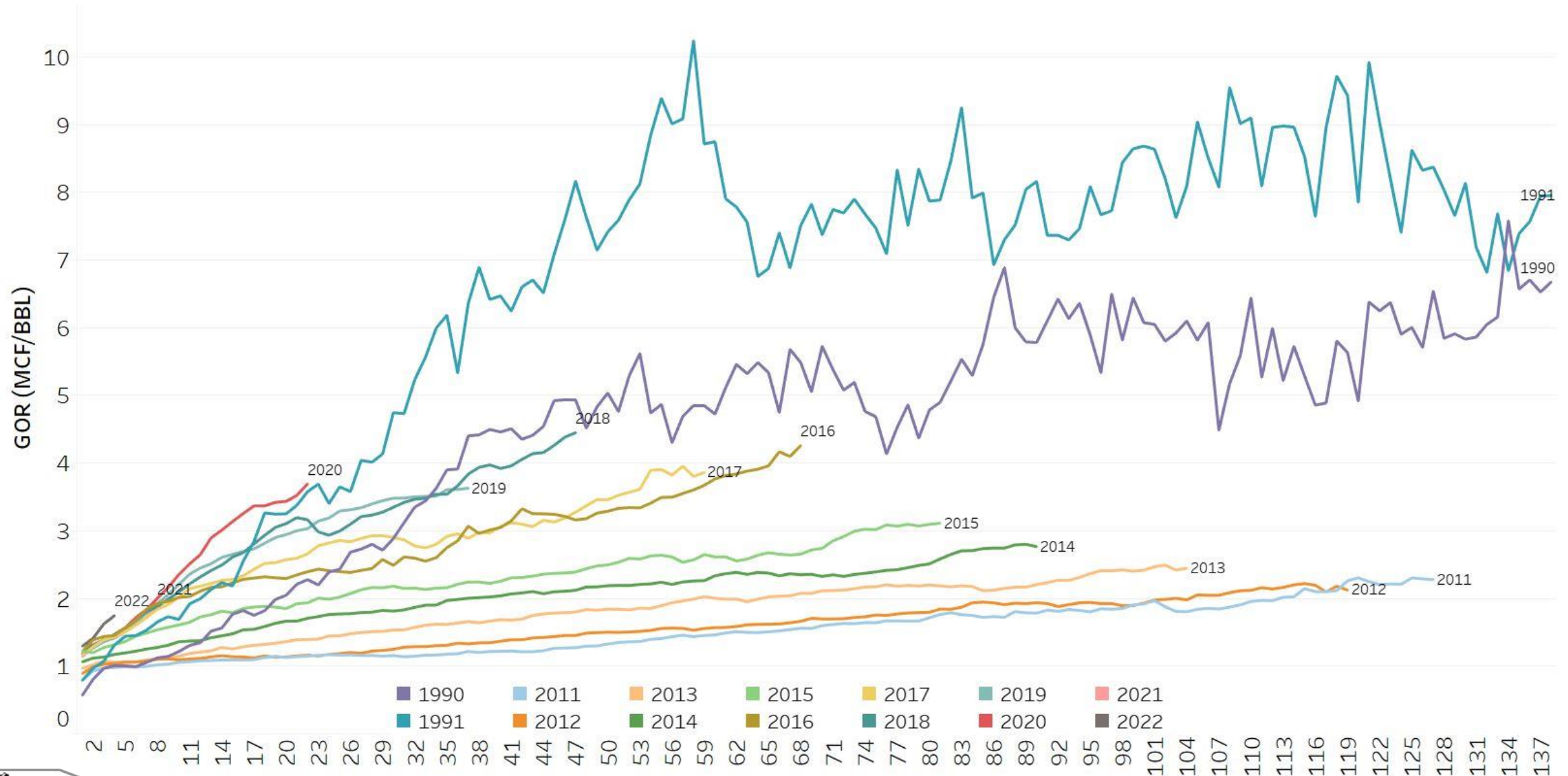


- IP Year**
- 2011
 - 2015
 - 2019
 - 2012
 - 2016
 - 2020
 - 2013
 - 2017
 - 2021
 - 2014
 - 2018
 - 2022

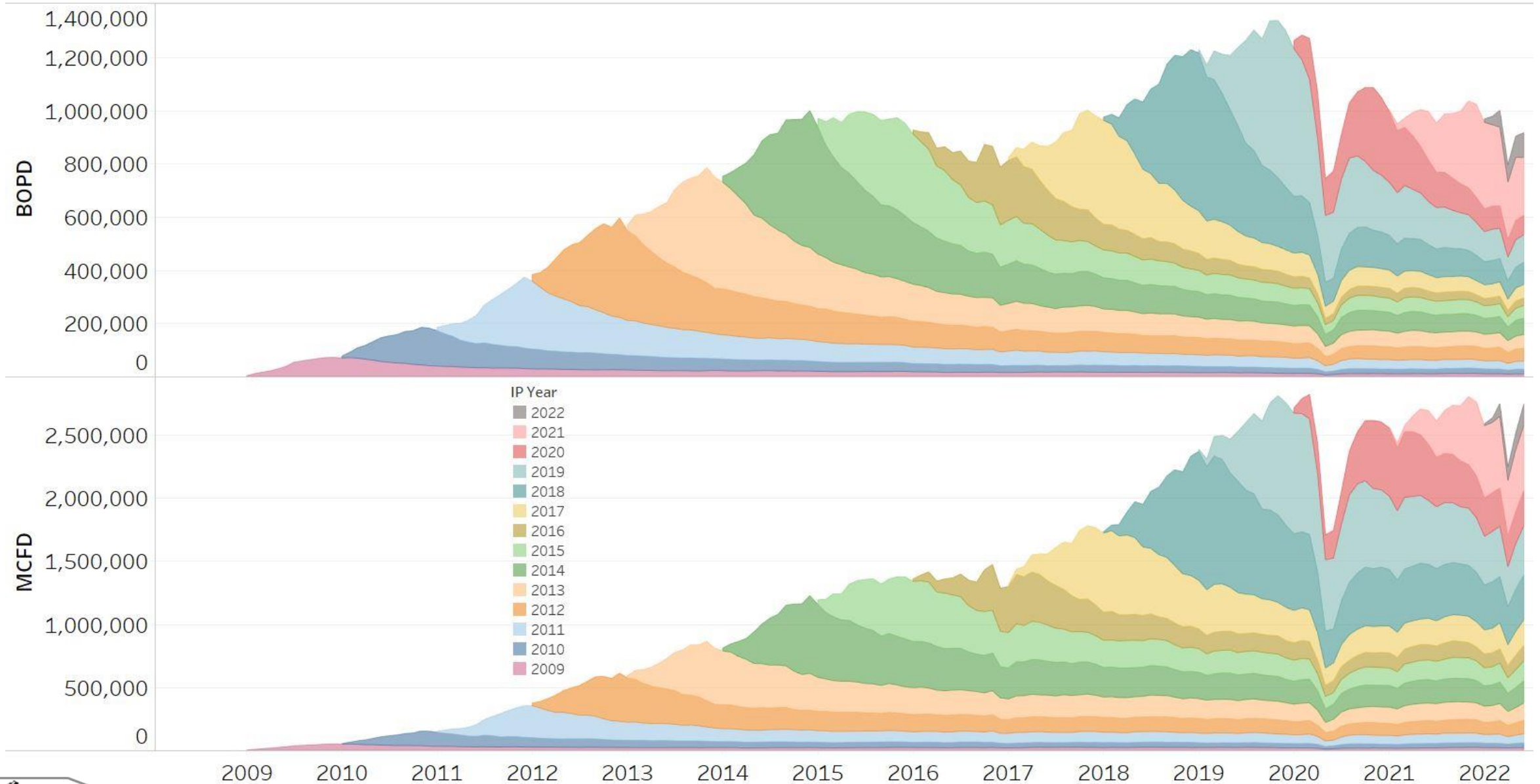


Statewide Bakken Gas/Oil Ratios

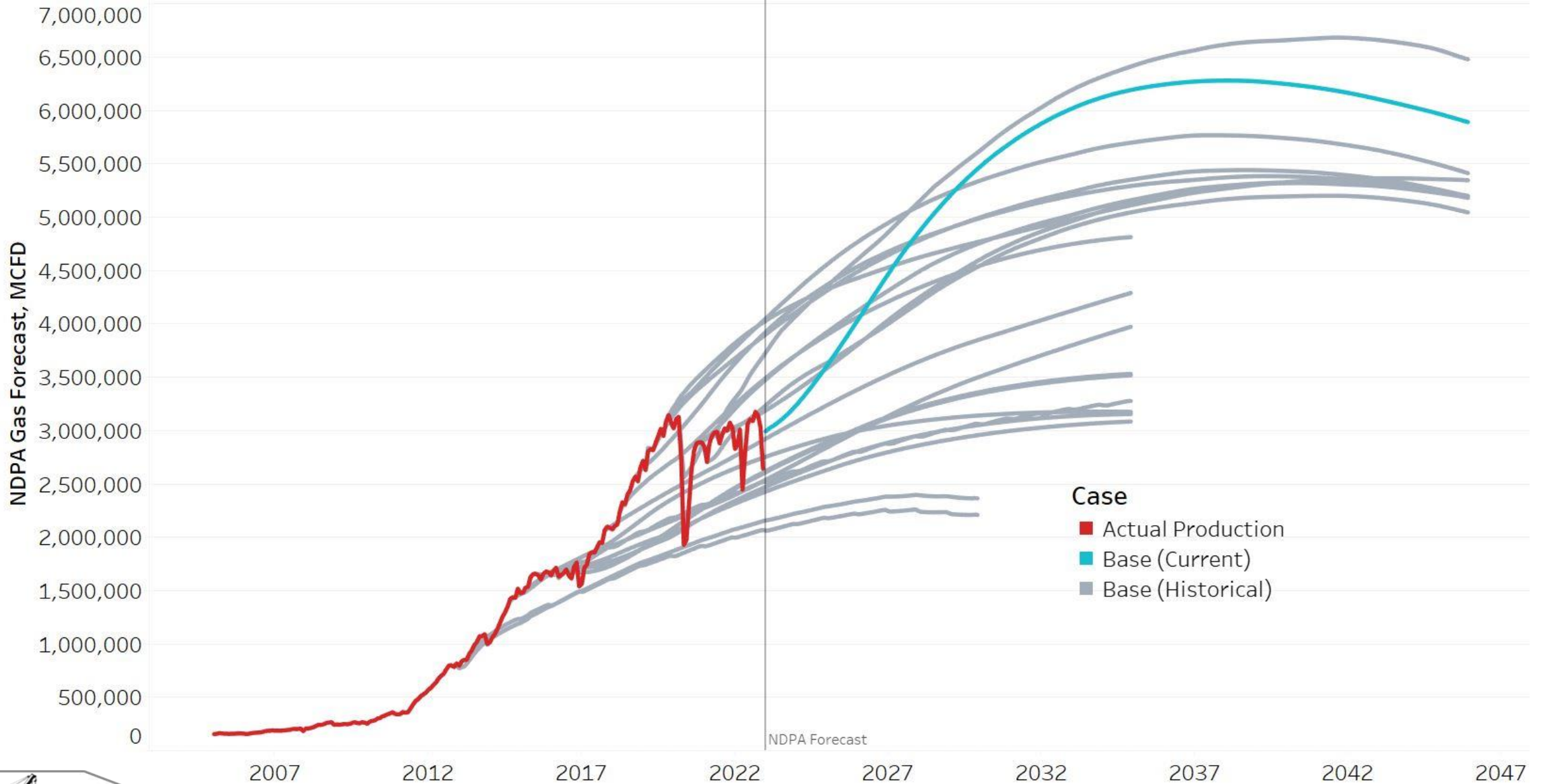
Production Month



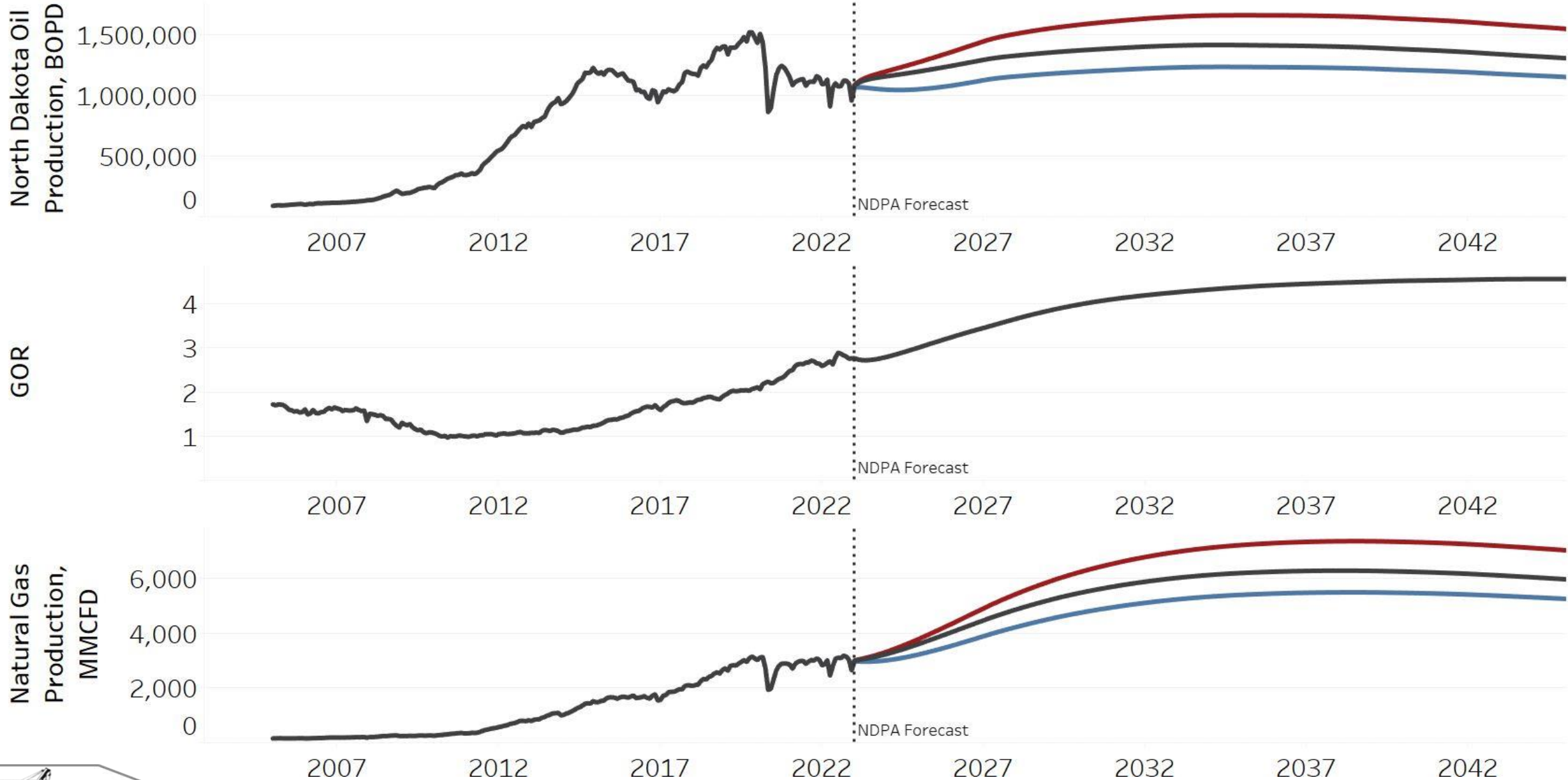
Terminal Gas Decline(?)



