

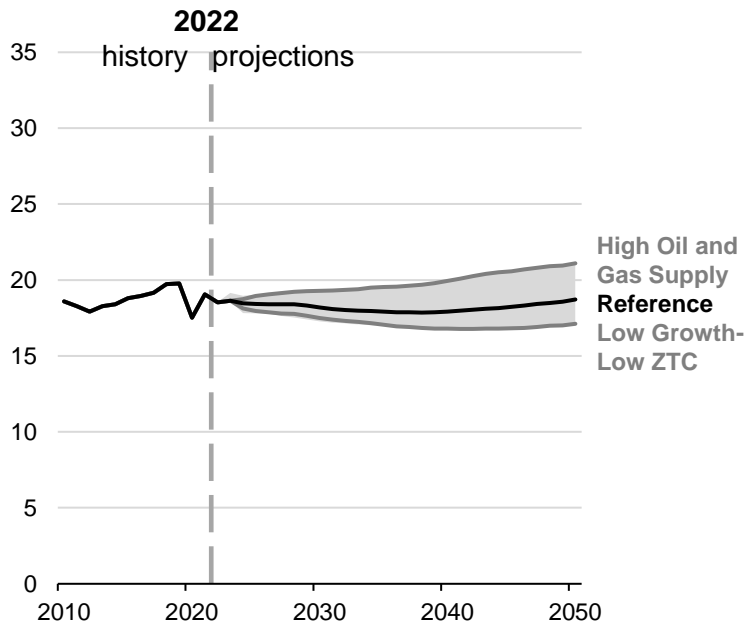
North Dakota Midstream Update



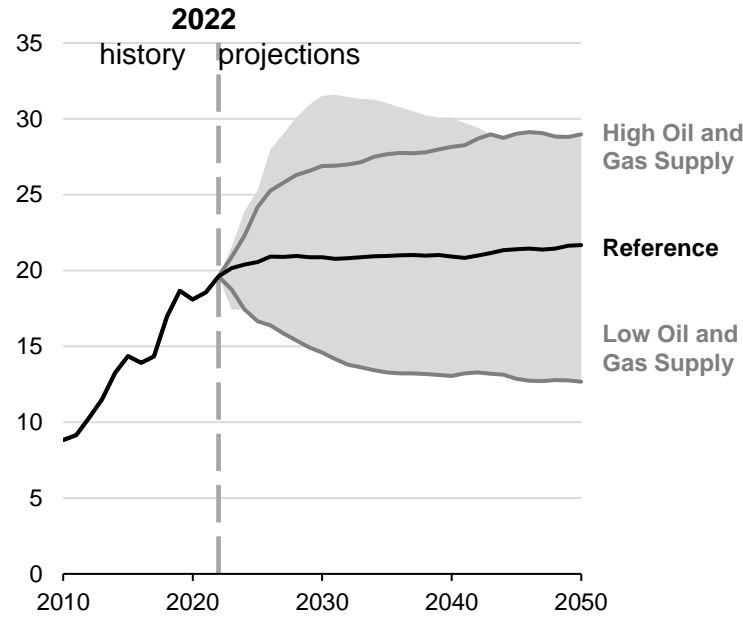
In all cases, we project that the United States will remain a net exporter of petroleum products through 2050



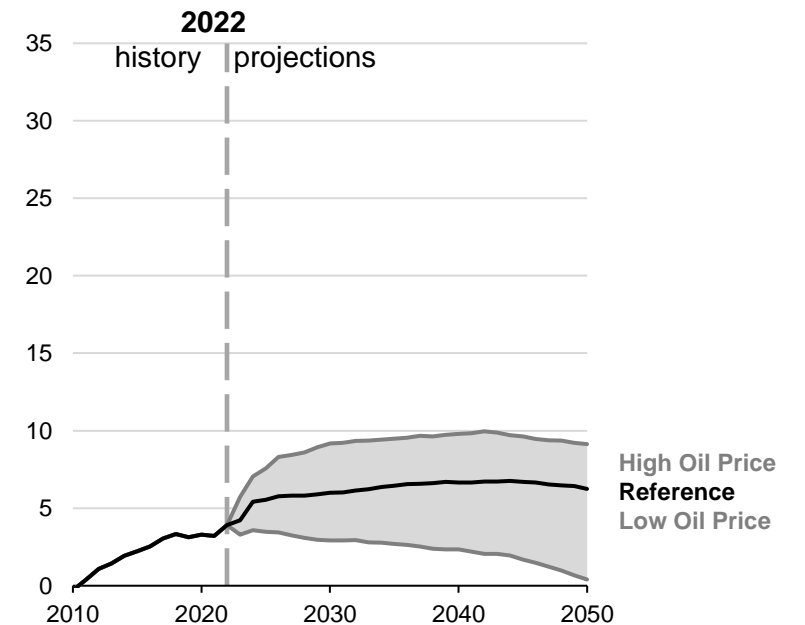
Petroleum and other liquids consumption
million barrels per day



Petroleum and other liquids production
million barrels per day



Petroleum products net exports
million barrels per day

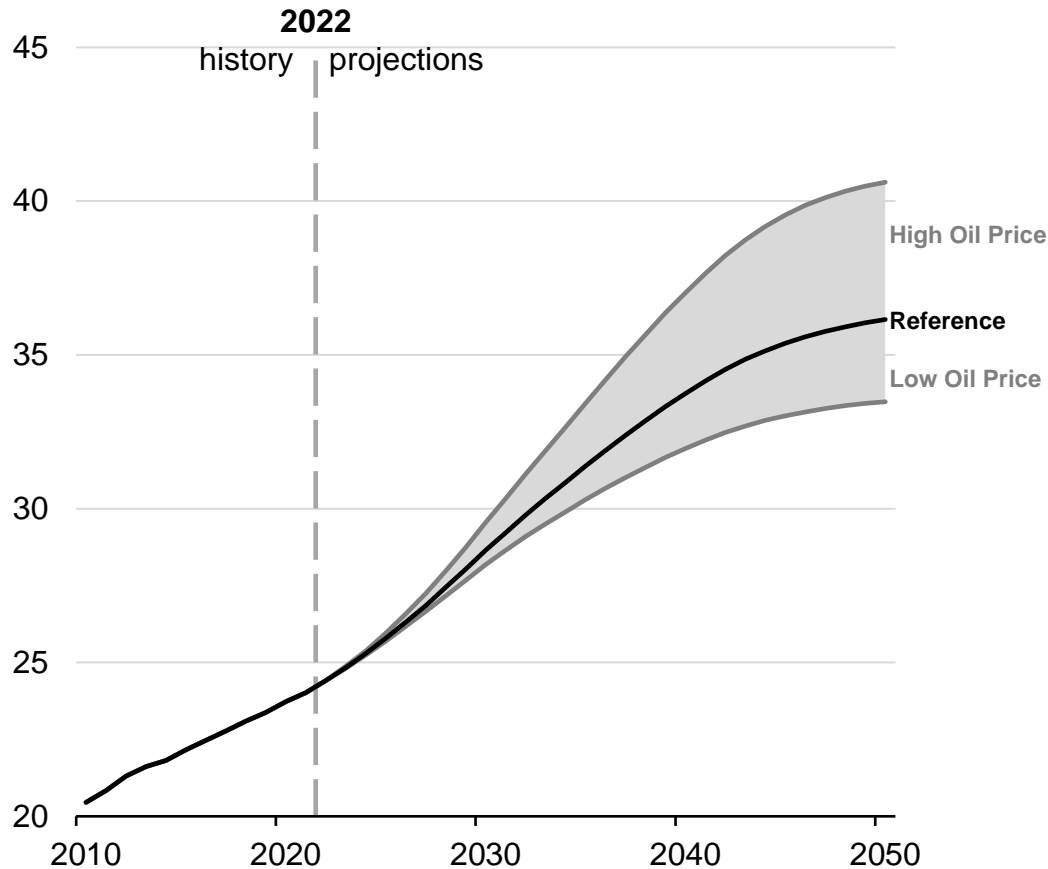


Data source: U.S. Energy Information Administration, *Annual Energy Outlook 2023* (AEO2023)

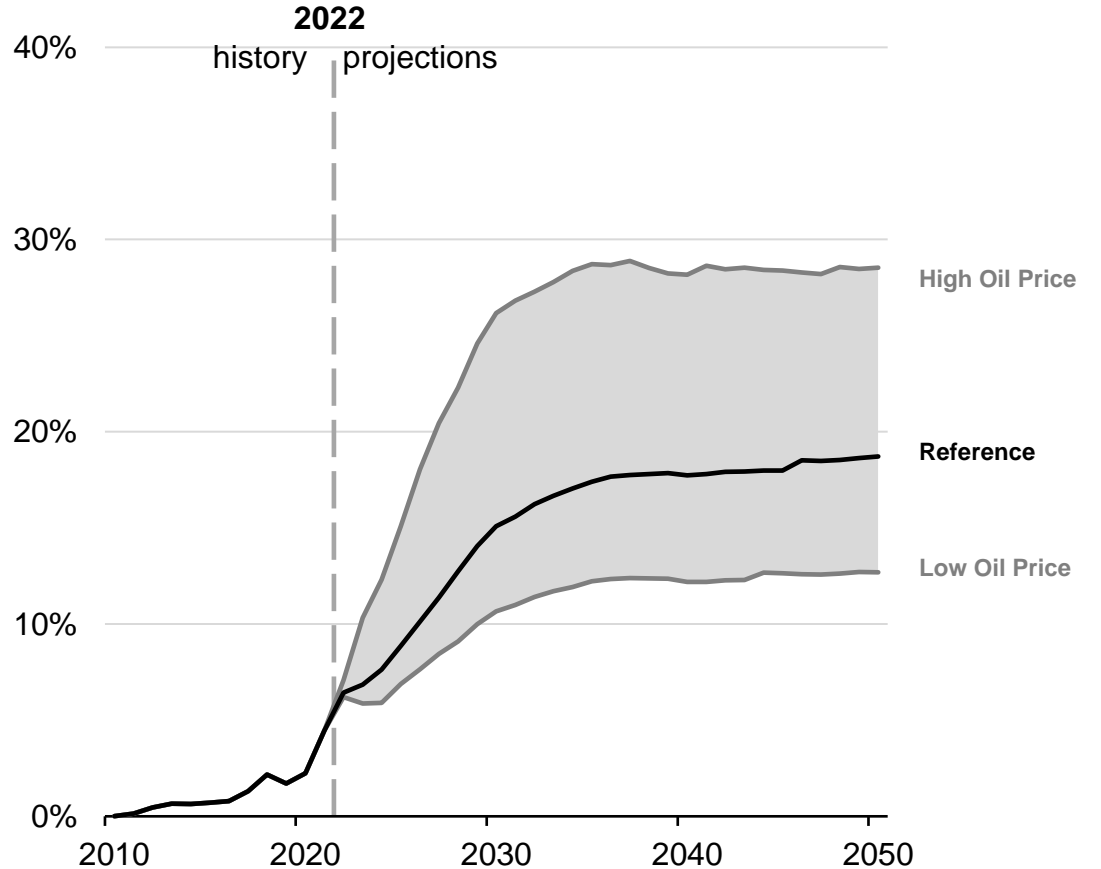
Note: Biofuels are not included in *petroleum and other liquids* production or consumption. Shaded regions represent maximum and minimum values for each projection year across the AEO2023 Reference case and side cases. ZTC=Zero-Carbon Technology Cost

Light-duty vehicle fuel economy and electric vehicle market share increase through 2050 due to rising CAFE Standards and other incentives

Light-duty vehicle average fuel economy
miles per gallon



Market share of electric light-duty vehicles*
percentage of sales

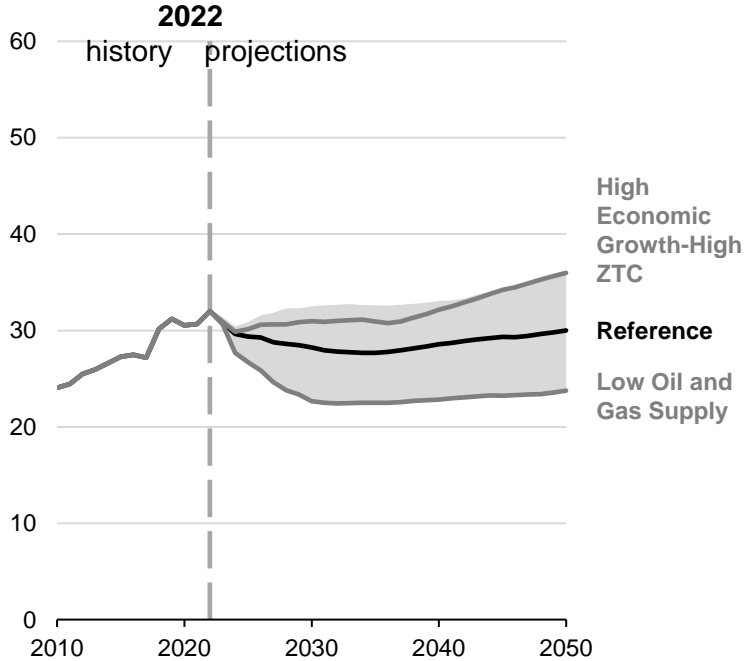


Data source: U.S. Energy Information Administration, *Annual Energy Outlook 2023* (AEO2023)

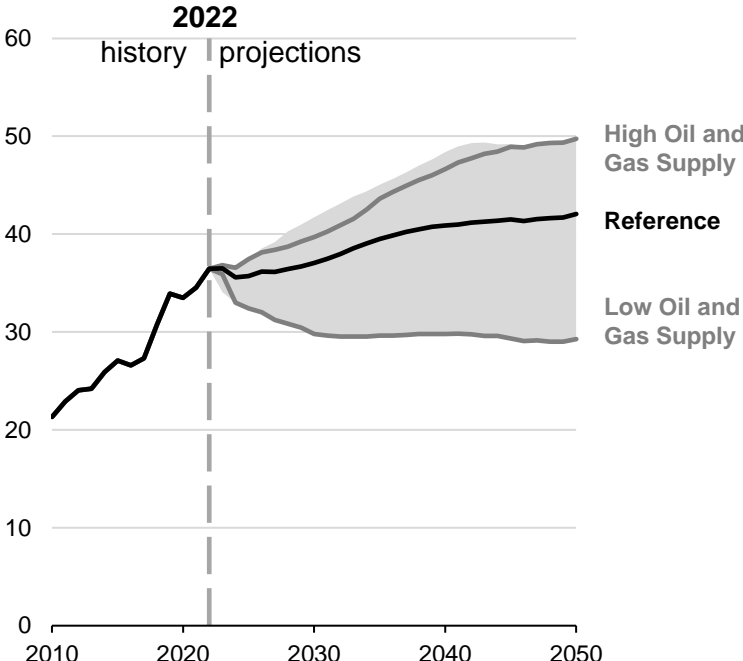
Note: *Includes battery electric and plug-in hybrid electric vehicles. Shaded regions represent maximum and minimum values for each projection year across the AEO2023 Reference case and side cases.

Liquefied natural gas exports drive production; domestic consumption remains stable

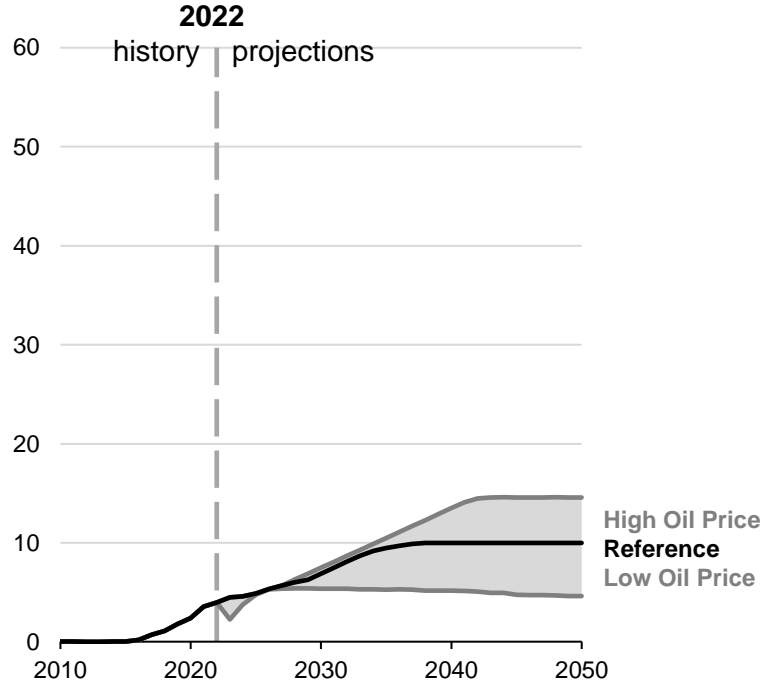
Natural gas consumption
trillion cubic feet



Dry natural gas production
trillion cubic feet



Liquefied natural gas exports
trillion cubic feet



Data source: U.S. Energy Information Administration, *Annual Energy Outlook 2023* (AEO2023)
 Note: Shaded regions represent maximum and minimum values for each projection year across the AEO2023 Reference case and side cases. ZTC=Zero-Carbon Technology Cost

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Archive

2023

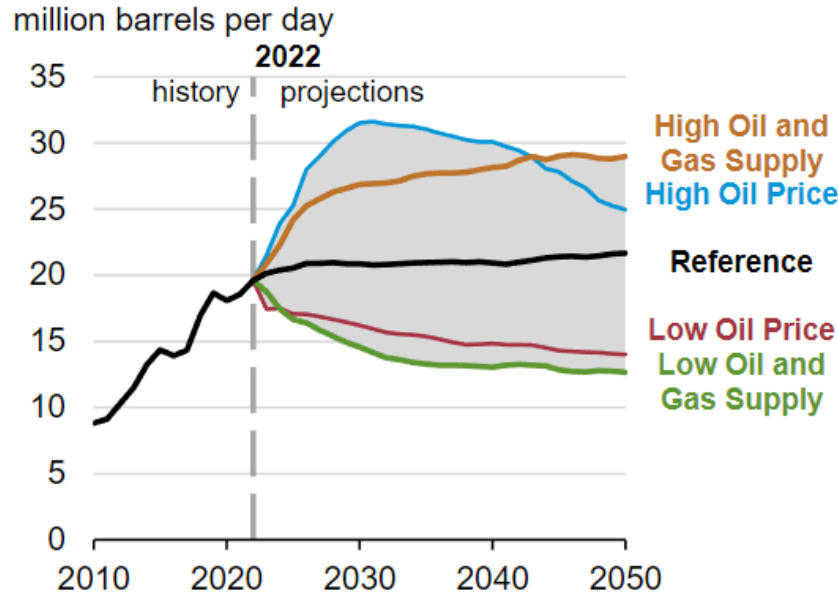
- April
- March



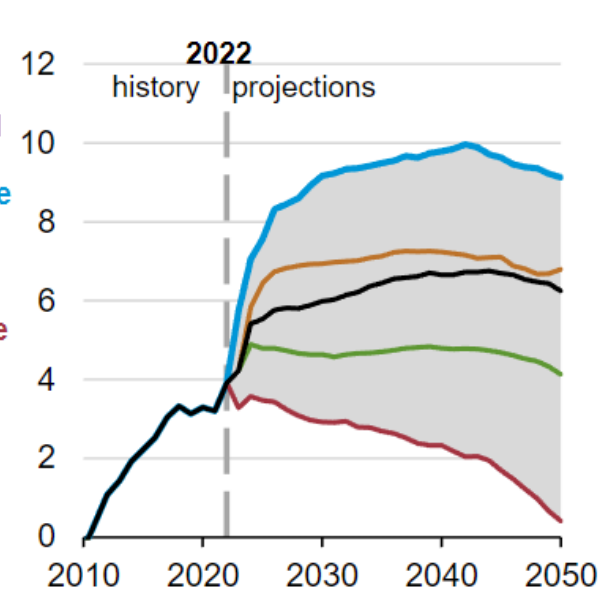
APRIL 4, 2023

U.S. production of petroleum and other liquids to be driven by international demand

Petroleum and other liquids production (2010–2050)



Petroleum products net exports (2010–2050)

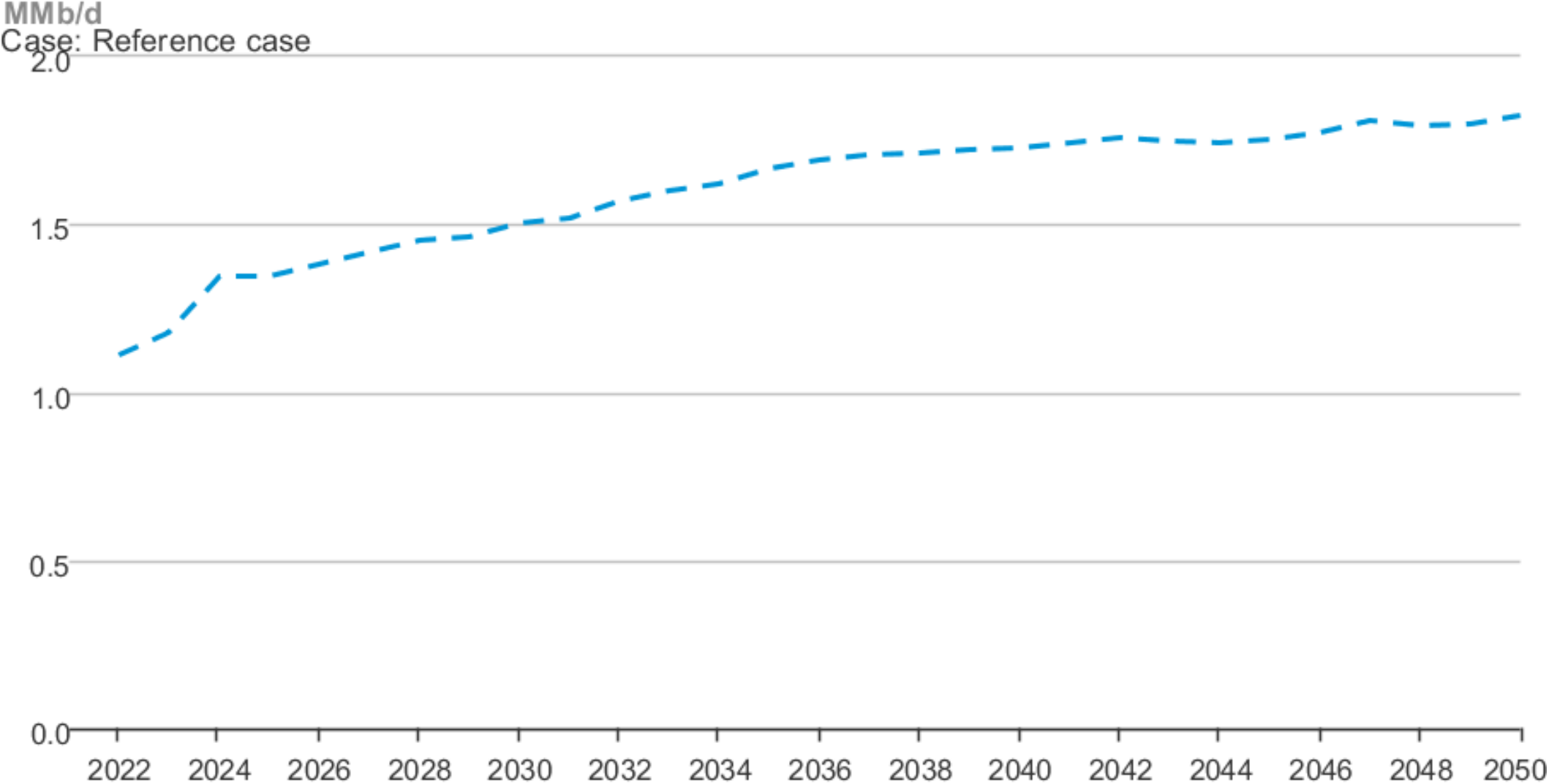


Data source: U.S. Energy Information Administration, *Annual Energy Outlook 2023* (AEO2023)

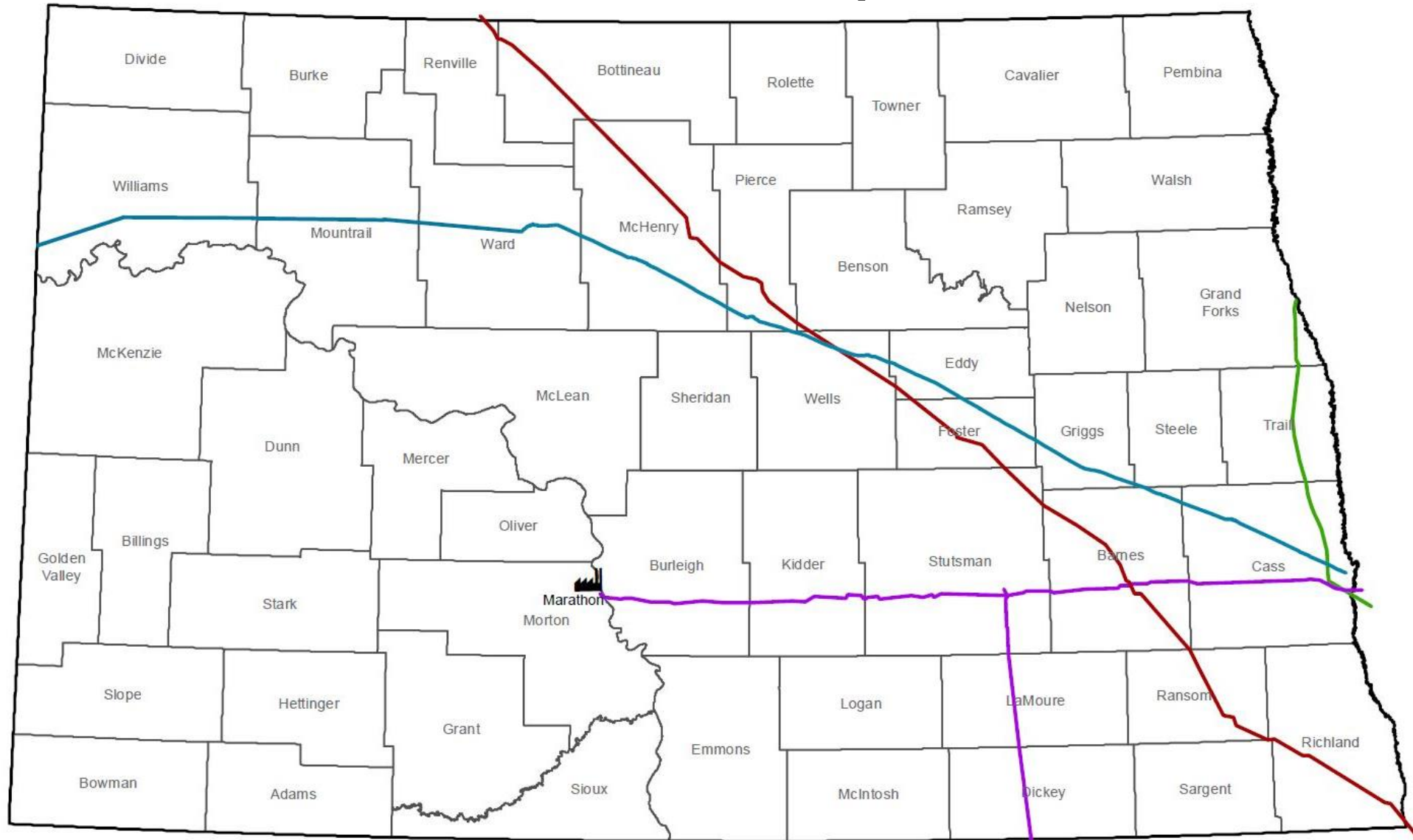
Note: We do not include biofuels in petroleum and other liquids production. Shaded regions represent maximum and minimum values for each projection year across the AEO2023 Reference case and side cases.

