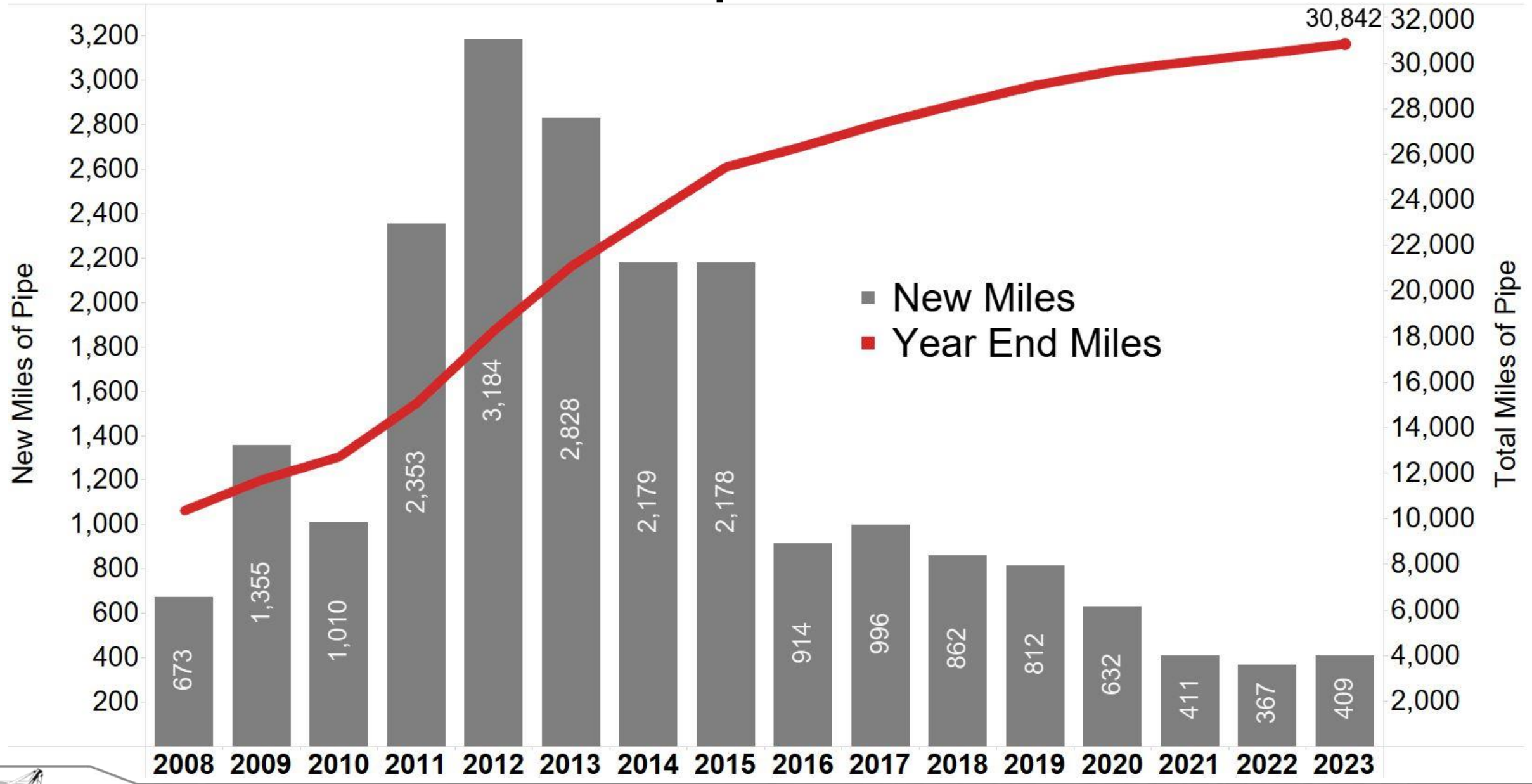
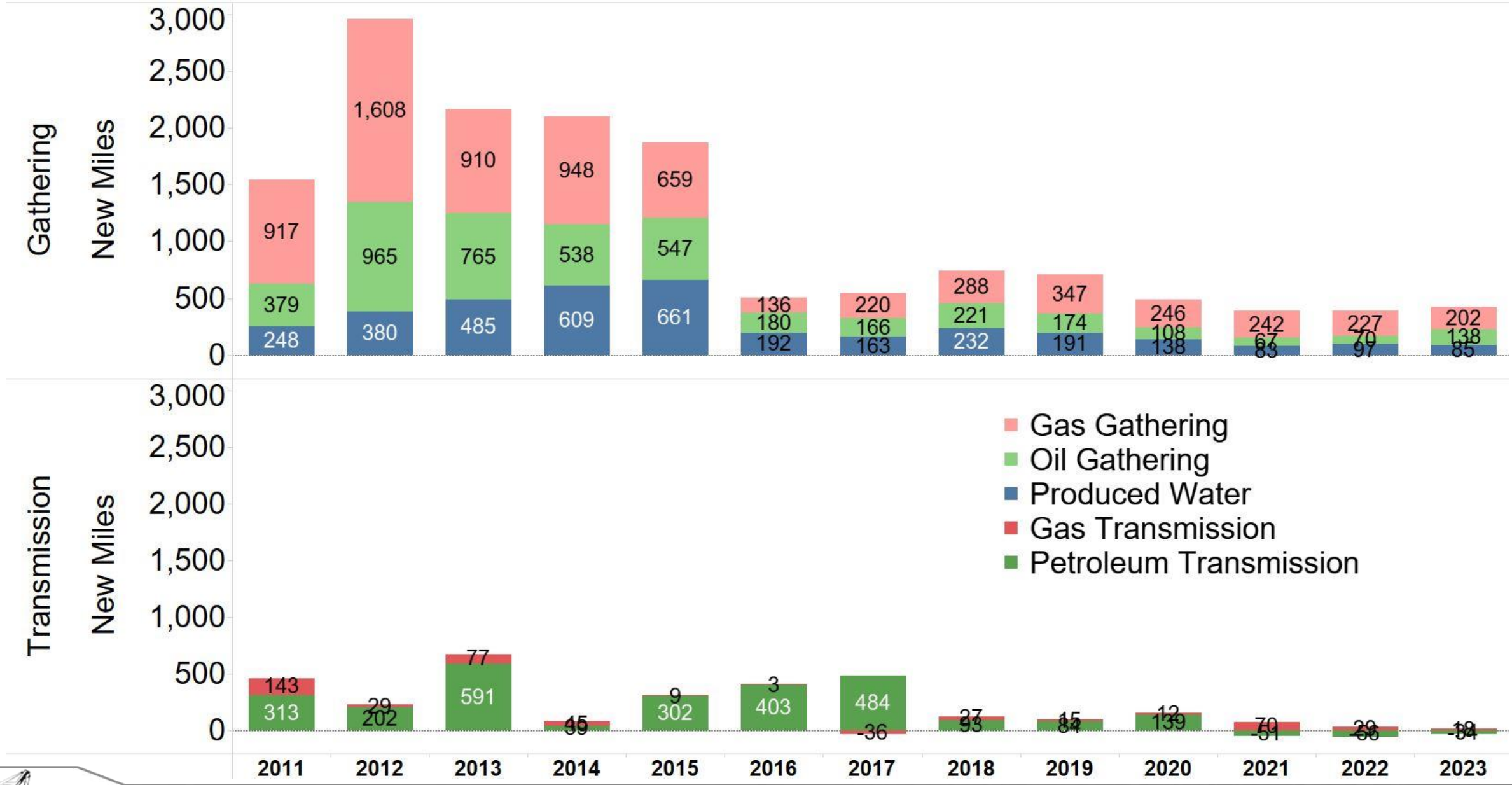
North Dakota Midstream Update