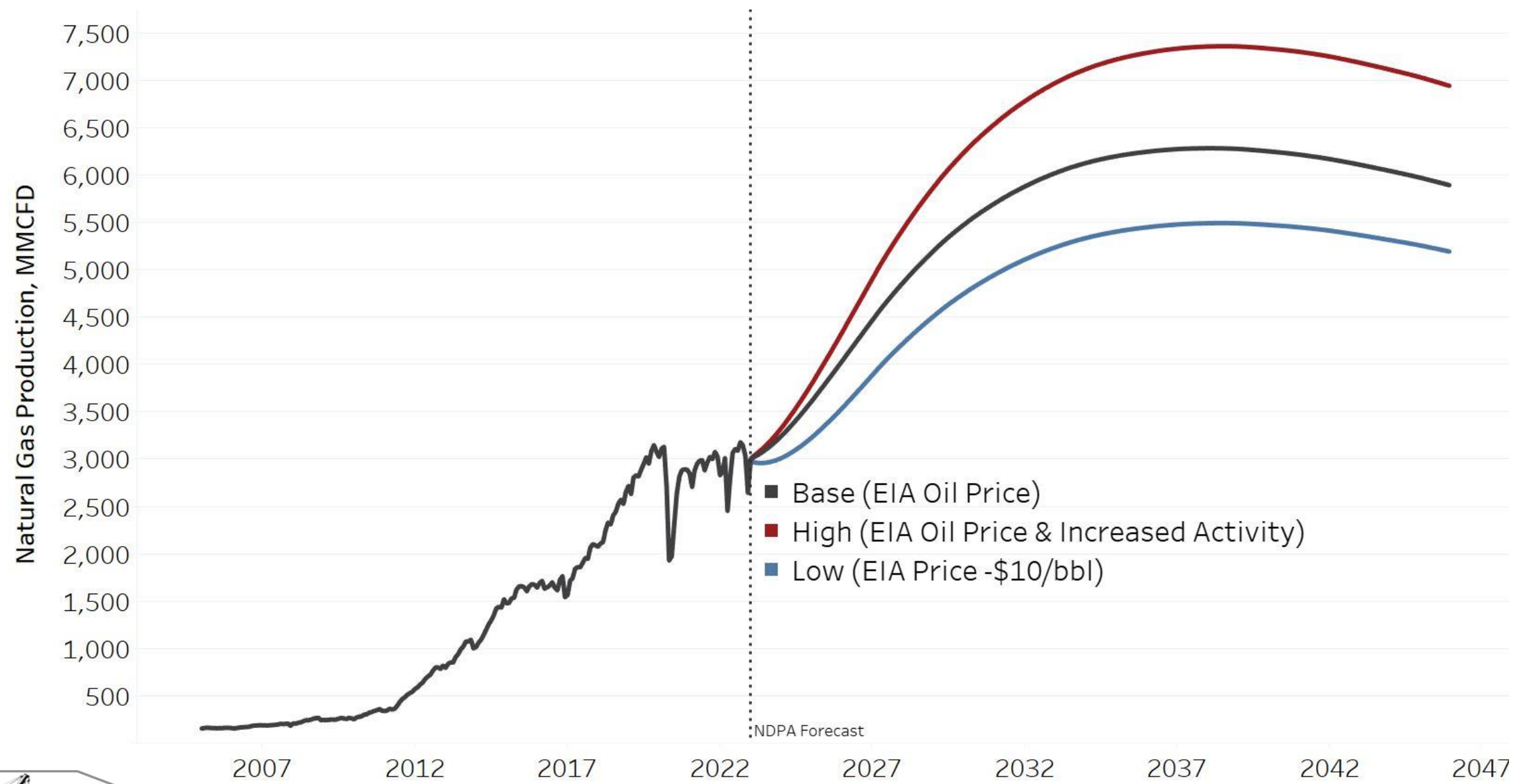
Where Did We(I) Go Wrong on Gas Forecasting?