Strong continuing international demand for petroleum and other liquids will sustain U.S. production above 2022 levels through 2050, according to most of the cases we examined in our *Annual Energy Outlook 2023* (AEO2023). We project that the United States will continue to be an integral part of global oil markets and a significant source of supply in these cases, as increased exports of finished products support U.S. production.

Crude Oil: Production: Lower 48 Onshore: Northern Great Plains



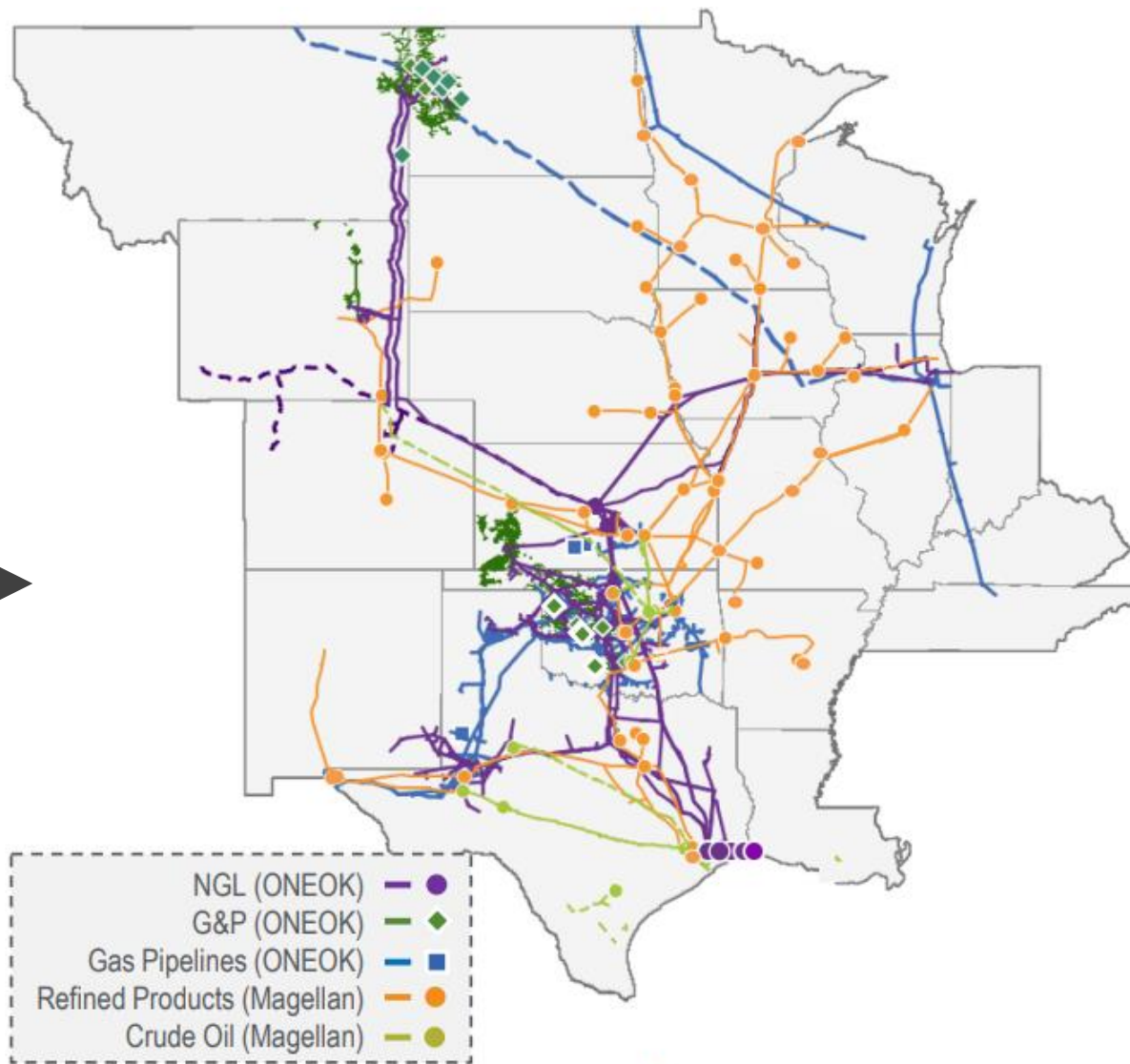
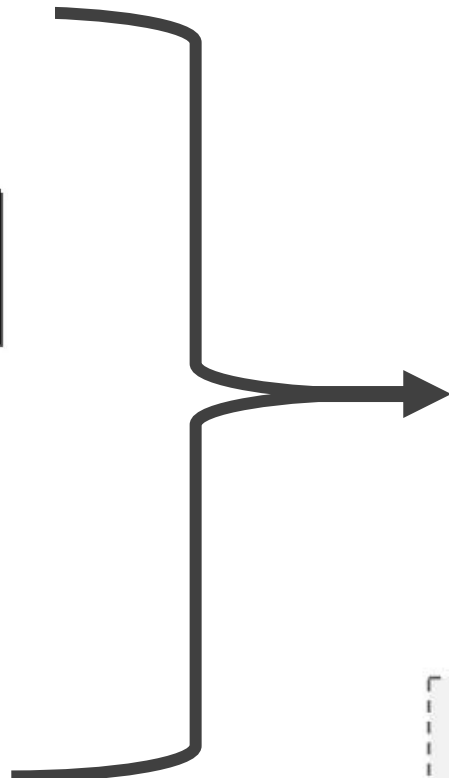
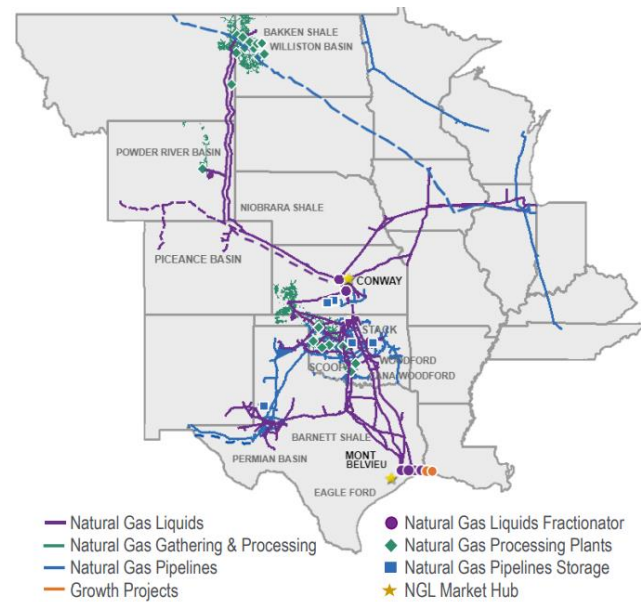
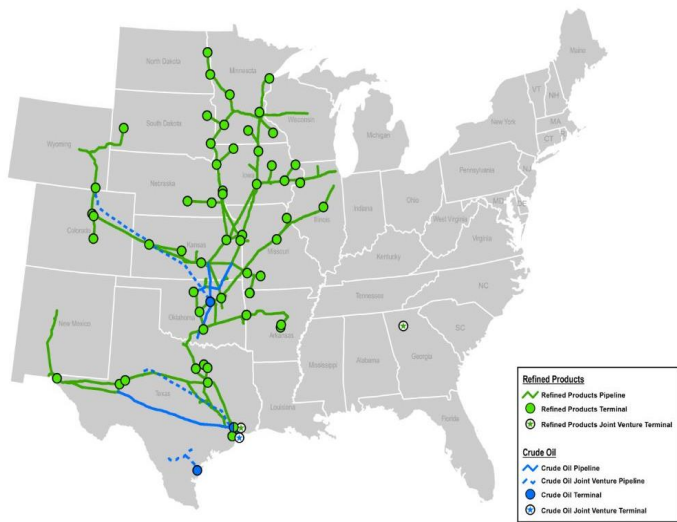
Refined Product Pipelines



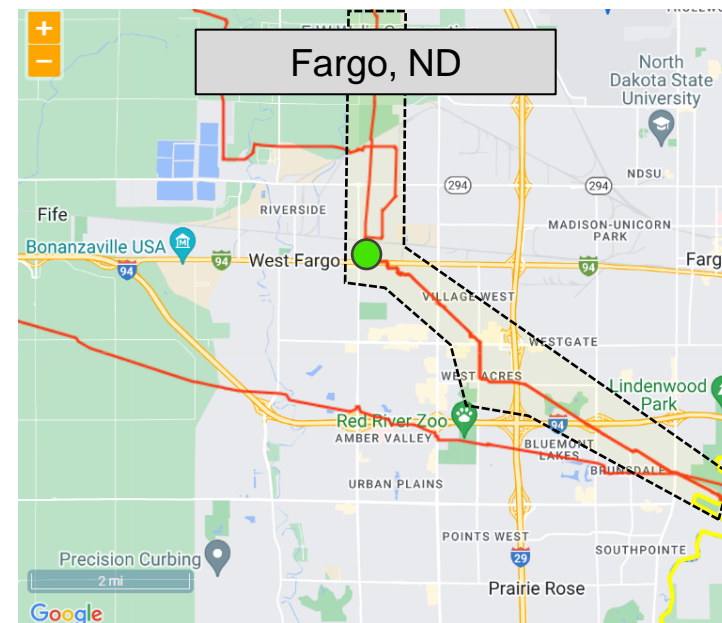
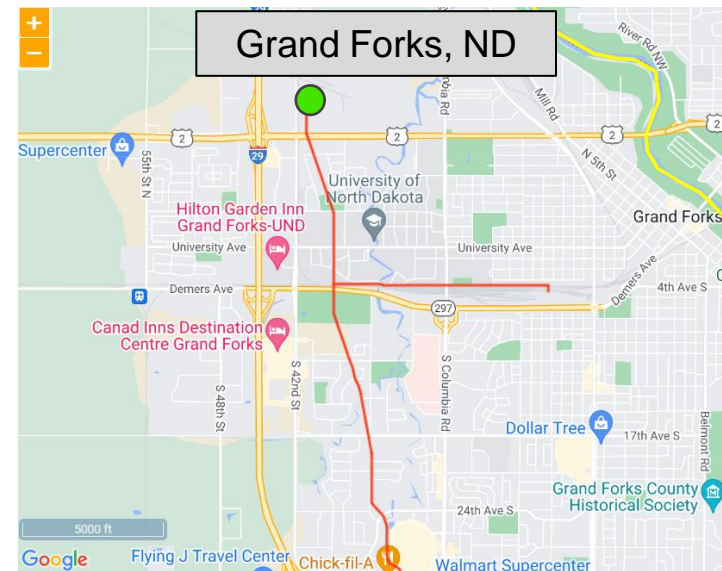
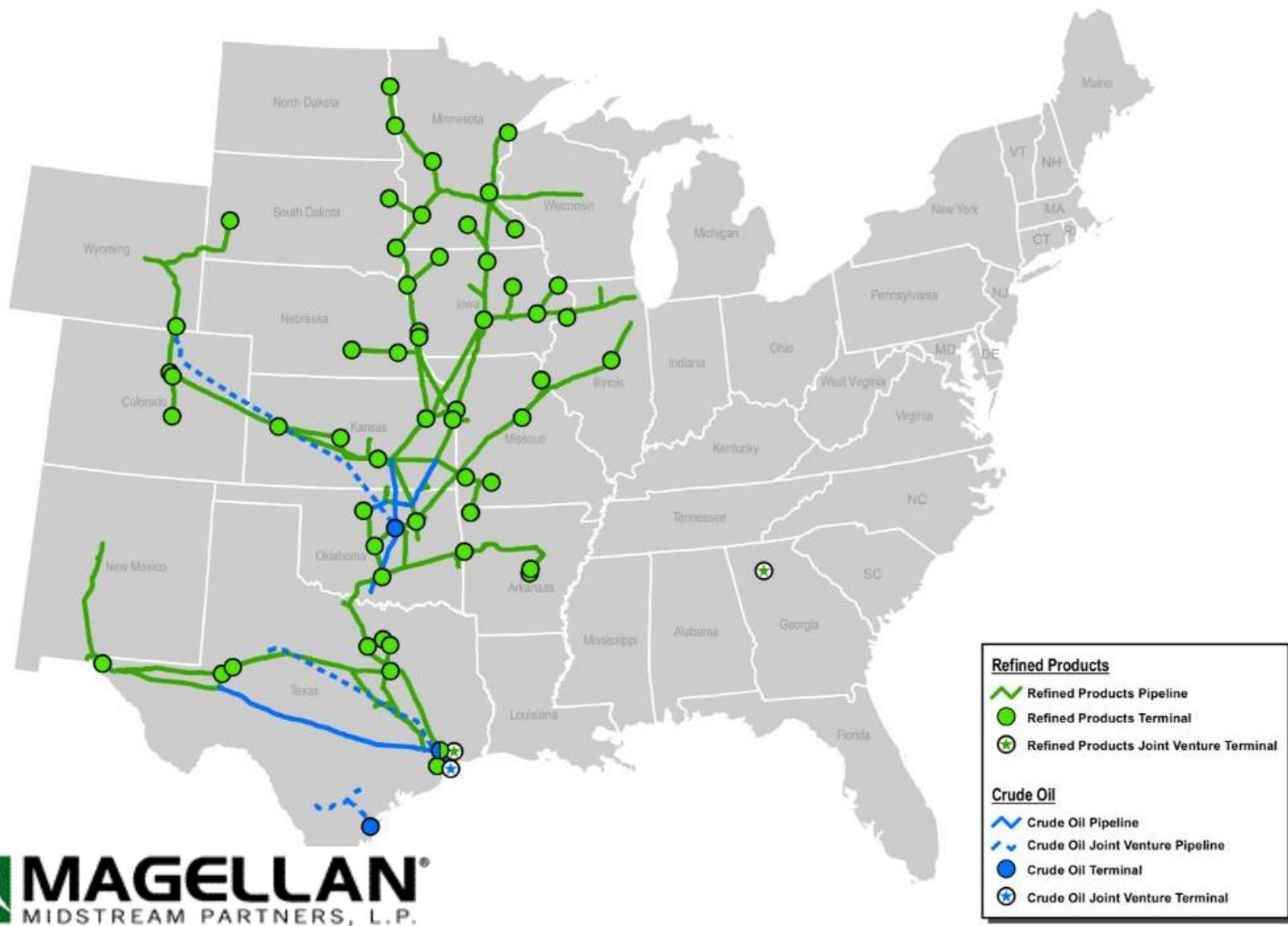
- Cenex Pipeline LLC - Refined Products
- Magellan Midstream Partners LP - Refined Products
- Kinder Morgan Cochin - Condensate
- NuStar Energy - Refined Products
- 🏭 Refinery



ONEOK to Acquire Magellan: \$18.8B



ONEOK to Acquire Magellan: \$18.8B



Grand Forks Expansion Not Proceeding



Grandforks Expansion

- Proposed Route
- Proposed Route
- Existing NGP Assets

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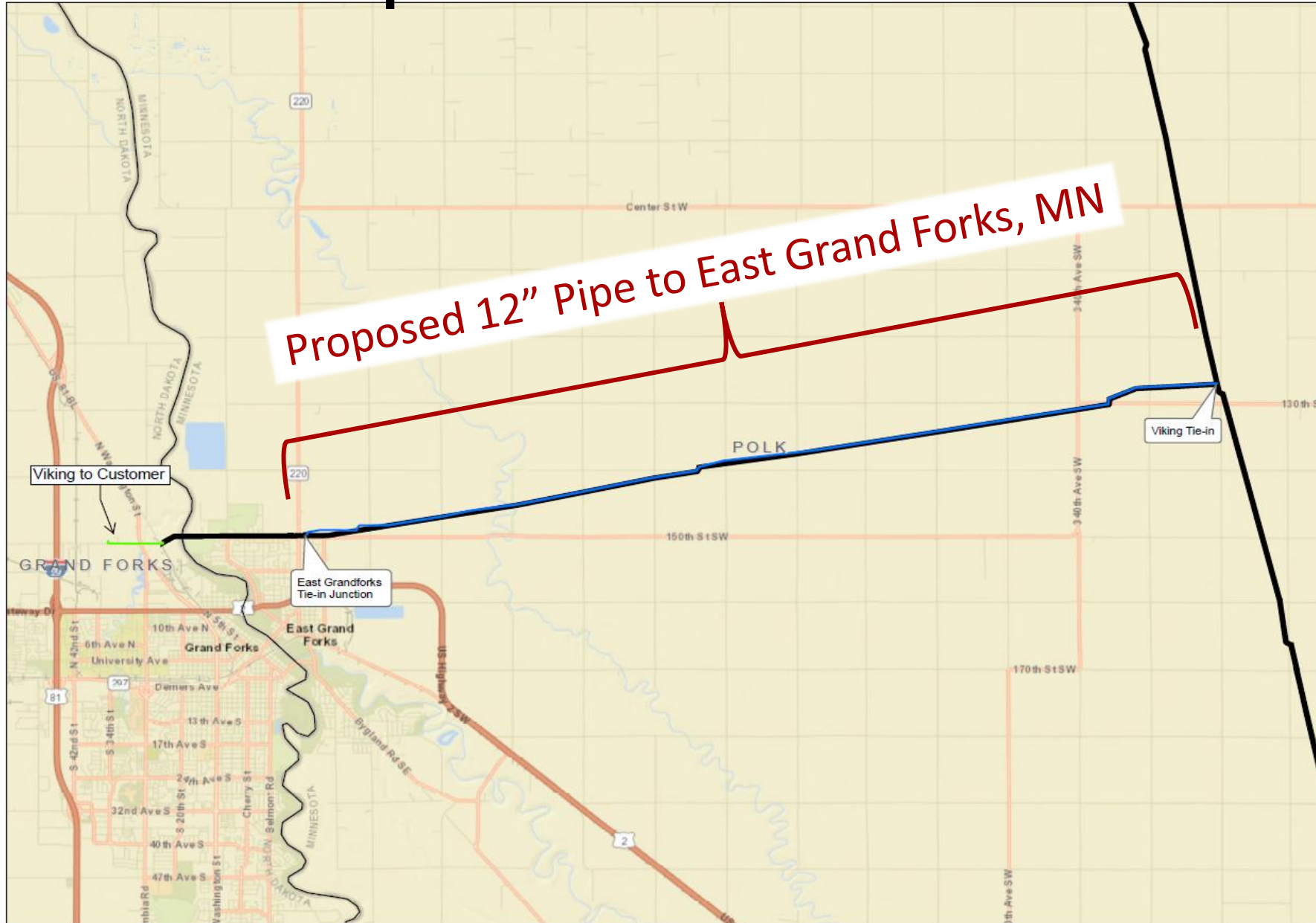
Page of



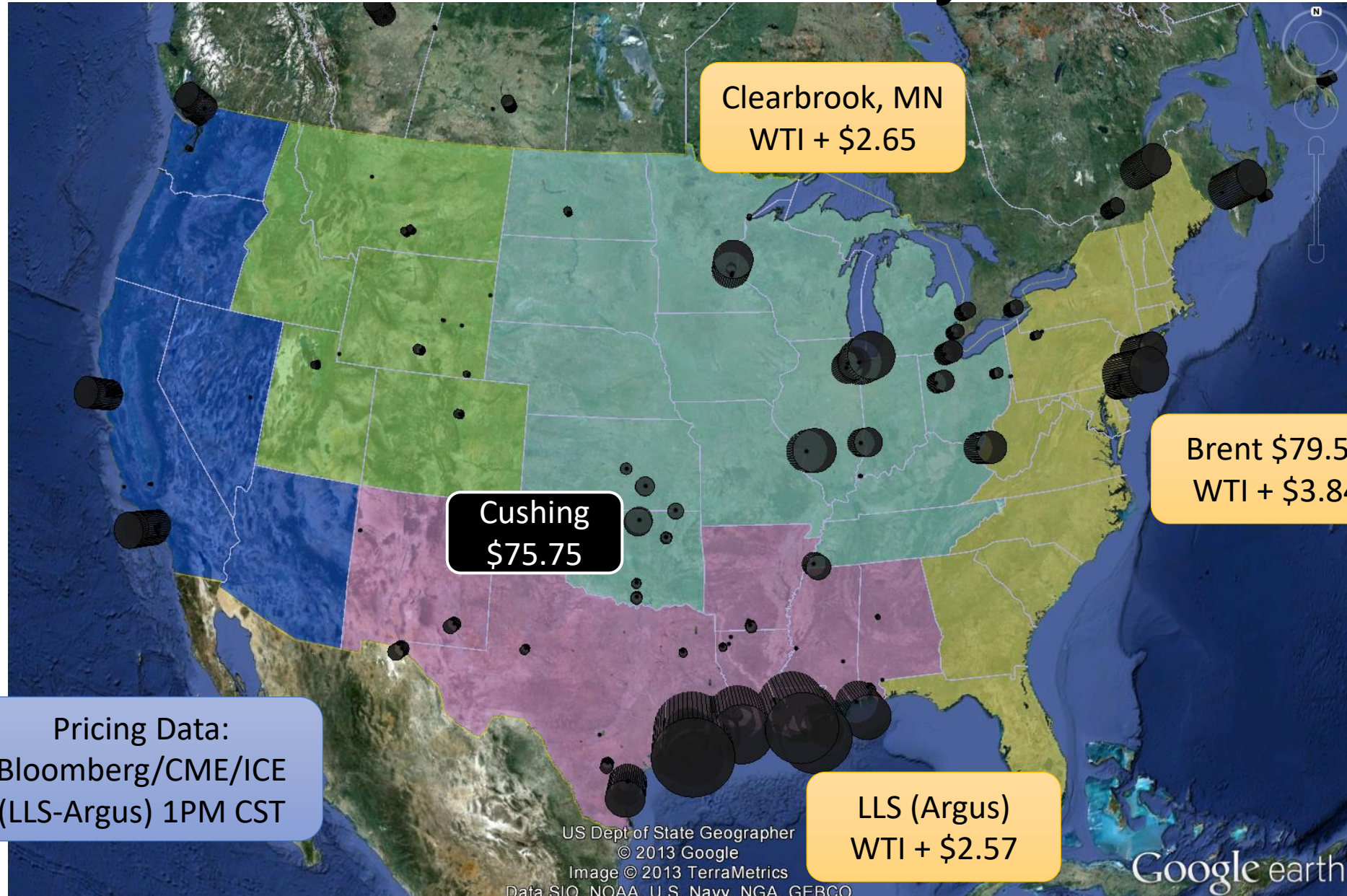
0 1.5 3 Miles



Printed on 2/4/2022 at 5:16:25 PM

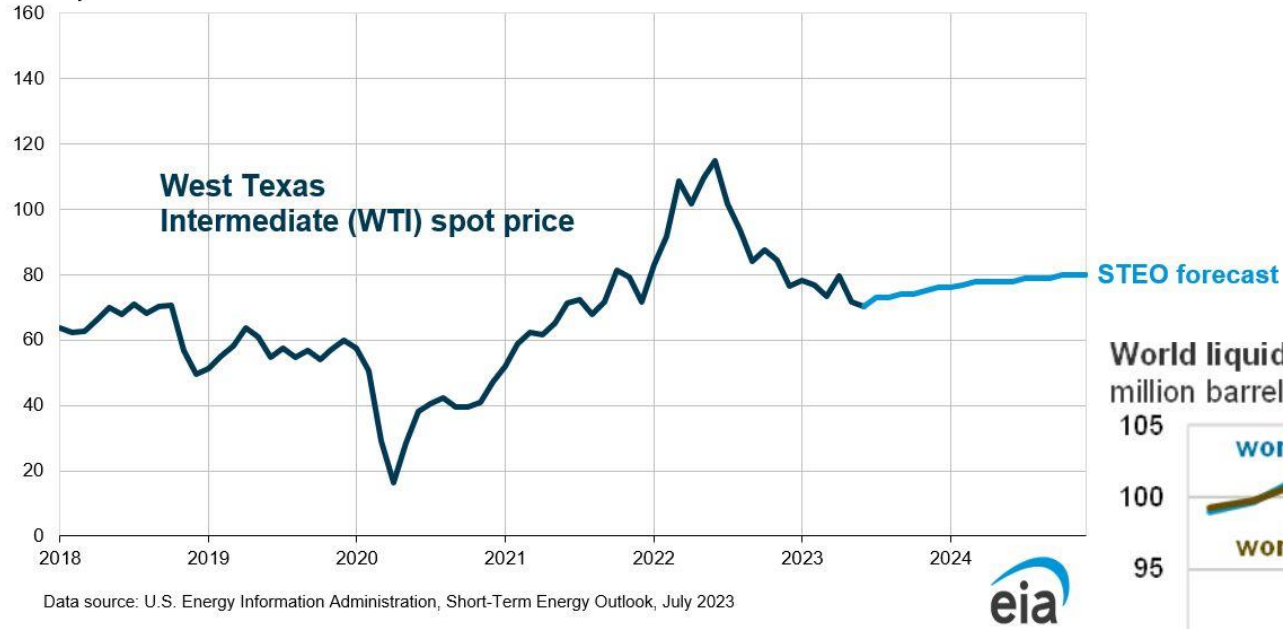


Crude Oil Prices – July 20, 2023

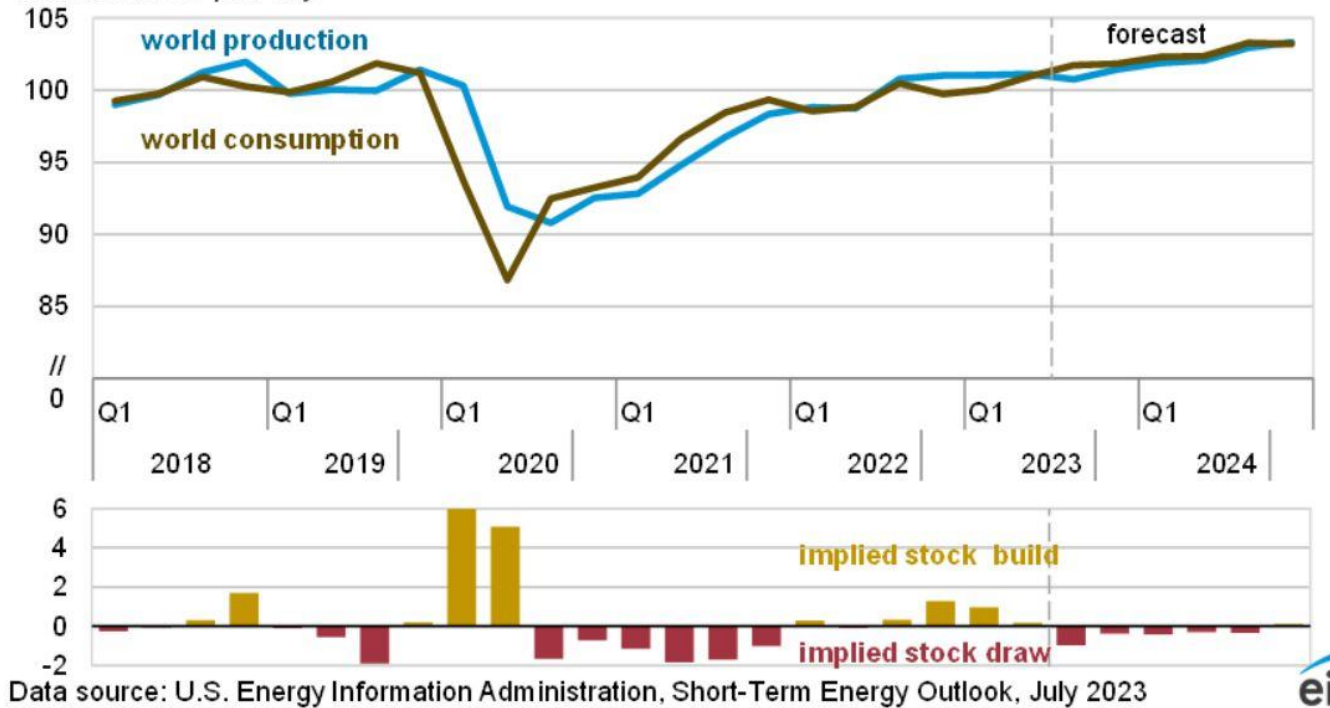


EIA Oil Price Outlook (July 2023)