Image: Library of Congress

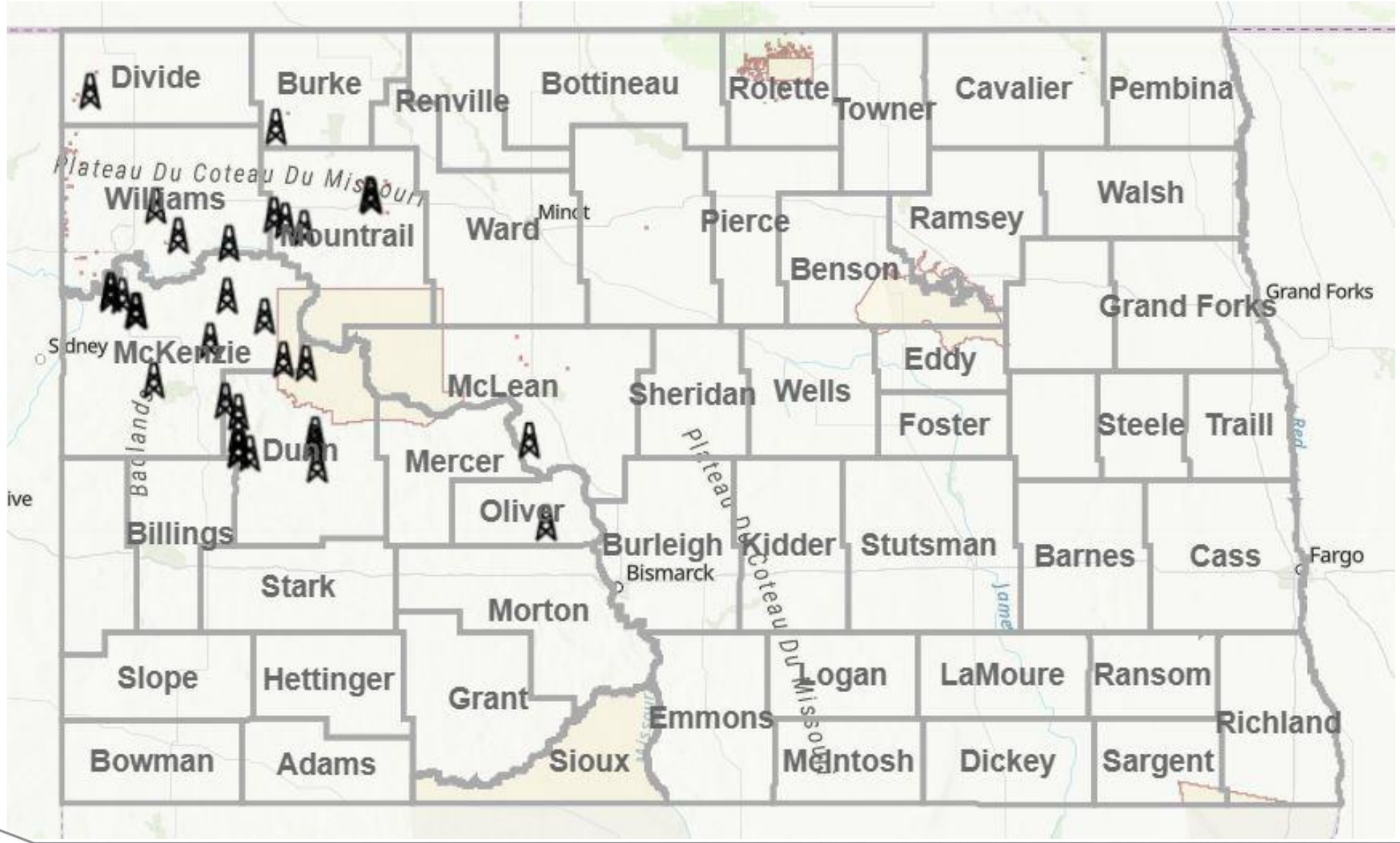
North Dakota Pipeline Construction



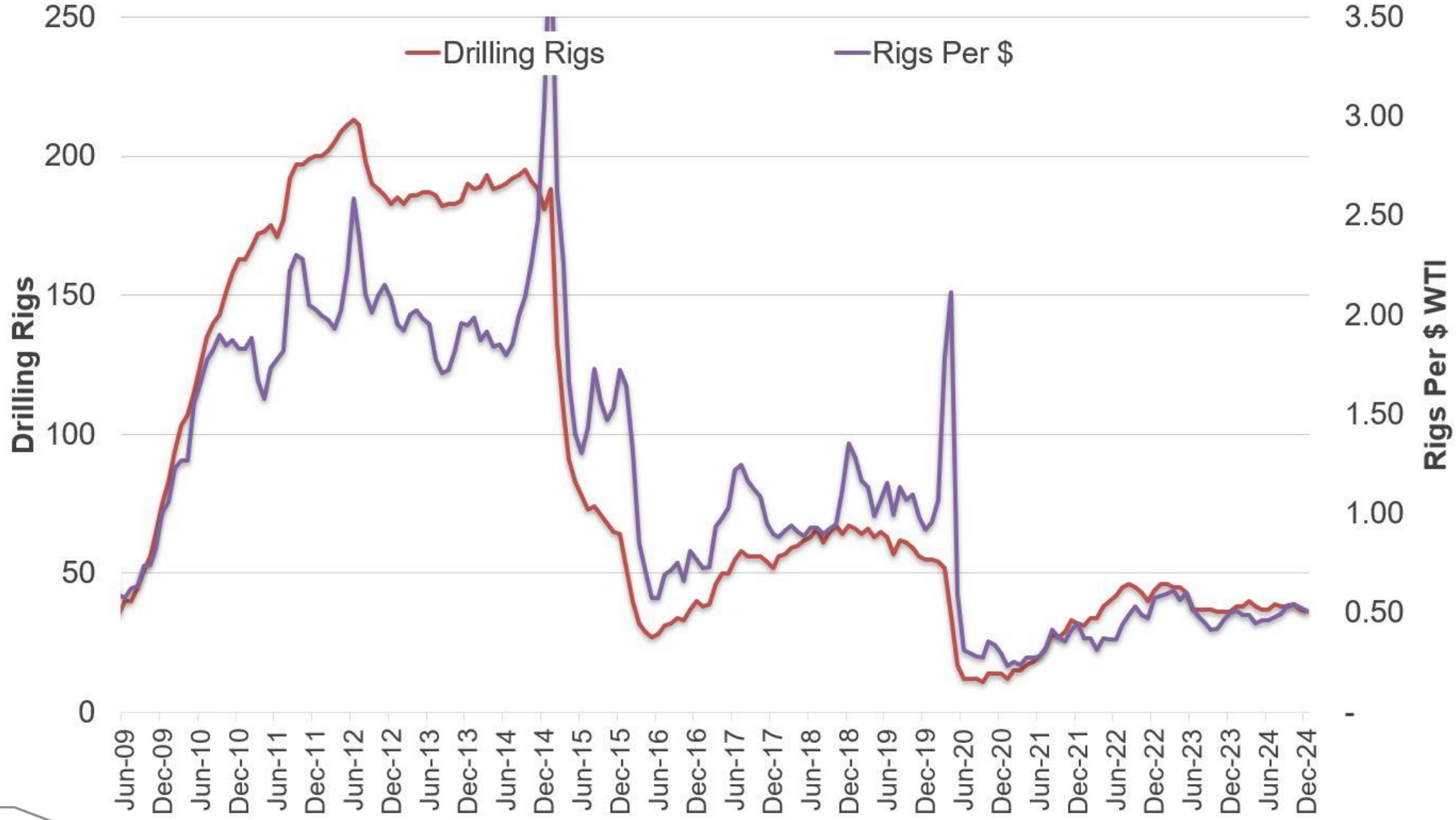
North Dakota Pipeline Construction



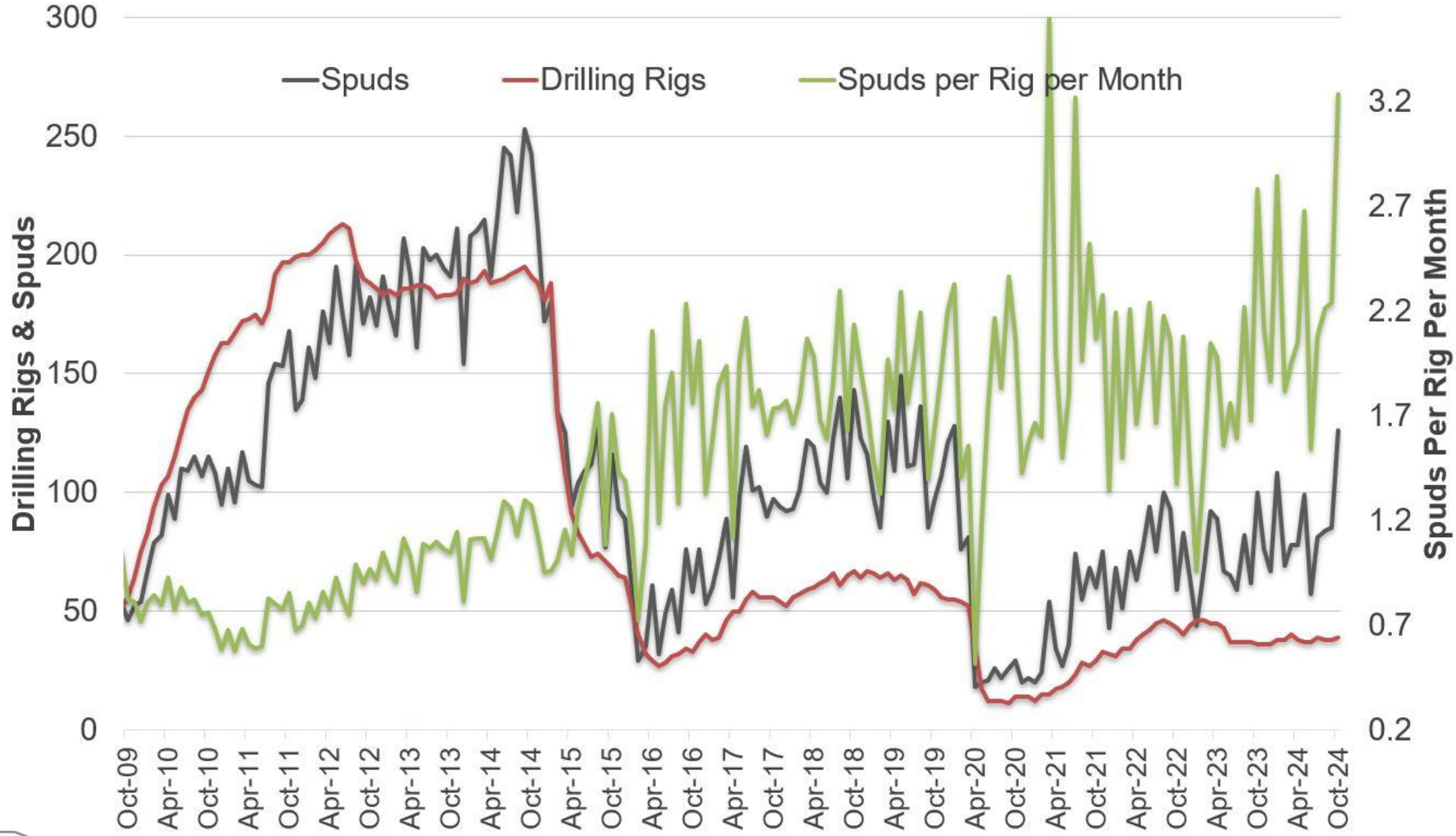
North Dakota Drilling Rigs: 30 (January 23, 2025)



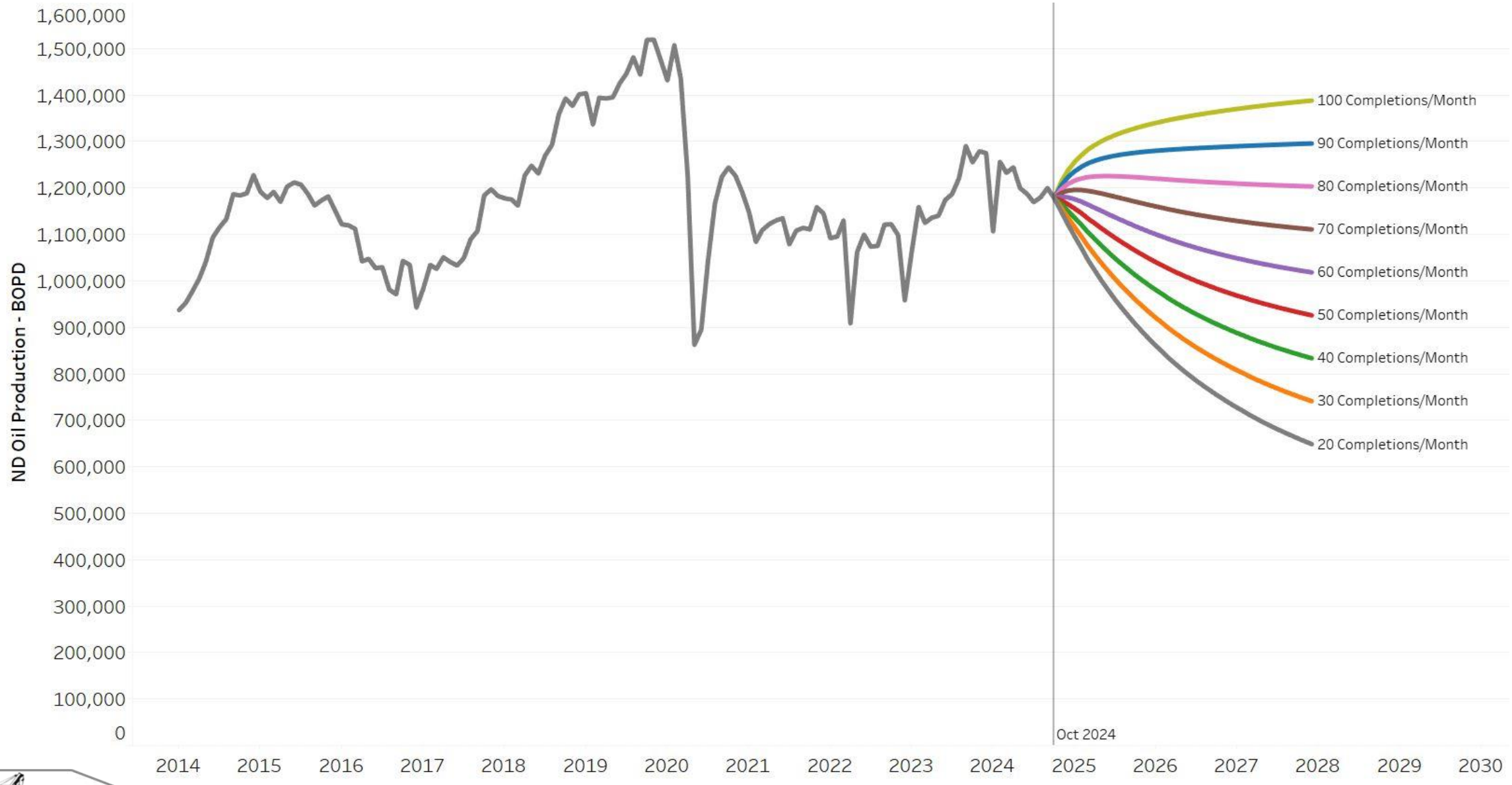
North Dakota Drilling Rig Relationship With Oil Price