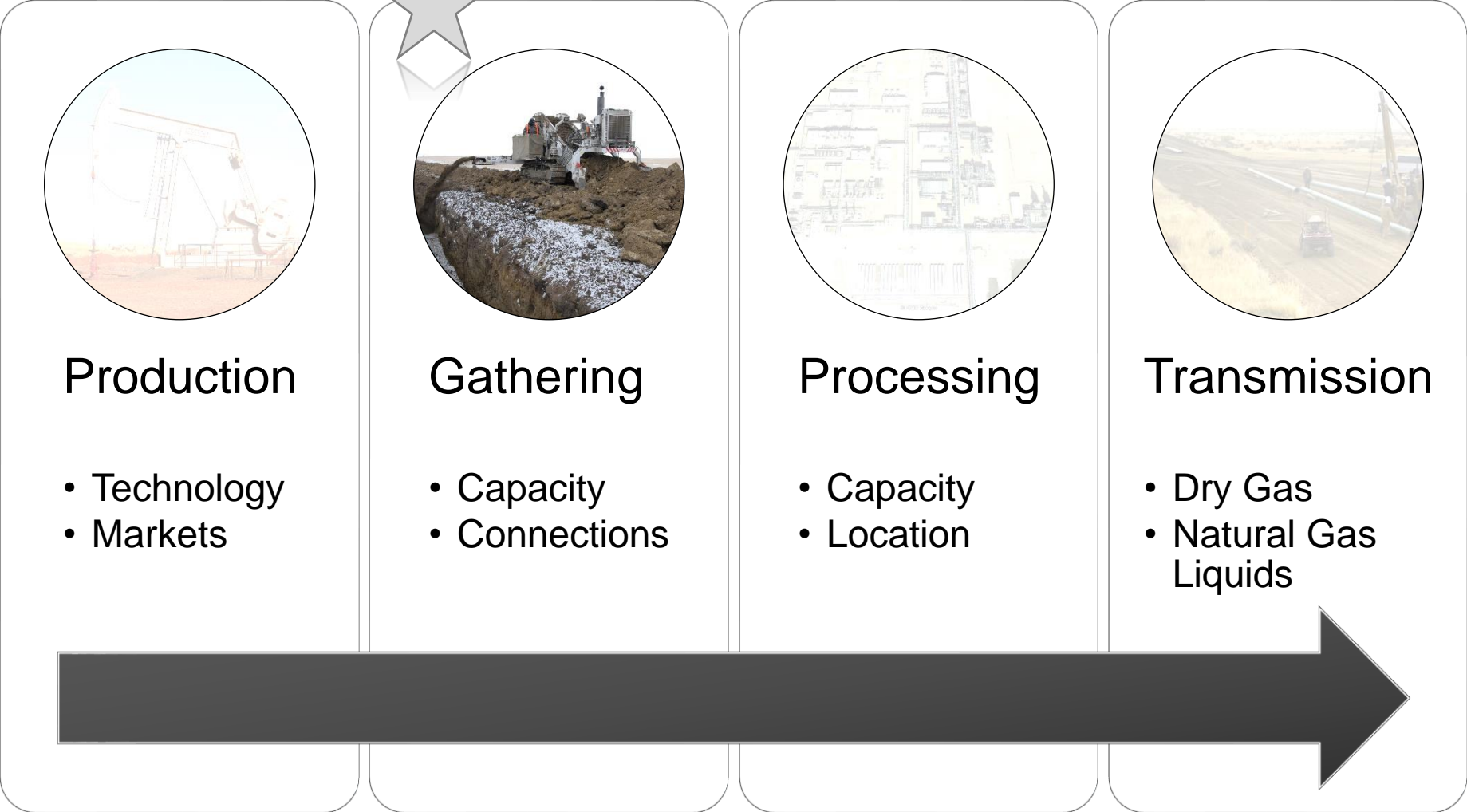
ND Oil Production: EIA Price Deck



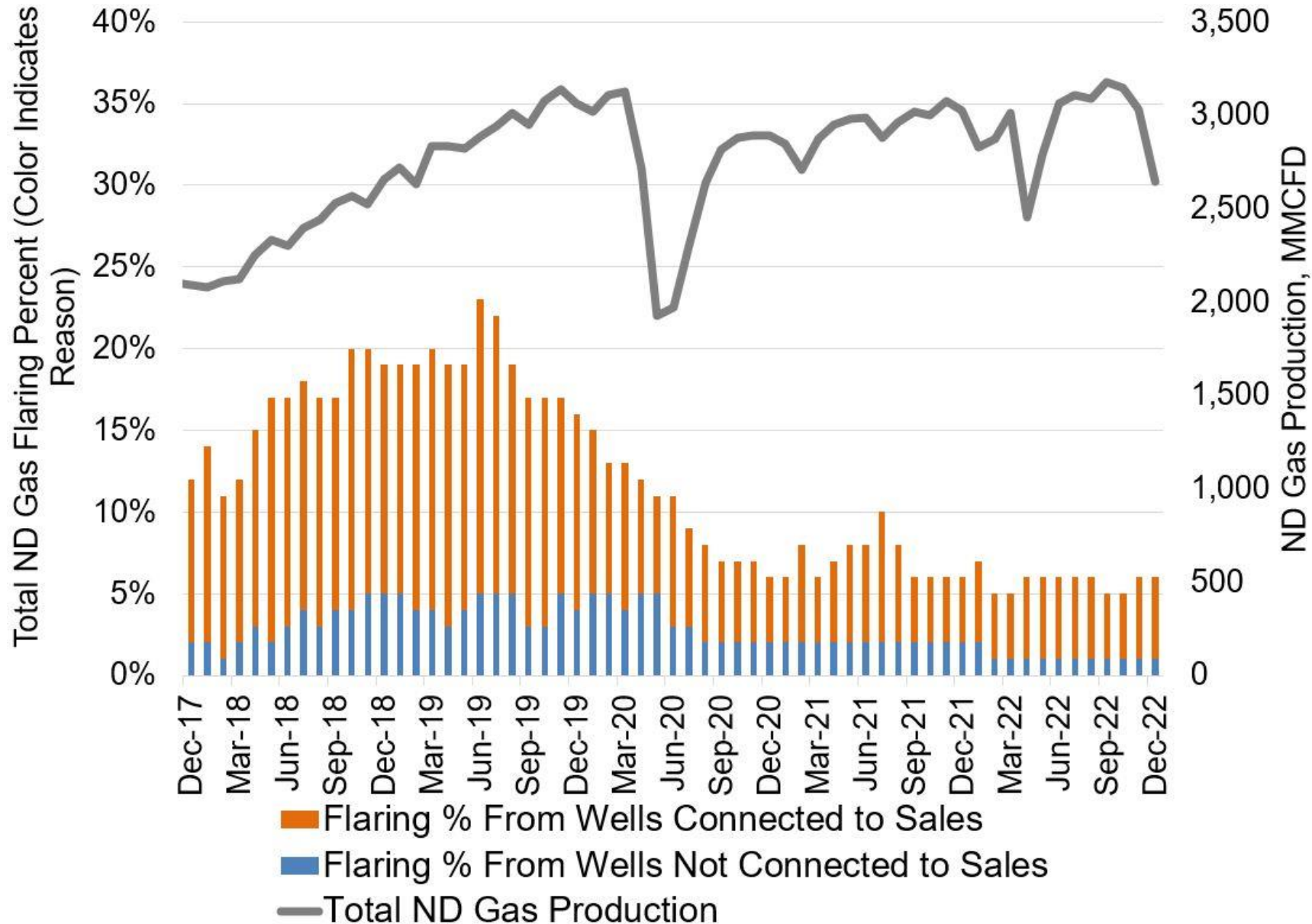
ND Gas Production: EIA Price Deck



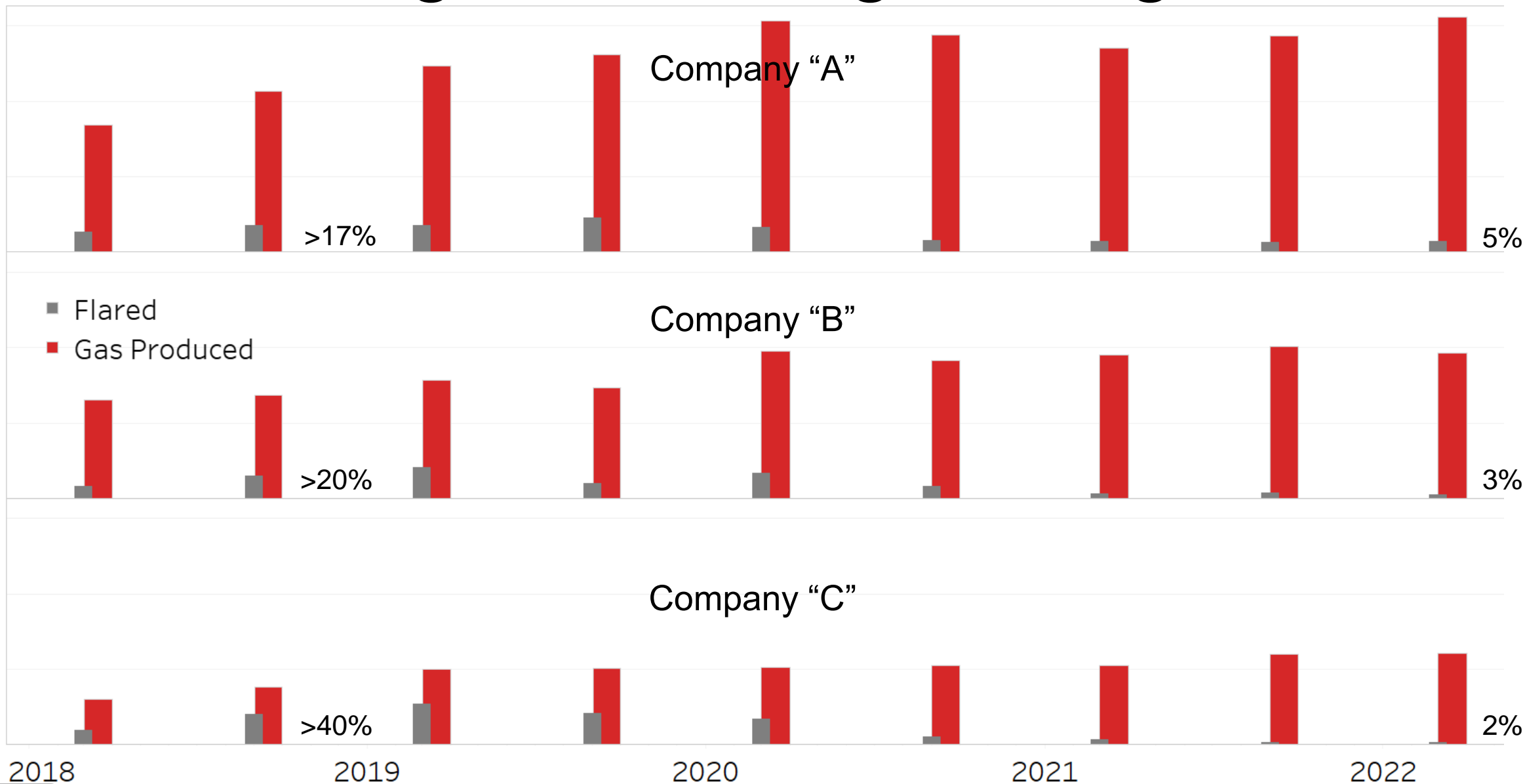
Natural Gas Update



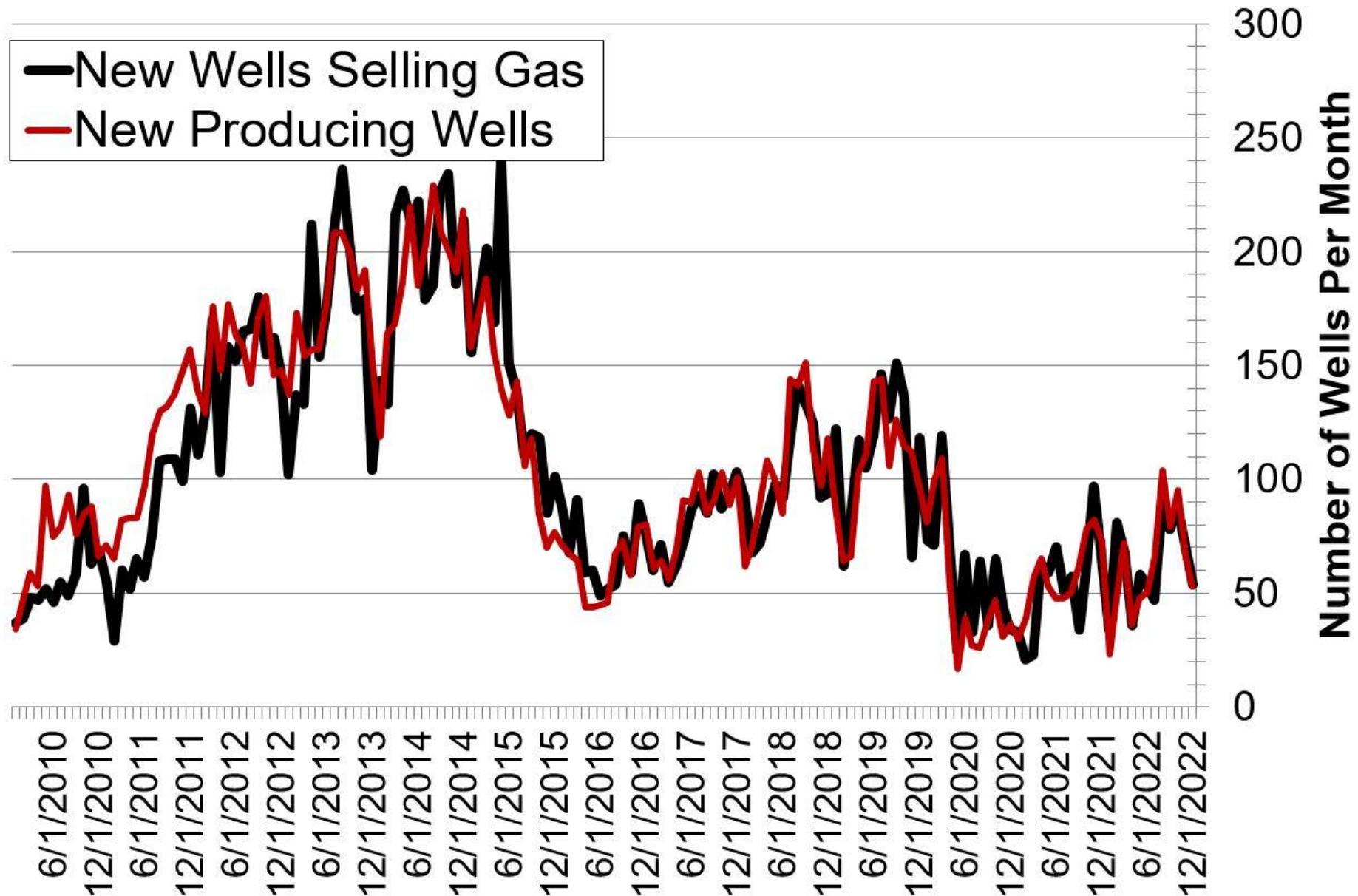
Natural Gas Capture Rates



ESG Targets Pushing Flaring Down



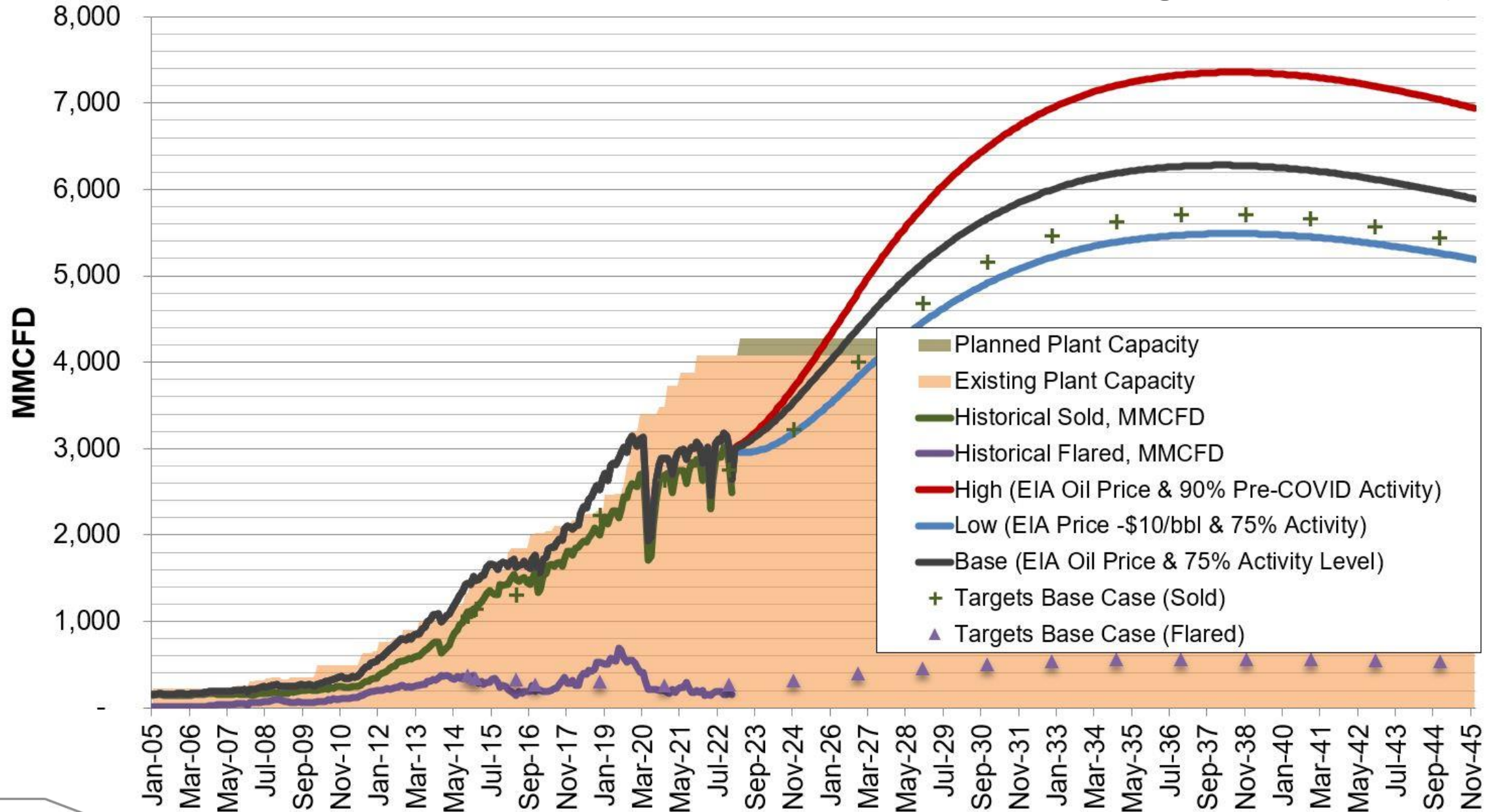
Natural Gas Gathering Connections Keeping Pace



Natural Gas Update



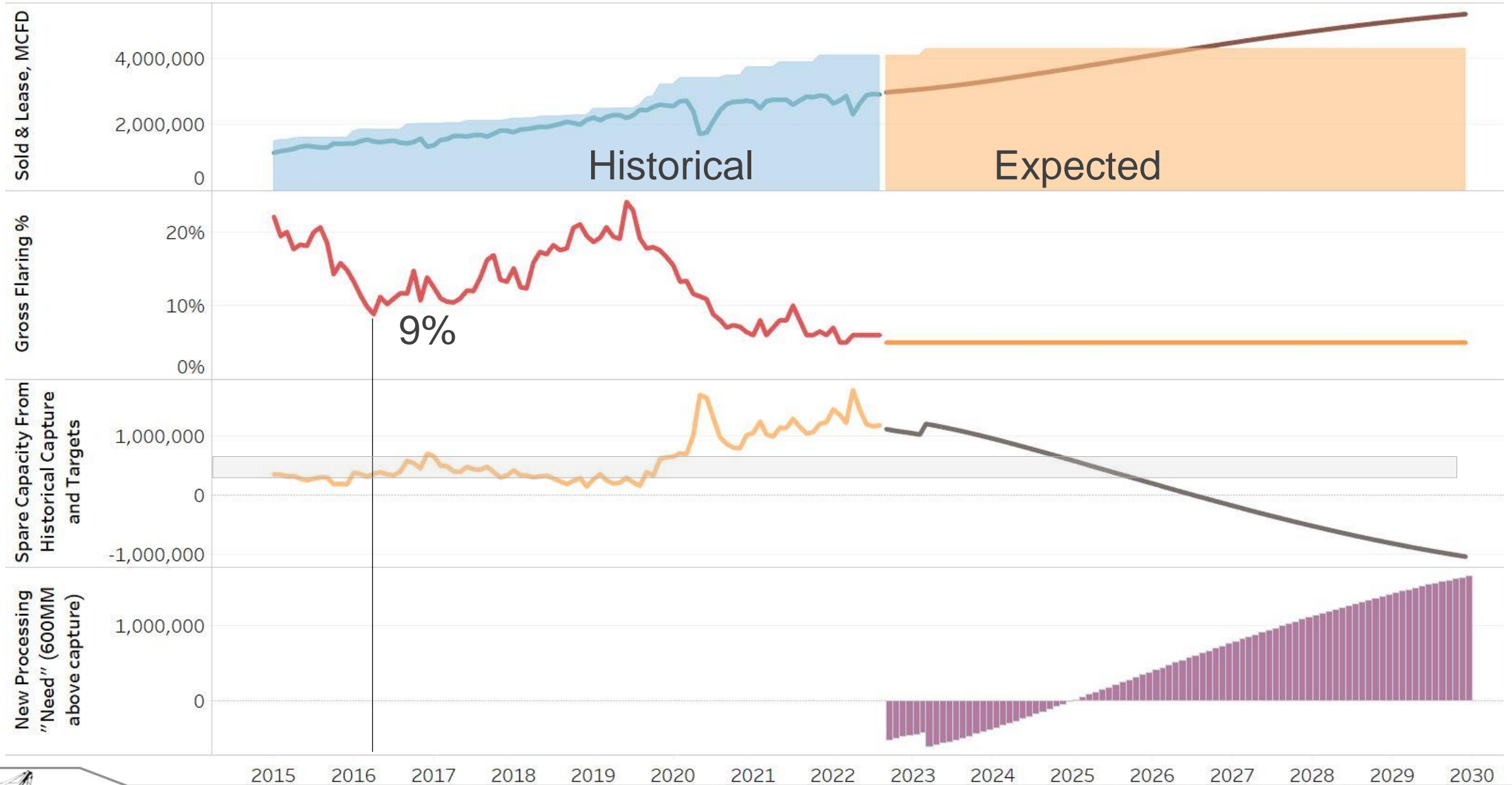
North Dakota Natural Gas Processing Capacity



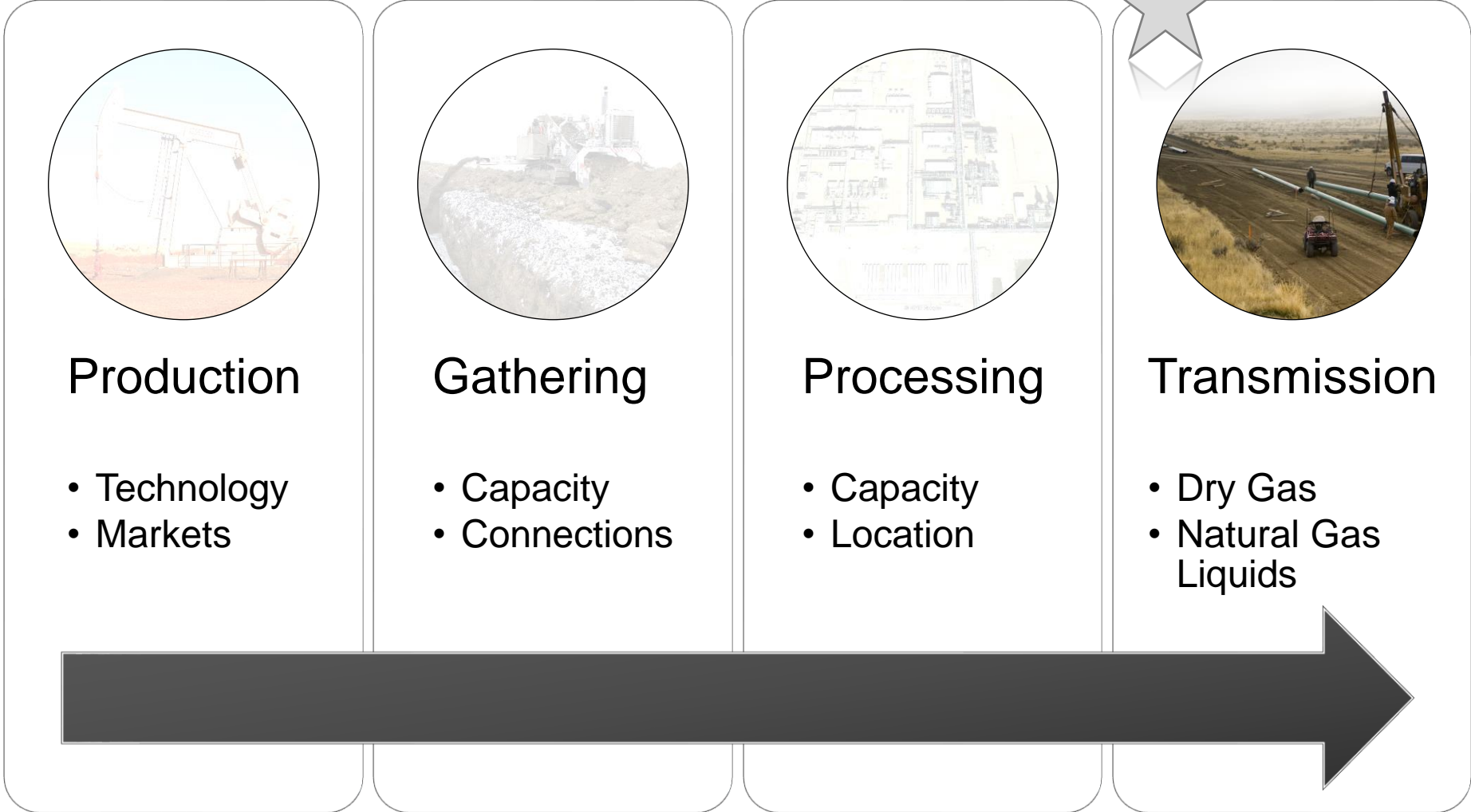
Gas Processing Capacity & Spare Capacity