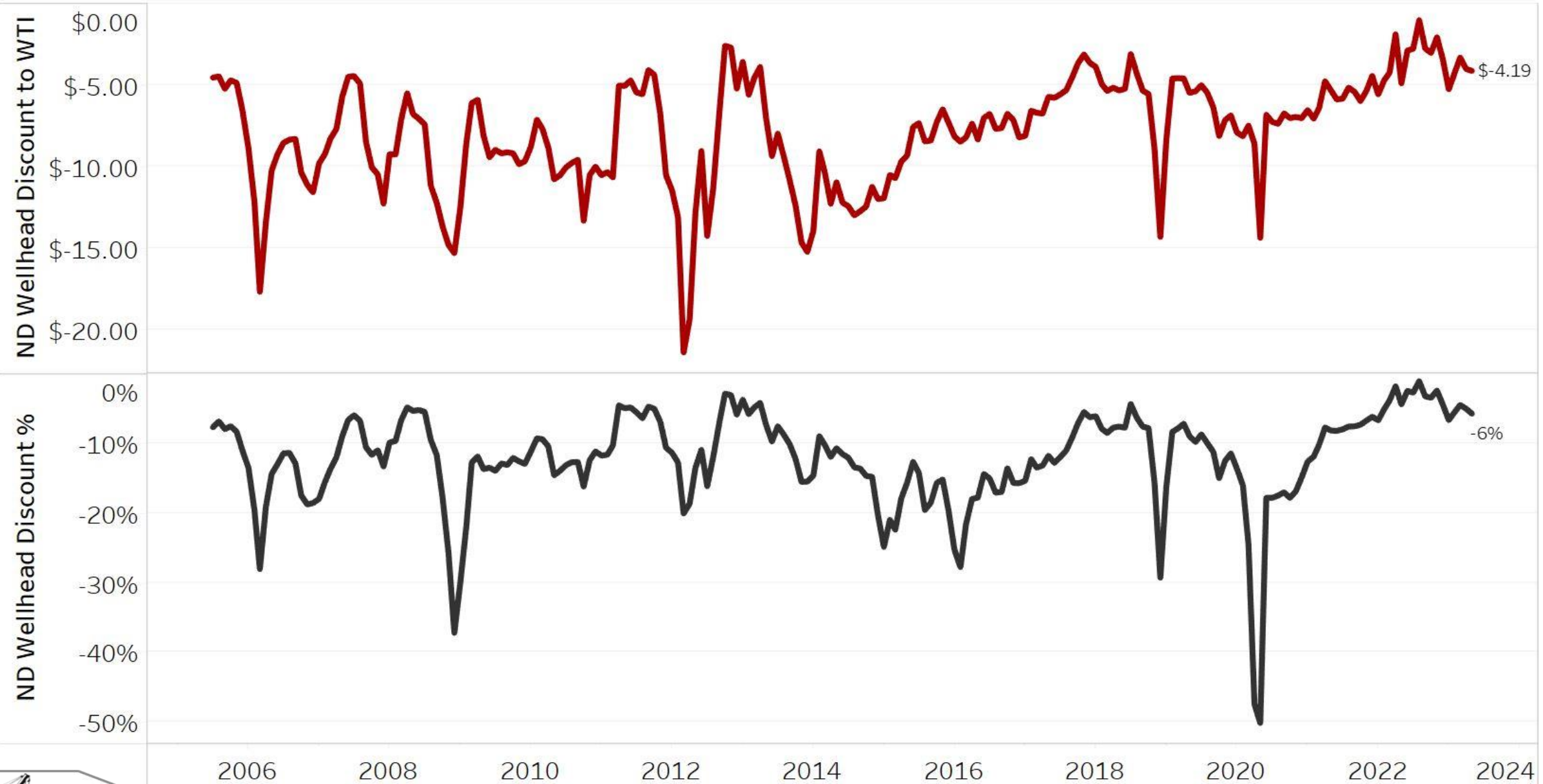
West Texas Intermediate (WTI) crude oil price
dollars per barrel



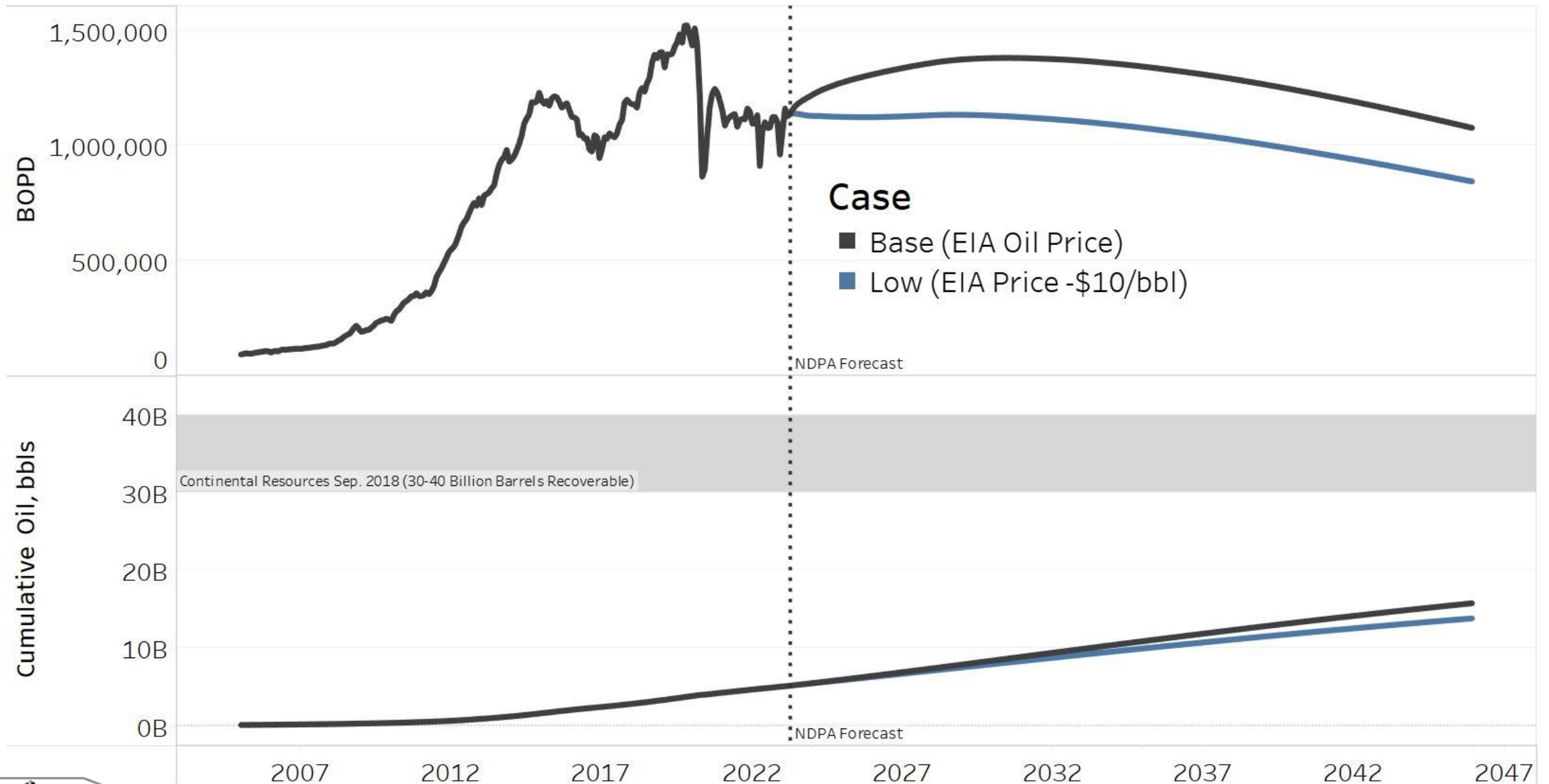
World liquid fuels production and consumption balance
million barrels per day



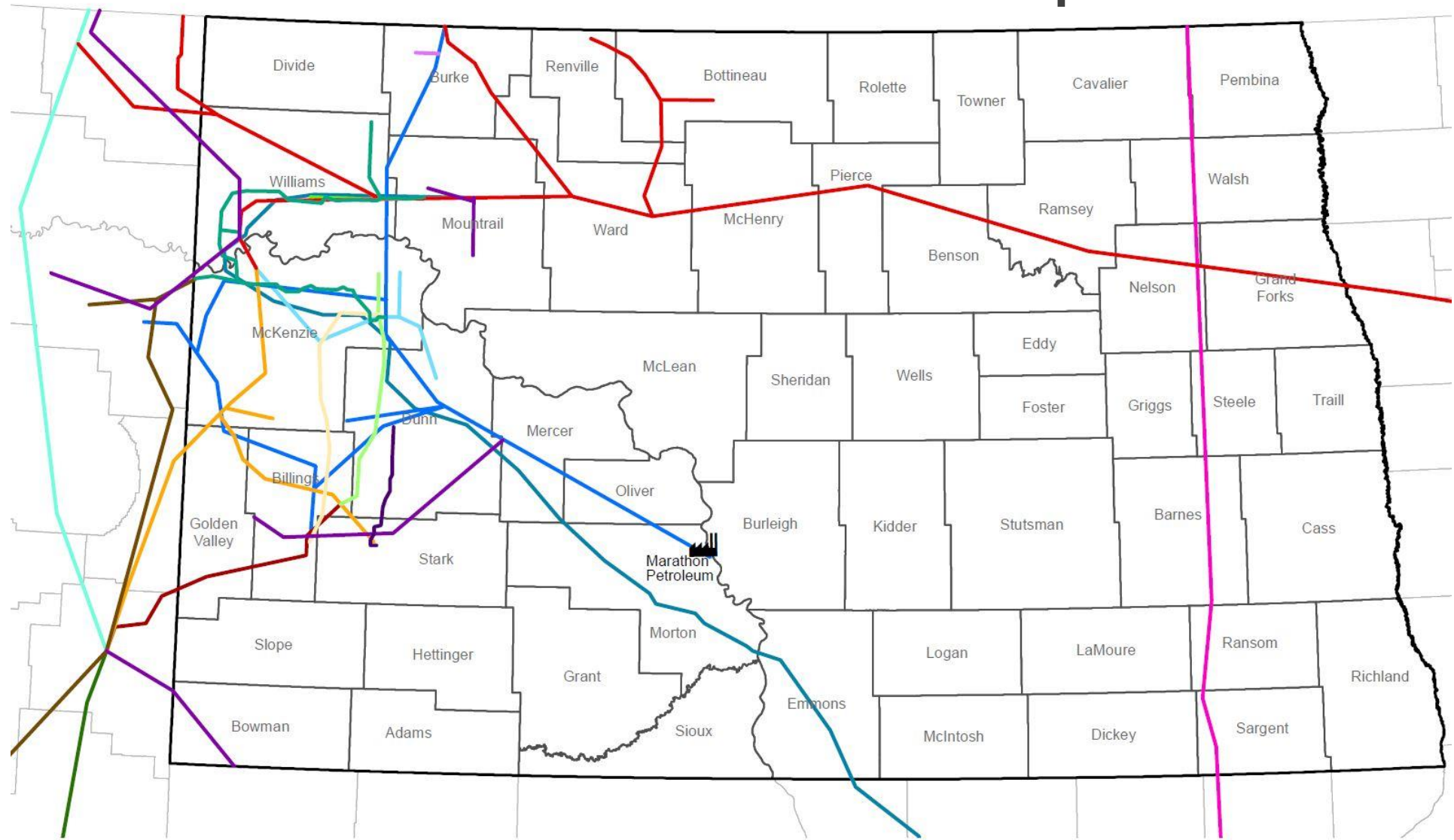
Average North Dakota Oil “Discount” to WTI



ND Oil Production: EIA Price Deck



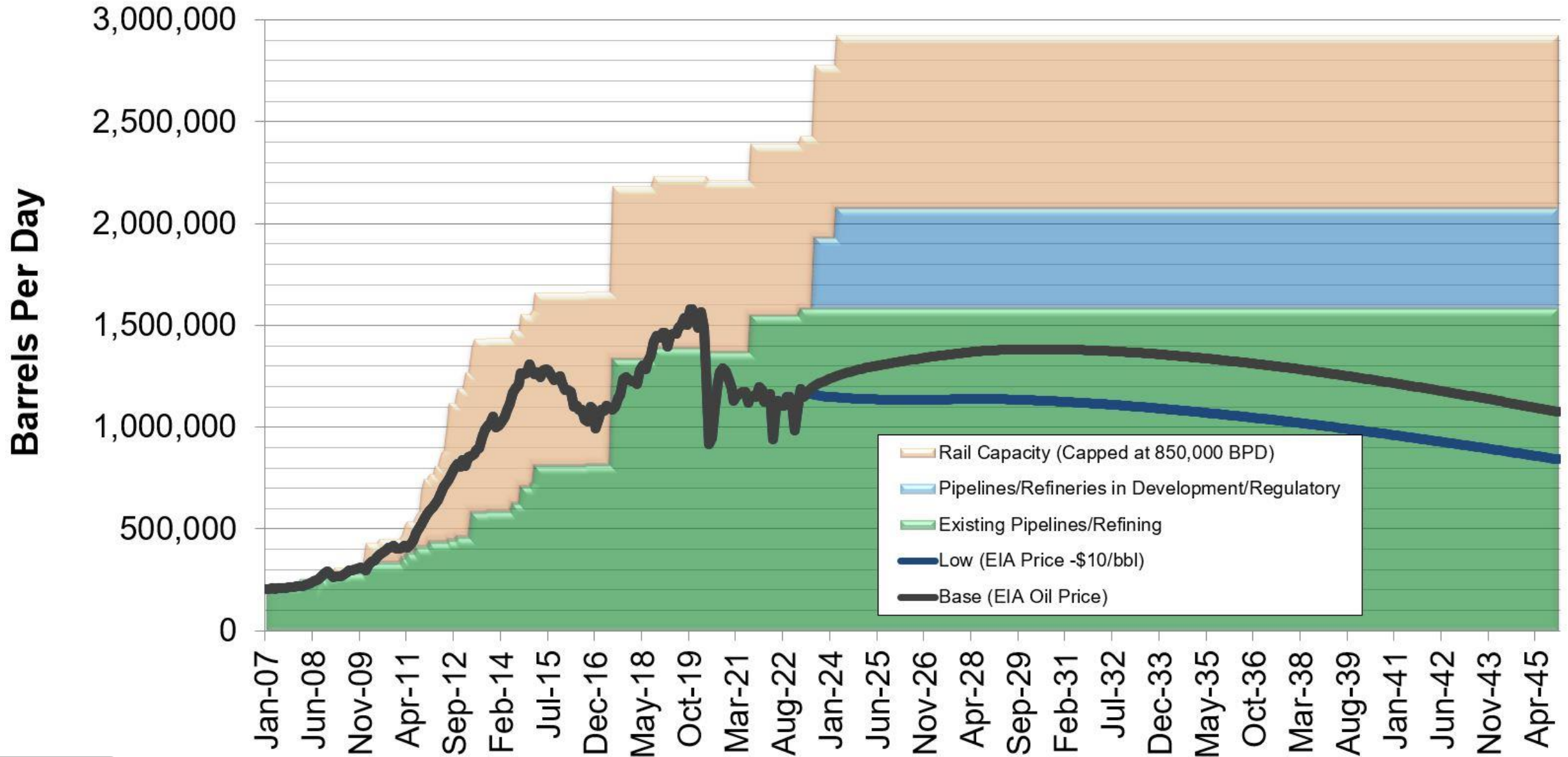
North Dakota Oil Transmission Pipelines



- | | | | | | |
|--------------------|-----------------|---------------|------------|-------------------|----------|
| 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



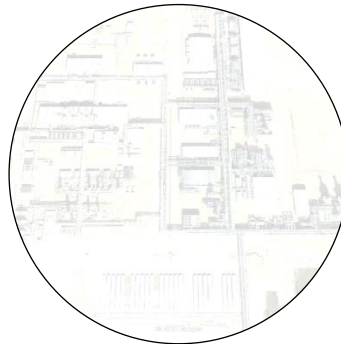
Production

- Technology
- Markets



Gathering

- Capacity
- Connections



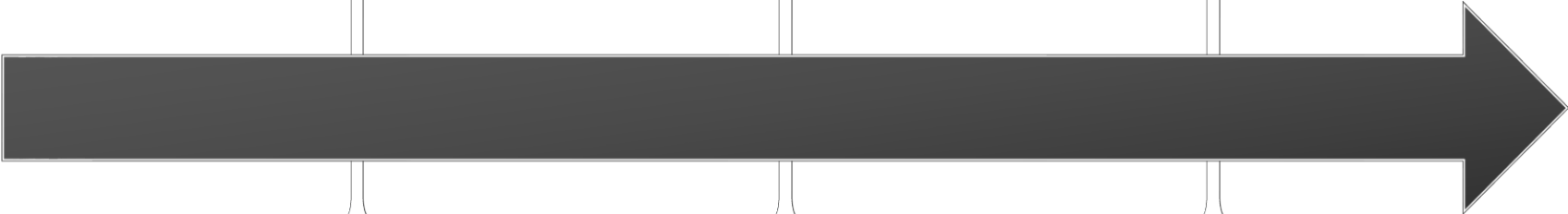
Processing

- Capacity
- Location

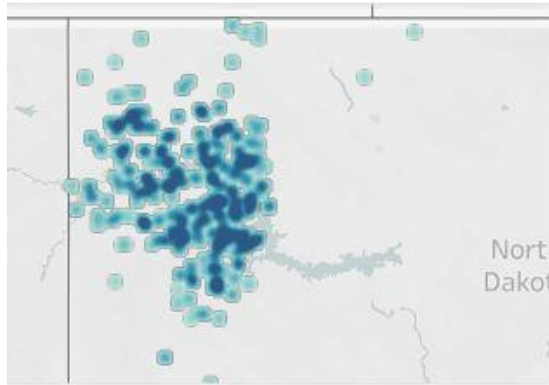


Transmission

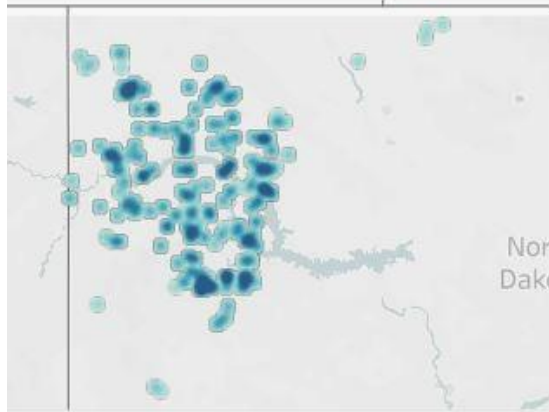
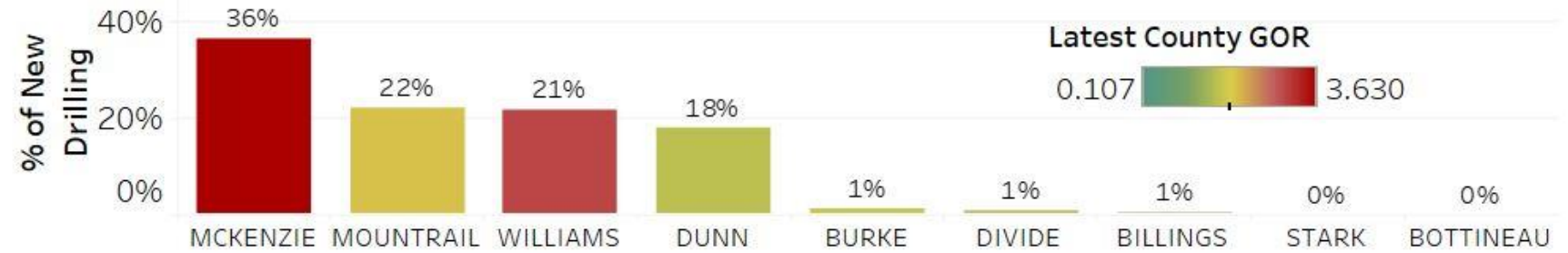
- Dry Gas
- Natural Gas Liquids



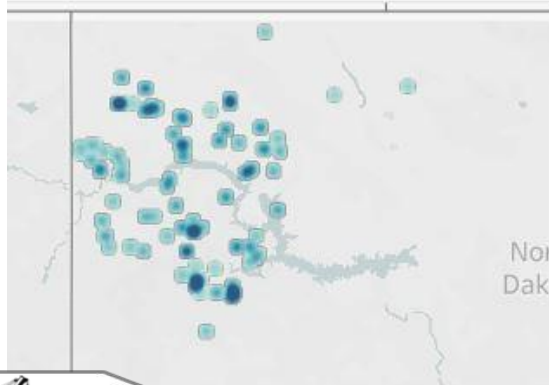
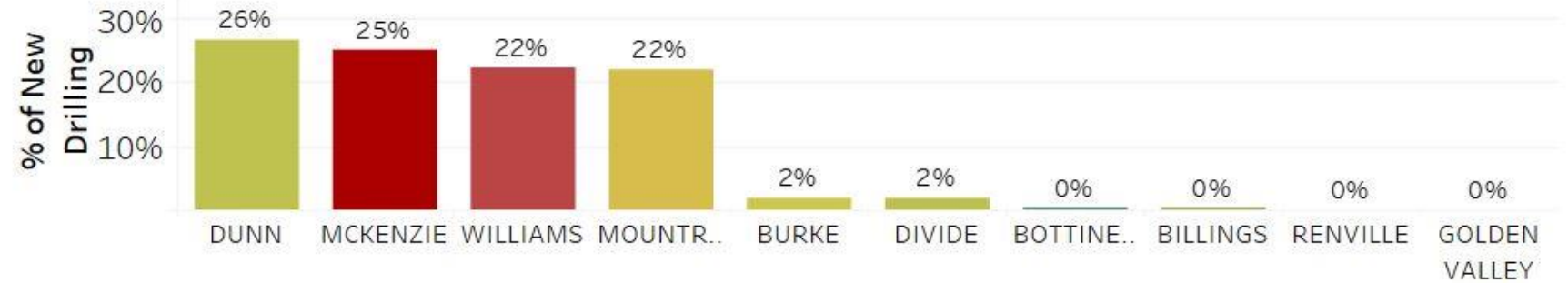
Near-term GOR Influenced by Drilling Location



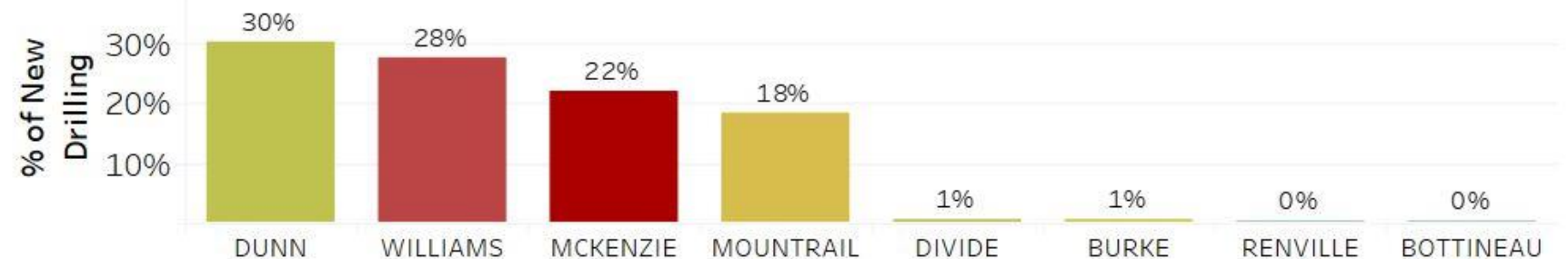
2019 Rig Location and County GOR



2022 Rig Location and County GOR

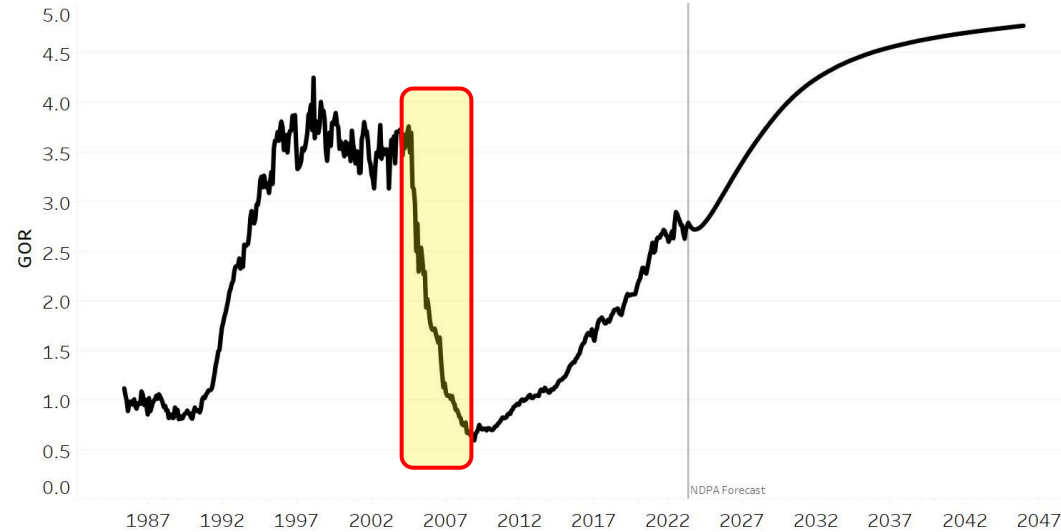
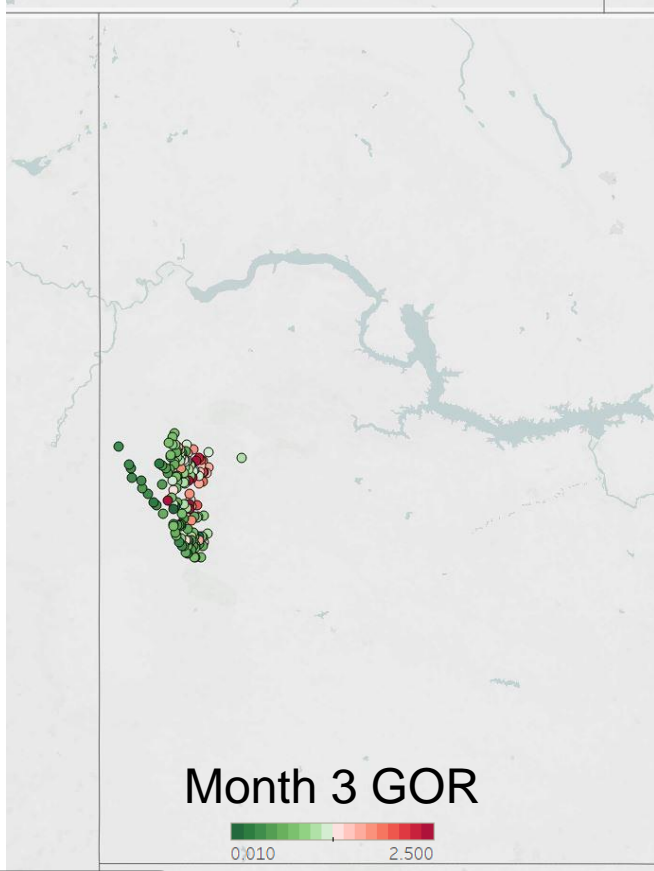