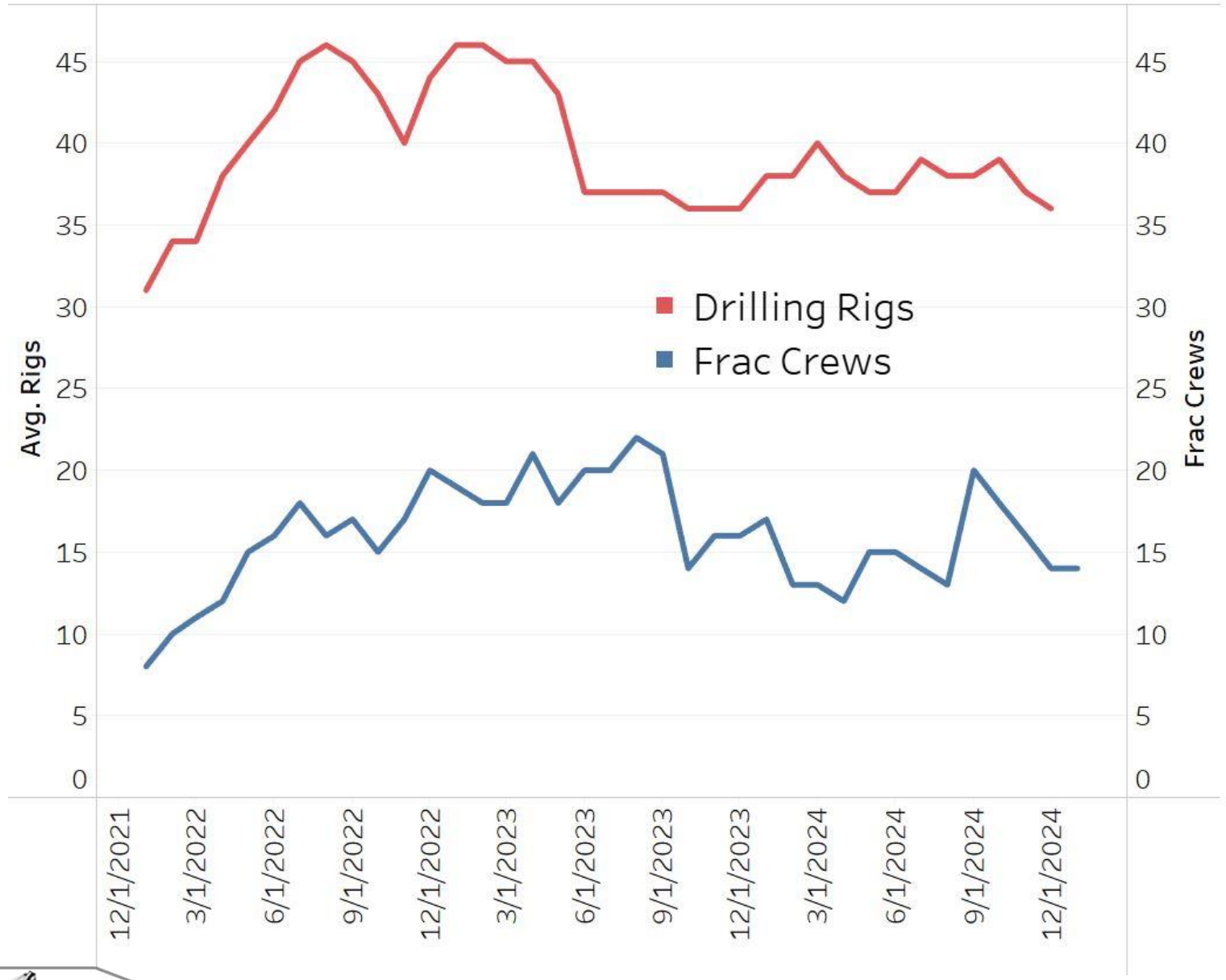
North Dakota Drilling Rig Efficiency

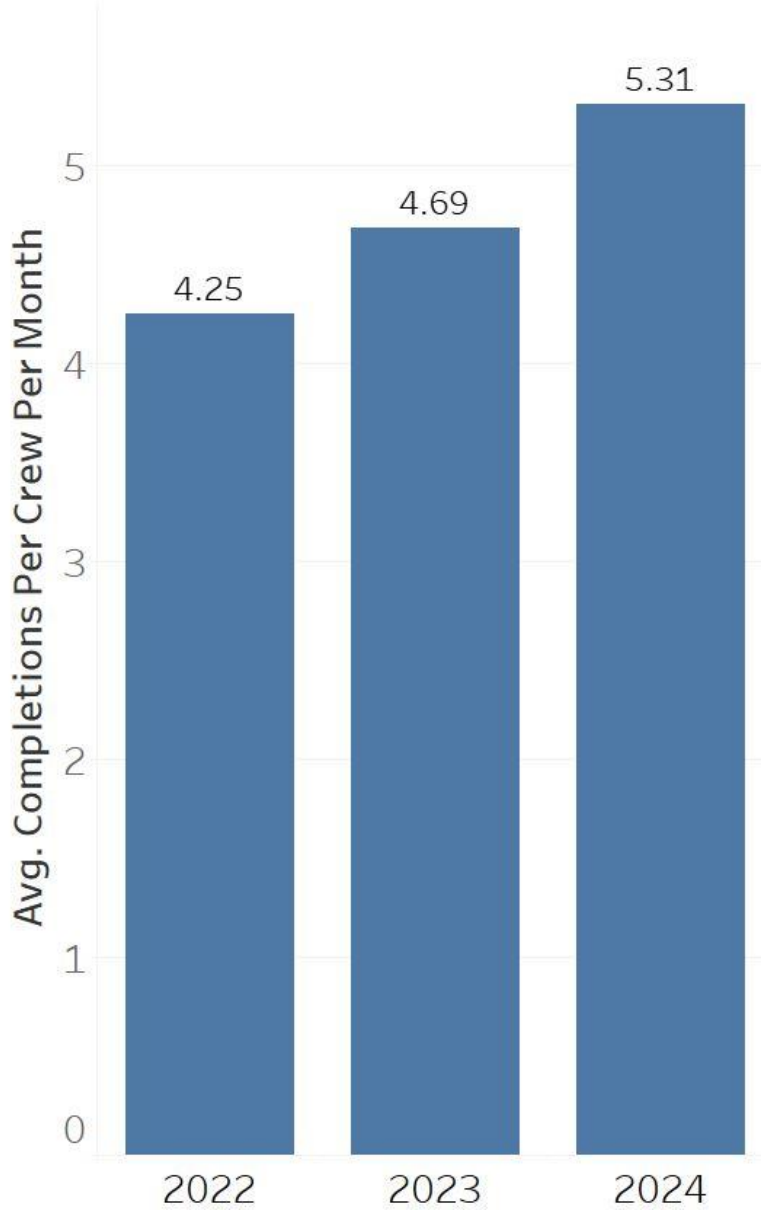


Monthly Completion* Scenarios - Oil

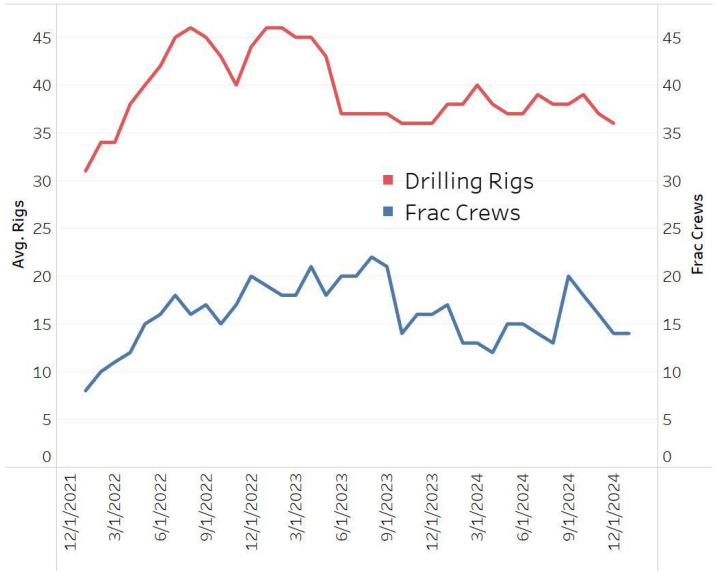


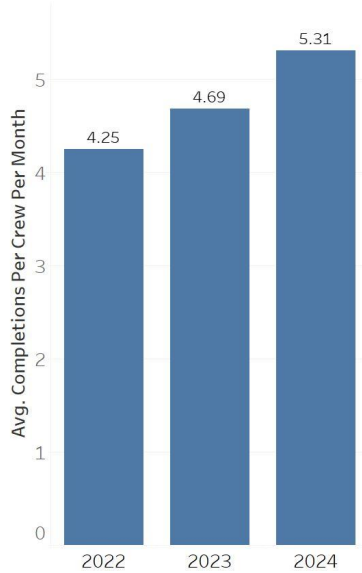
North Dakota Frac Crew Efficiency

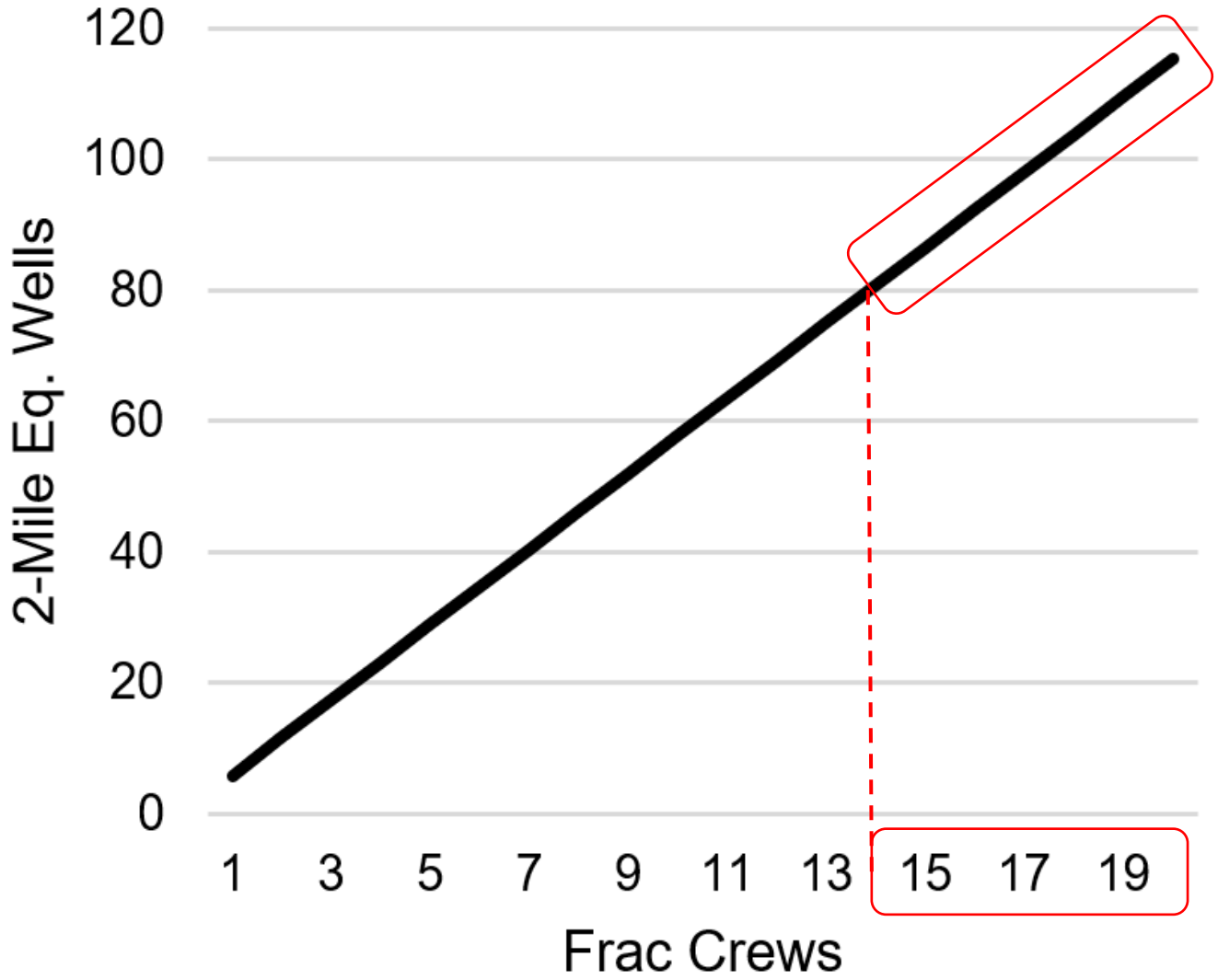




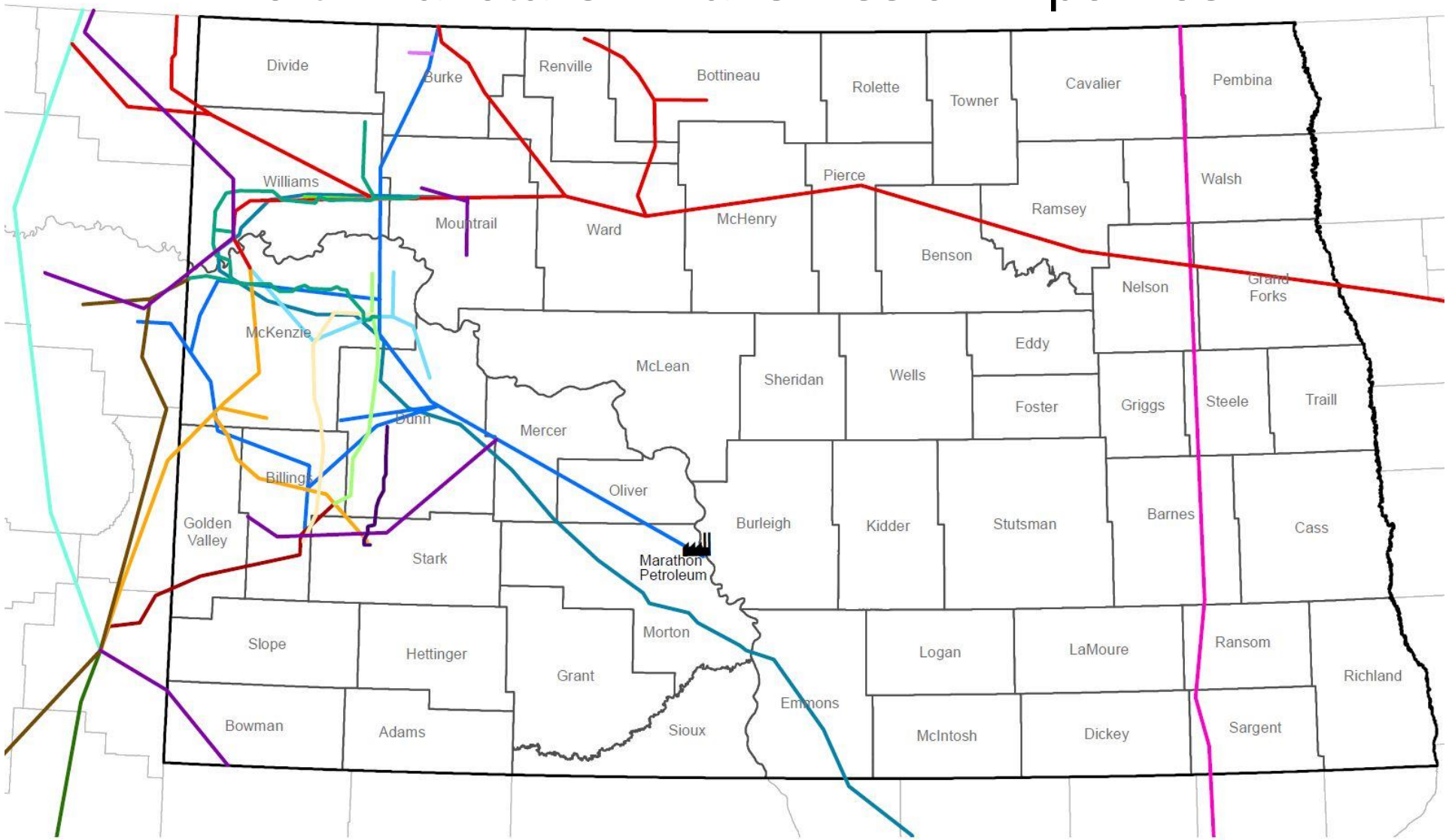
What is the Optimal Frac Crew Count? (Assuming 25% 3-Mile Laterals)