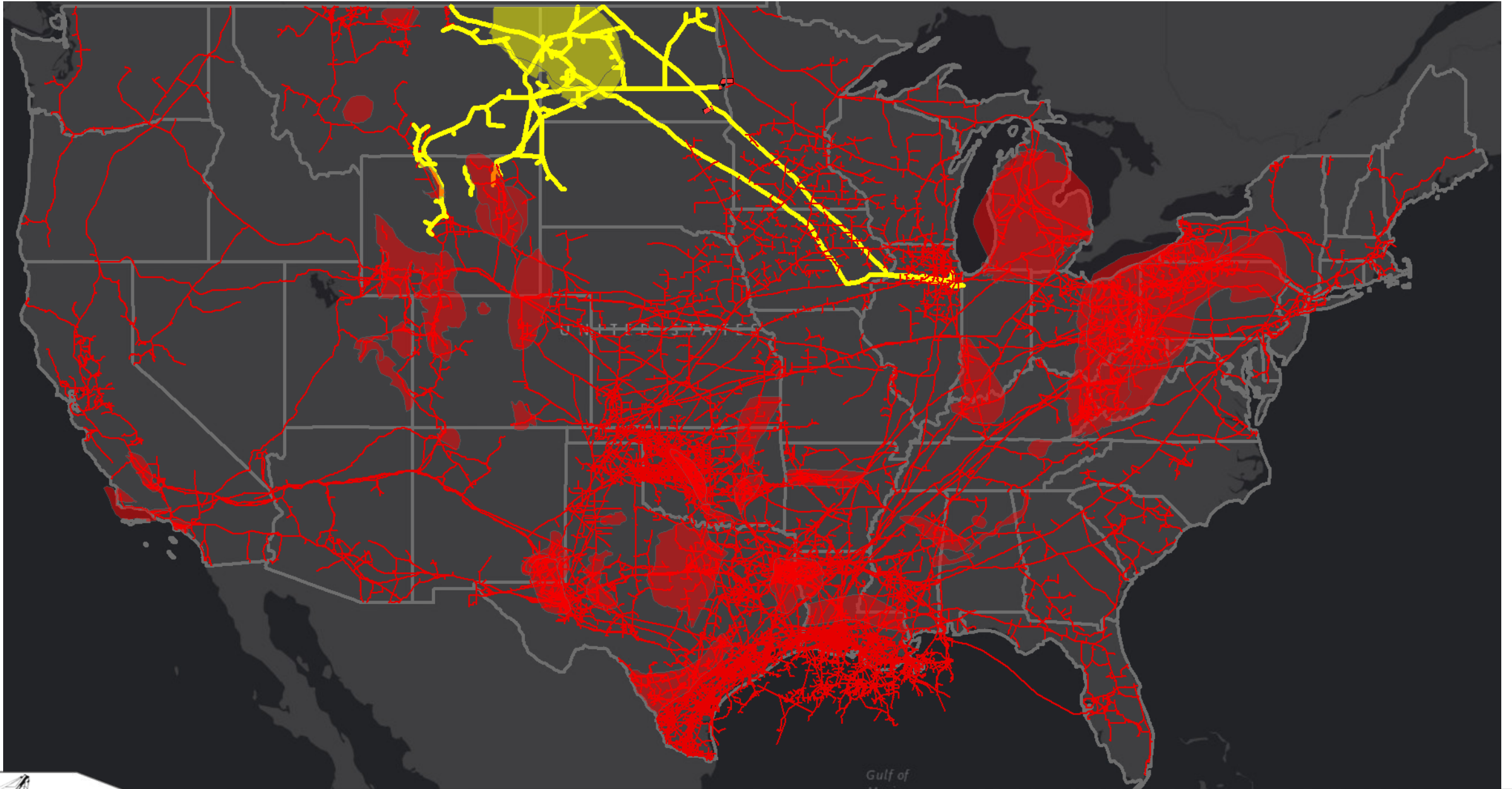
Gas Processing Capacity & Spare Capacity