2023 (YTD) Rig Location and County GOR



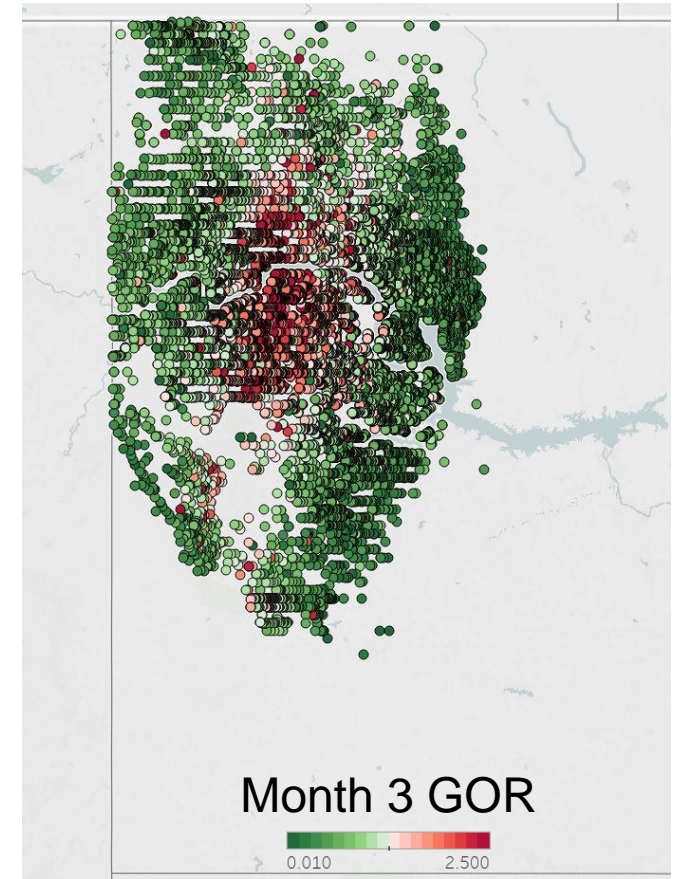
The GOR “Reset” and Forward Expectations

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

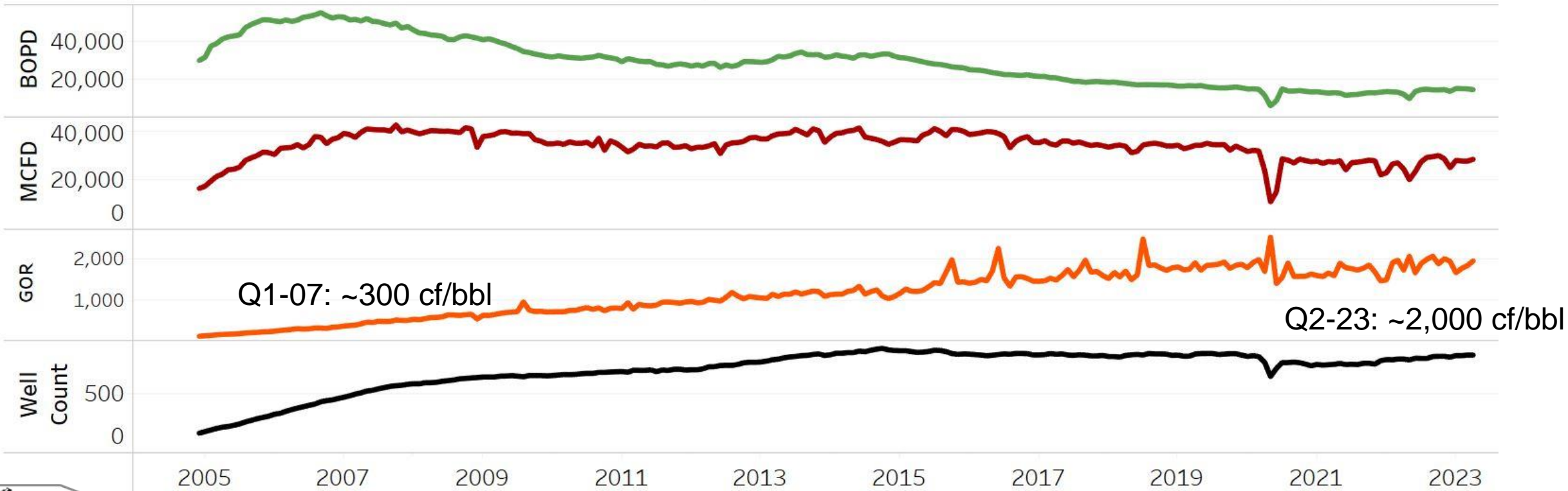


Mid-2000’s: Modern Bakken development begins and statewide average GOR is “reset” with large volumes of new gas production

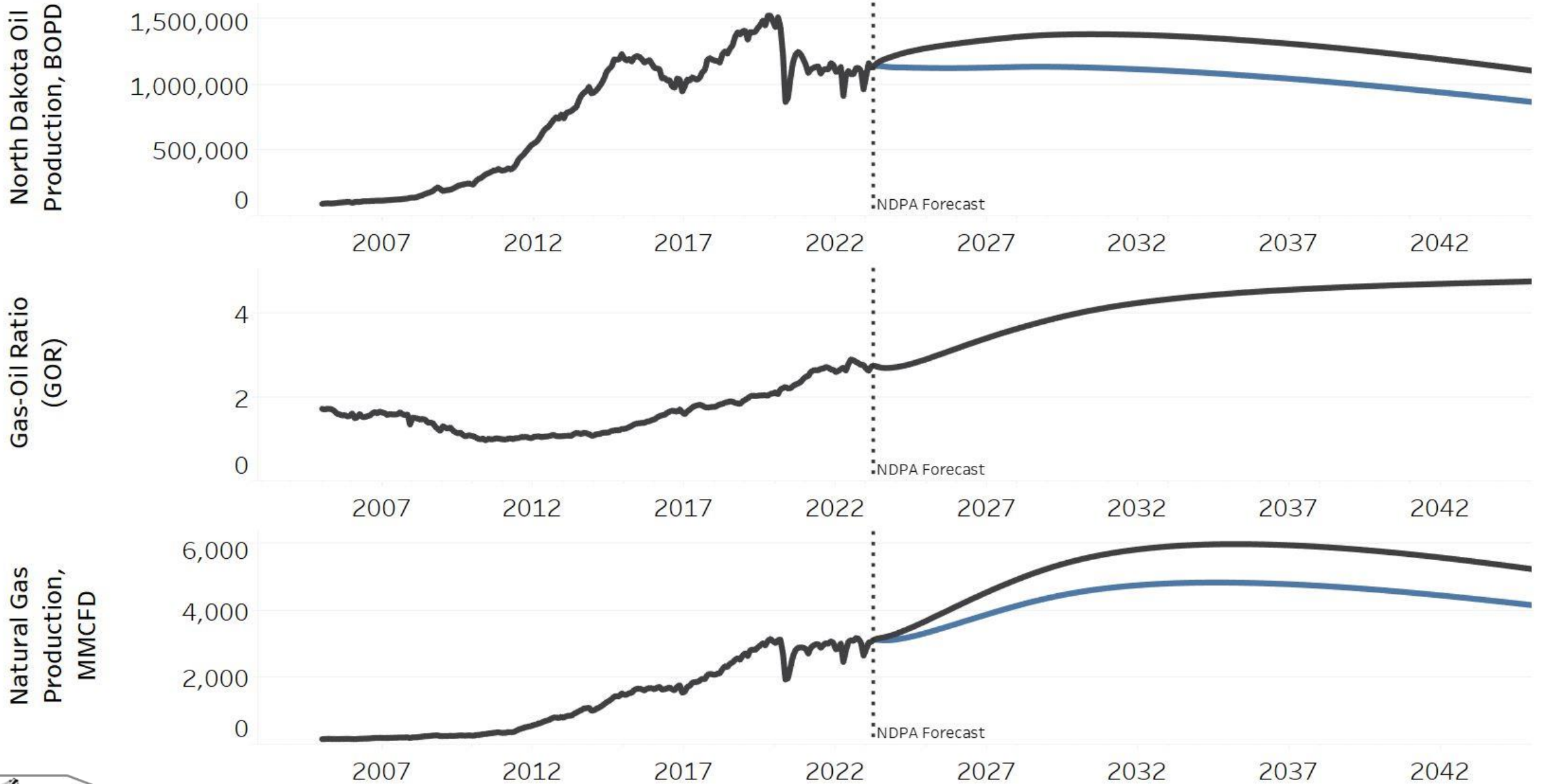
Future GOR will be driven by widespread development including deeper/hotter acreage with higher initial and sustained reservoir GOR



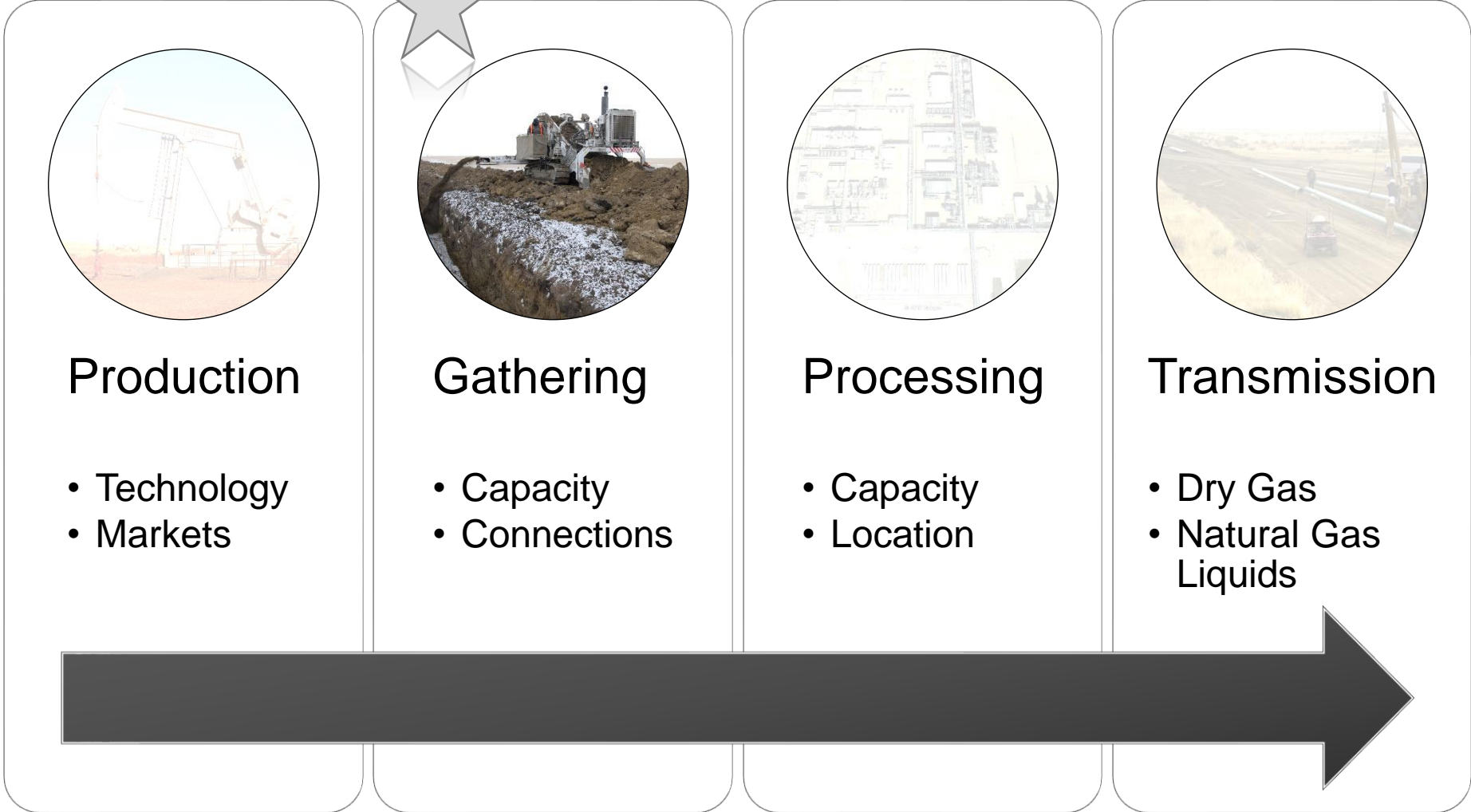
Montana Elm Coulee Gas/Oil Ratios



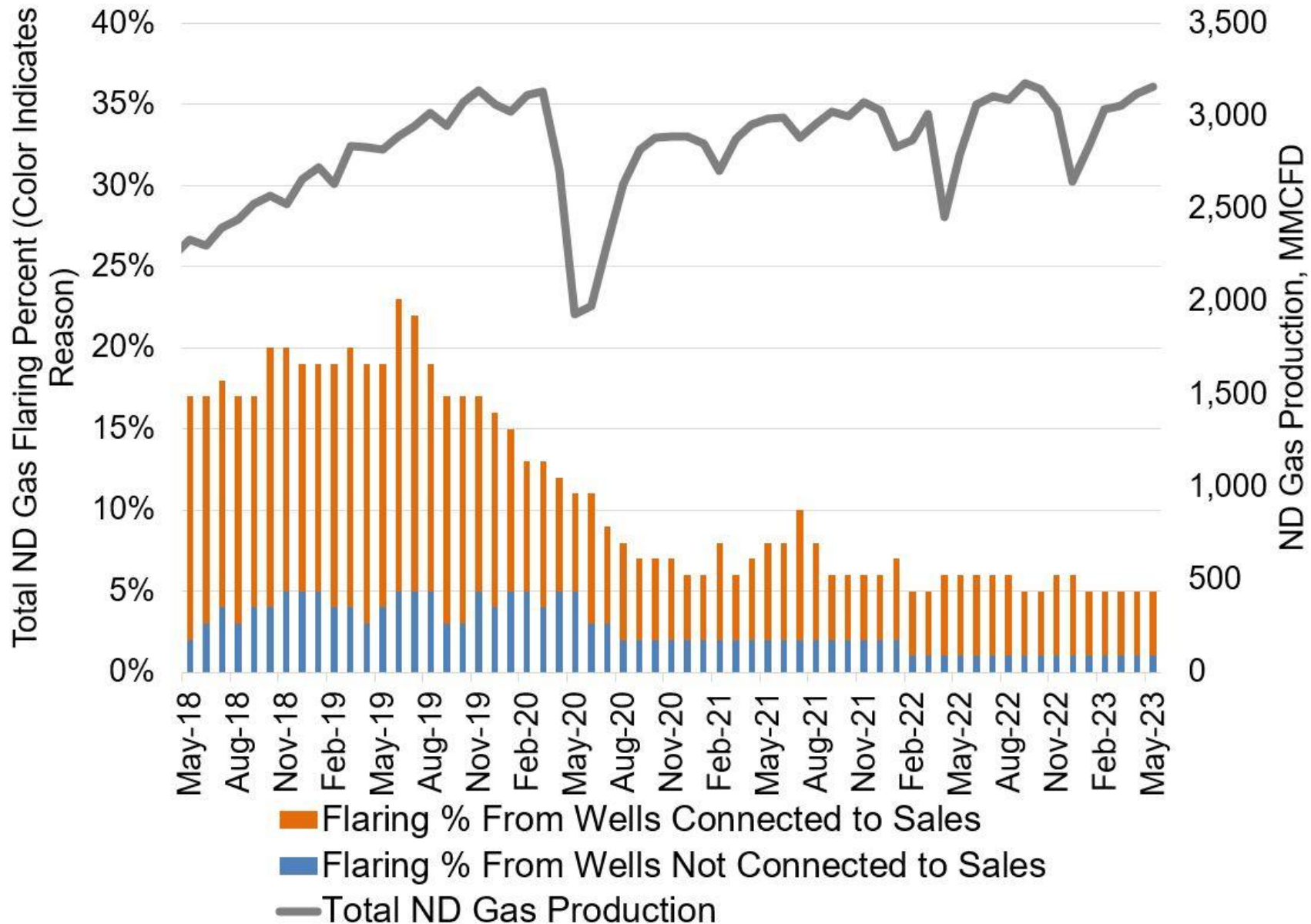
ND Production Forecast: EIA Price Deck



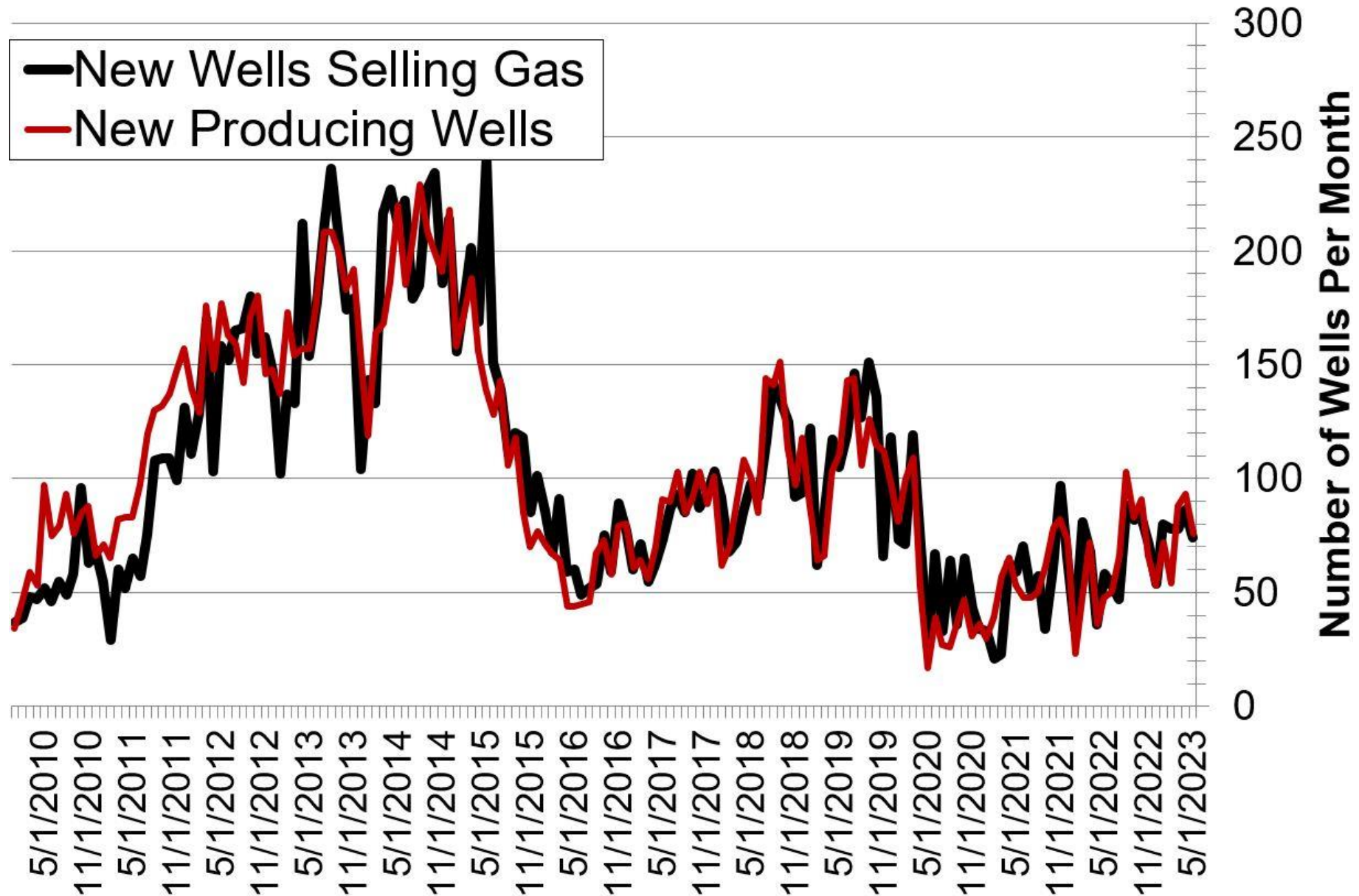
Natural Gas Update



Natural Gas Capture Rates



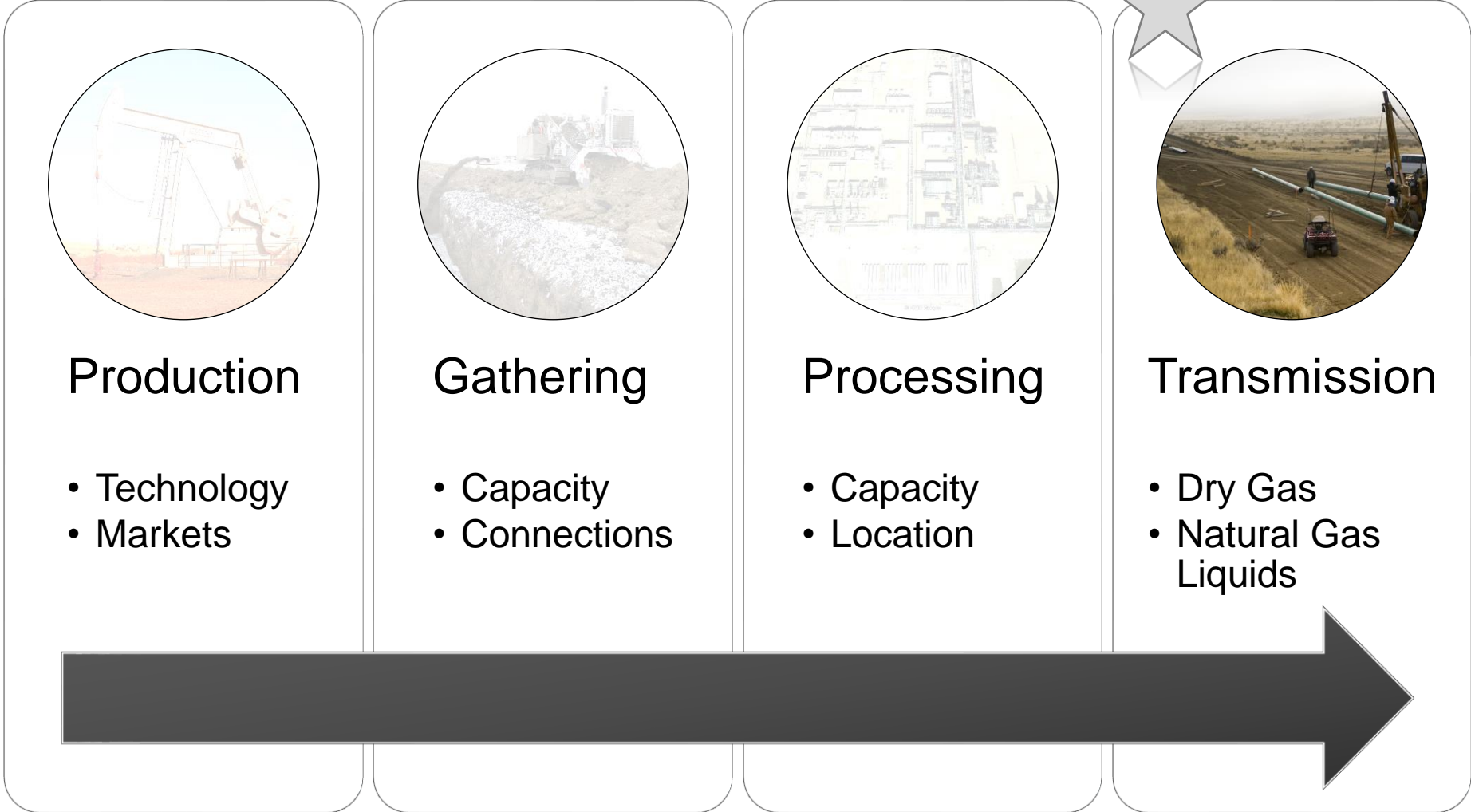
Natural Gas Gathering Connections Keeping Pace