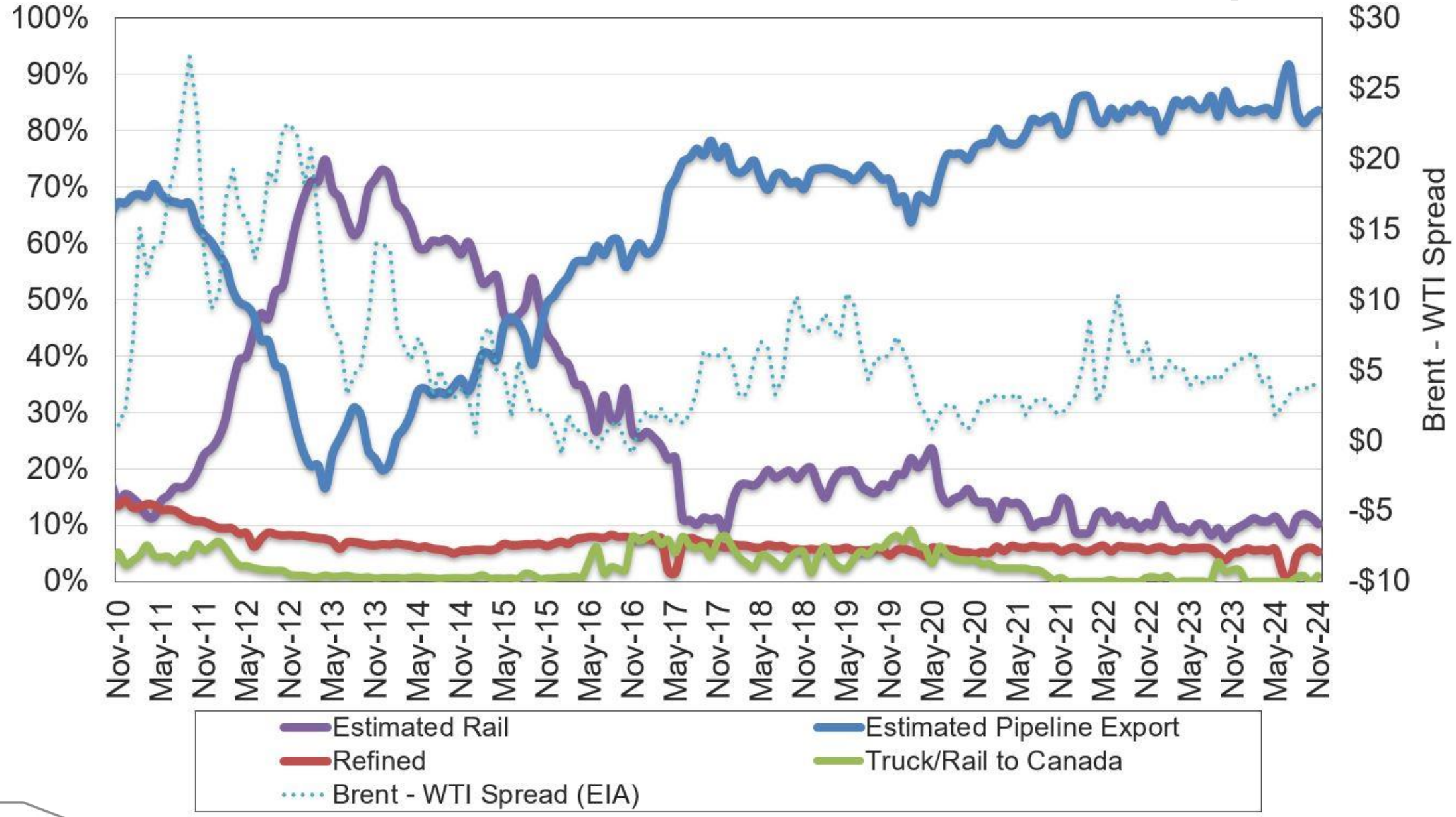




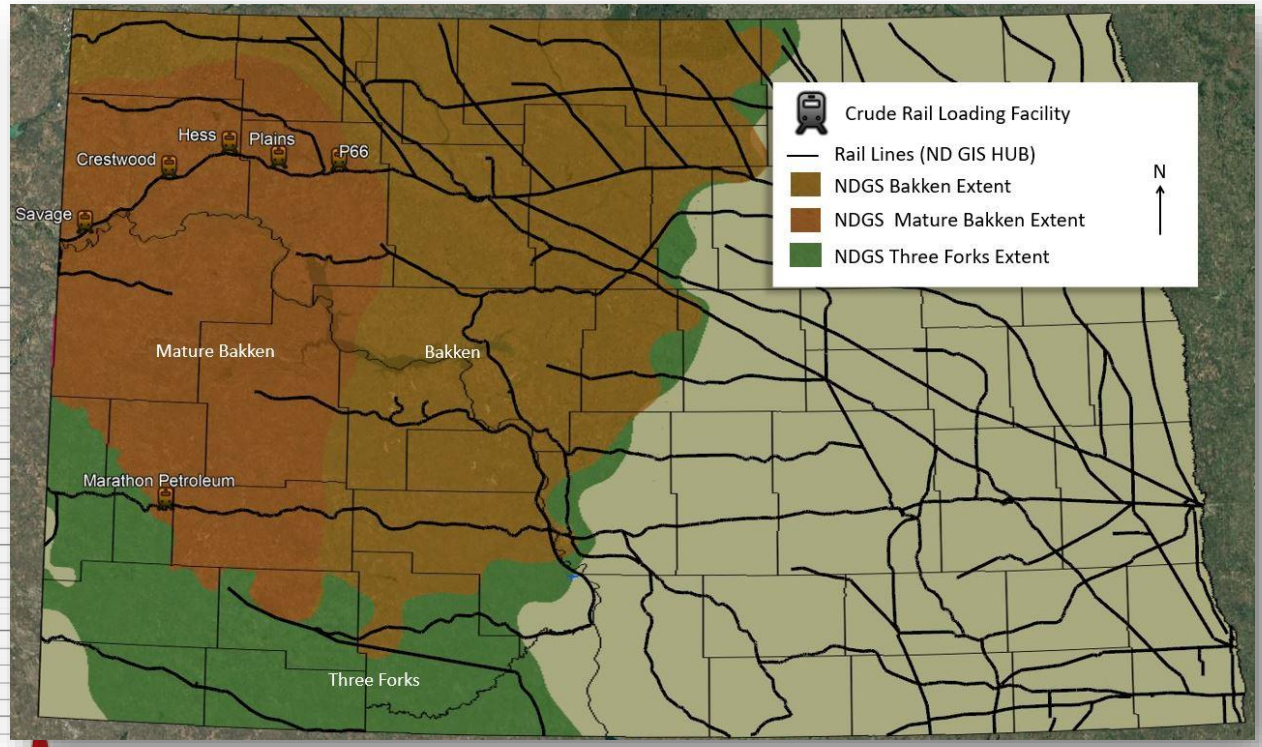
North Dakota Oil Transmission Pipelines

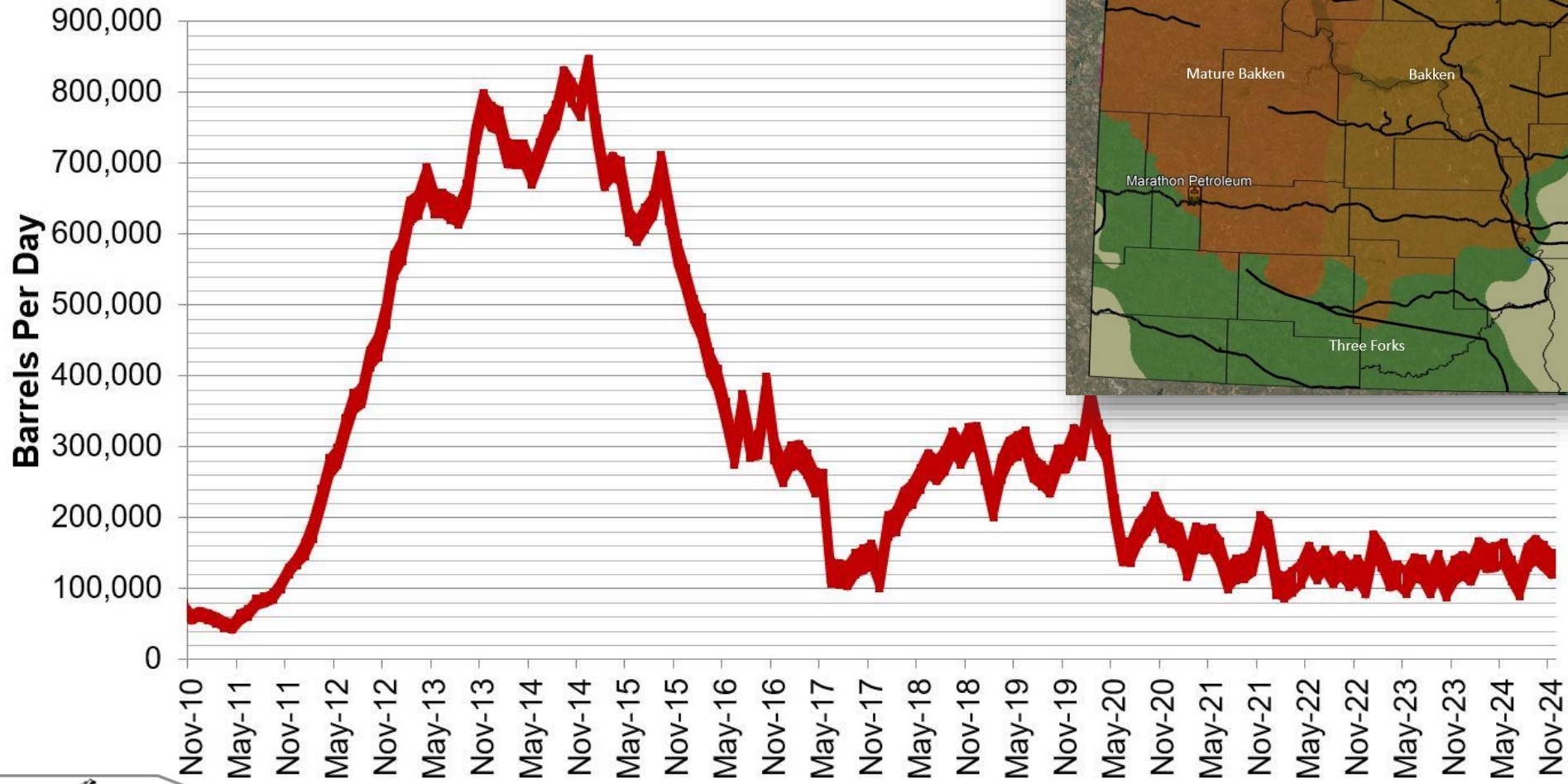


Estimated Williston Basin Oil Transportation

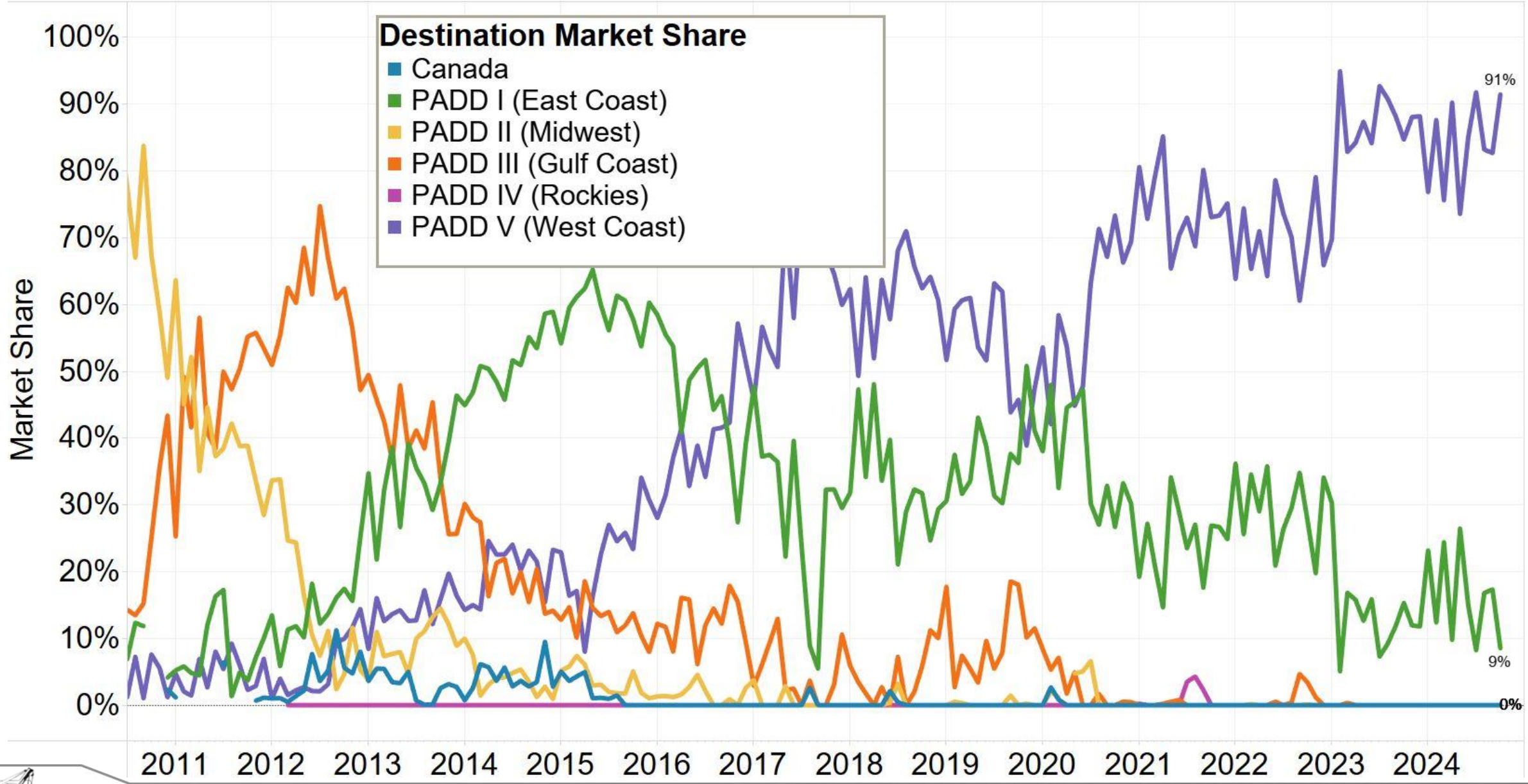


Estimated ND Rail Export Volumes

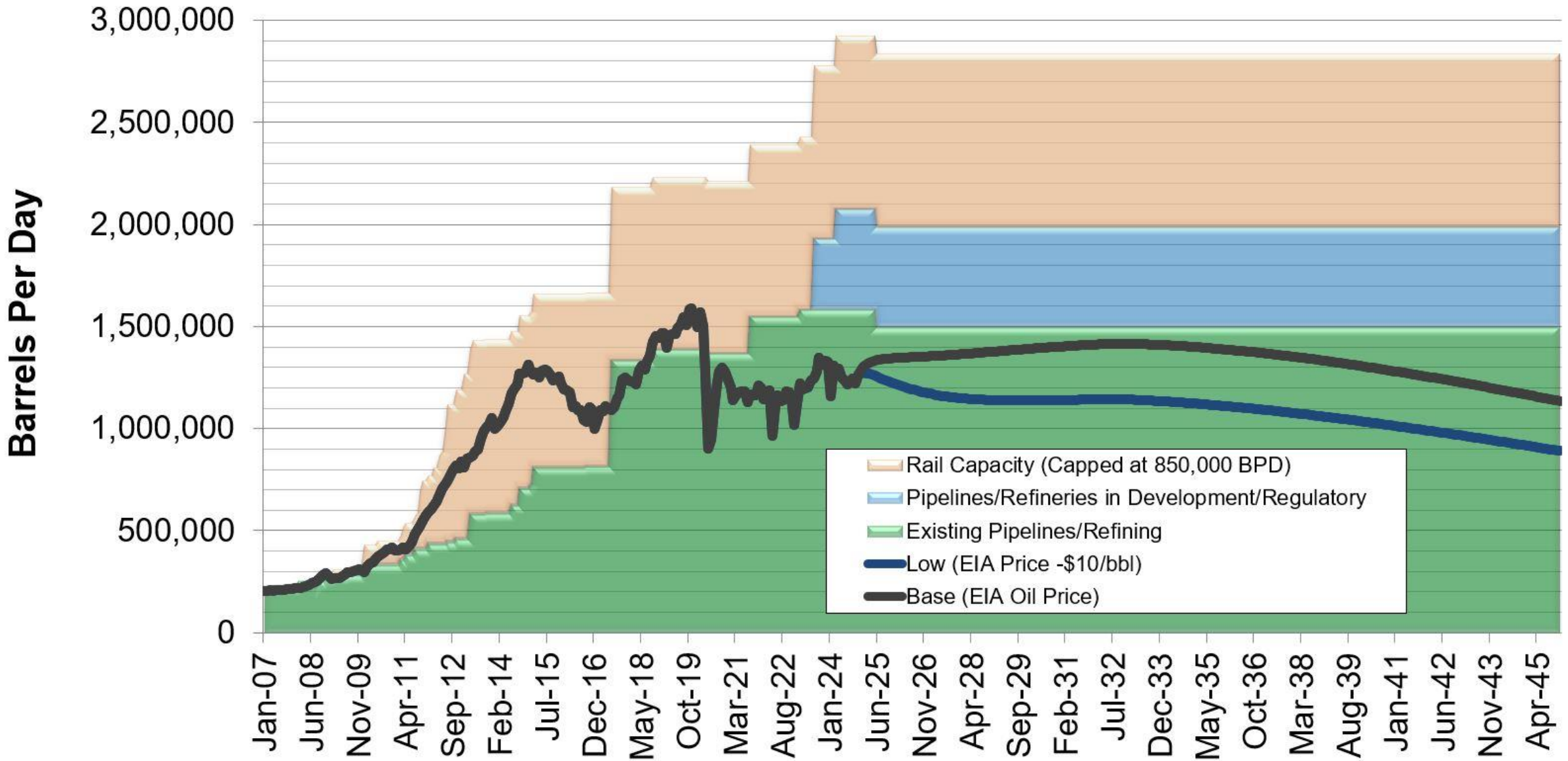




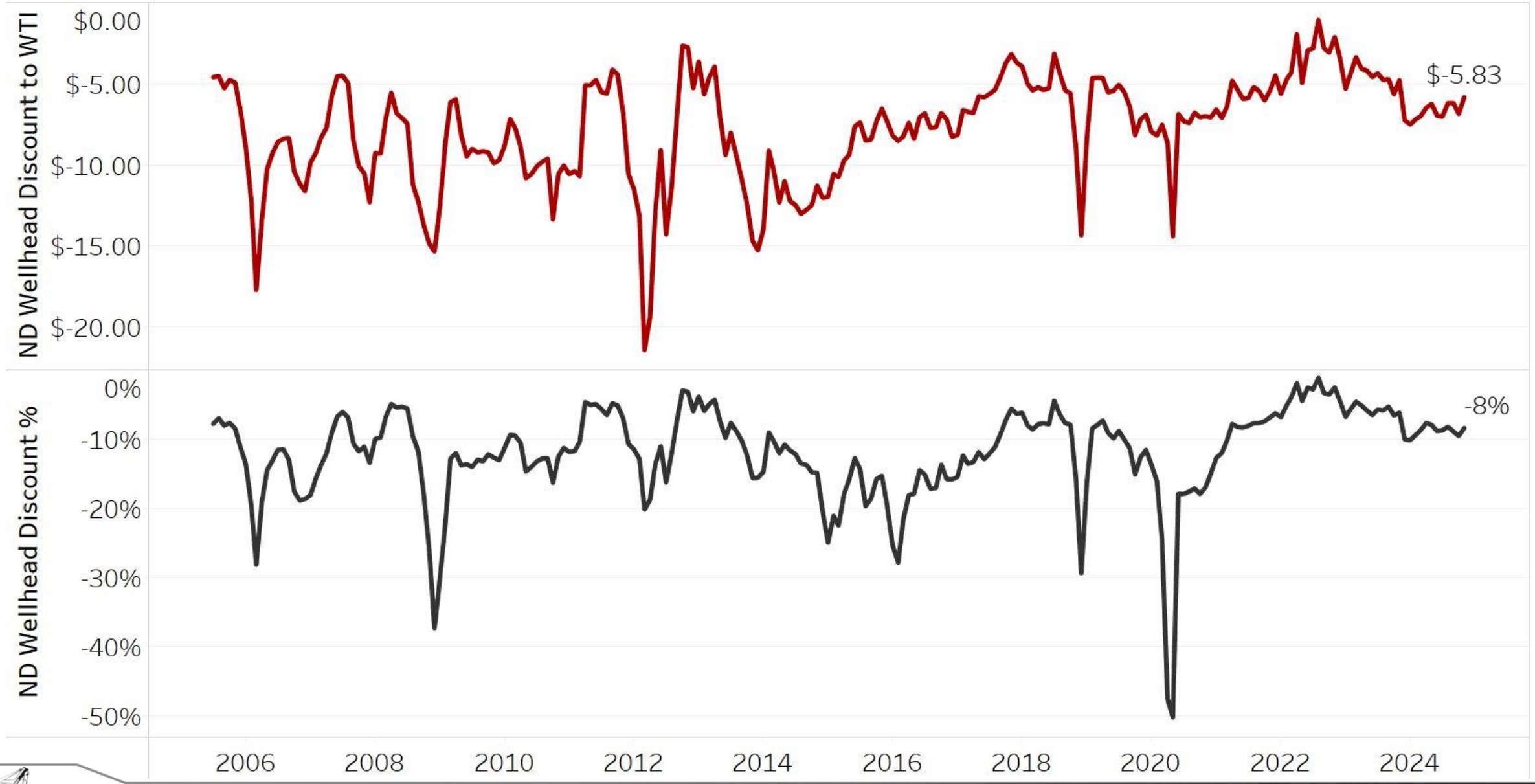
Rail Destinations Market Share (Oct. 2024)



Williston Basin Oil Production & Export Capacity, BOPD



Average North Dakota Oil “Discount” to WTI



DAPL Contracts & Transport Rates

Tariff 4.1.0 – Effective July 1, 2017

UNCOMMITTED RATES FOR BAKKEN CRUDE PETROLEUM	
From	**To** **Nederland, Jefferson County, Texas** (SXL Nederland Terminal or P66 Nederland Terminal)