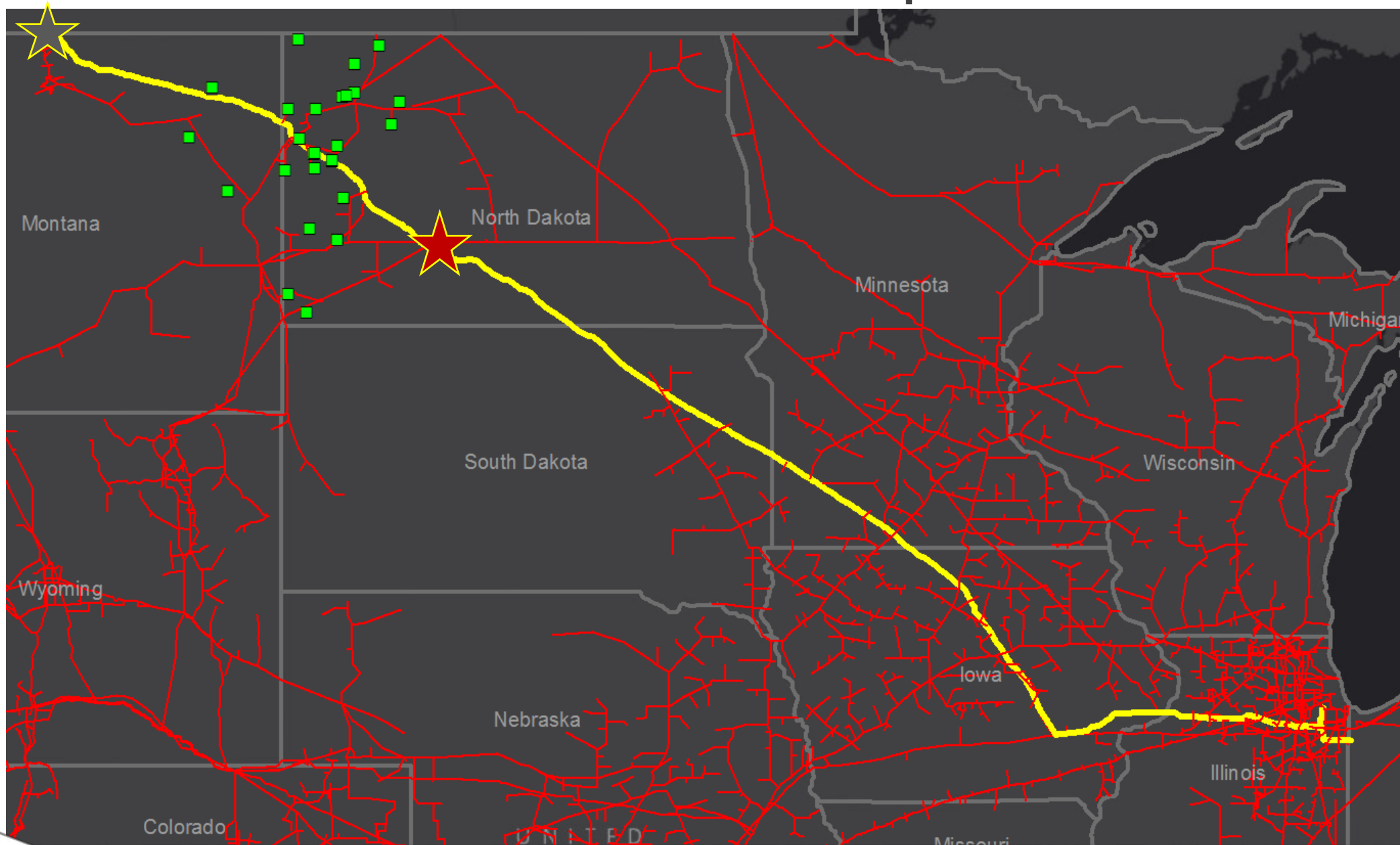
Natural Gas Update



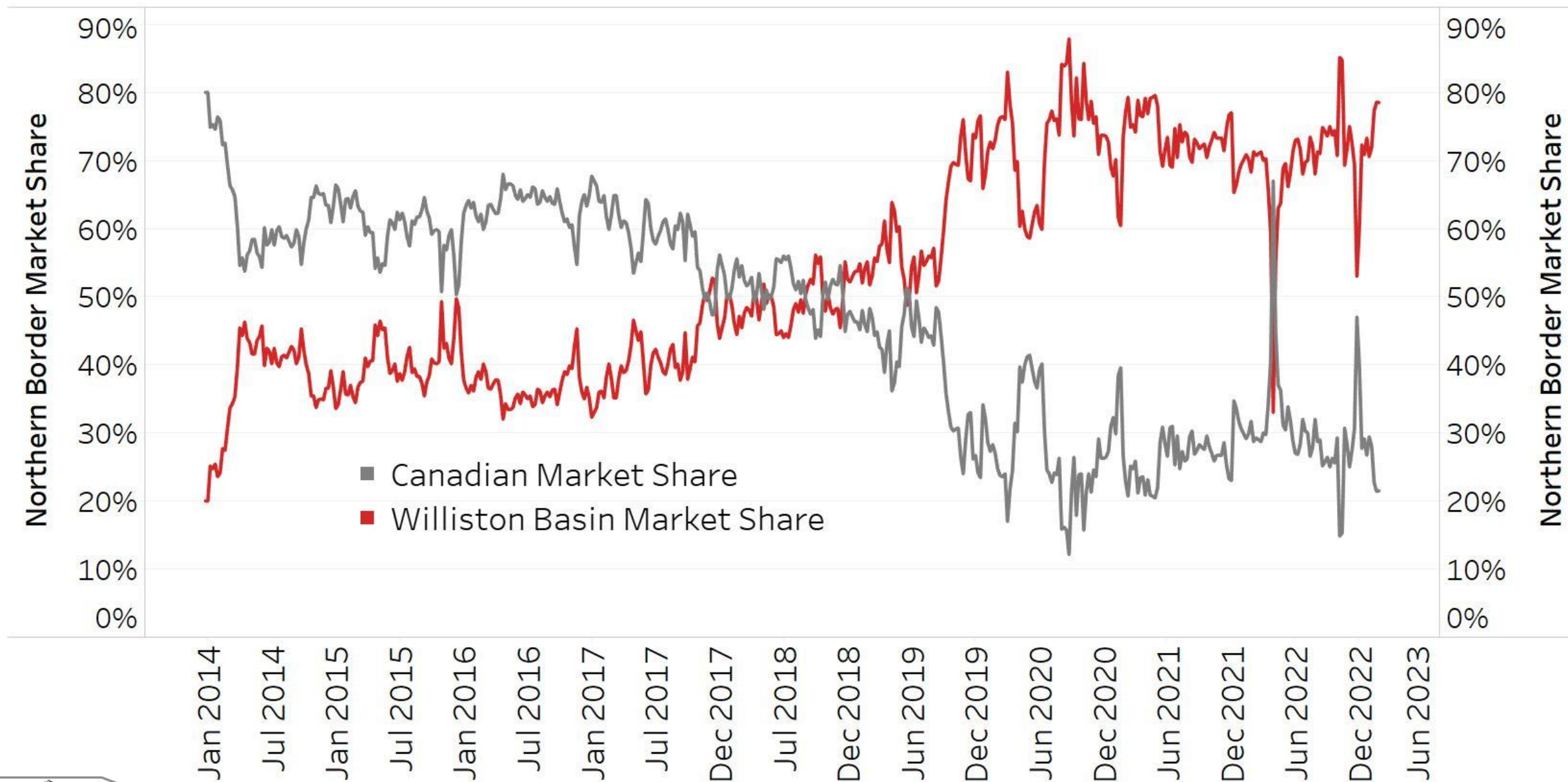
Bakken Natural Gas Infrastructure



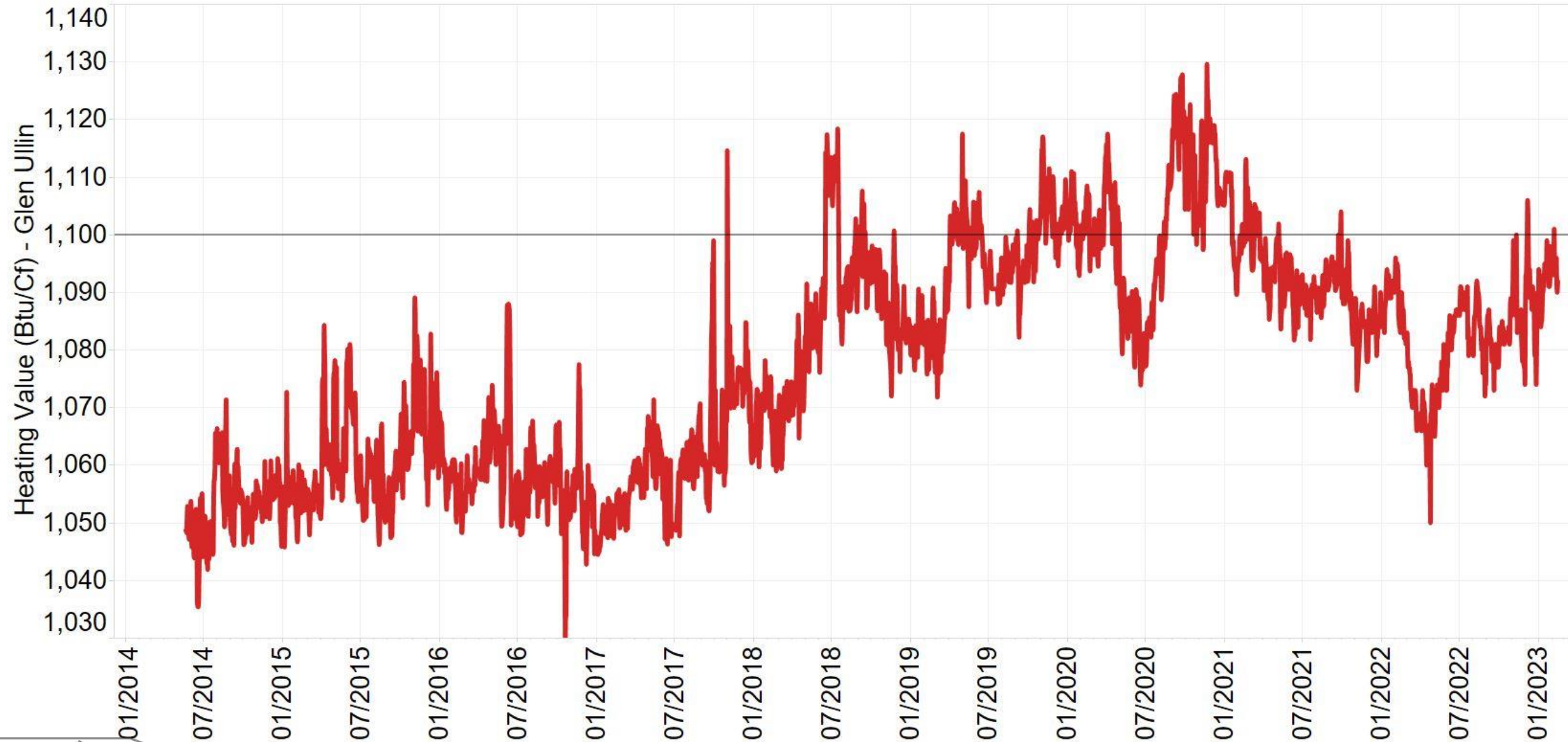
Northern Border Pipeline



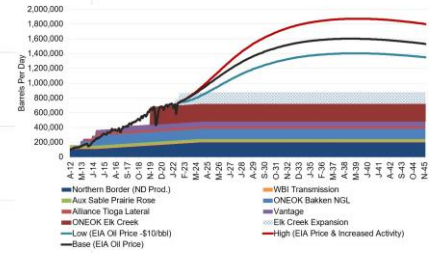
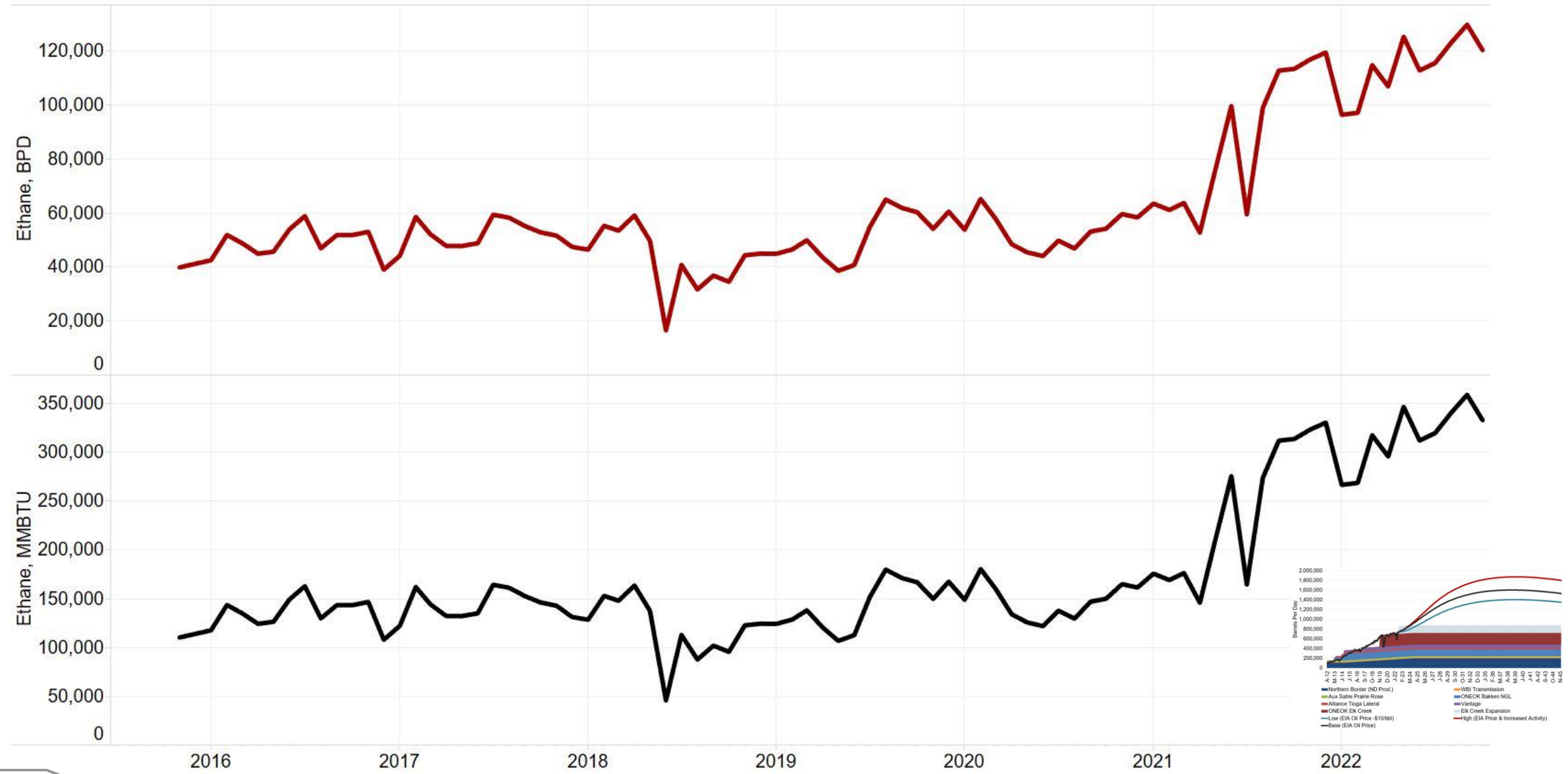
Northern Border Pipeline Market Share



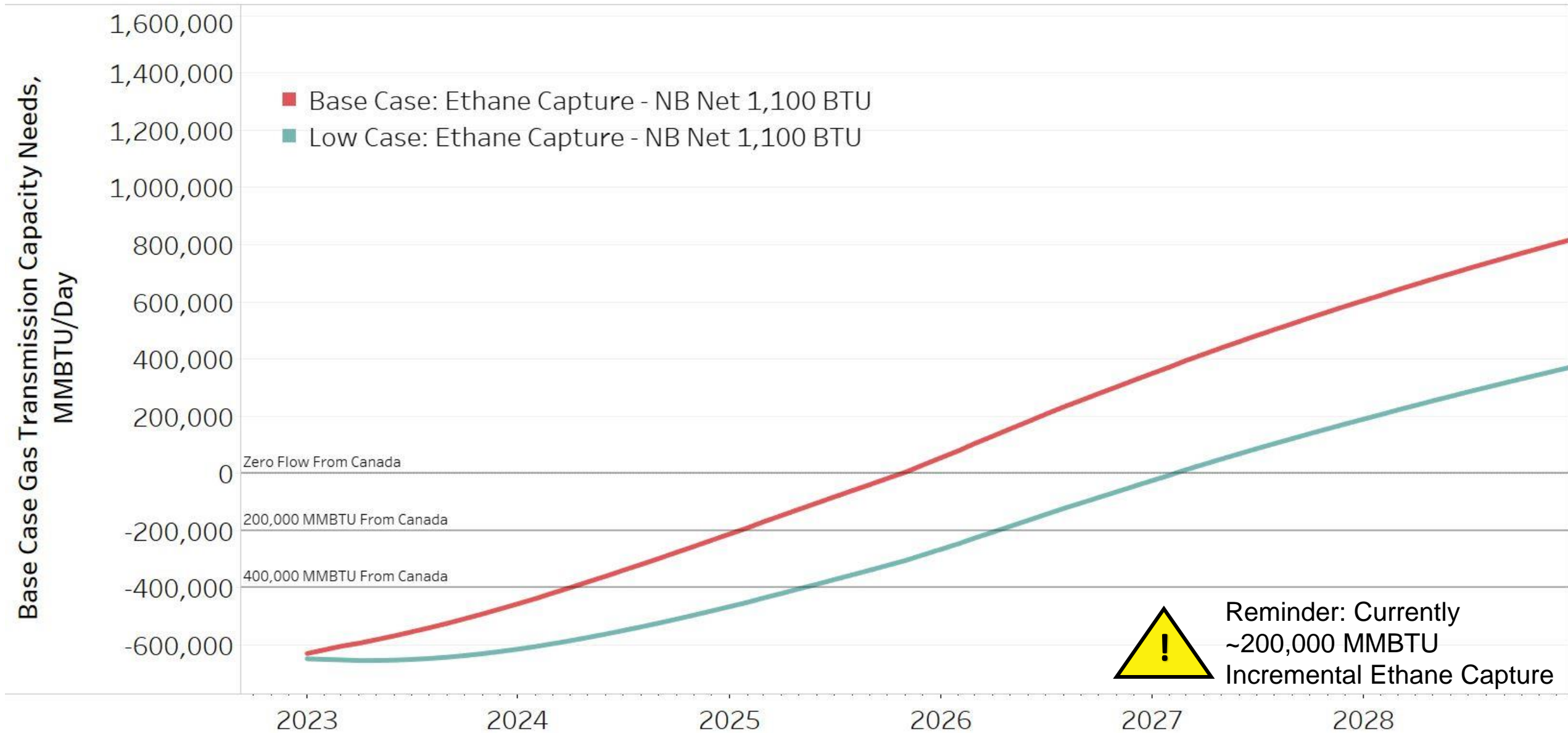
Northern Border BTU at Glen Ullin, ND



ND Ethane Capture Driving Down NB BTU & Market Share



Residue Gas Pipeline Capacity Needs



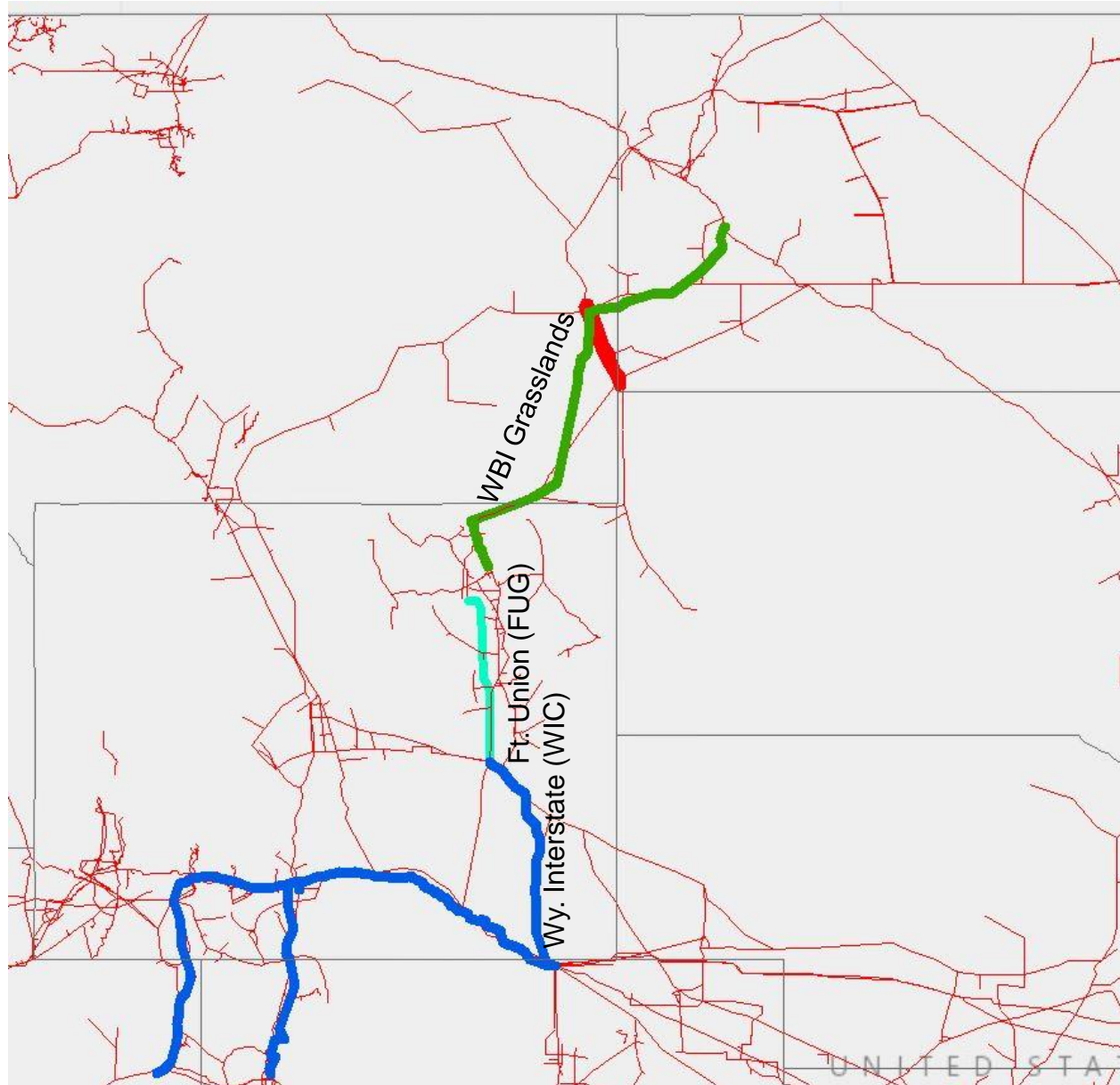
WBI Energy – Grasslands South Project

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
- Q3 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



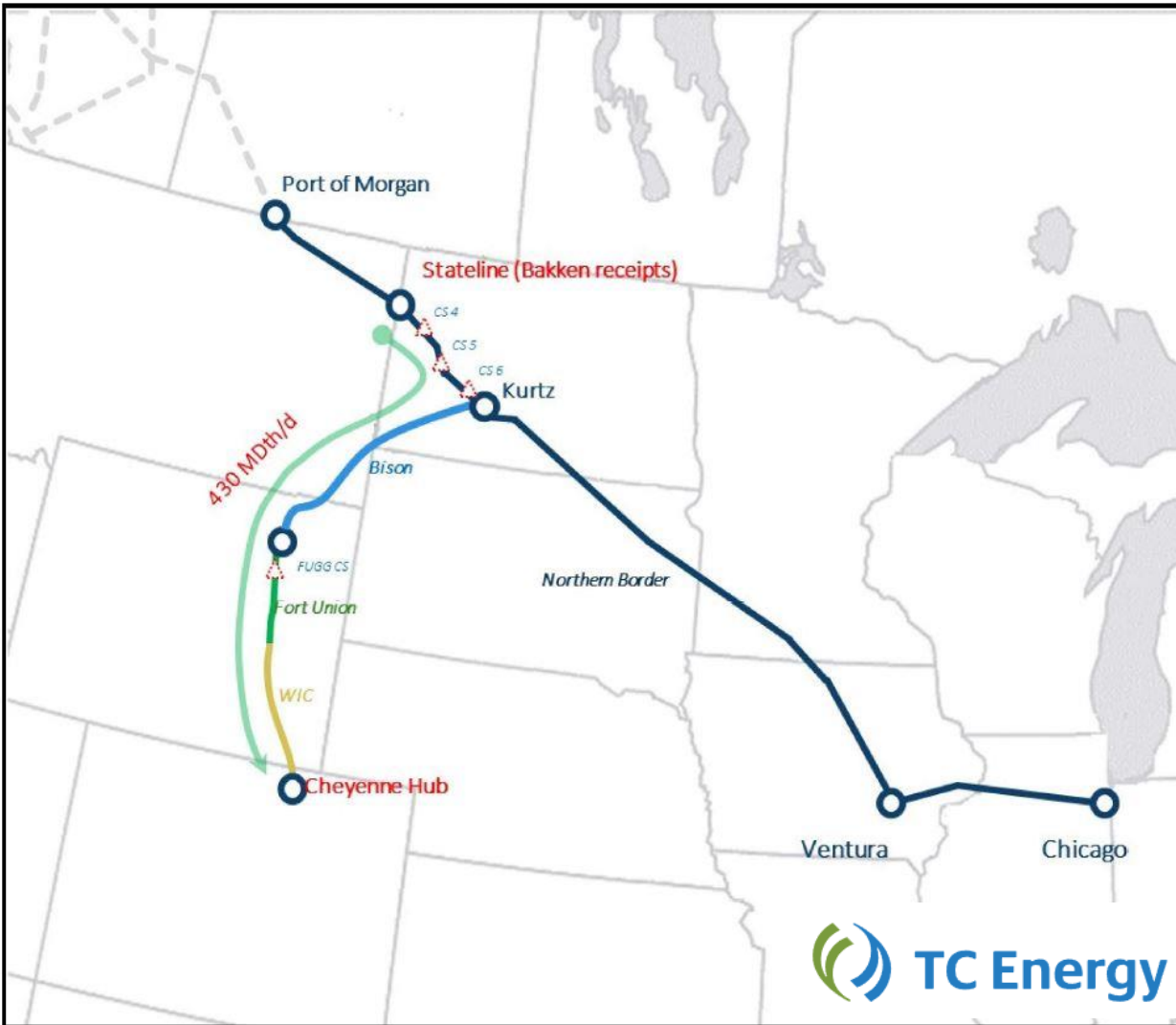
TC Energy – Proposed Bison XPress Project