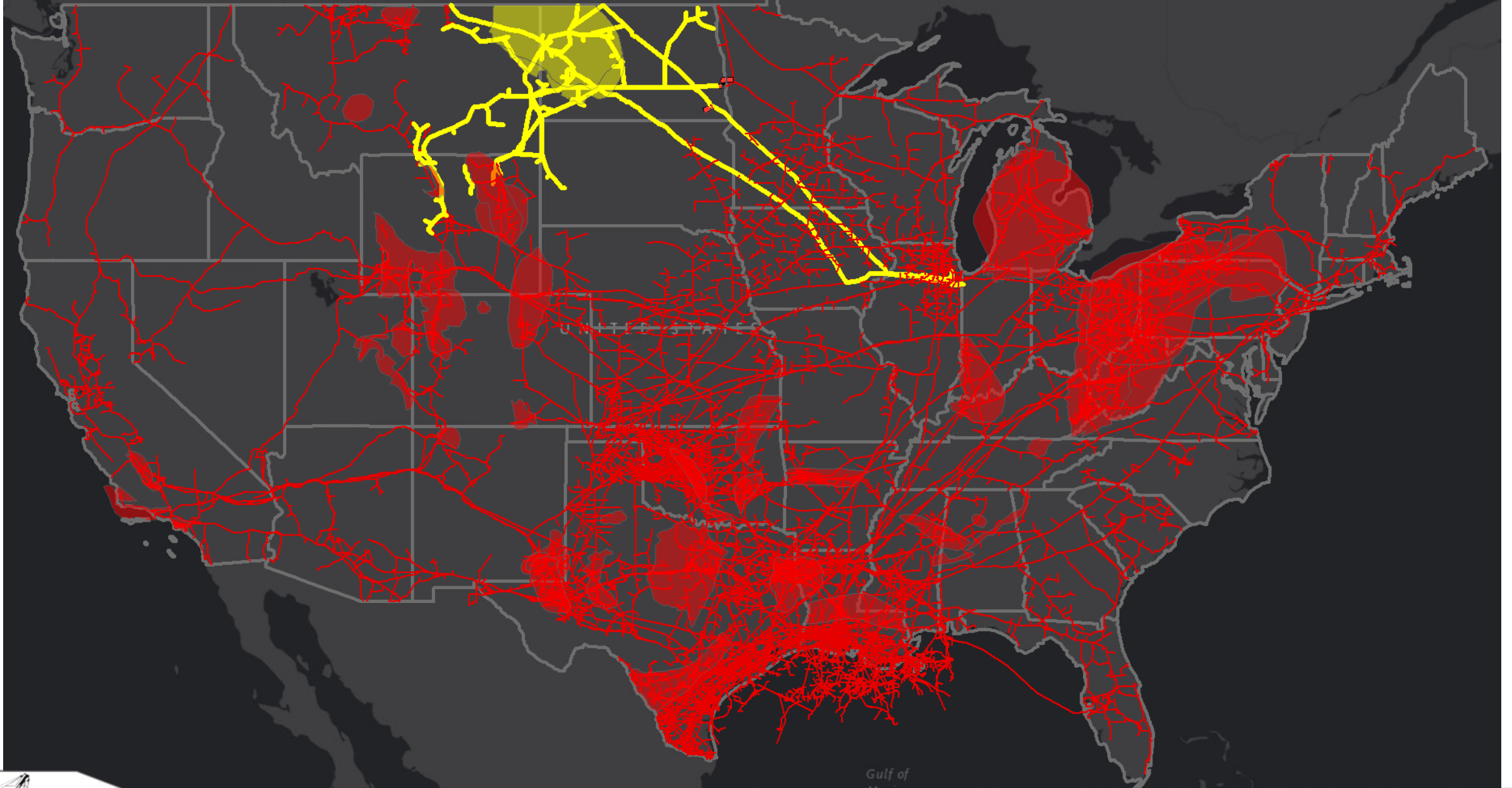
Natural Gas Update



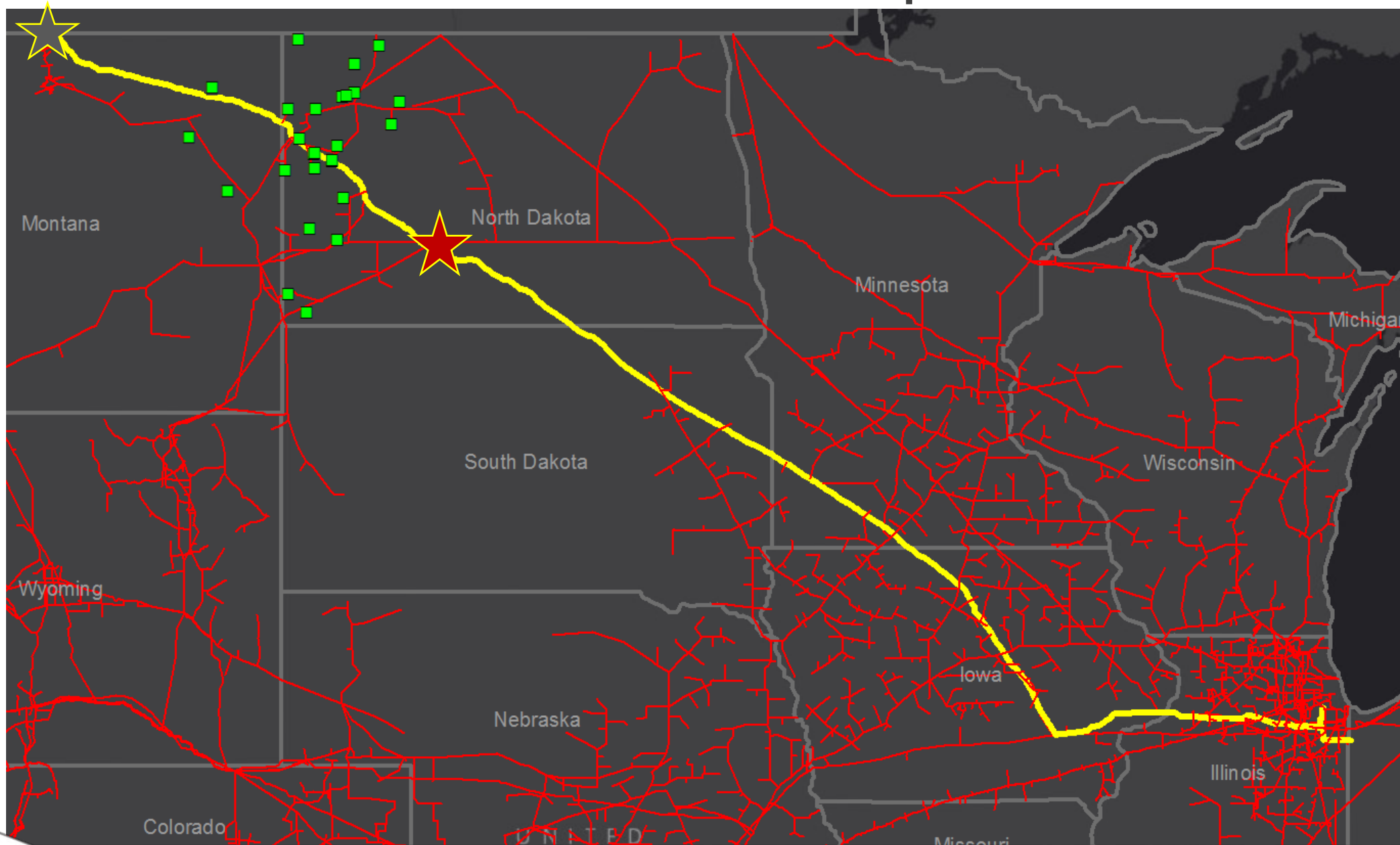
Natural Gas Update



Bakken Natural Gas Infrastructure



Northern Border Pipeline



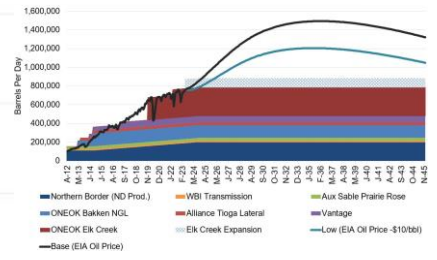
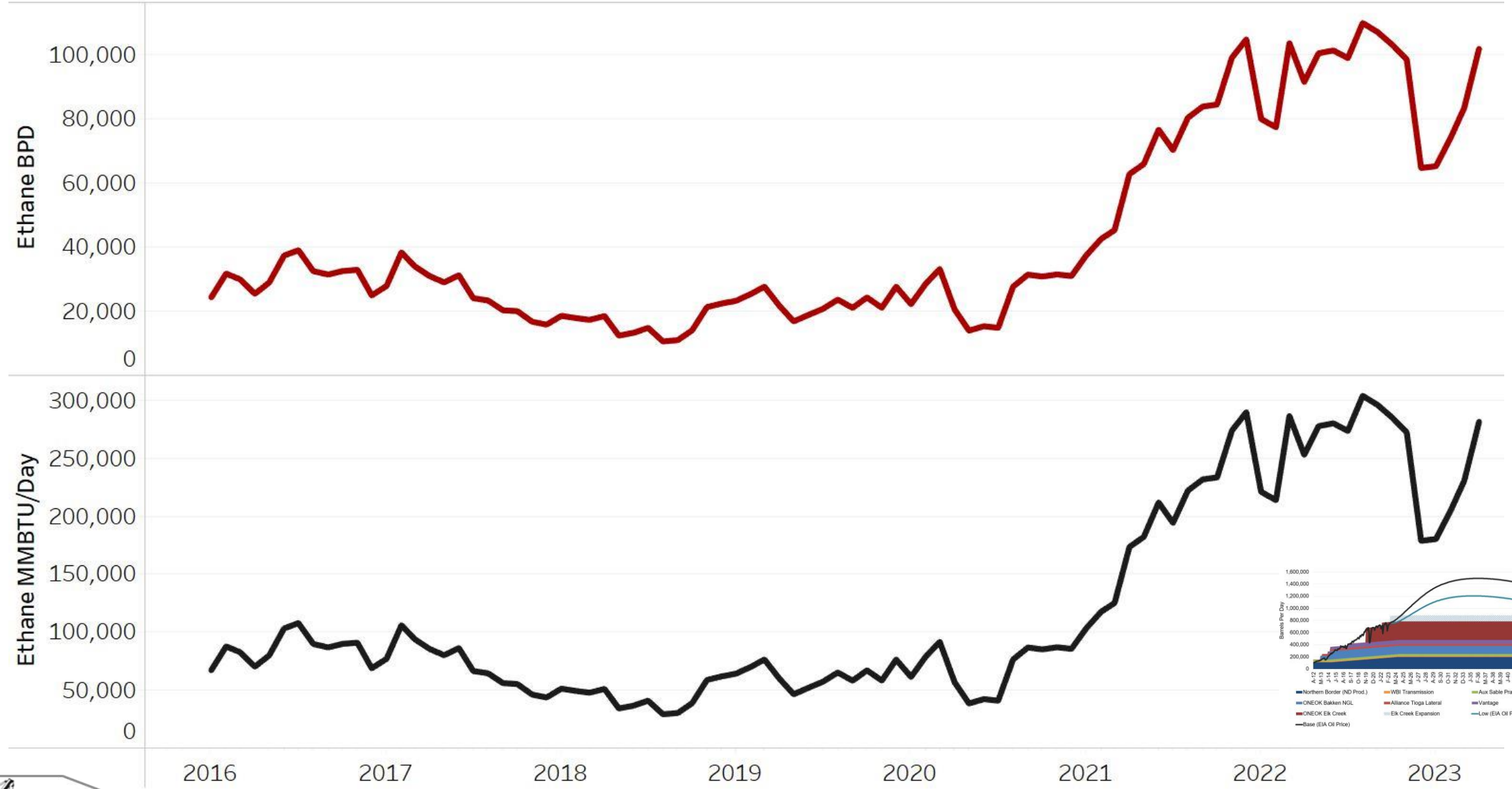
Northern Border Pipeline Market Share



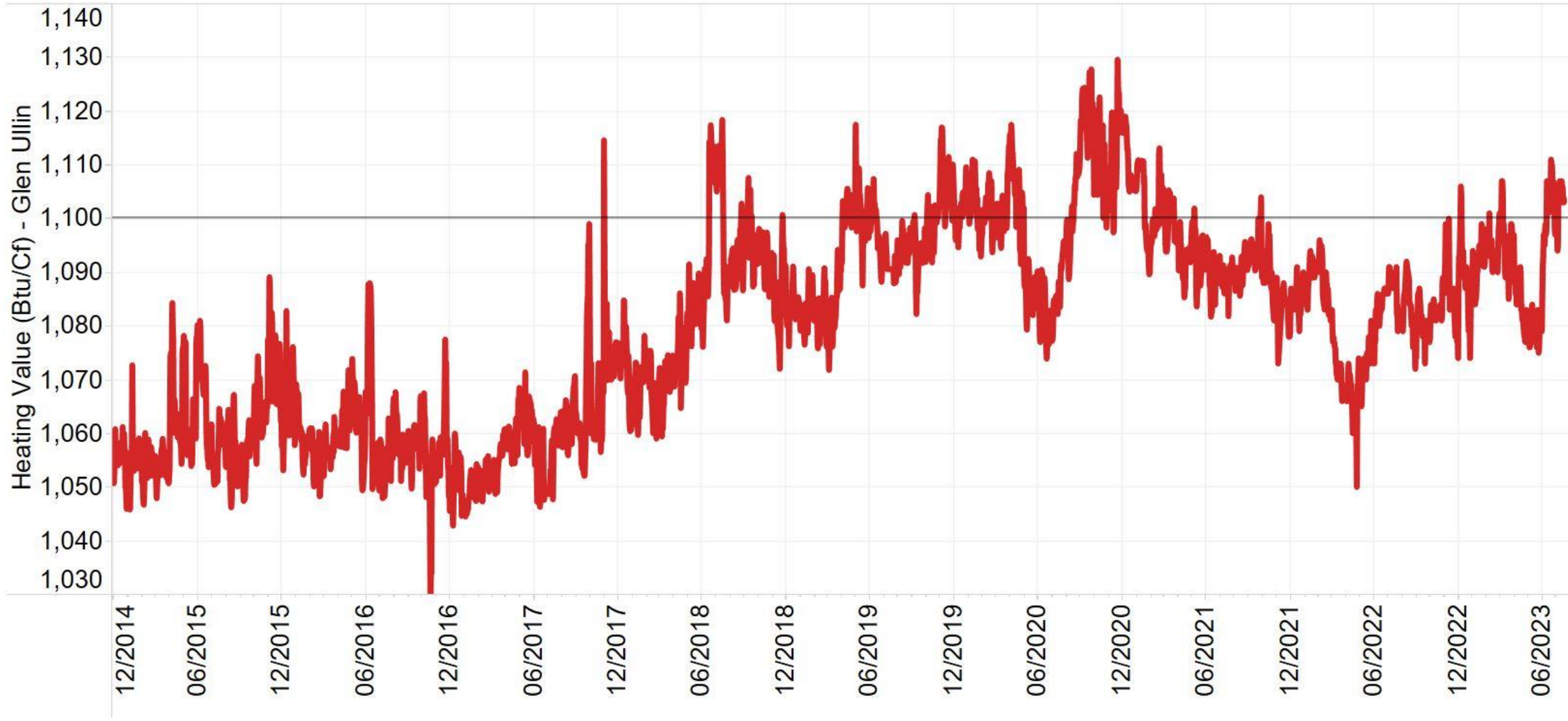
Major Residue Gas Pipeline Infrastructure



Rockies NGL Pipes Driving Down NB BTU & Market Share



Northern Border BTU at Glen Ullin, ND



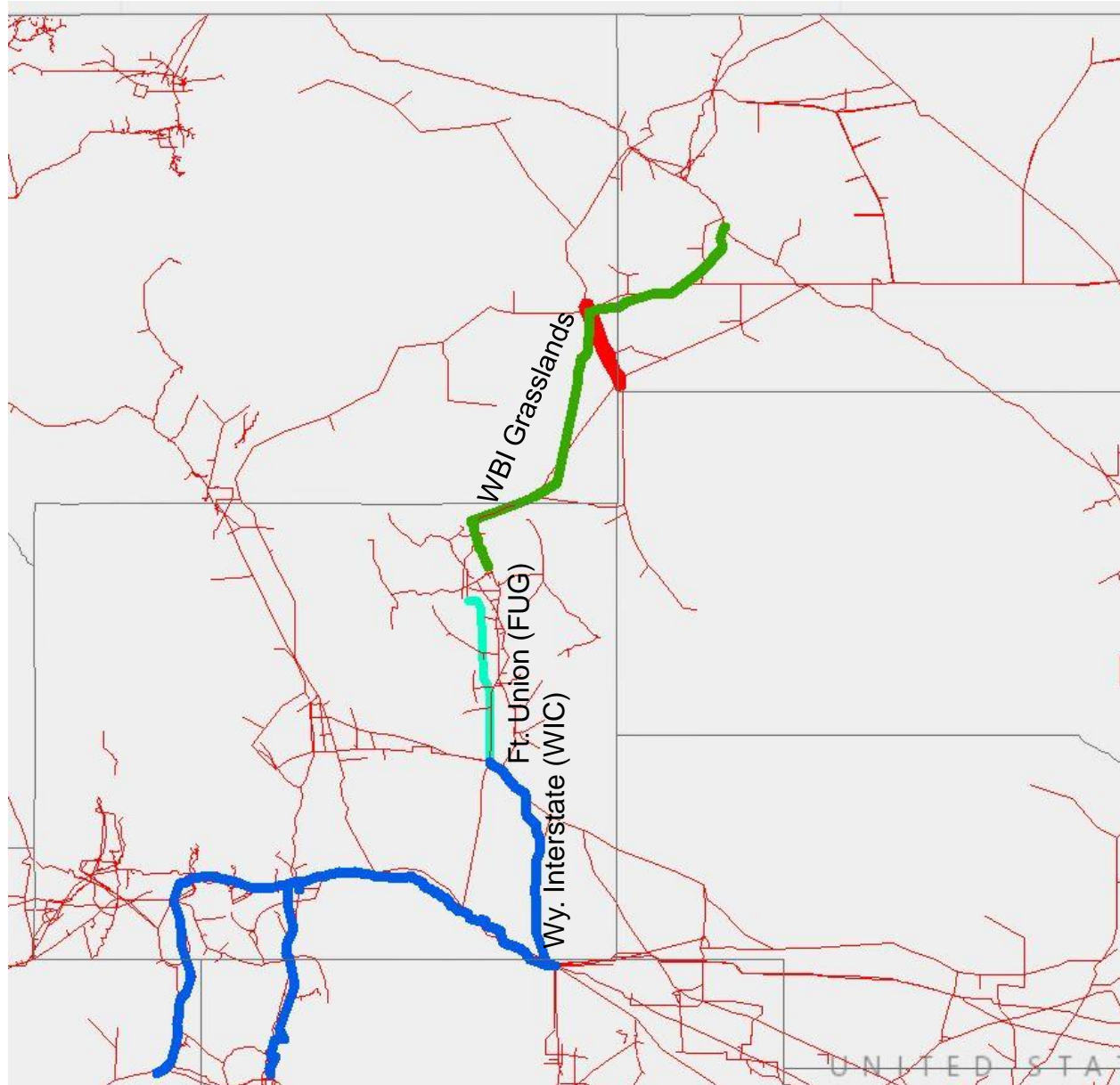
WBI Energy – Grasslands South Project

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



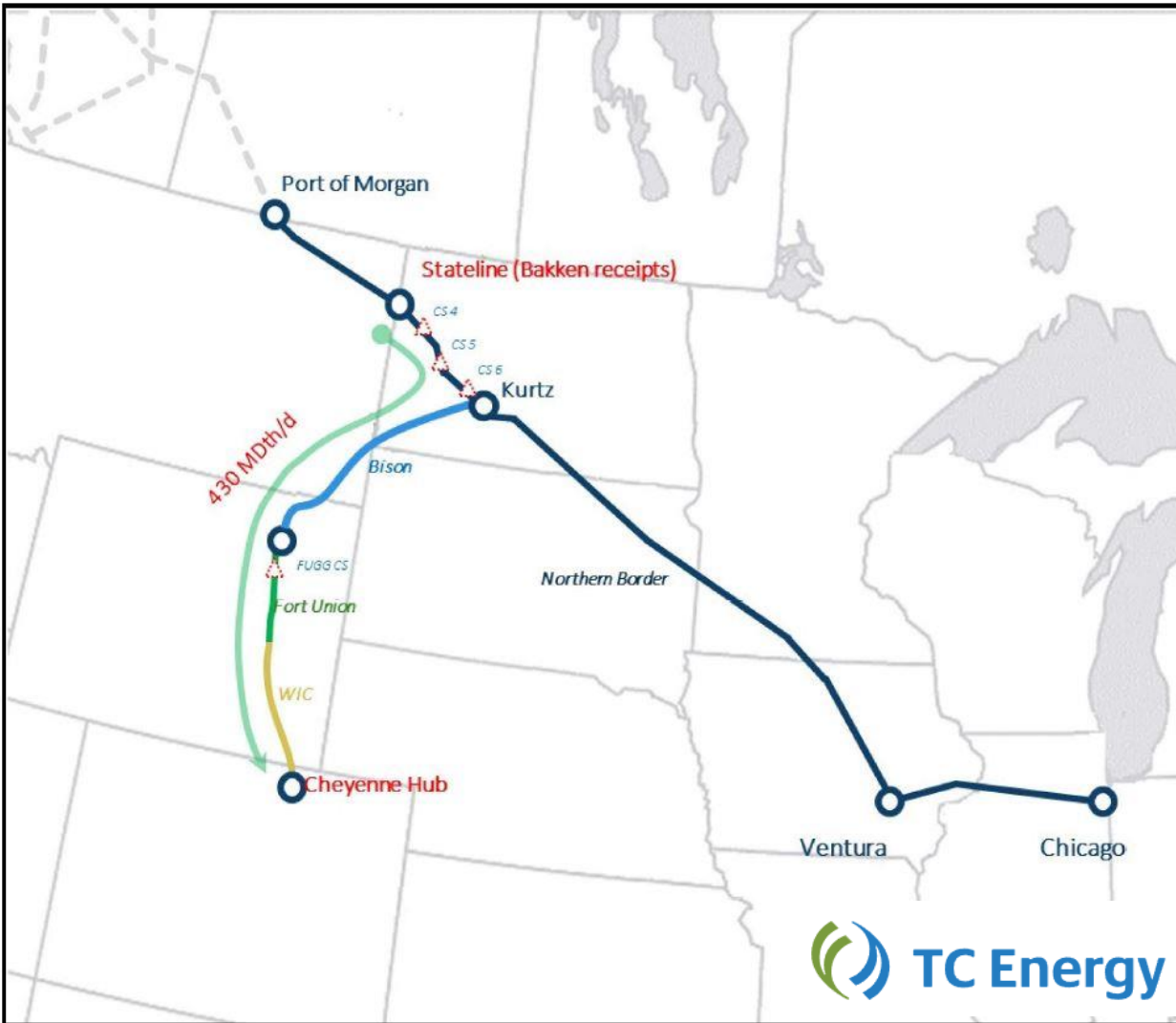
TC Energy / Kinder Morgan: Bakken xPress Project

Project Highlights

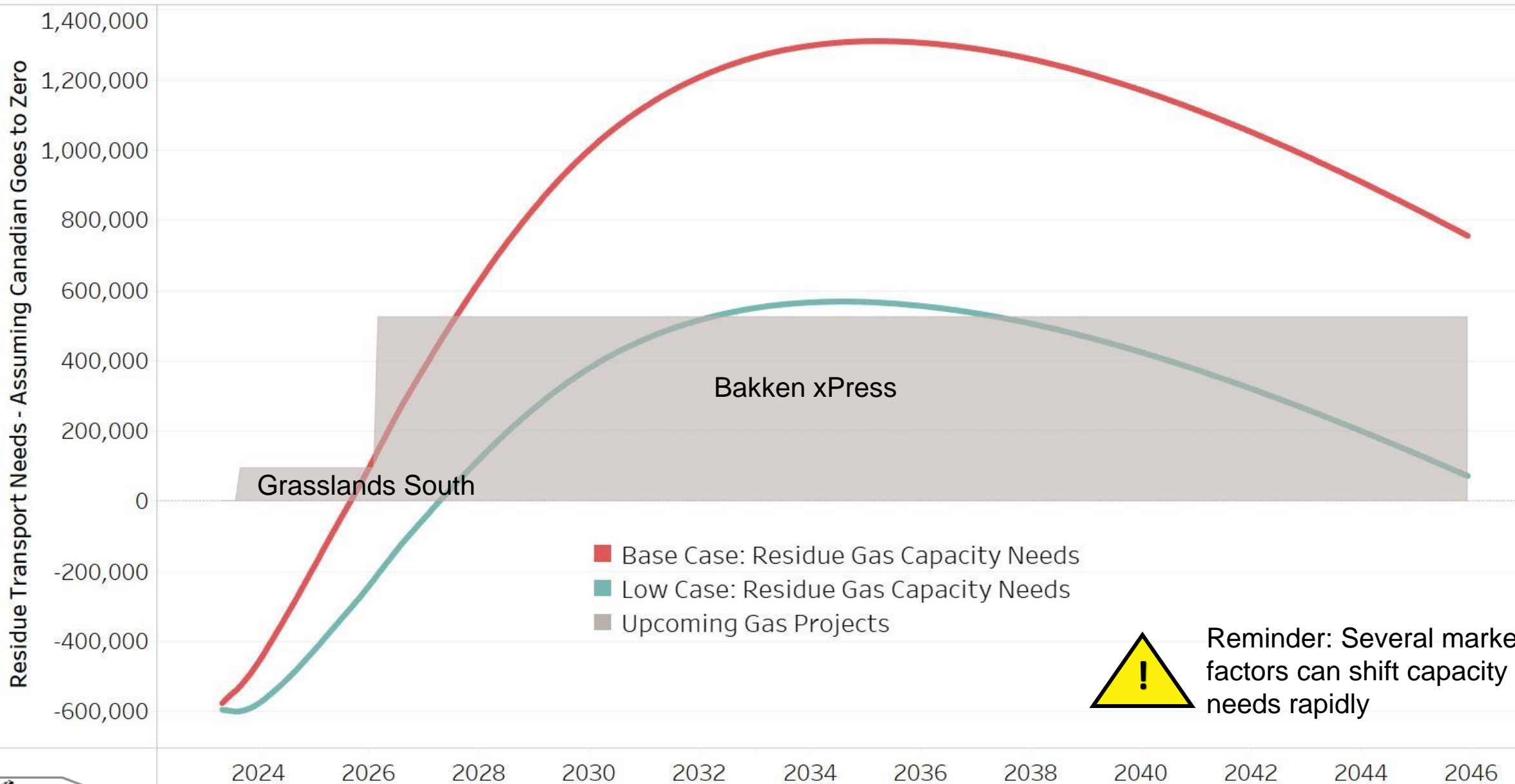
- Non-binding open season April 4 - May 6, 2022
- Binding Open Season: June 1-30, 2023
- Three compressor upgrades in North Dakota
- Reverse the idle Bison Pipeline (30" – 302 Mile)
- Proposed capacity Up to 430,000 Dth/Day
- March 2026 targeted in-service date
- Fort Union Gas Gathering and Wyoming 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



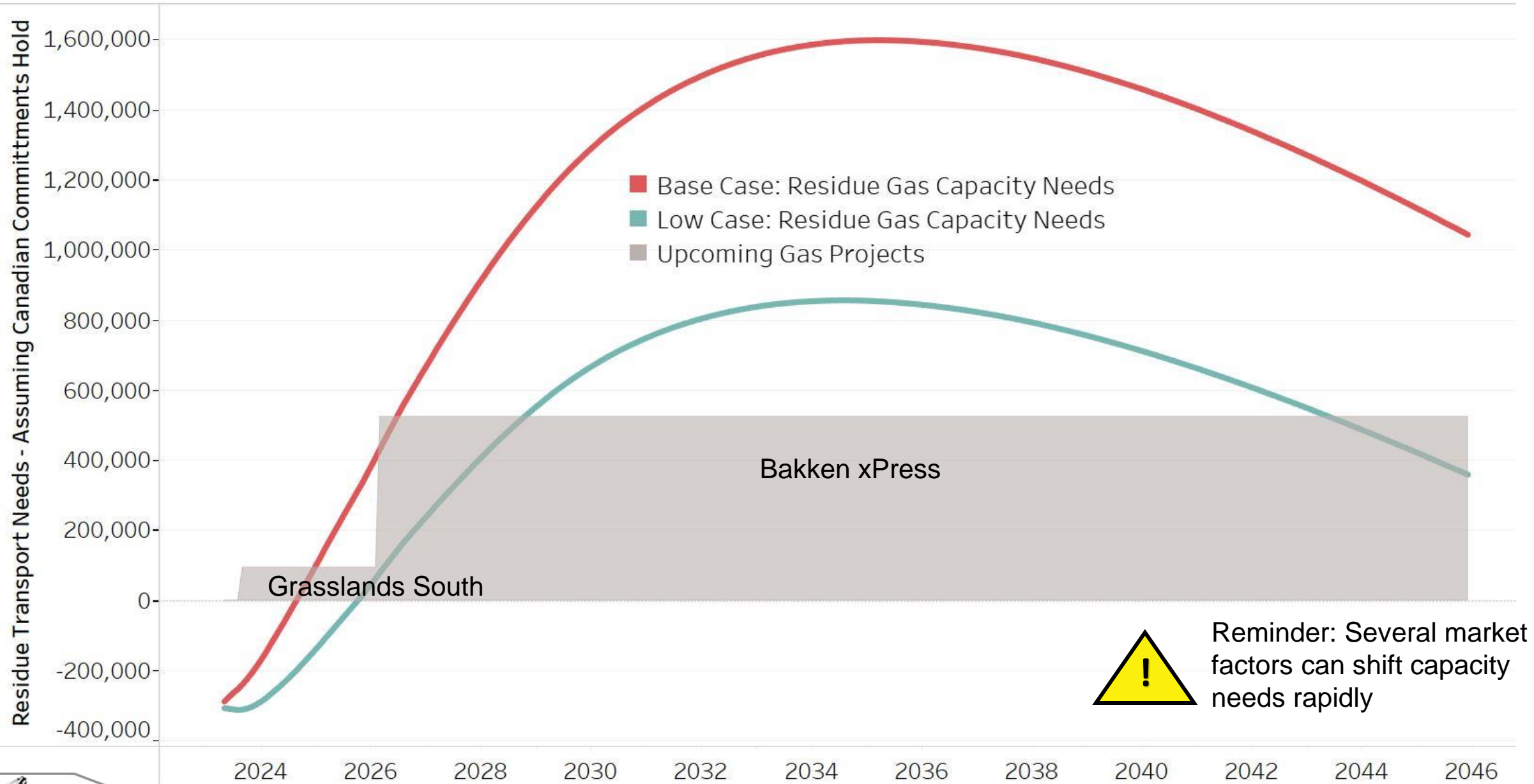
Residue Capacity Needs : ZERO CANADIAN



Reminder: Several market factors can shift capacity needs rapidly



Residue Capacity Needs: ~288,000 MMBTU CDN



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 +/- 200-300,000+ MMBTU/Day. How will total egress impact storage withdrawals?