An Origin Point that is a Bakken Field Point*	$7.5149

Committed Rates for Bakken Crude Petroleum from a Committed Shipper's Selected Origin Point(s) that is a Bakken Field Point* to Destination Point of NEDERLAND, Texas – SXL Nederland Terminal

	Term	
Volume Commitment (bpd)^	**7 Years**	**10 Years**
5,000 – 29,999	$6.6300**	$6.3750**
30,000 – 49,999	$6.3750**	$6.1200**
50,000 – 69,999	$6.1200**	$5.8650**
70,000 – 89,999	$6.1200**	$5.7120**
90,000+	$5.7120**	$5.6100**

Tariff 4.11.0 – Effective July 1, 2024

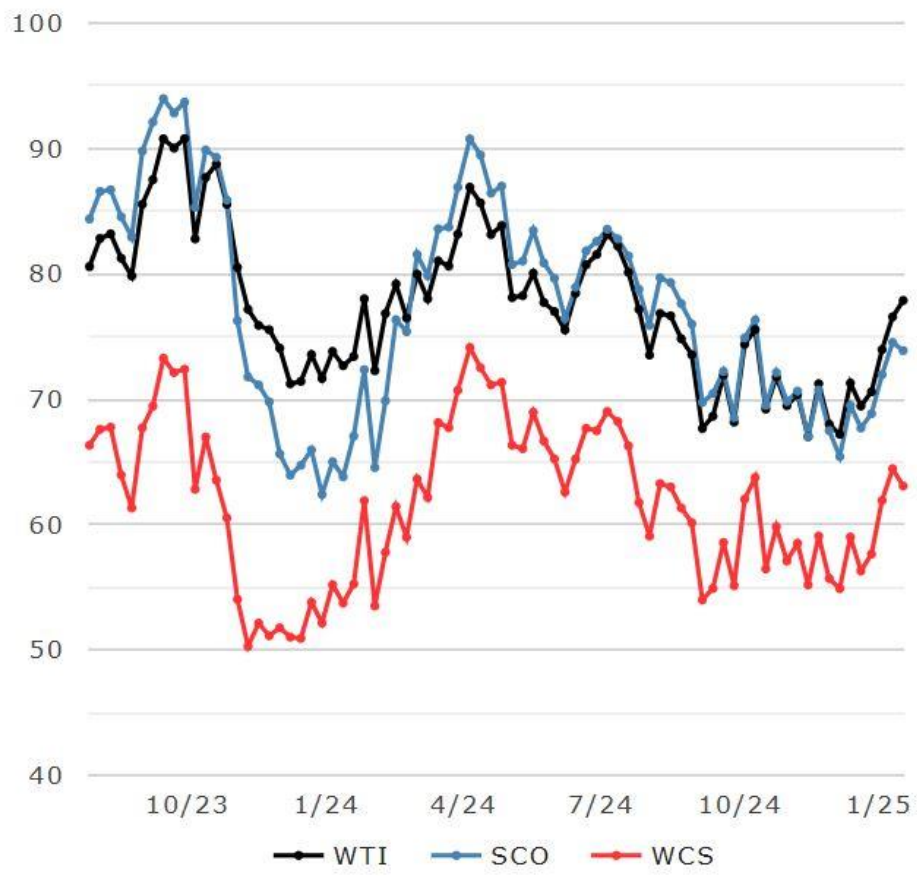
Uncommitted Rates for Bakken Crude Petroleum		
From	**To**	