Project Highlights

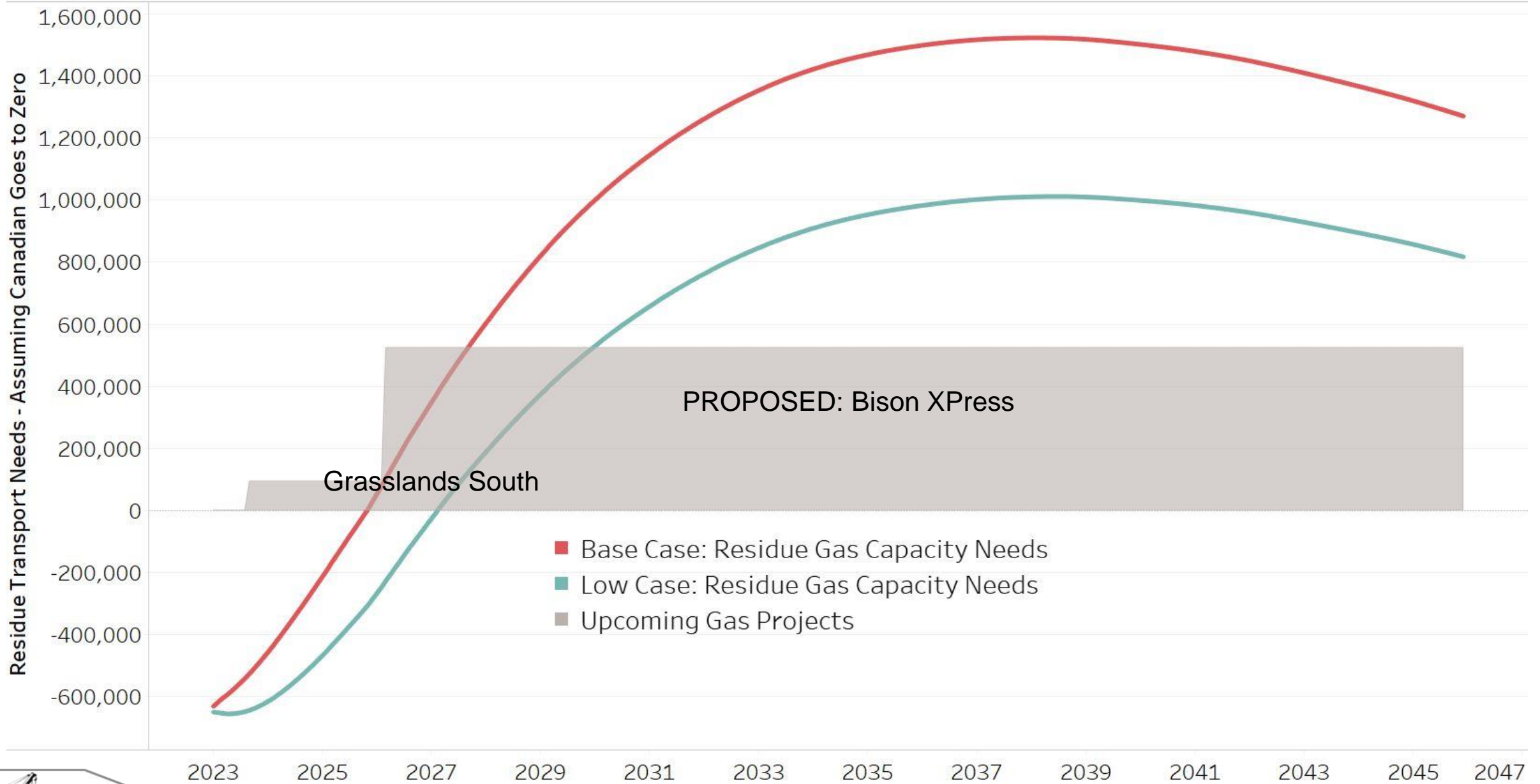
- Non-binding open season April 4 - May 6, 2022
- Three compressor upgrades in North Dakota
- Reverse the idle Bison Pipeline (30" – 302 Mile)
- Proposed capacity 430,000 Dth/Day
- Q1 2026 targeted in-service date
- Fort Union Gas Gathering and Wyoming Interstate Company provide further transport to Cheyenne hub.
- Seeking commitments 10yrs or Longer

Proposed Tariff Rates

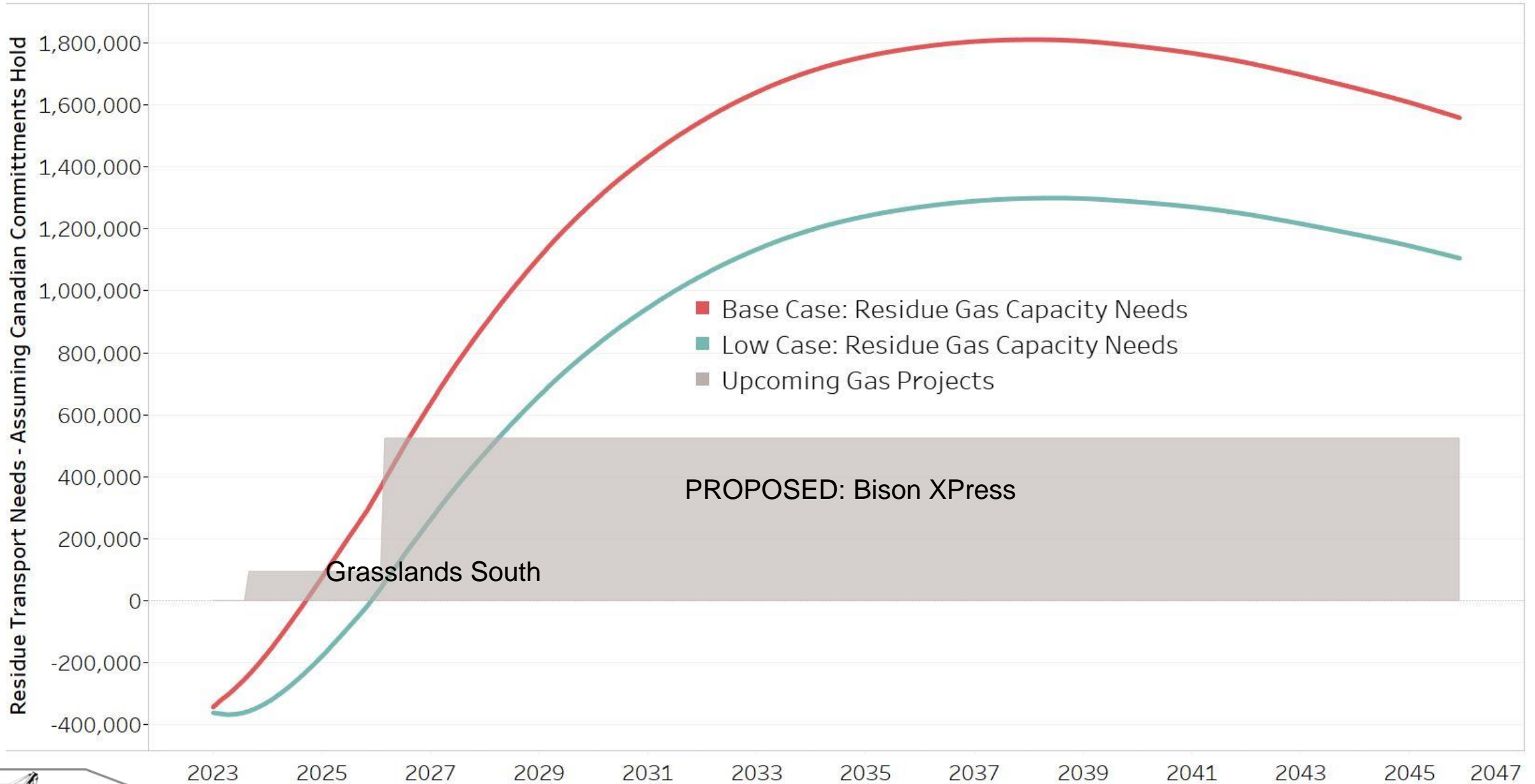
- NBPL/Bison \$0.45/Dth + Fuel/Elec to WIC/FUG Interconnect
- WIC/FUG to Cheyenne \$0.30/Dth + Fuel/Elec
- Anchor Shipper Minimum: 50,000 Dth/Day



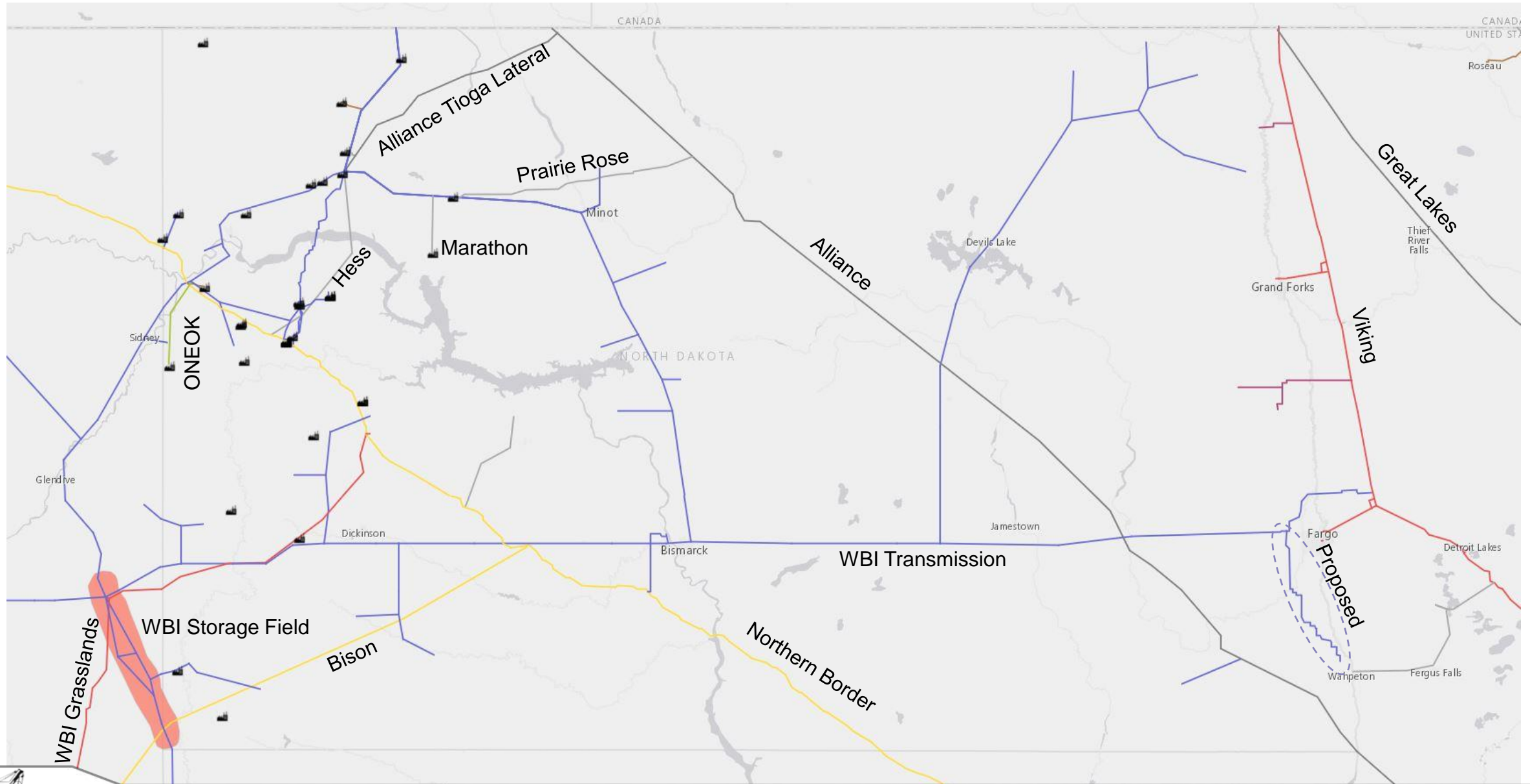
Residue Capacity Needs : ZERO CANADIAN



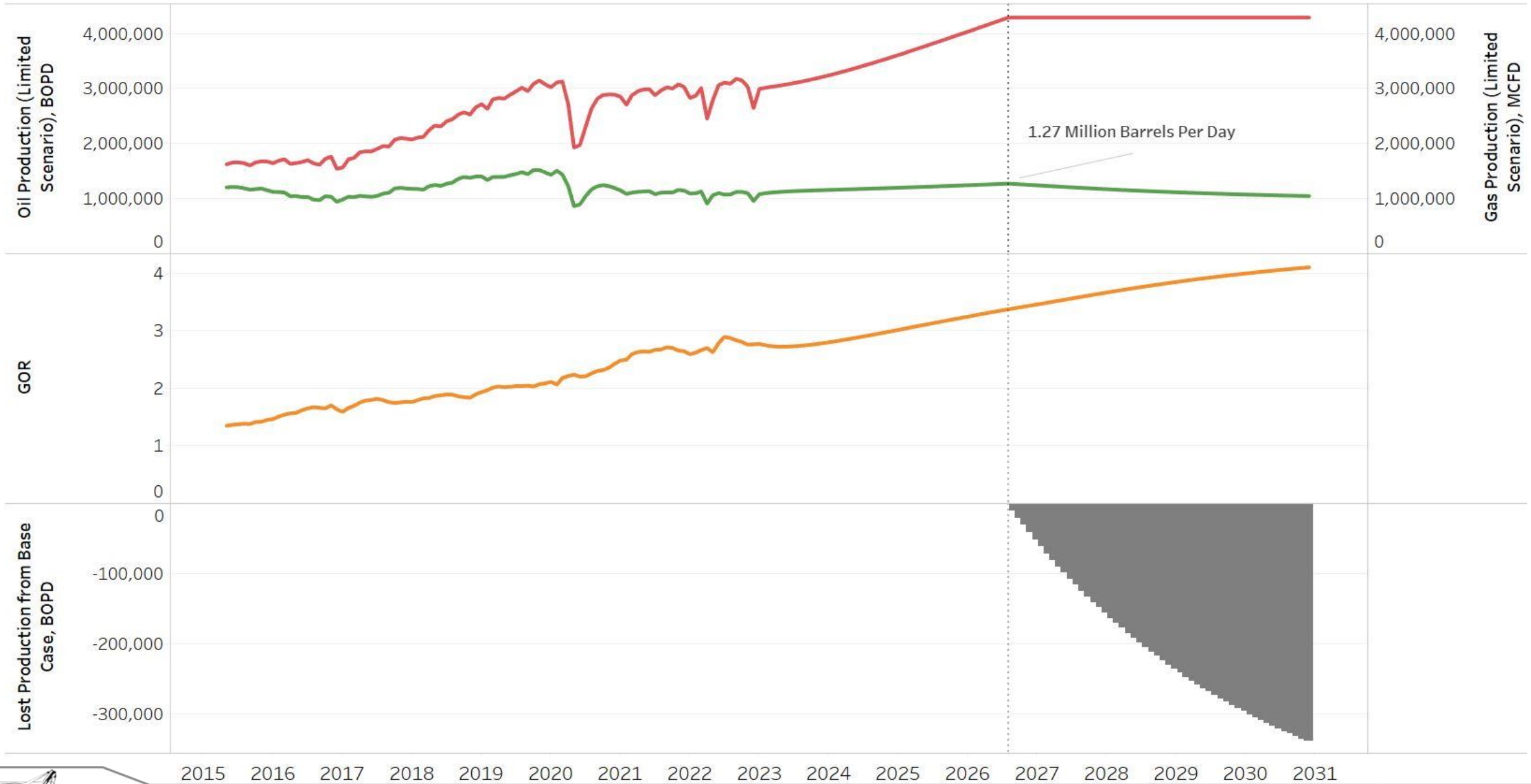
Residue Capacity Needs: ~288,000 MMBTU CDN



Major Residue Gas Pipeline Infrastructure

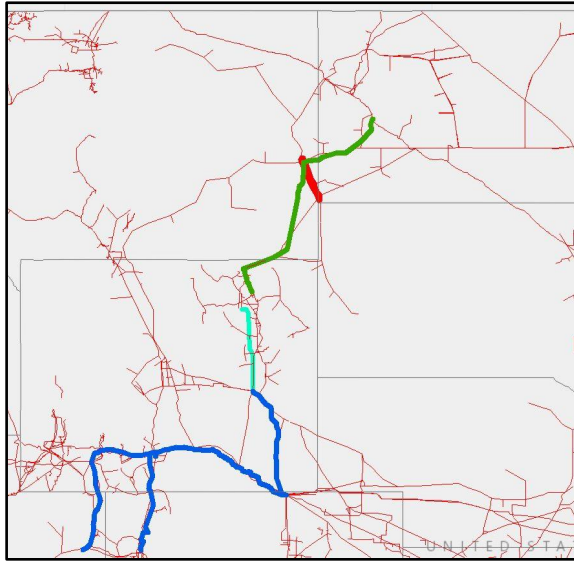


Gas Limitations Would Force Oil Production Down As GOR Rises

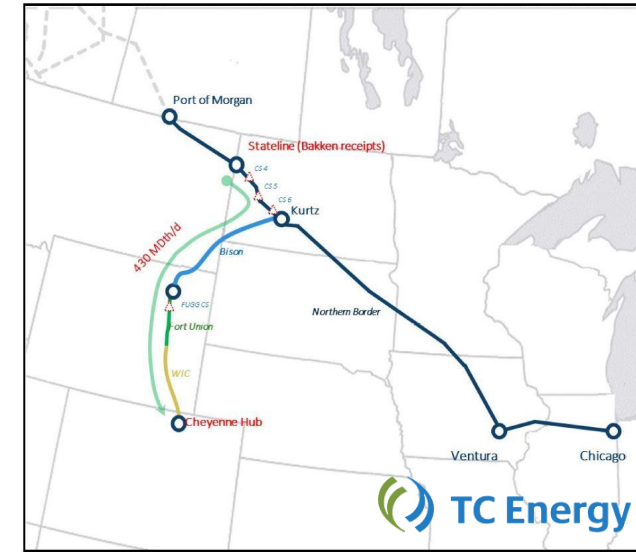


Value of a Dekatherm (MMBTU)

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
- \$3.74* in oil/gas tax value per Dekatherm x 524,000 Dekatherms = \$1,959,760 per day
- **\$715+ Million** per year in oil and natural gas taxes to the State of North Dakota



Pipeline Authority Tools

54-17.7-04. Powers.