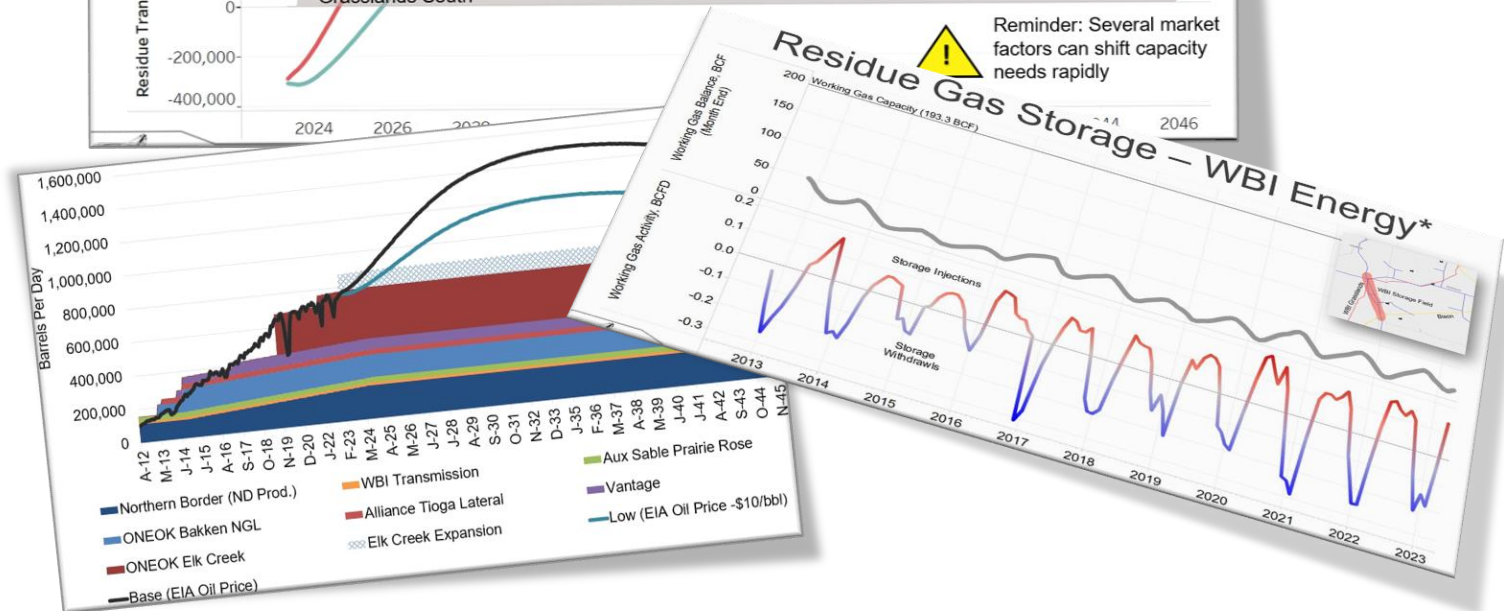
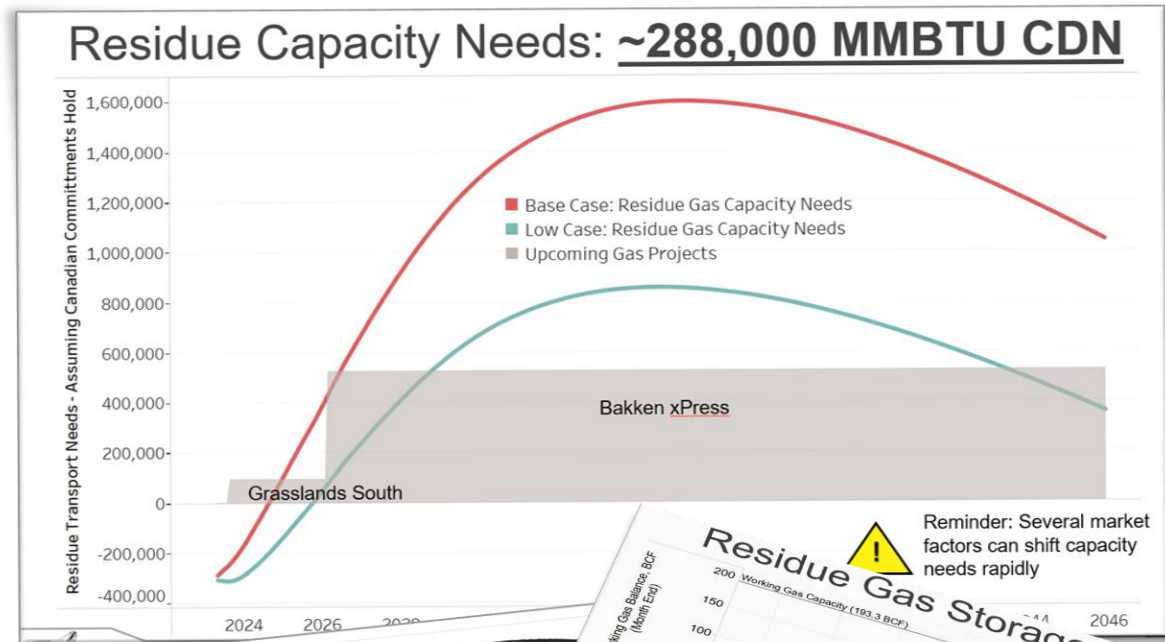
What if Port of Morgan “stickiness” is greater than 288,000 MMBTU/Day?



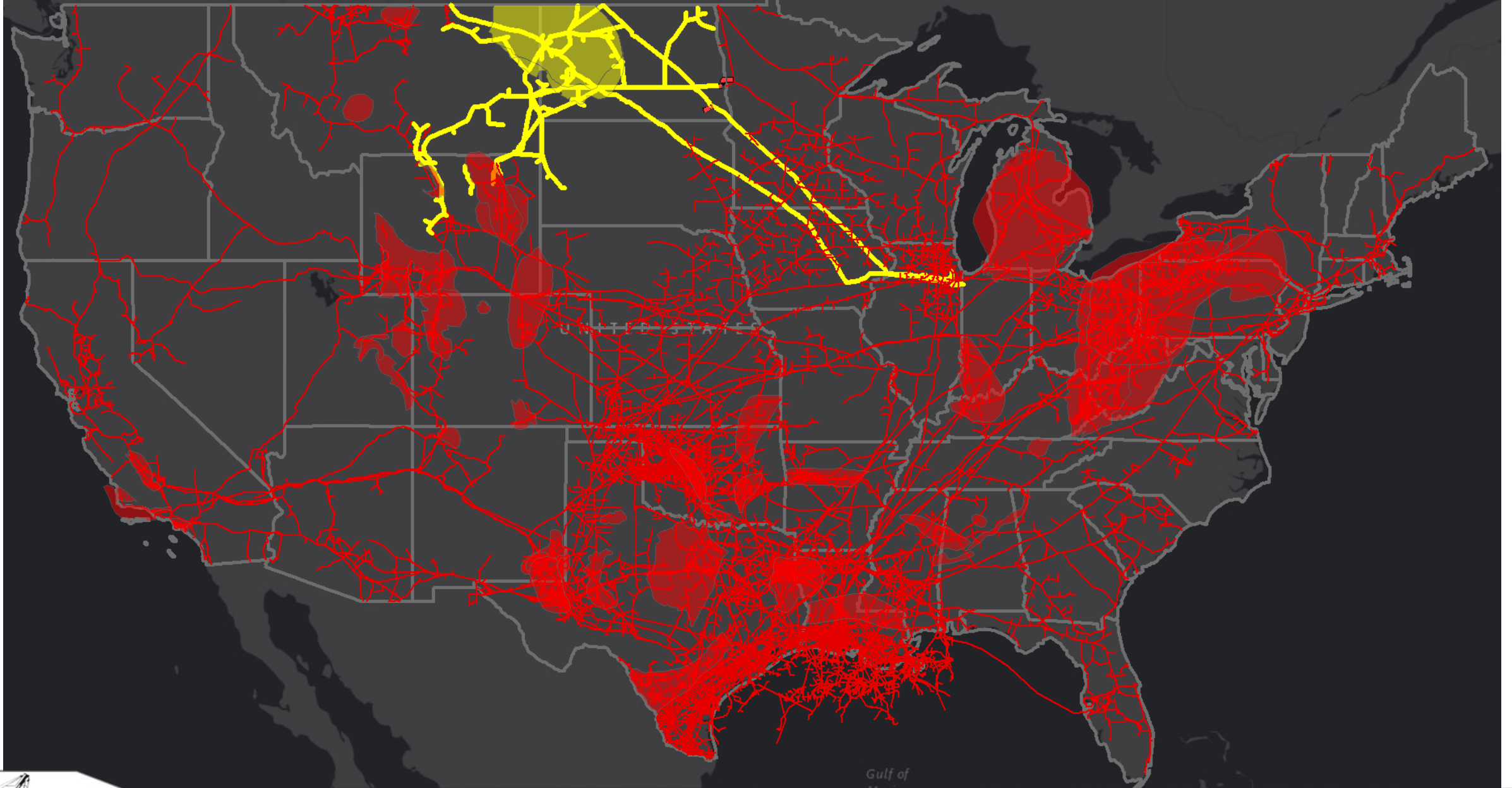
Could market conditions at Cheyenne attract more competition from Port of Morgan Shippers?



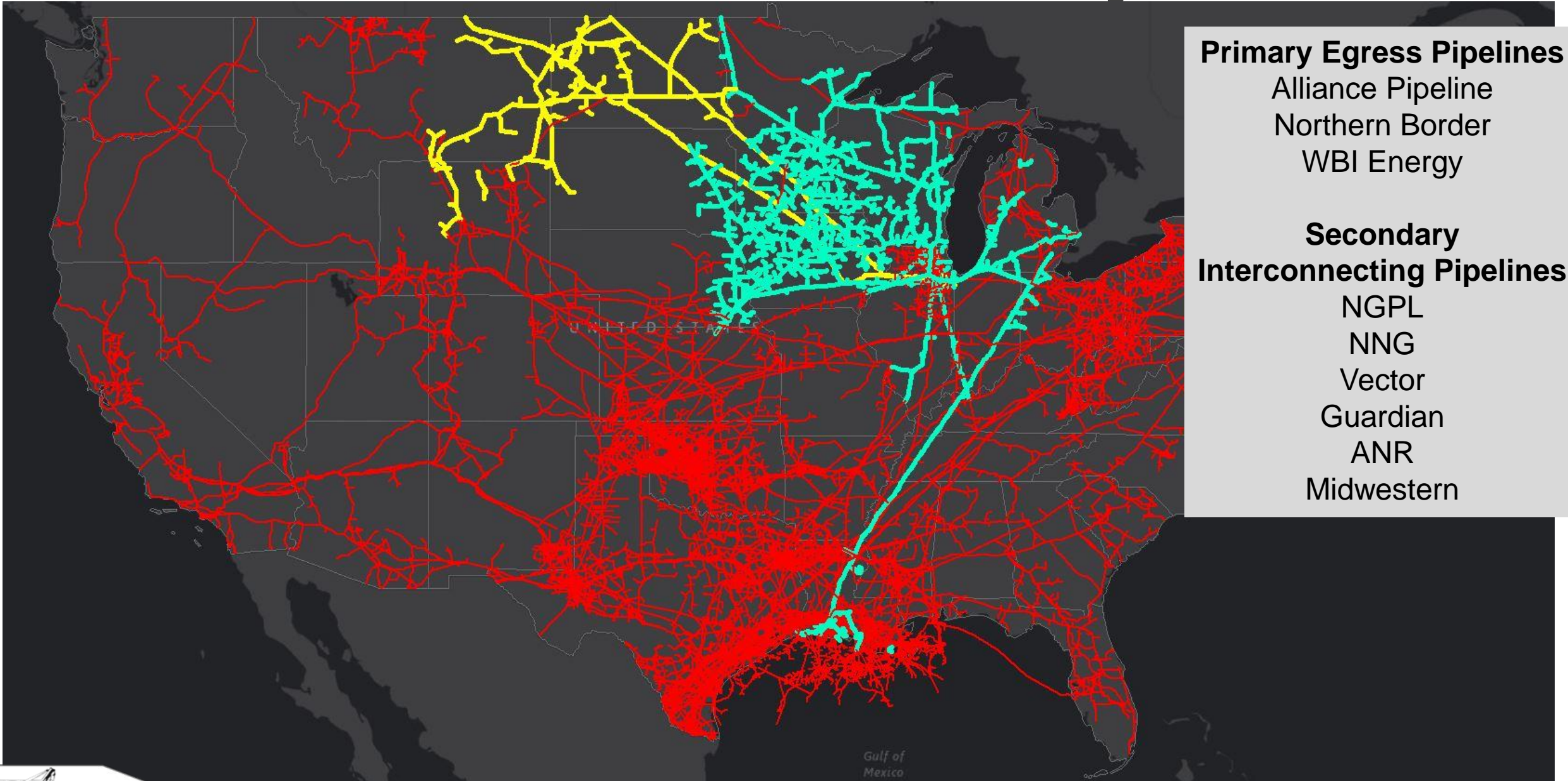
Will downstream markets desire a Northern Border BTU limit?



Bakken Natural Gas Infrastructure



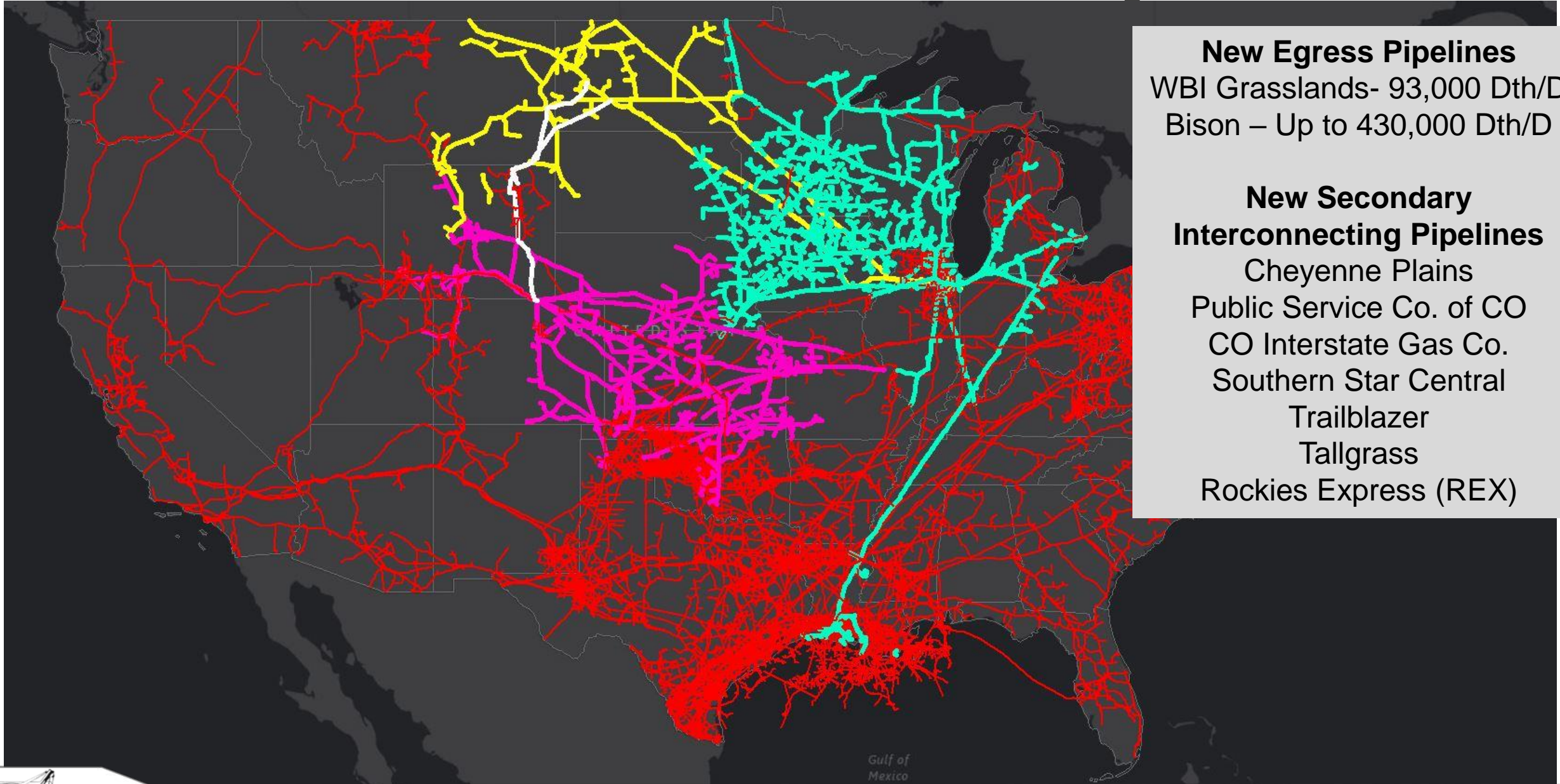
Bakken Market Connectivity - Current



- Primary Egress Pipelines**
 - Alliance Pipeline
 - Northern Border
 - WBI Energy
- Secondary Interconnecting Pipelines**
 - NGPL
 - NNG
 - Vector
 - Guardian
 - ANR
 - Midwestern



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

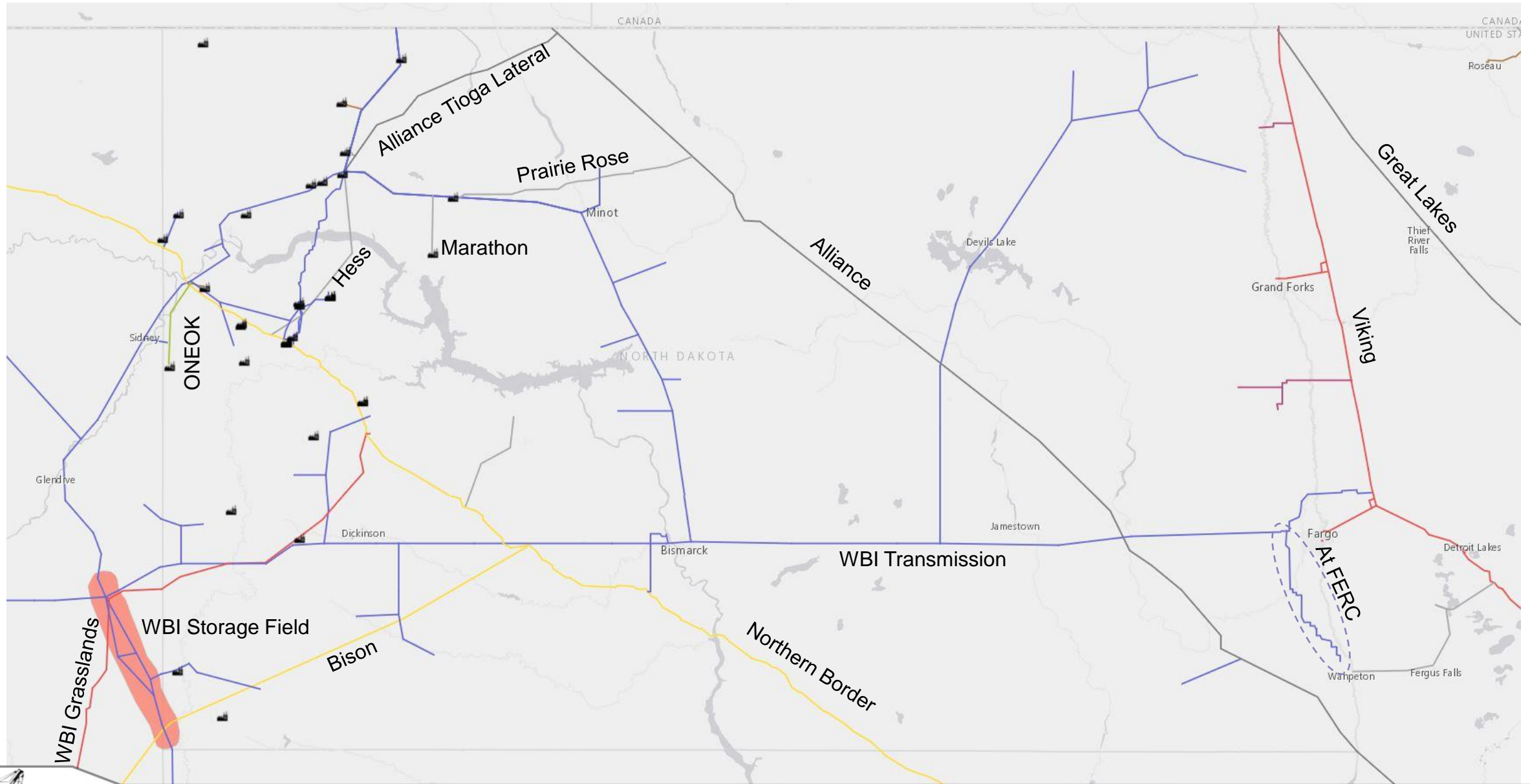
Trailblazer

Tallgrass

Rockies Express (REX)



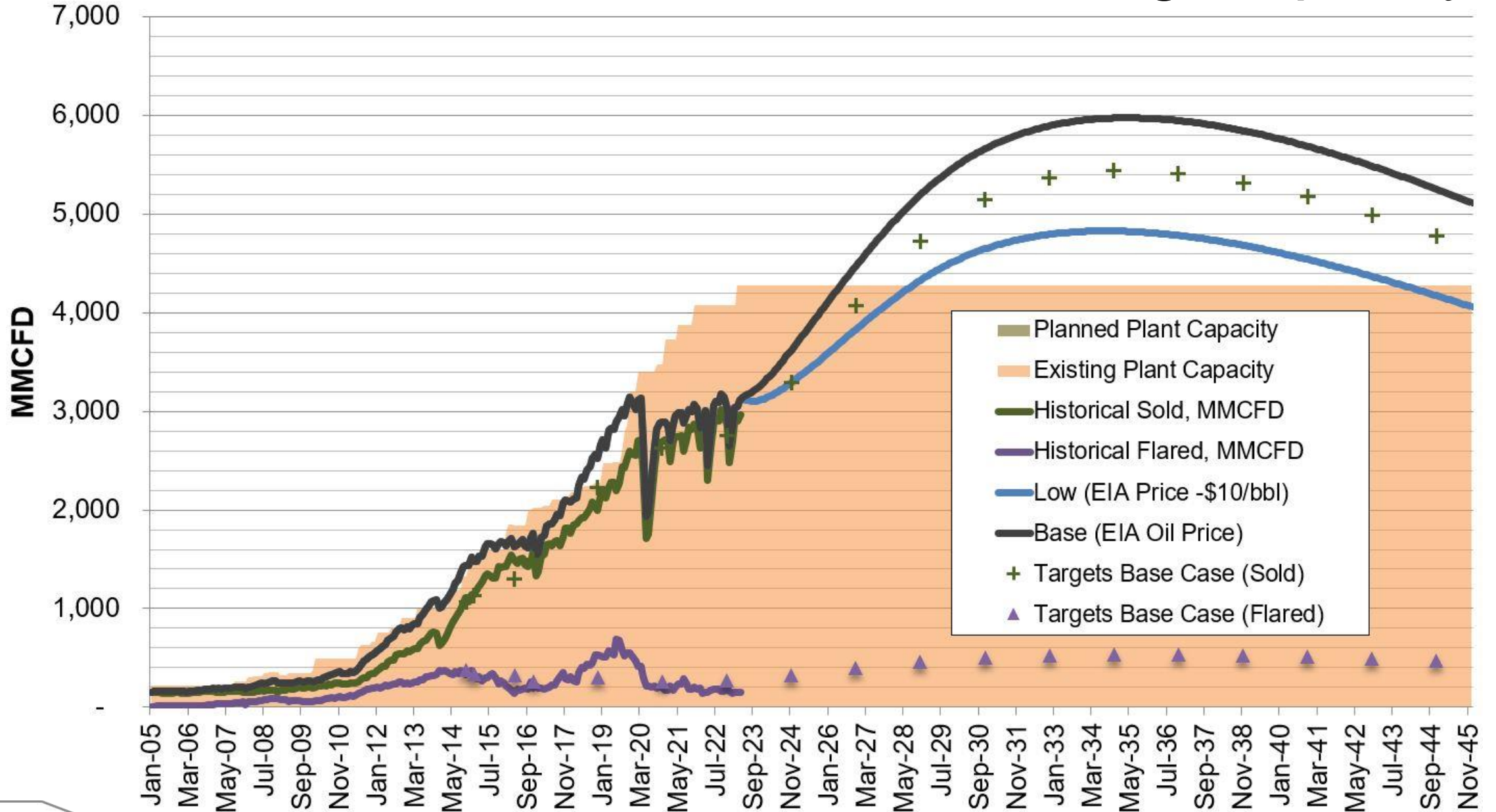
Major Residue Gas Pipeline Infrastructure