	Nederland, Jefferson County, Texas (ETNT Nederland Terminal or P66 Nederland Terminal)	**Collierville, Tennessee** (Valero Terminal)
An Origin Point that is an Eligible Bakken Origin Point*	**[I]** $10.4155	**[I]** $10.4155

Committed Rates for Bakken Crude Petroleum from a Committed Shipper's Selected Origin Point(s) that is an Eligible Bakken Origin Point* to Destination Point of NEDERLAND, TEXAS – ETNT Nederland Terminal

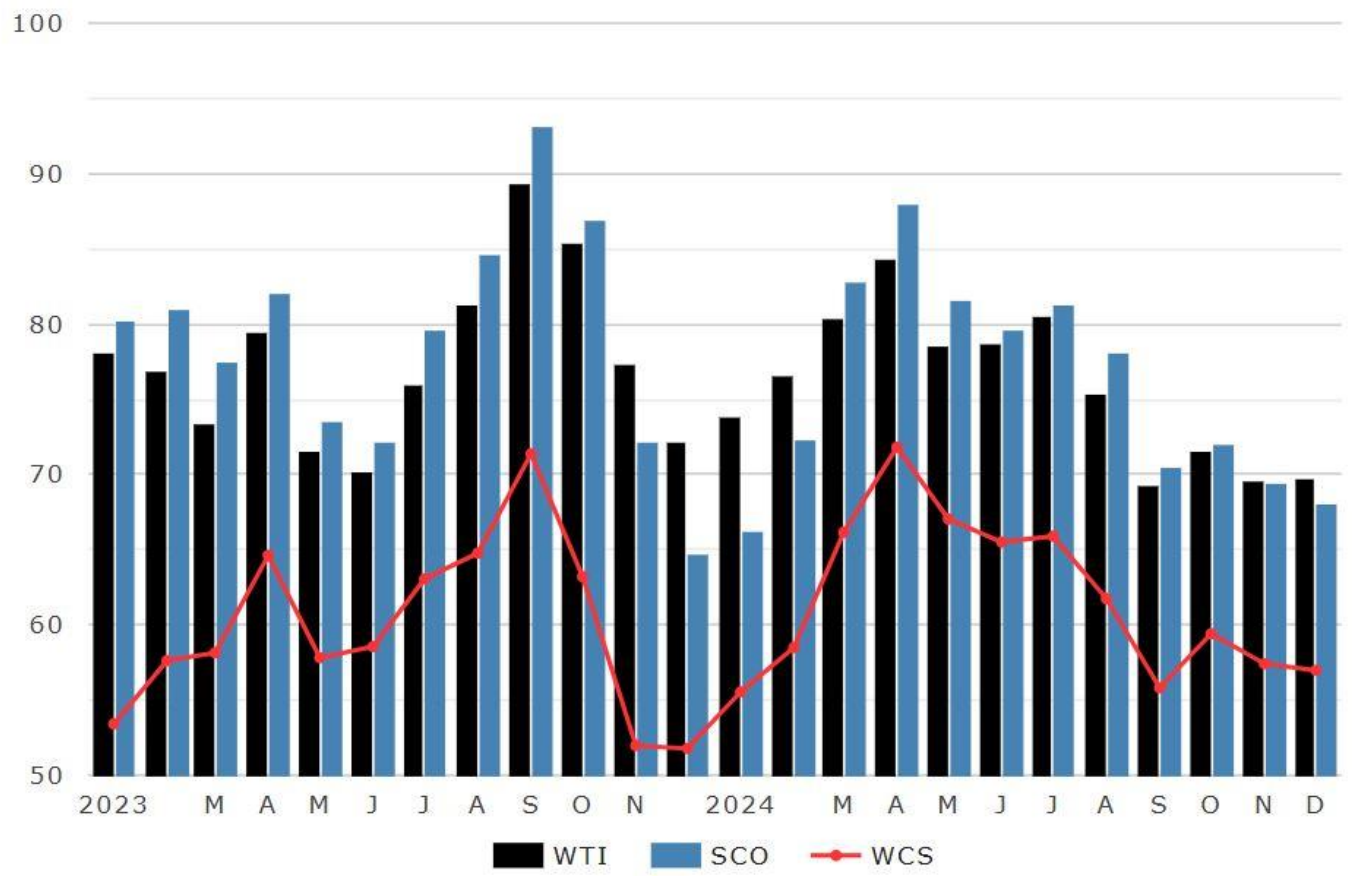
Volume Commitment Requirement (bpd)^	Term	
	7 Years	10 Years
3,500 – 29,999	**[I]** $7.6157**	**[I]** $7.3229**
30,000 – 49,999	**[I]** $7.3229**	**[I]** $7.0299**
50,000 – 69,999	**[I]** $7.0299**	**[I]** $6.7371**
70,000 – 89,999	**[I]** $7.0299**	**[I]** $6.5613**
90,000+	**[I]** $6.5613**	**[I]** $6.4443**