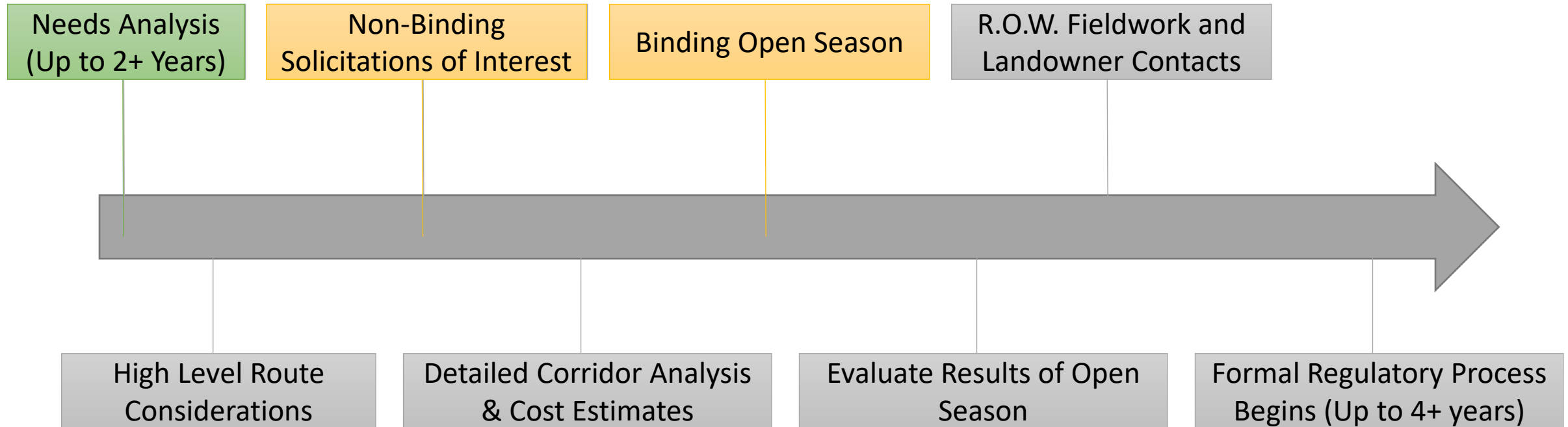
The authority has all powers necessary to carry out the purposes of this chapter, including the power to:

1. Make grants or loans and to provide other forms of financial assistance as necessary or appropriate for the purposes of this chapter.
2. Make and execute contracts and all other instruments necessary or convenient for the performance of the authority's powers and functions.
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.
4. Borrow money and issue evidences of indebtedness as provided in this chapter.

Additional Tools 5-18

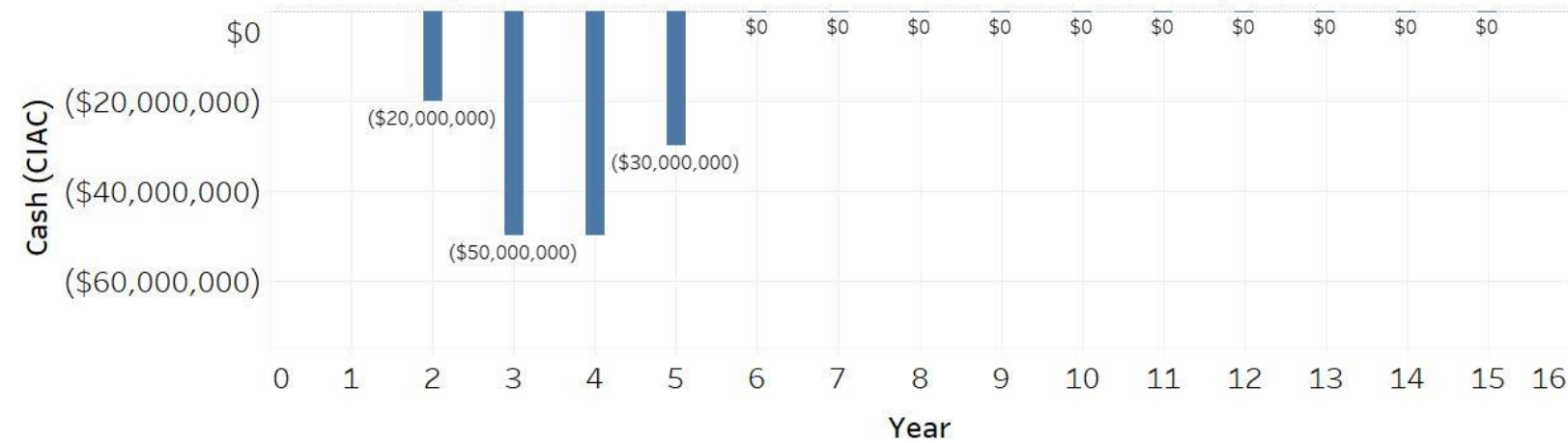


Early Stages of Pipeline Development



\$150M Examples (CIAC vs Capacity)

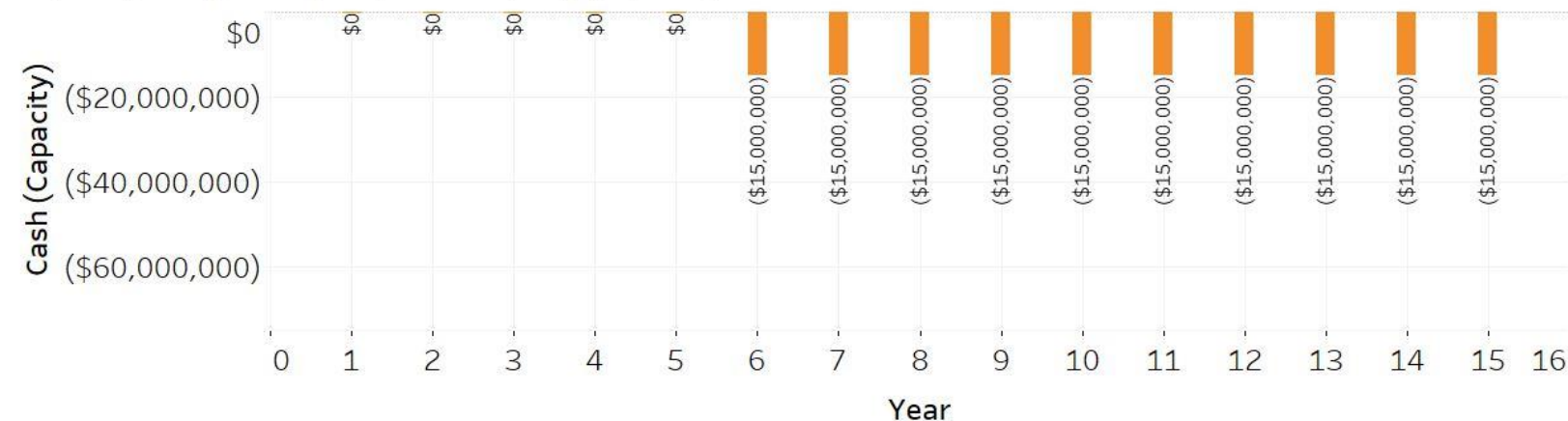
Upfront Capital Contribution (\$150M Contribution in Aid of Construction - "CIAC")



Considerations (+/-)

- Upfront contribution (+)
- Transport rate buydown (+)
- No direct recovery mechanism (-)
- Federal tax consideration (-)
- NPV @ 6% = \$129M

Capacity Obligation (~41,000 Dth/Day @ \$1.00)

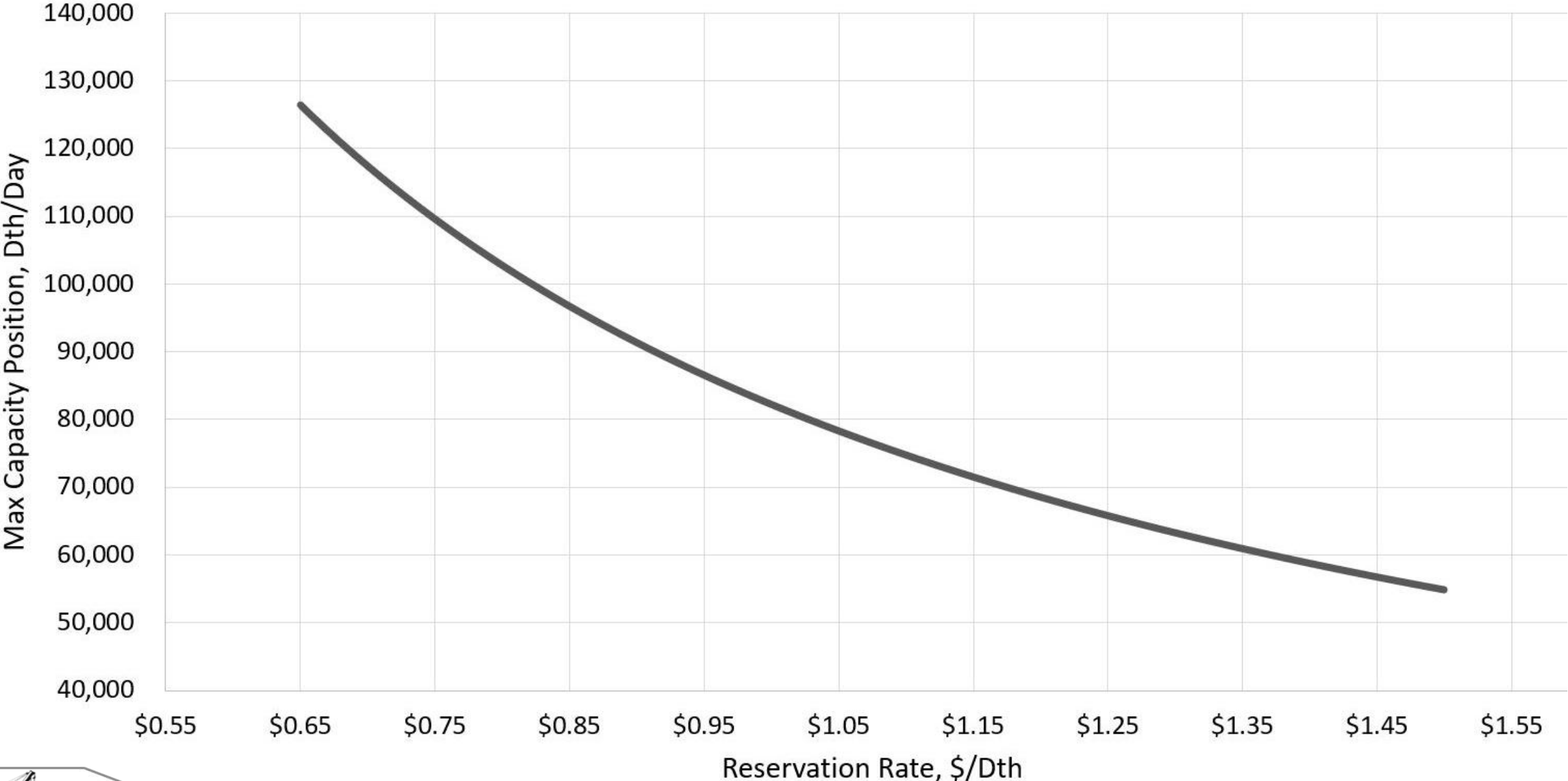


Considerations (+/-)

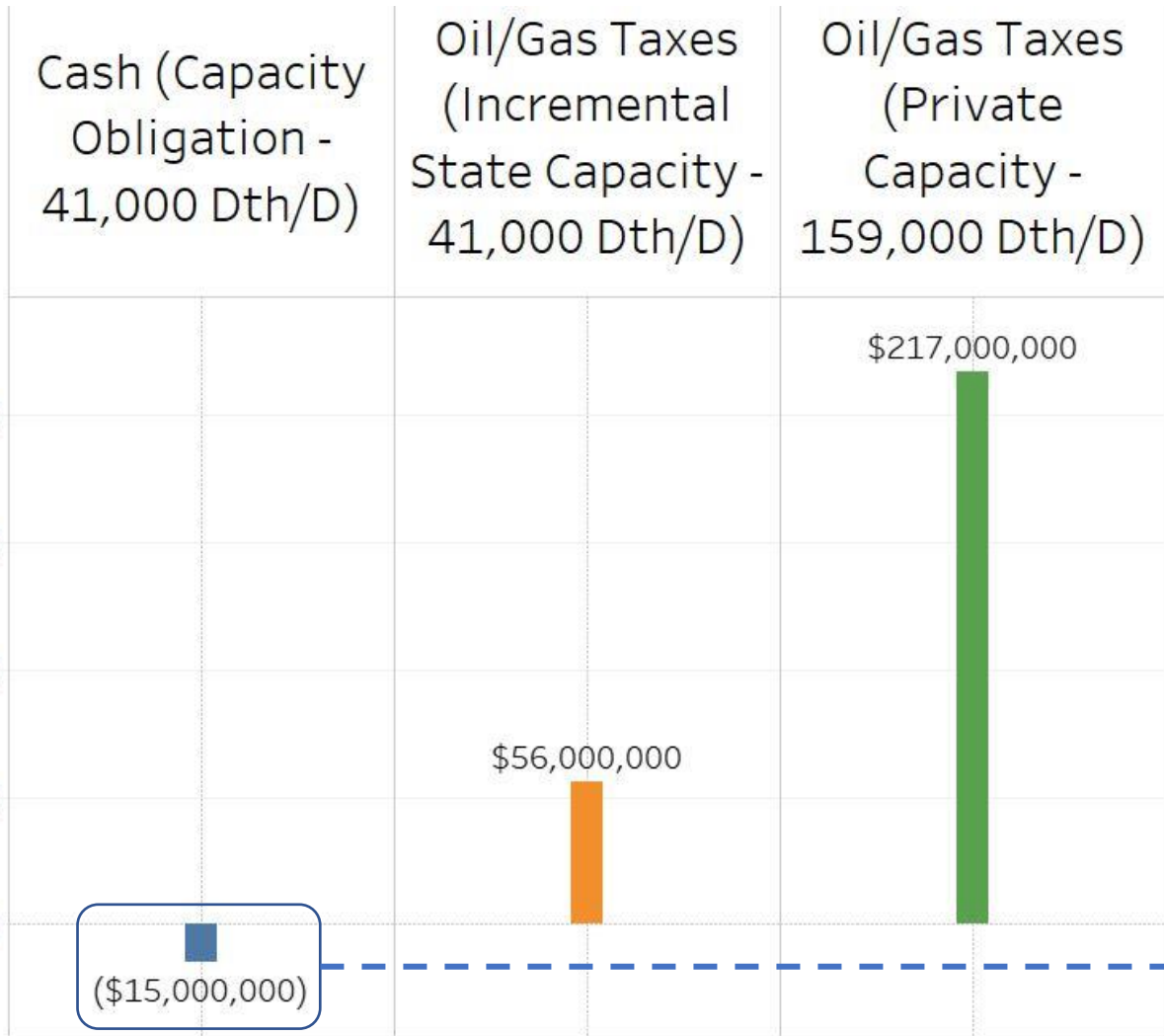
- Opportunity to release obligations (+)
- Obligation recovery possible through asset management agreement (+)
- If obligation is not released or recovered with AMA, max risk is the total transport obligation (\$150M in this example) (+/-)
- No direct transport rate buydown, but rate influenced by total committed volume.
- NPV @ 6% = \$82.5M