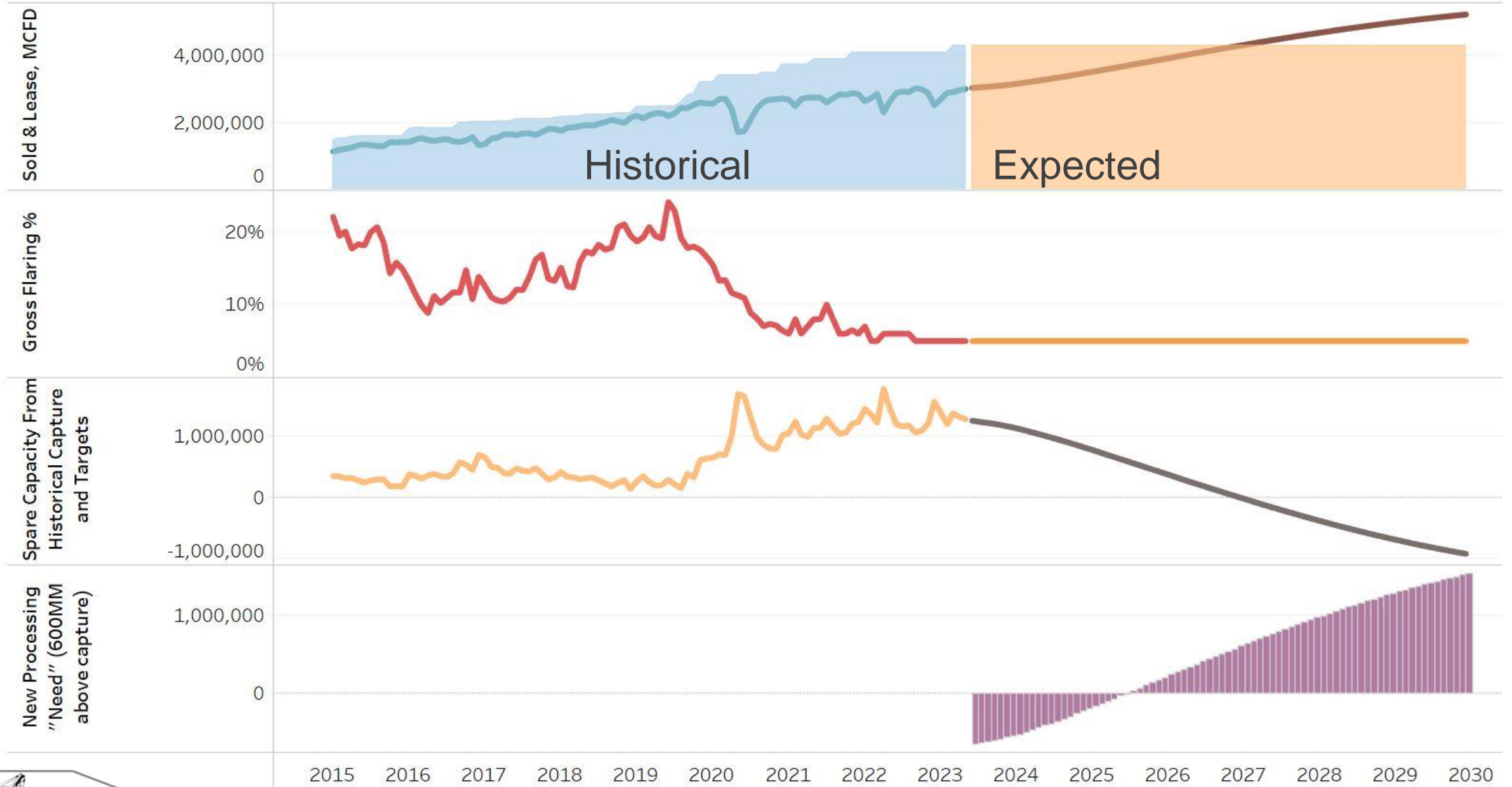
Natural Gas Update



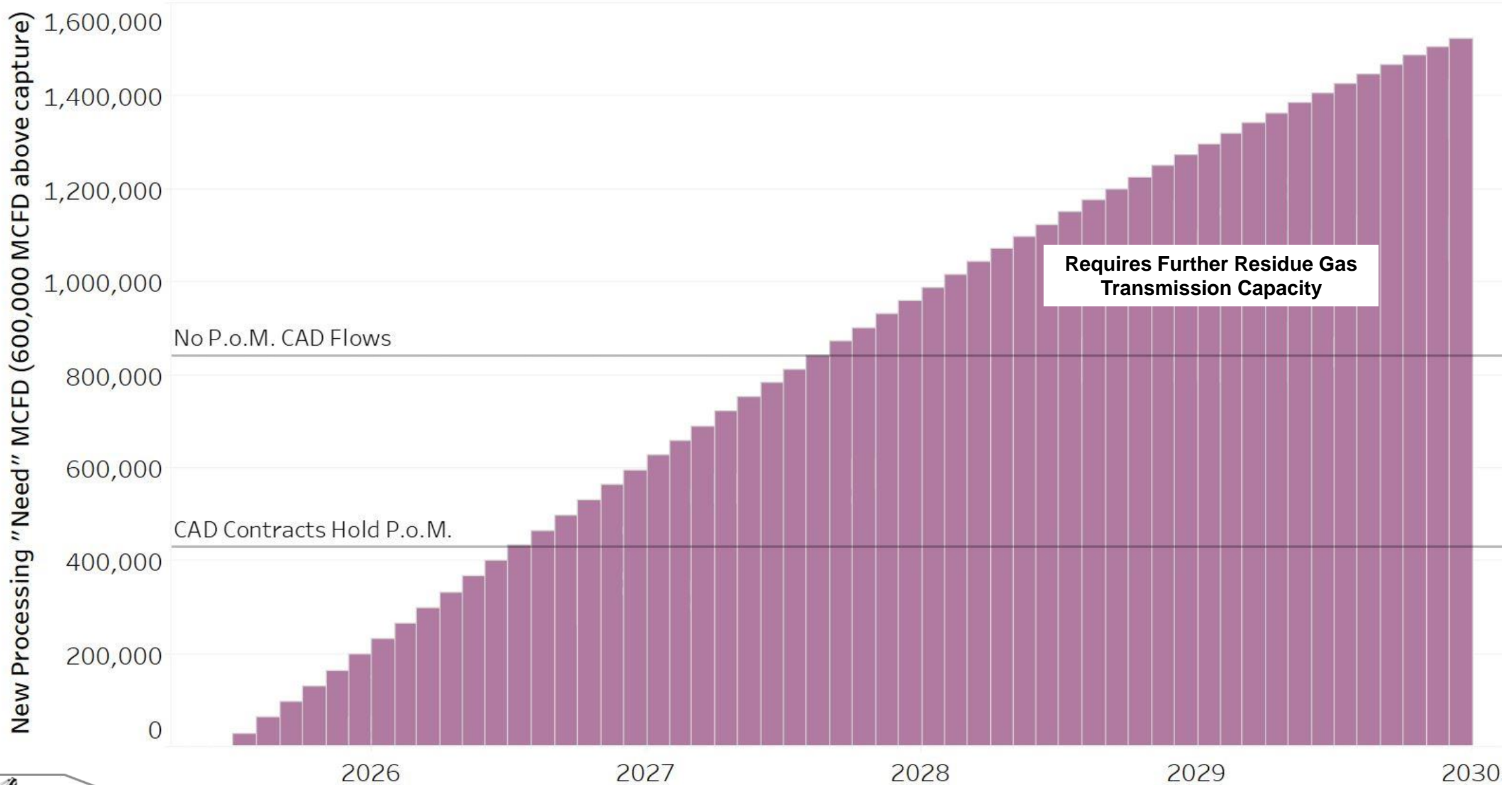
North Dakota Natural Gas Processing Capacity



Gas Processing Capacity & Spare Capacity



Processing Needs* – With New Cheyenne Pipes



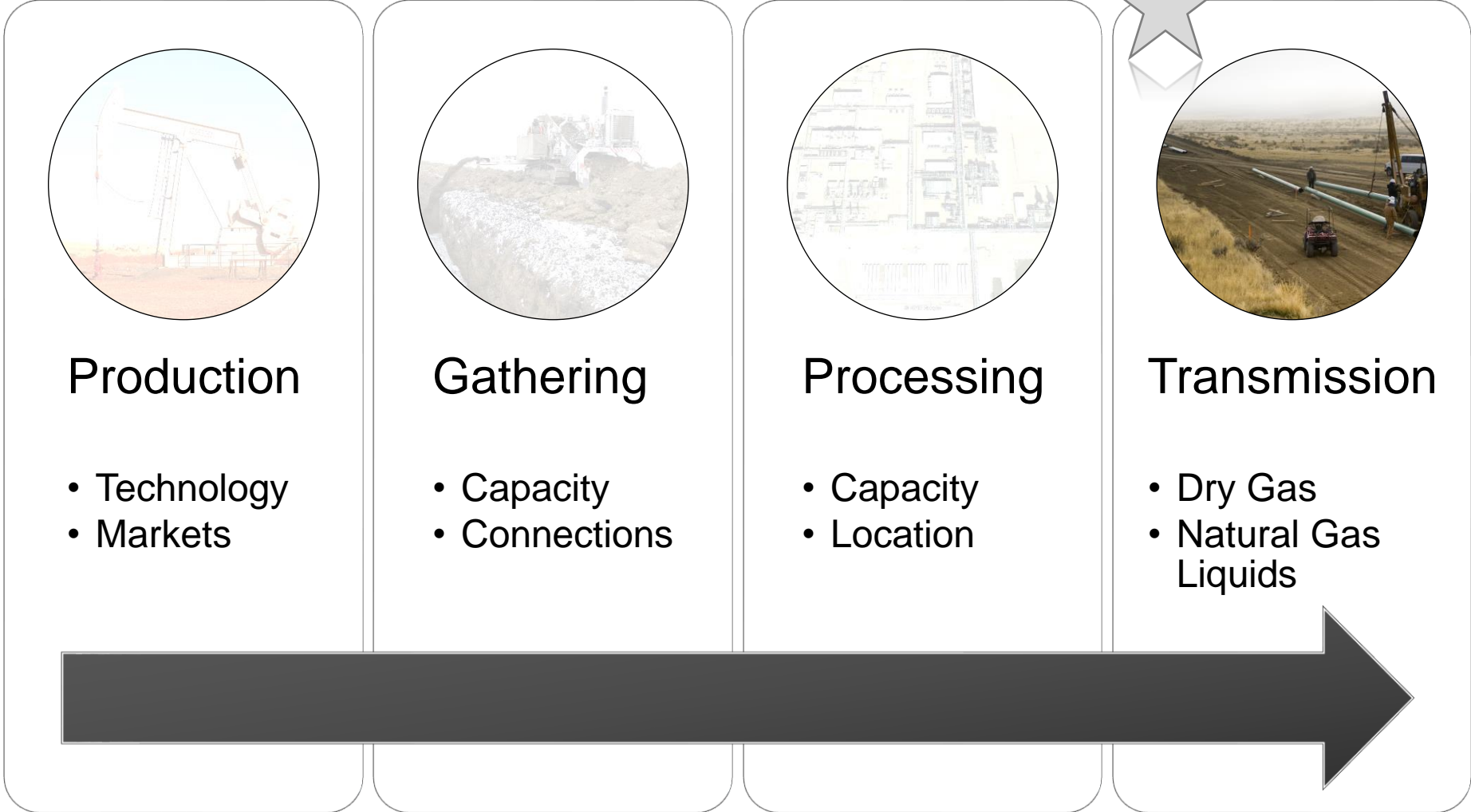
Requires Further Residue Gas Transmission Capacity

No P.o.M. CAD Flows

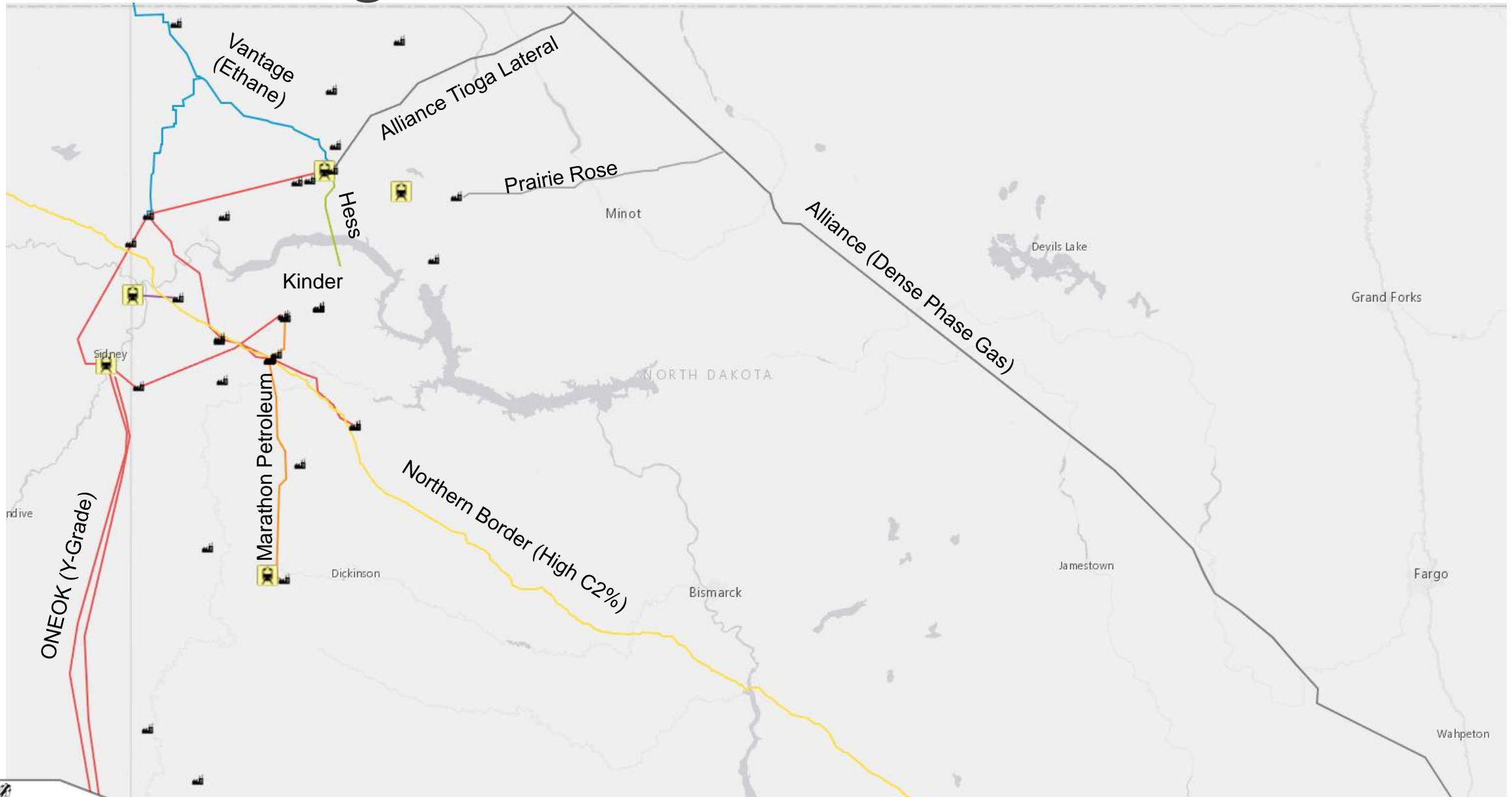
CAD Contracts Hold P.o.M.



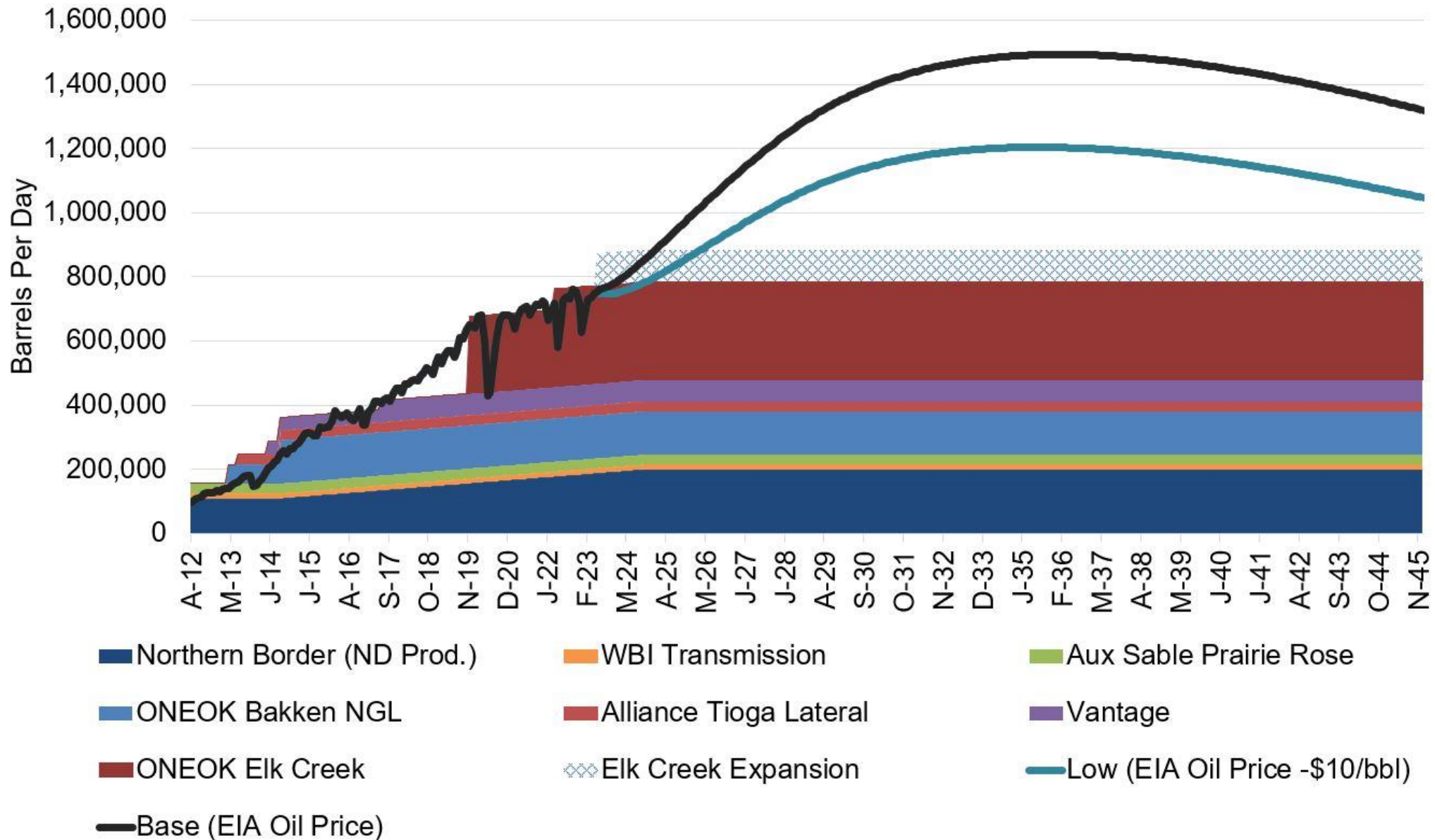
Natural Gas Update



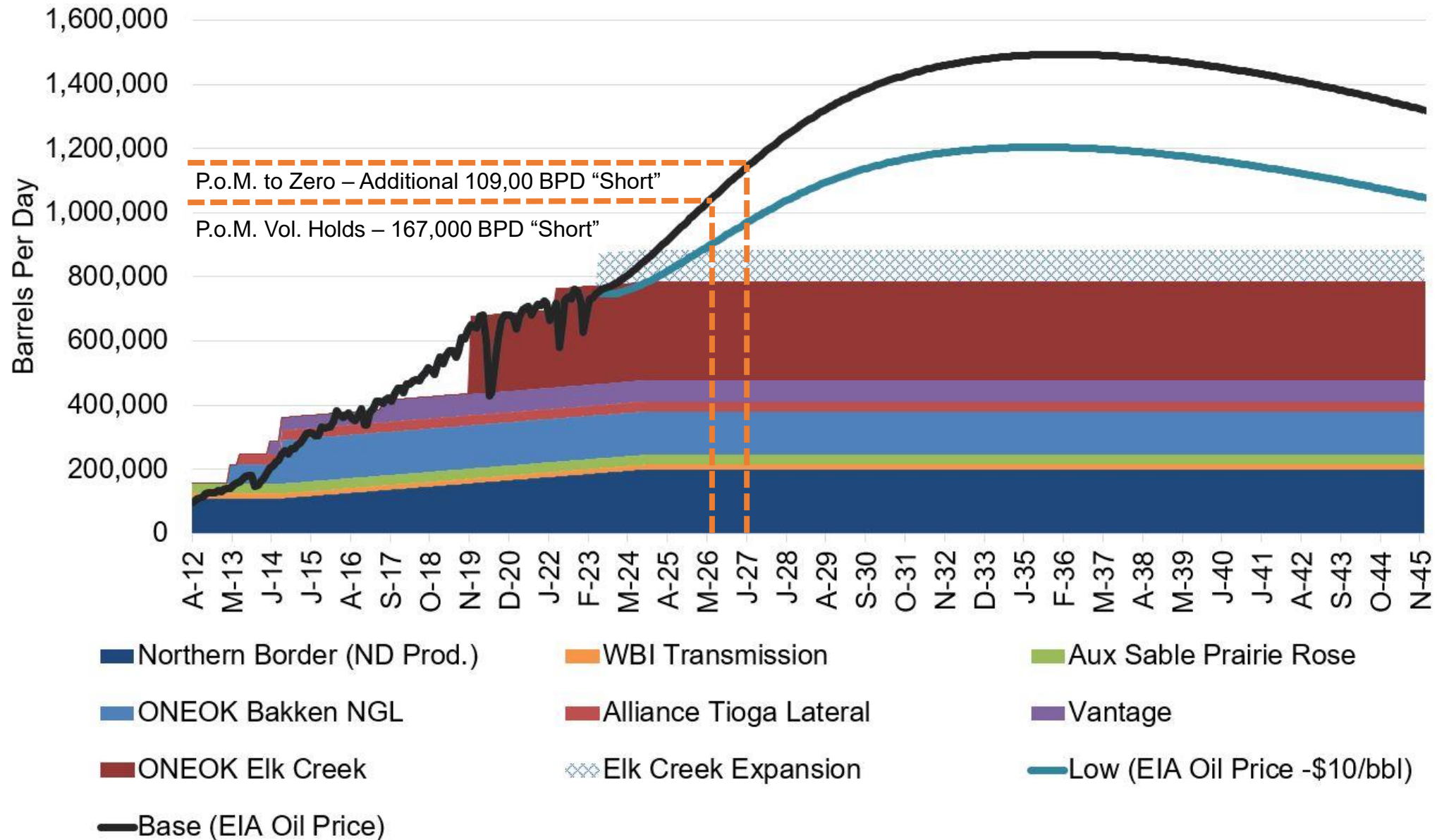
Regional NGL Infrastructure



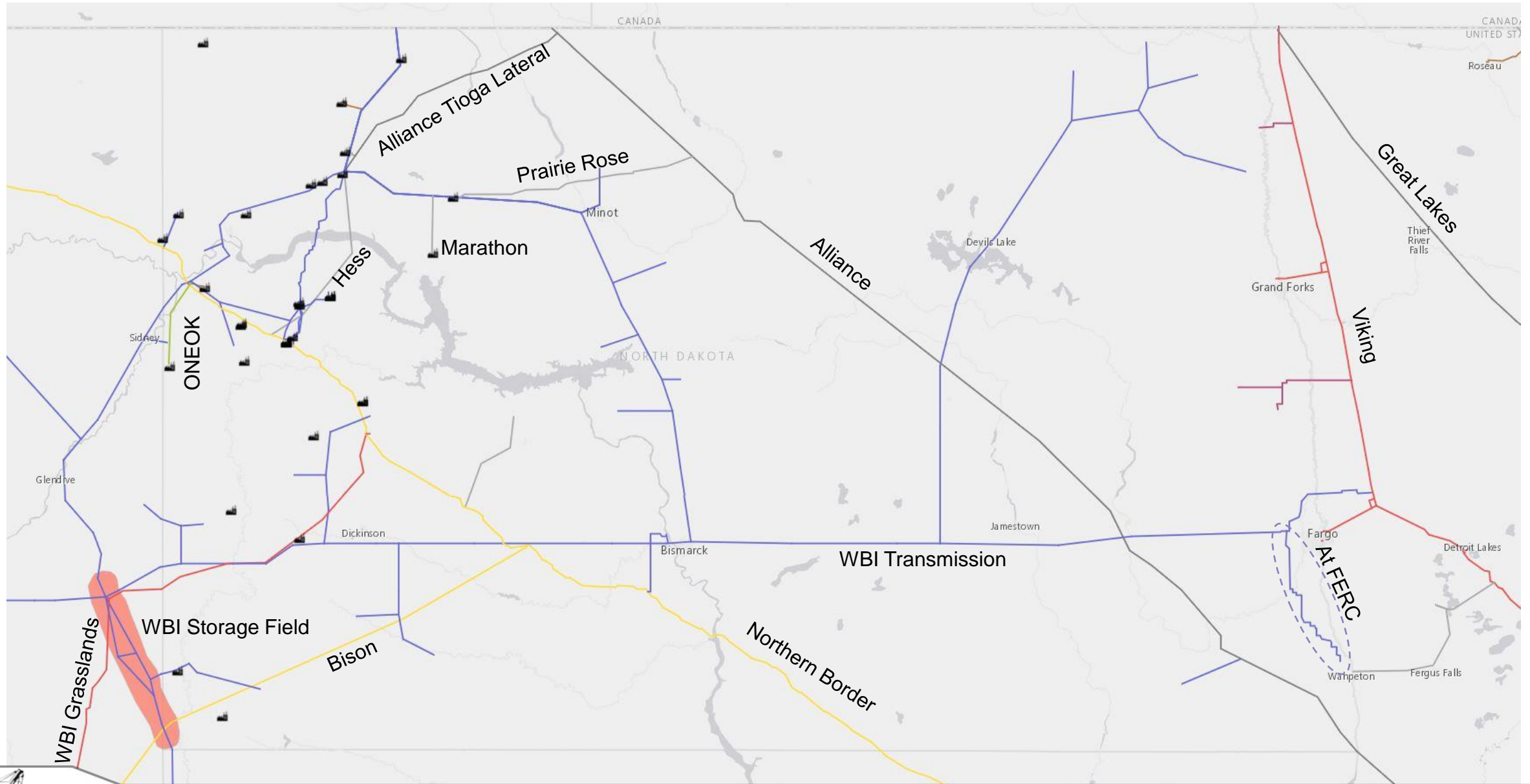
NGL Pipeline Takeaway Options*



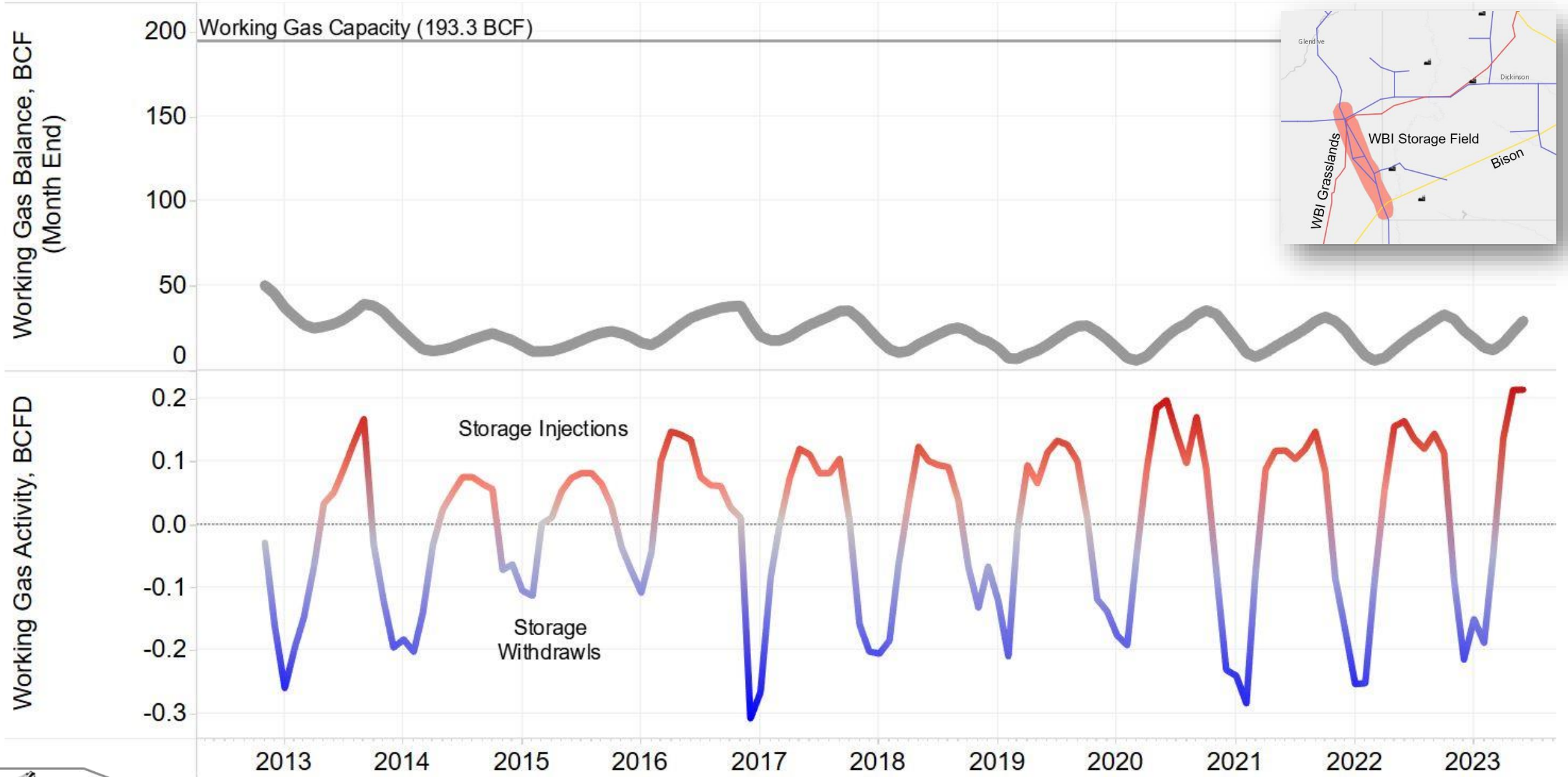
NGL Transport Needs* – With New Cheyenne Pipes