OIL SANDS MAGAZINE

OIL PRICES • WEEKLY CLOSE
USD/BBL

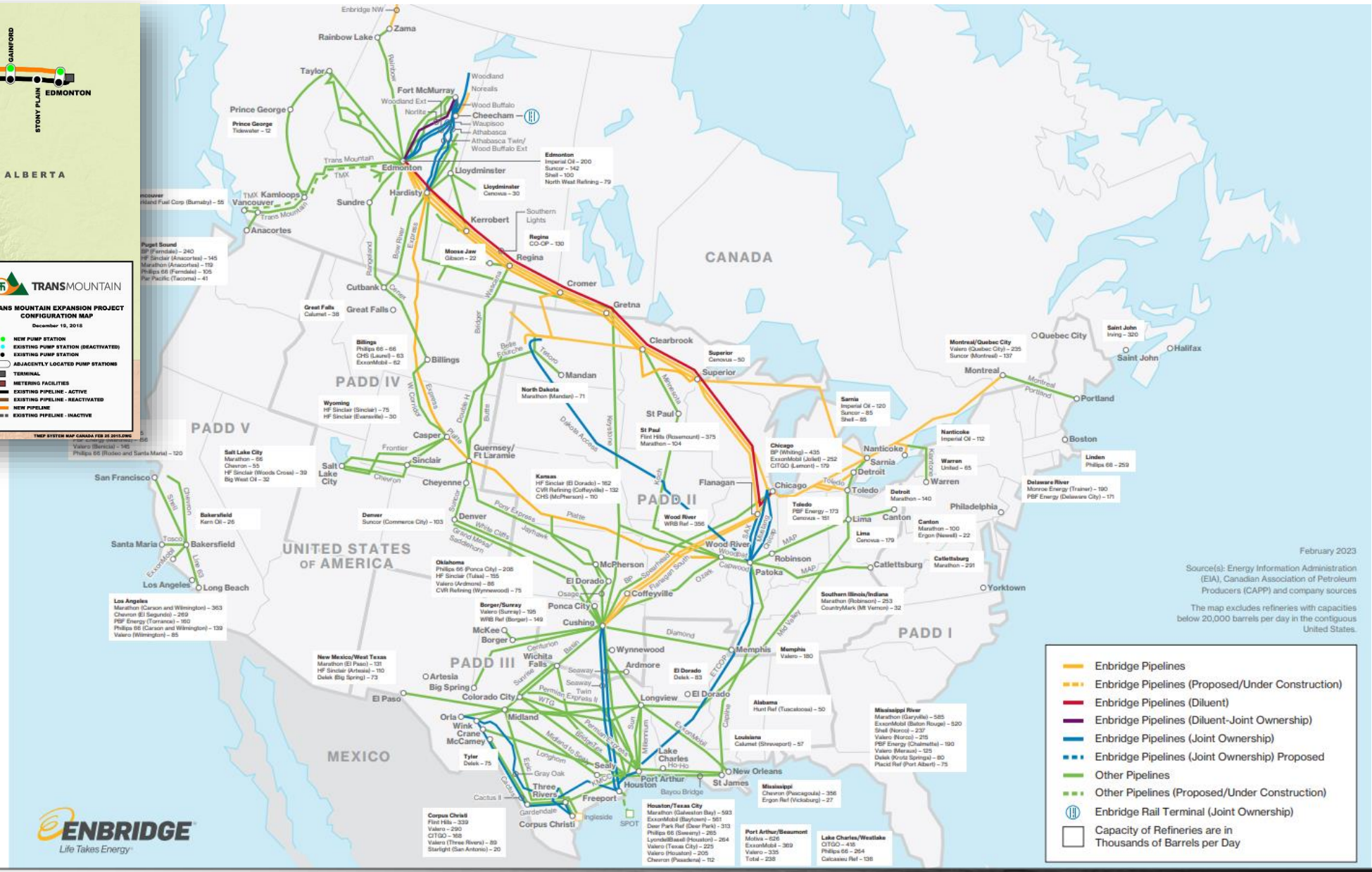


MONTHLY AVERAGE OIL PRICES
USD/BBL

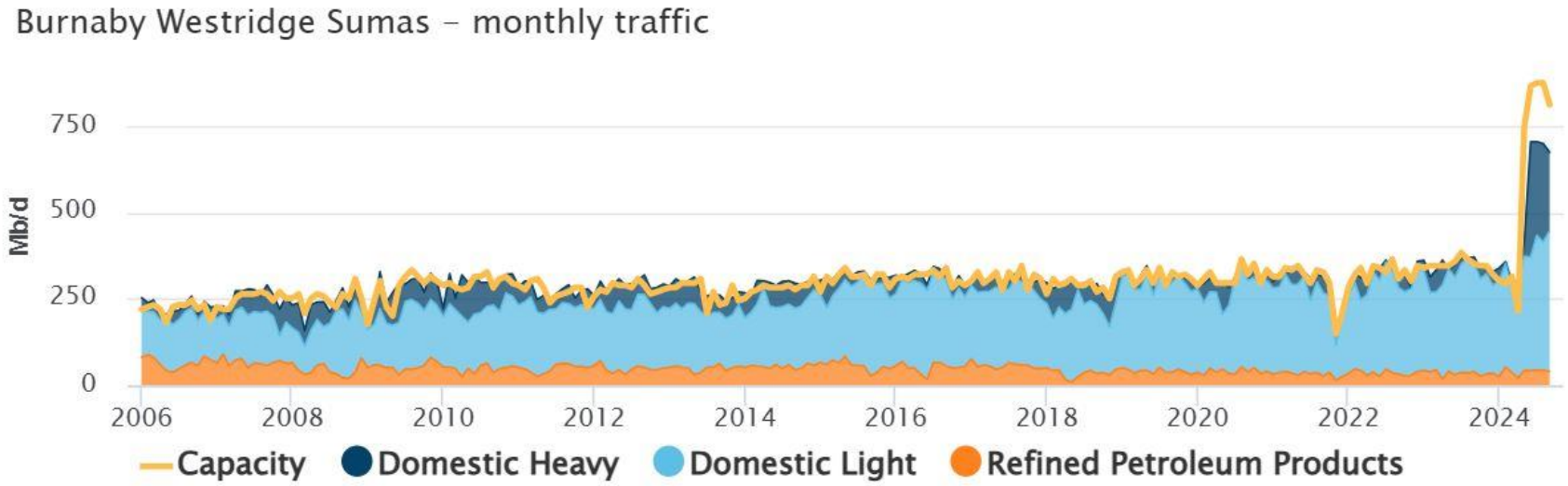


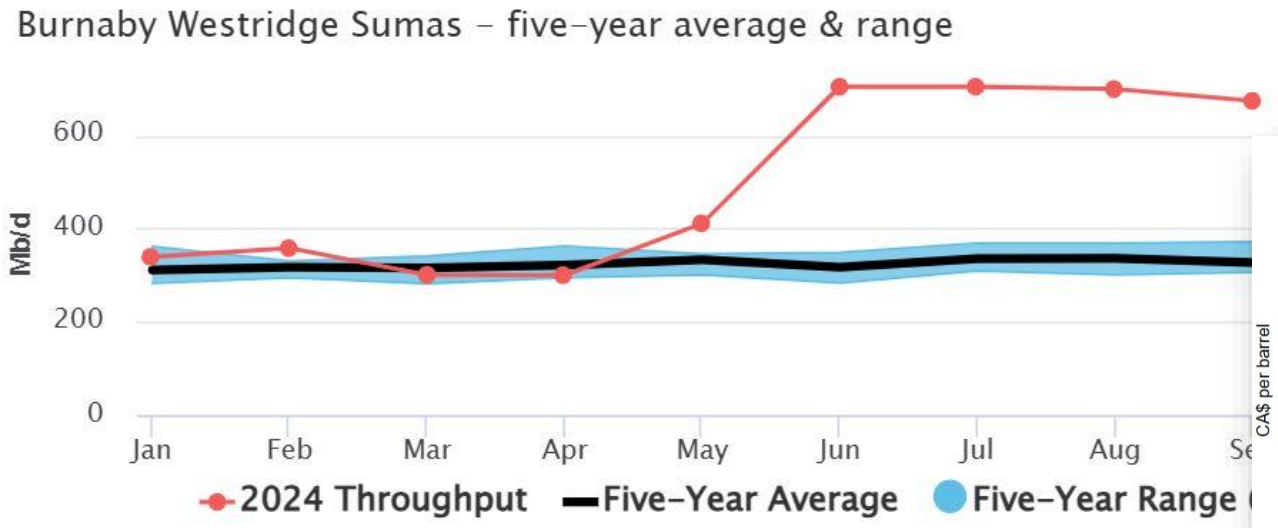
Source: Oilsands Magazine www.oilsandsmagazine.com