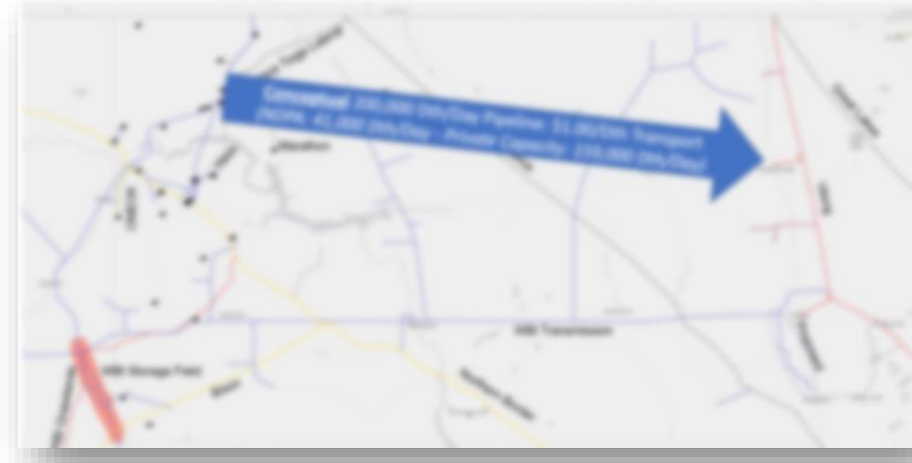
Capacity and Reservation Rate at \$30M/Yr



Example Operating Project Cashflows



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

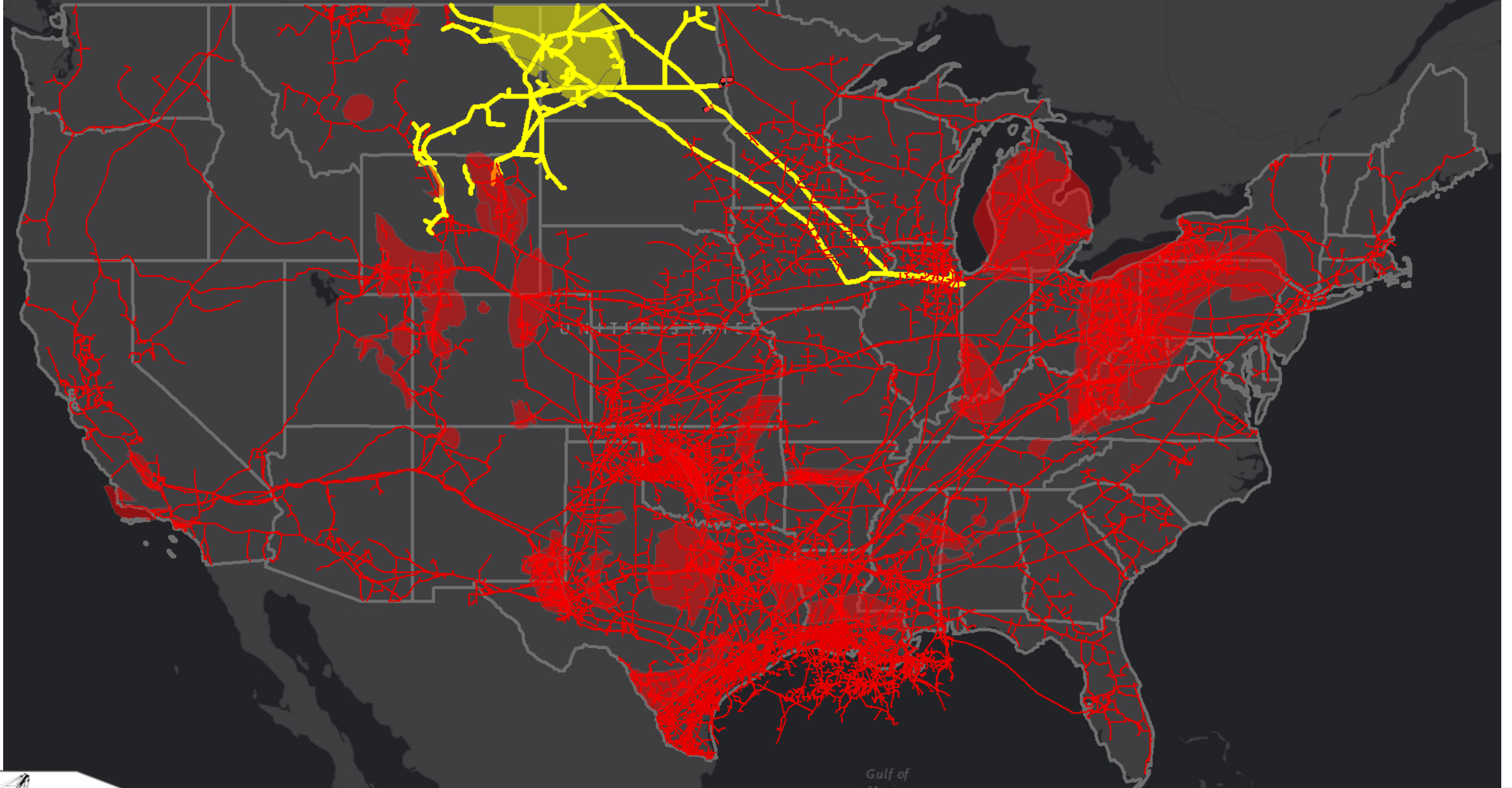


Options for State Capacity Obligation

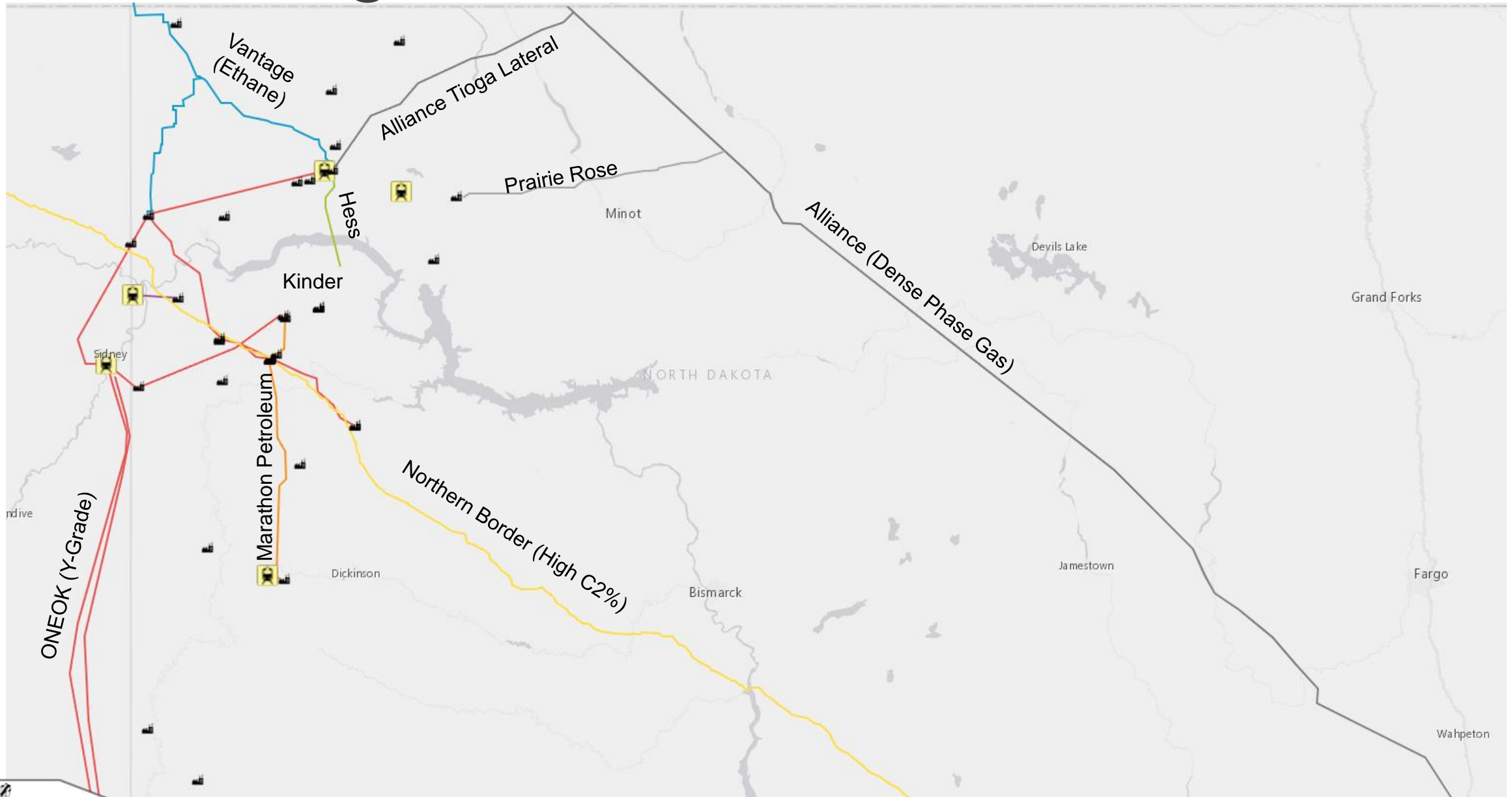
- Release (full or partial) to private sector
- Monetize capacity through asset management agreement (AMA)
- Worst case – Continue to pay obligations without recovery or release on 41,000Dth



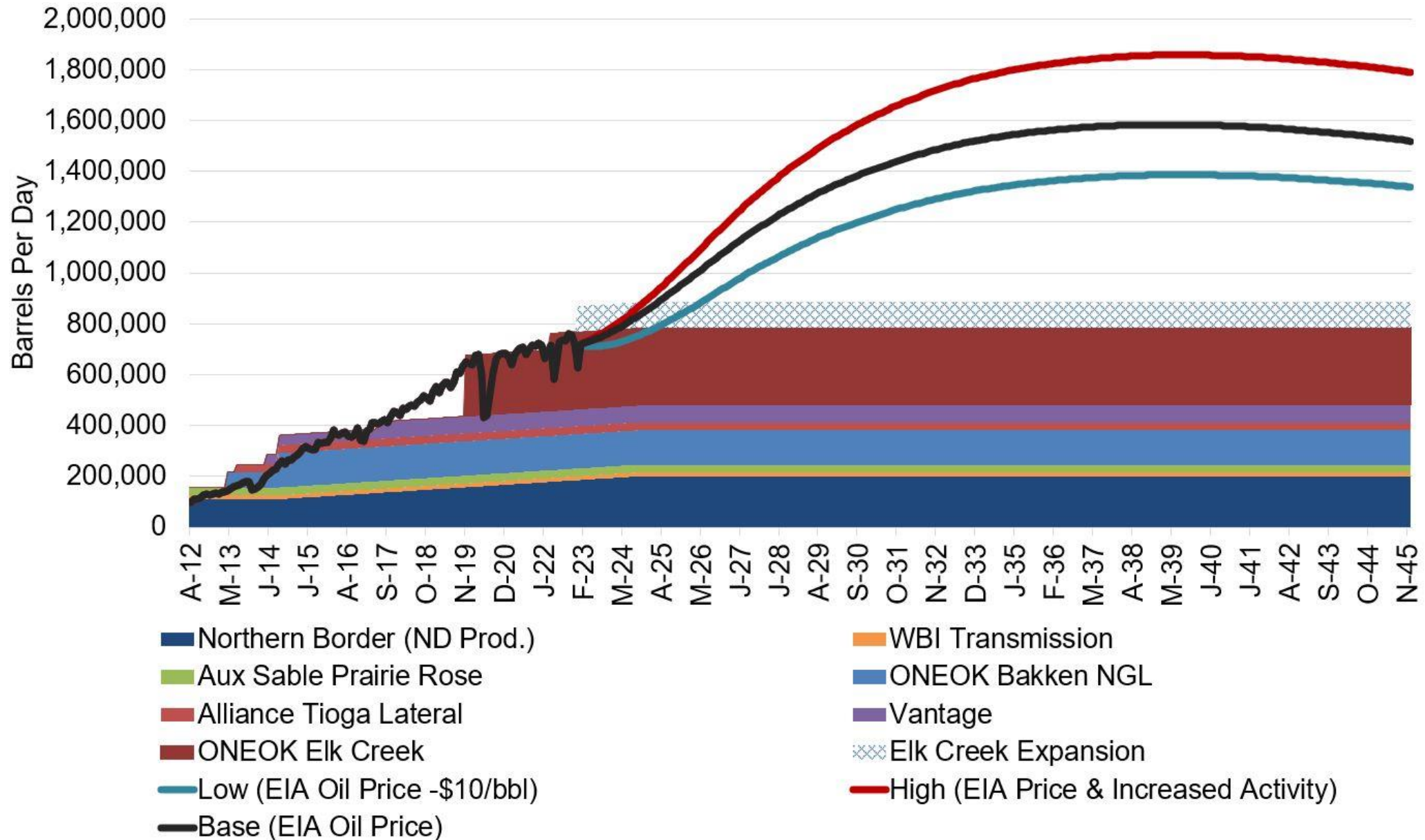
Bakken Natural Gas Infrastructure



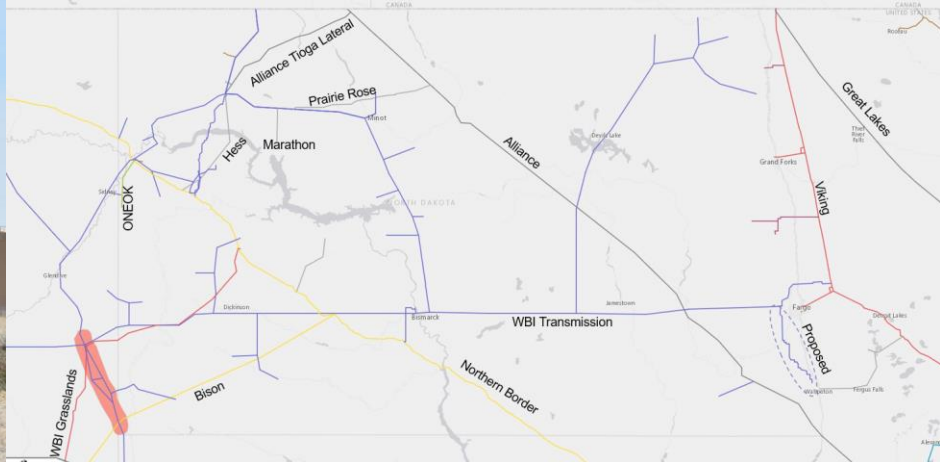
Regional NGL Infrastructure



NGL Pipeline Takeaway Options



2022 Winter Storms



Images Source: Mountrail-Williams Electric Cooperative

Contact Information

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North Dakota Pipeline Authority

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Websites:

www.pipeline.nd.gov
www.northdakotapipelines.com



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