Major Residue Gas Pipeline Infrastructure



Residue Gas Storage – WBI Energy*

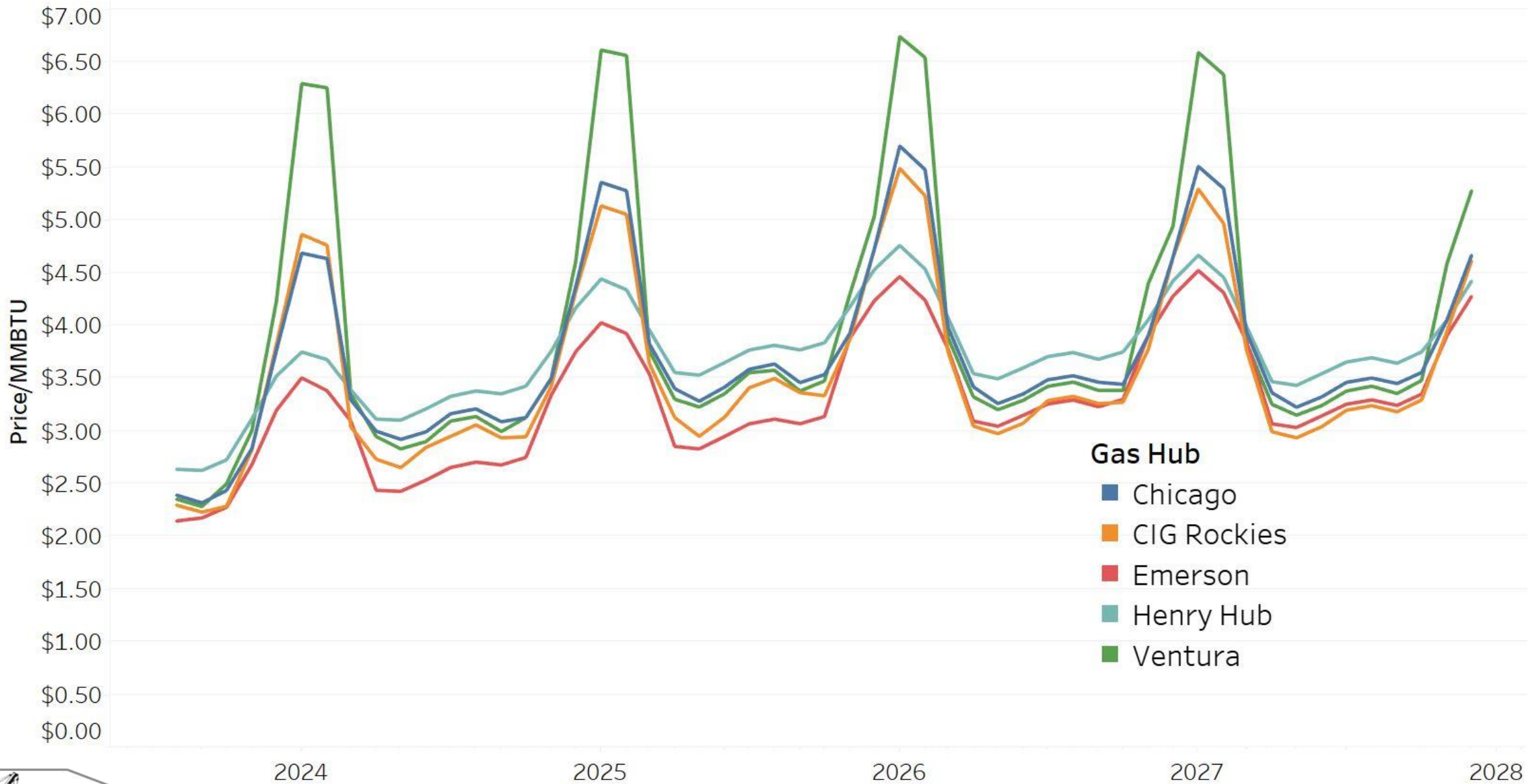


Why is gas expansion to eastern North
Dakota so challenging?....

...And why is demand growth so important
to the potential project success?



Regional Gas Hub Pricing*

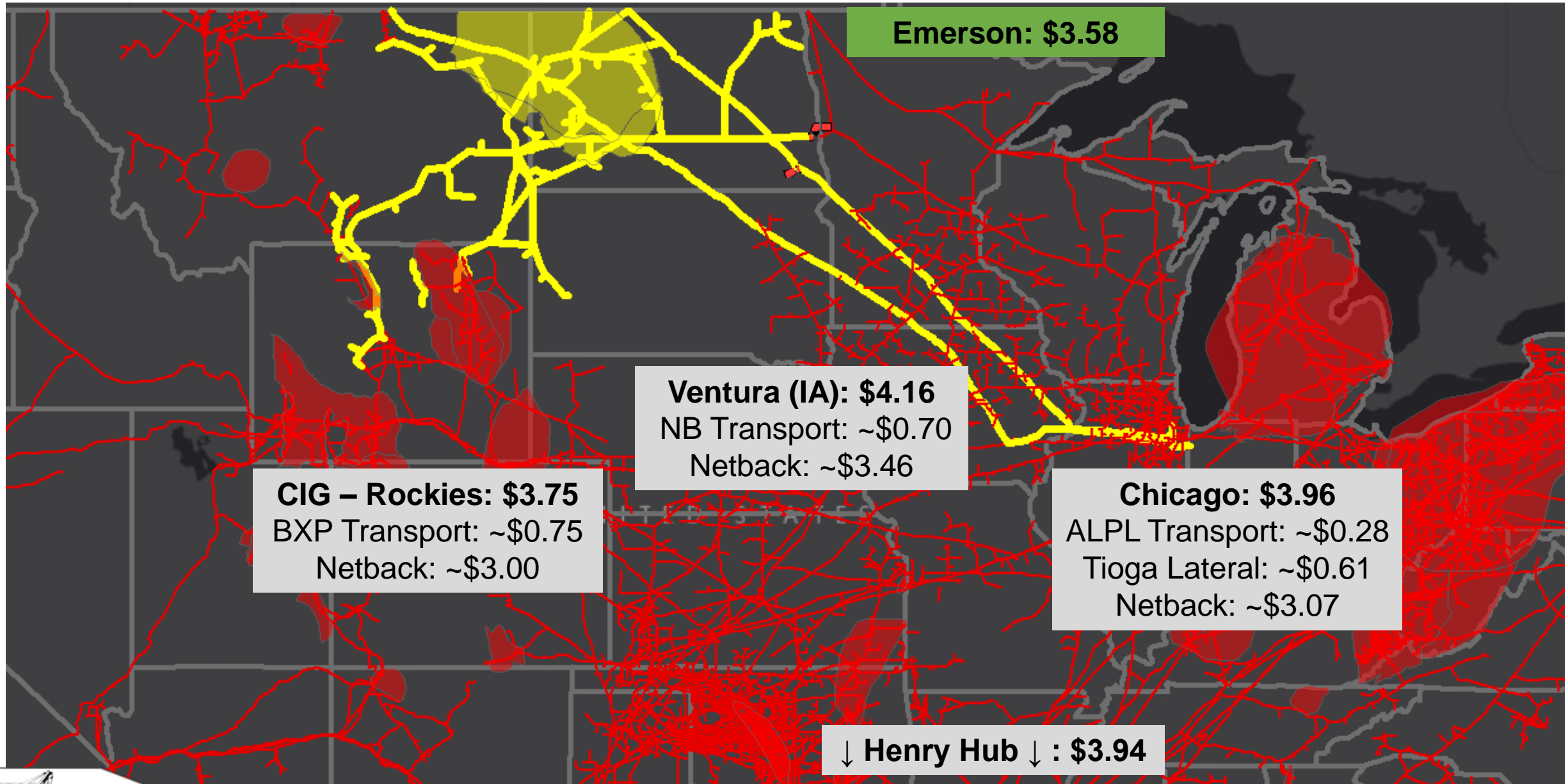


Gas Hub

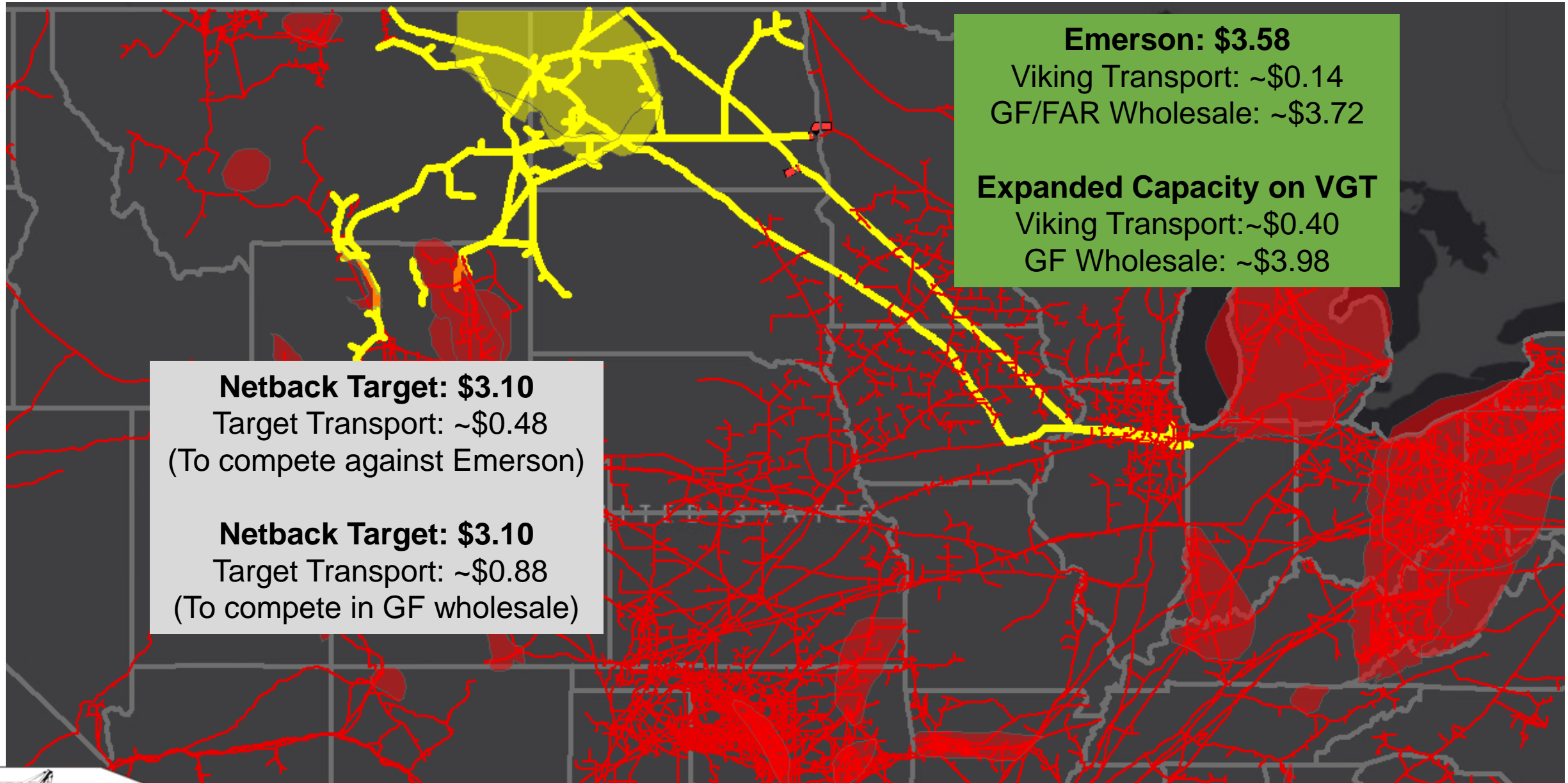
- Chicago
- CIG Rockies
- Emerson
- Henry Hub
- Ventura



Natural Gas Pricing: 2026 (ICE: 7-18-23)



Natural Gas Pricing: 2026 (ICE: 7-18-23)



Emerson: \$3.58
Viking Transport: ~\$0.14
GF/FAR Wholesale: ~\$3.72

Expanded Capacity on VGT
Viking Transport: ~\$0.40
GF Wholesale: ~\$3.98

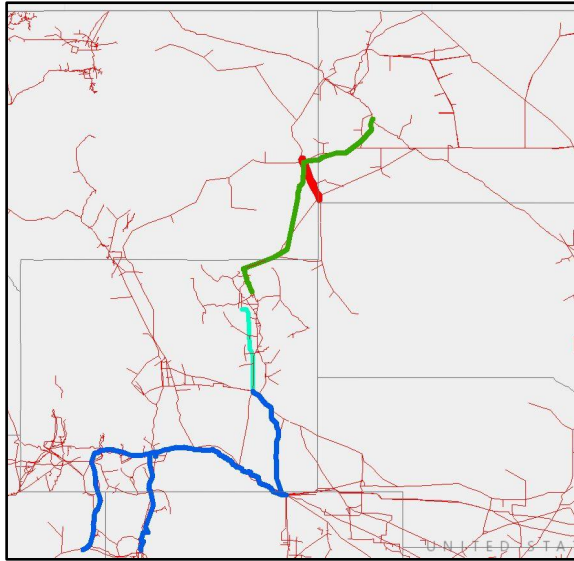
Netback Target: \$3.10
Target Transport: ~\$0.48
(To compete against Emerson)

Netback Target: \$3.10
Target Transport: ~\$0.88
(To compete in GF wholesale)

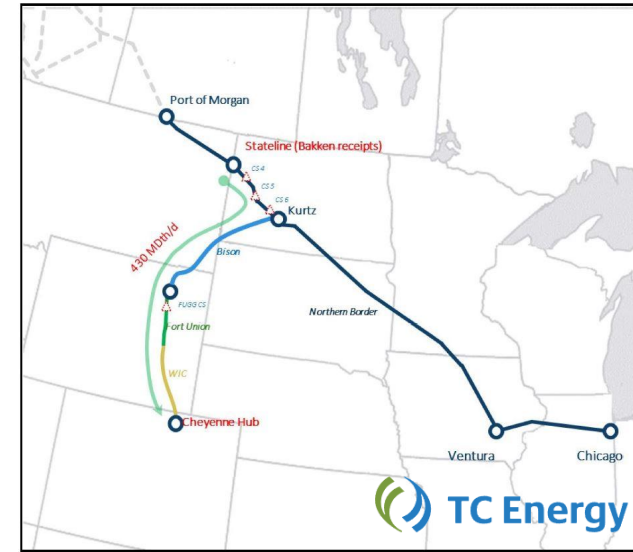


Value of a Dekatherm (MMBTU)

WBI Grasslands
94,000 Dekatherms
Per Day



Bison XPress
430,000 Dekatherms
Per Day

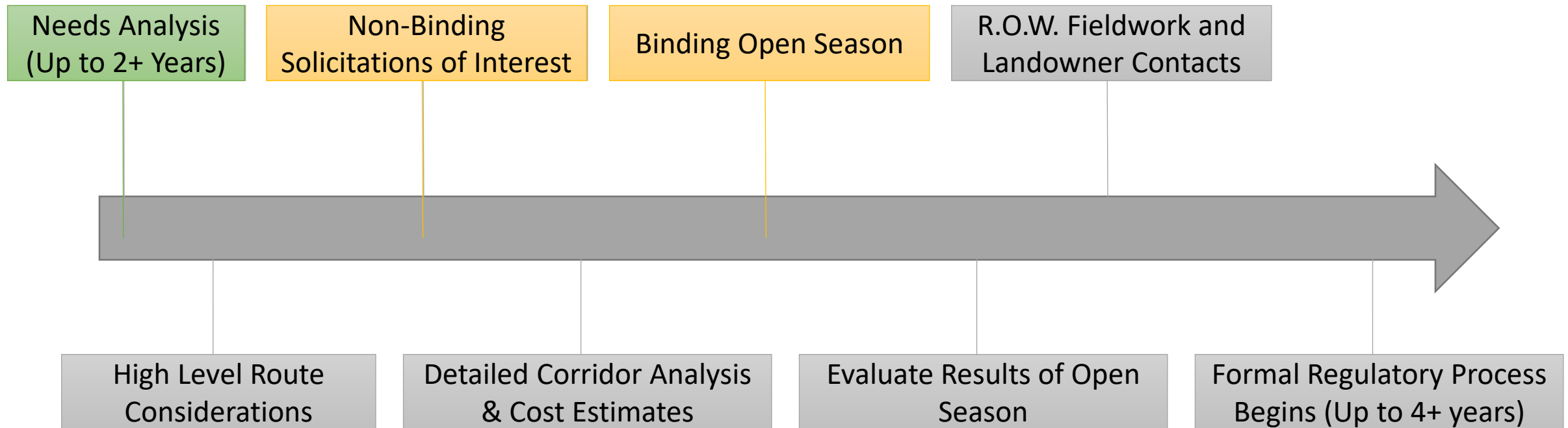


Combined Oil and Natural Gas Tax Value

- 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.~~



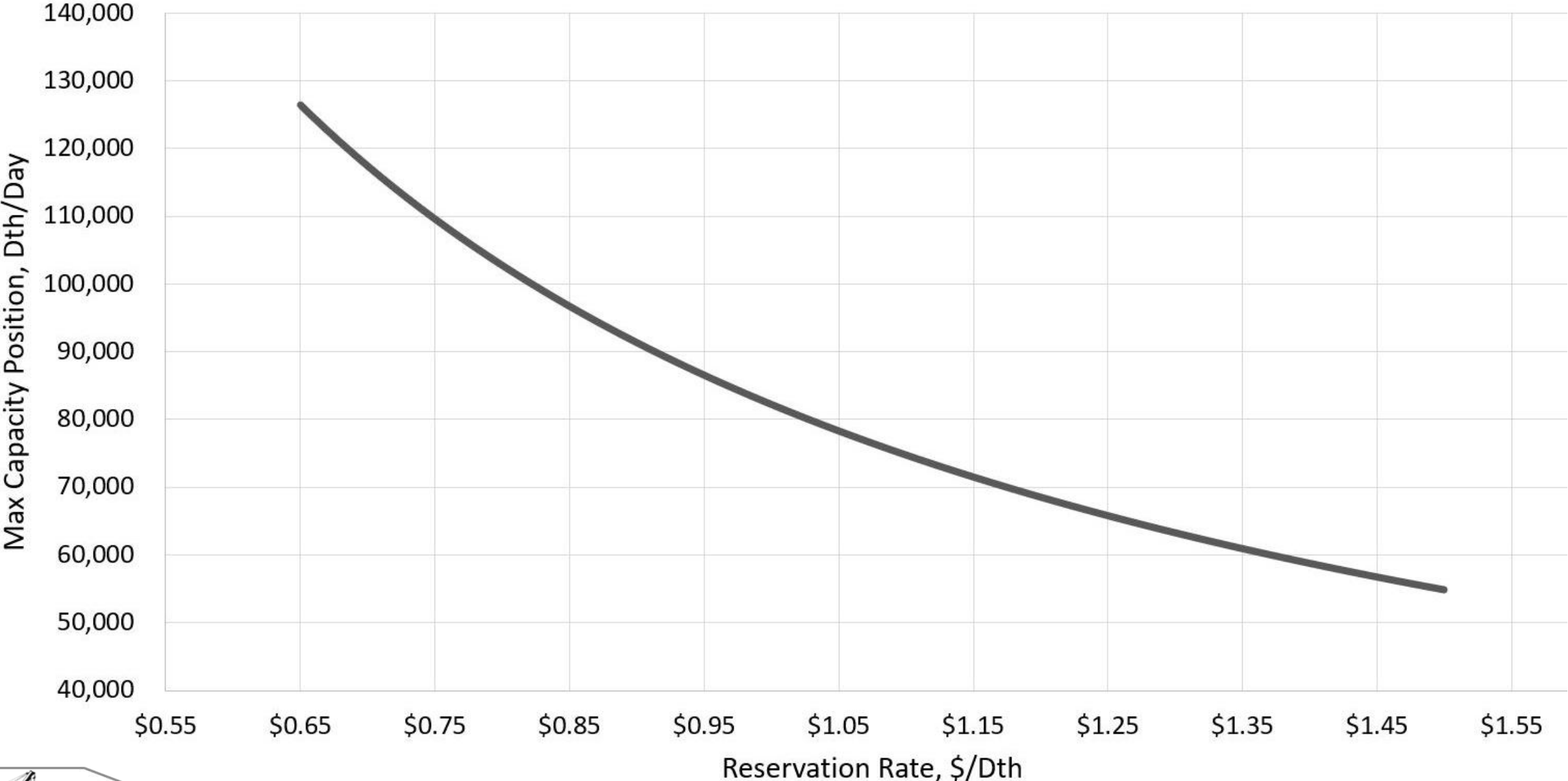
HB 1014 – NDPA Related Sections

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

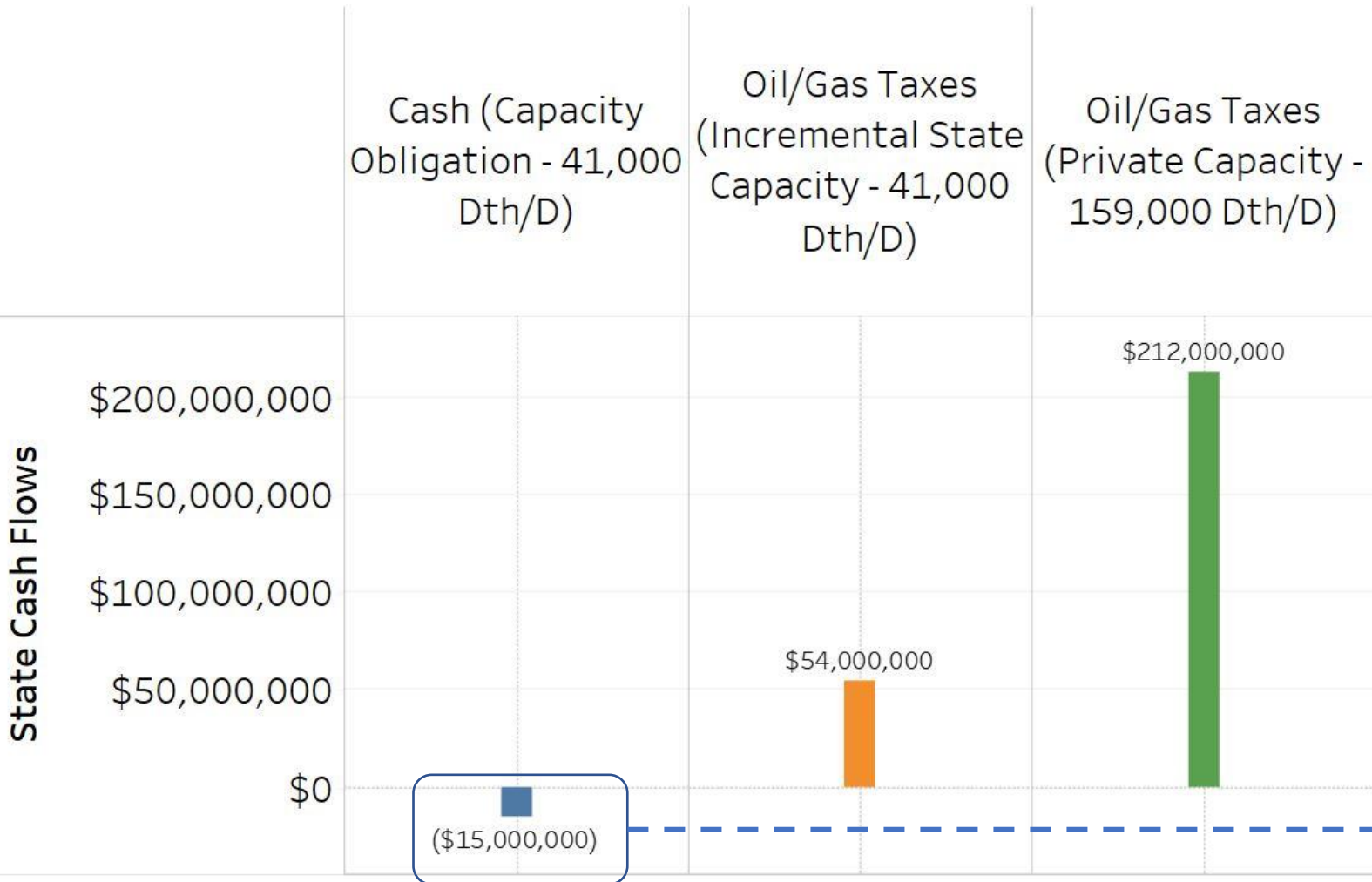
4. Borrow money and issue evidences of indebtedness as provided in this chapter, including borrowing from the Bank of North Dakota.
 - a. The authority may borrow up to sixty million dollars through a line of credit from the Bank. The interest rate on the line of credit must be the prevailing interest 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



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