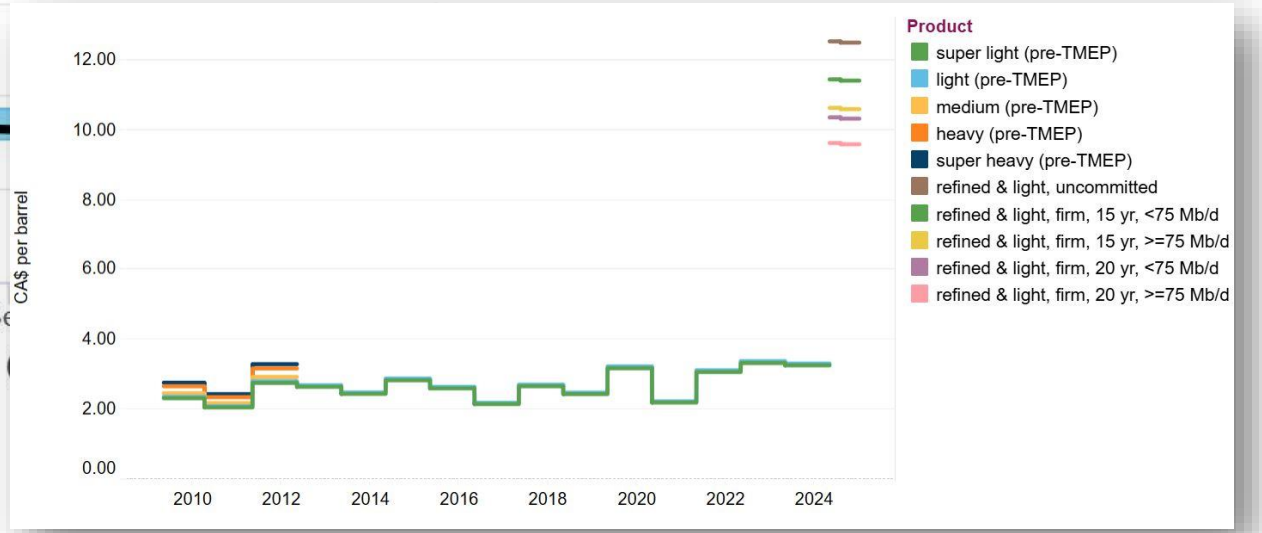
Trans Mountain Pipeline



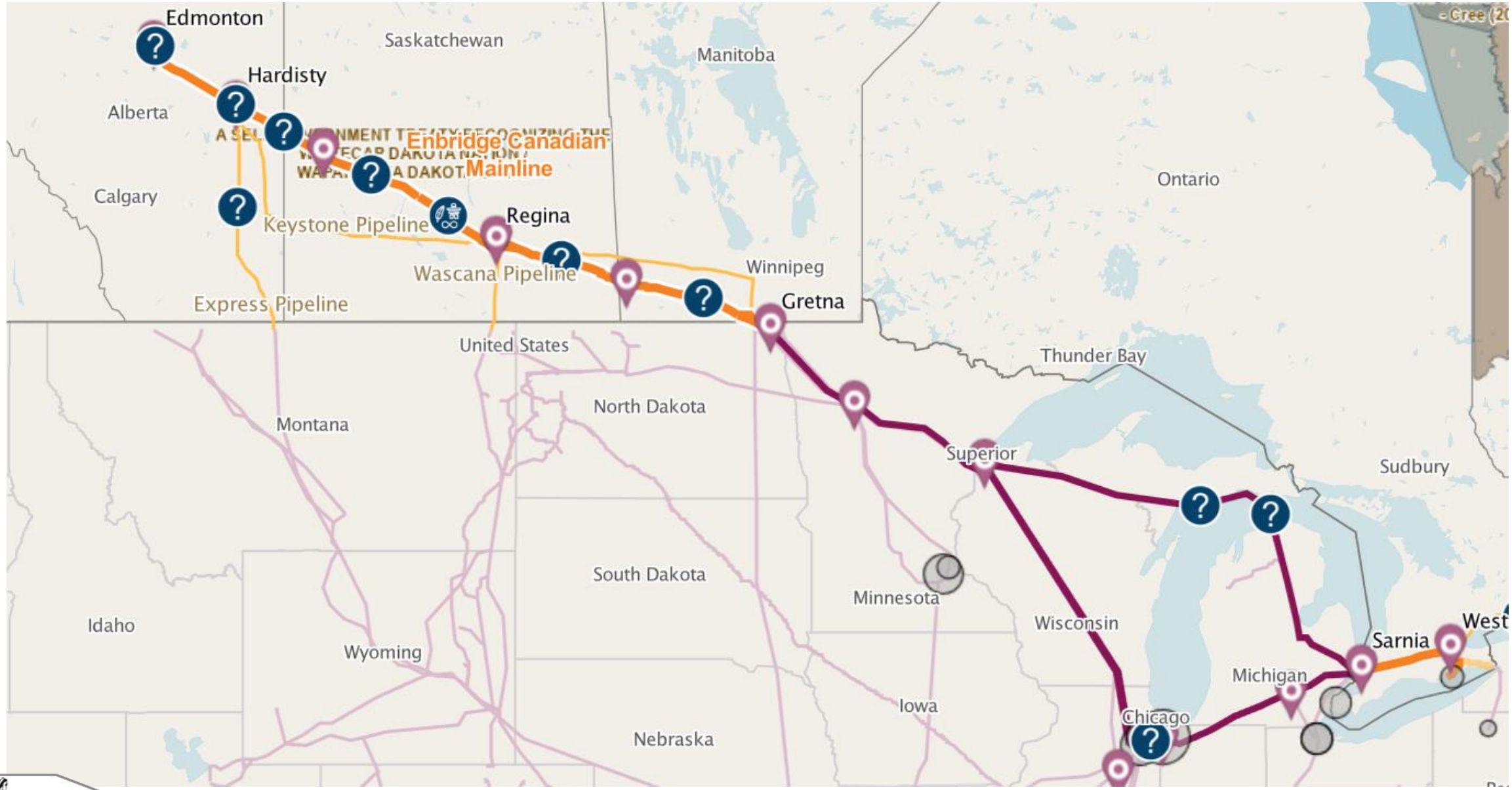
Trans Mountain Pipeline



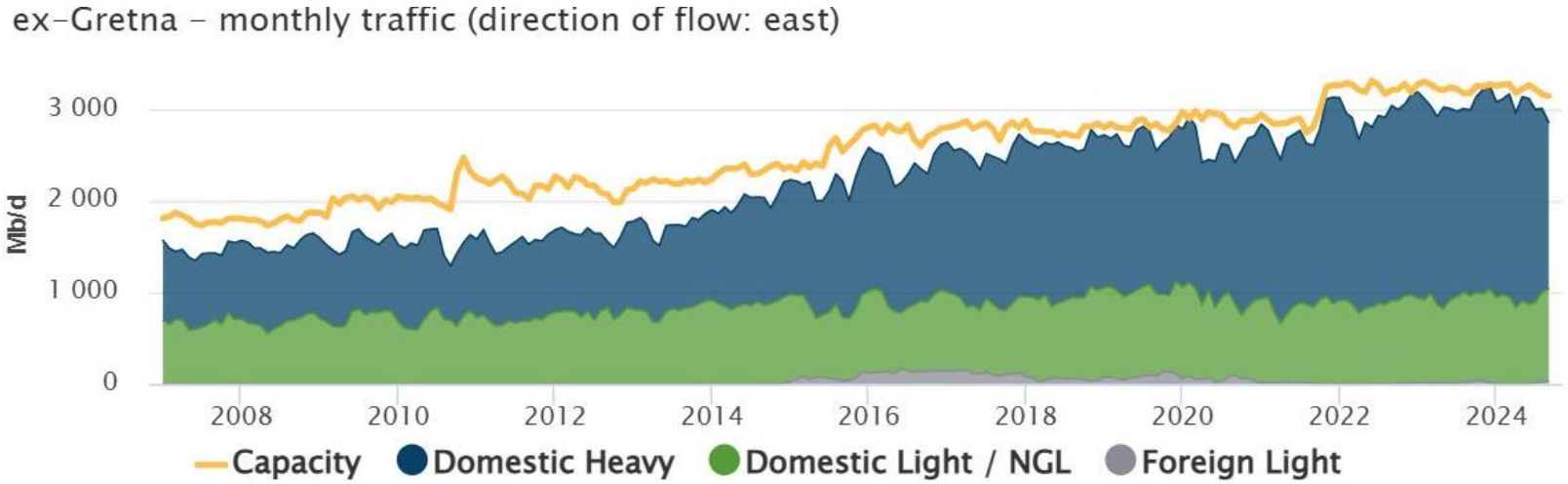


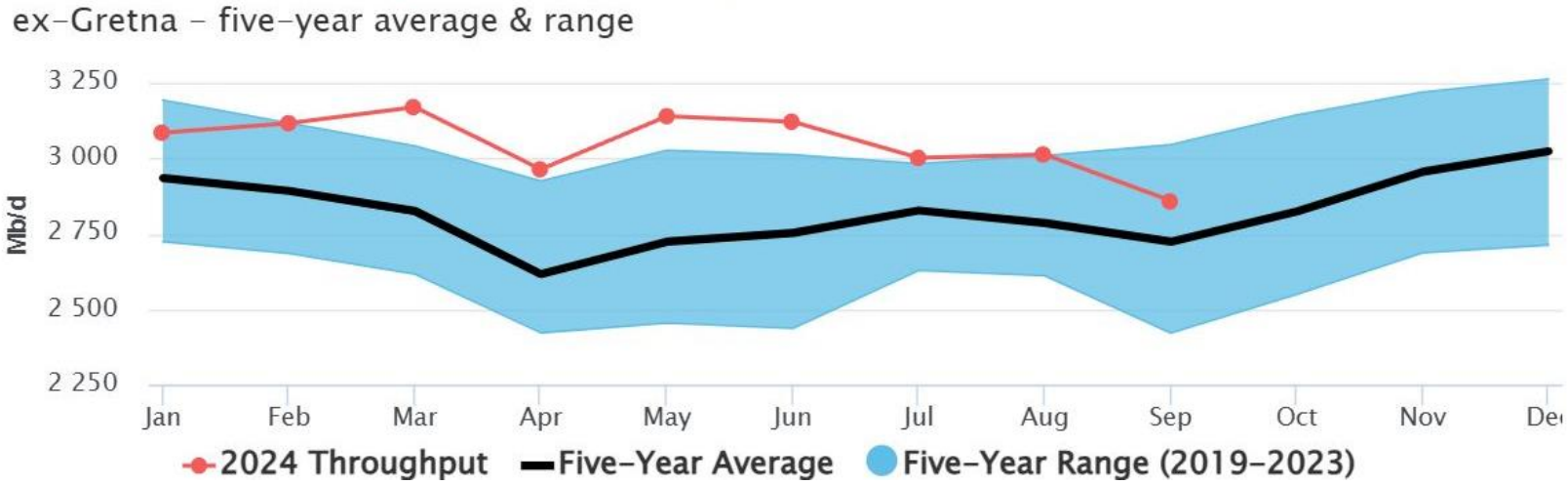


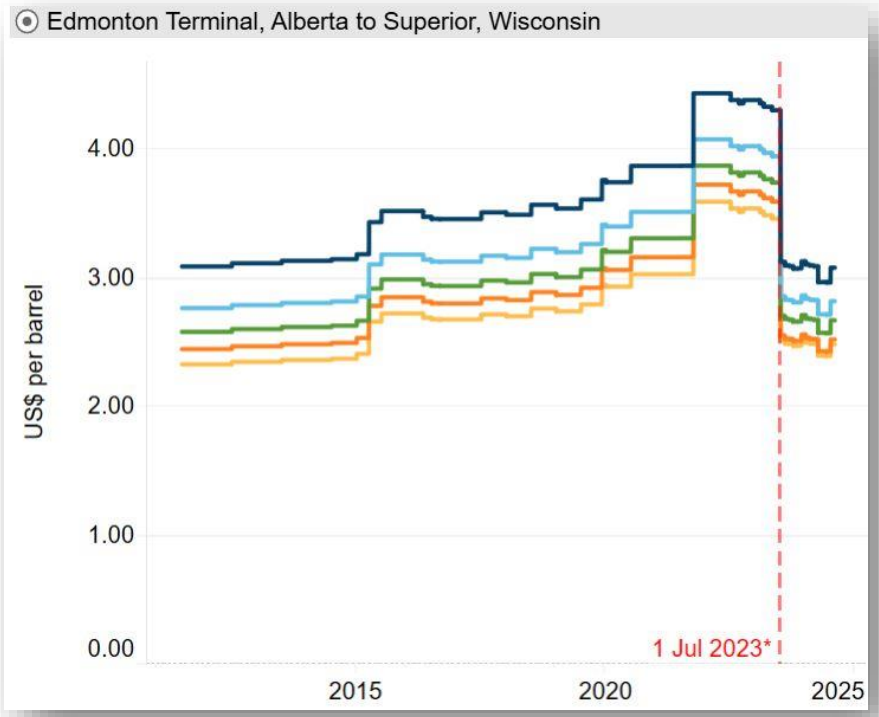
Enbridge Mainline System



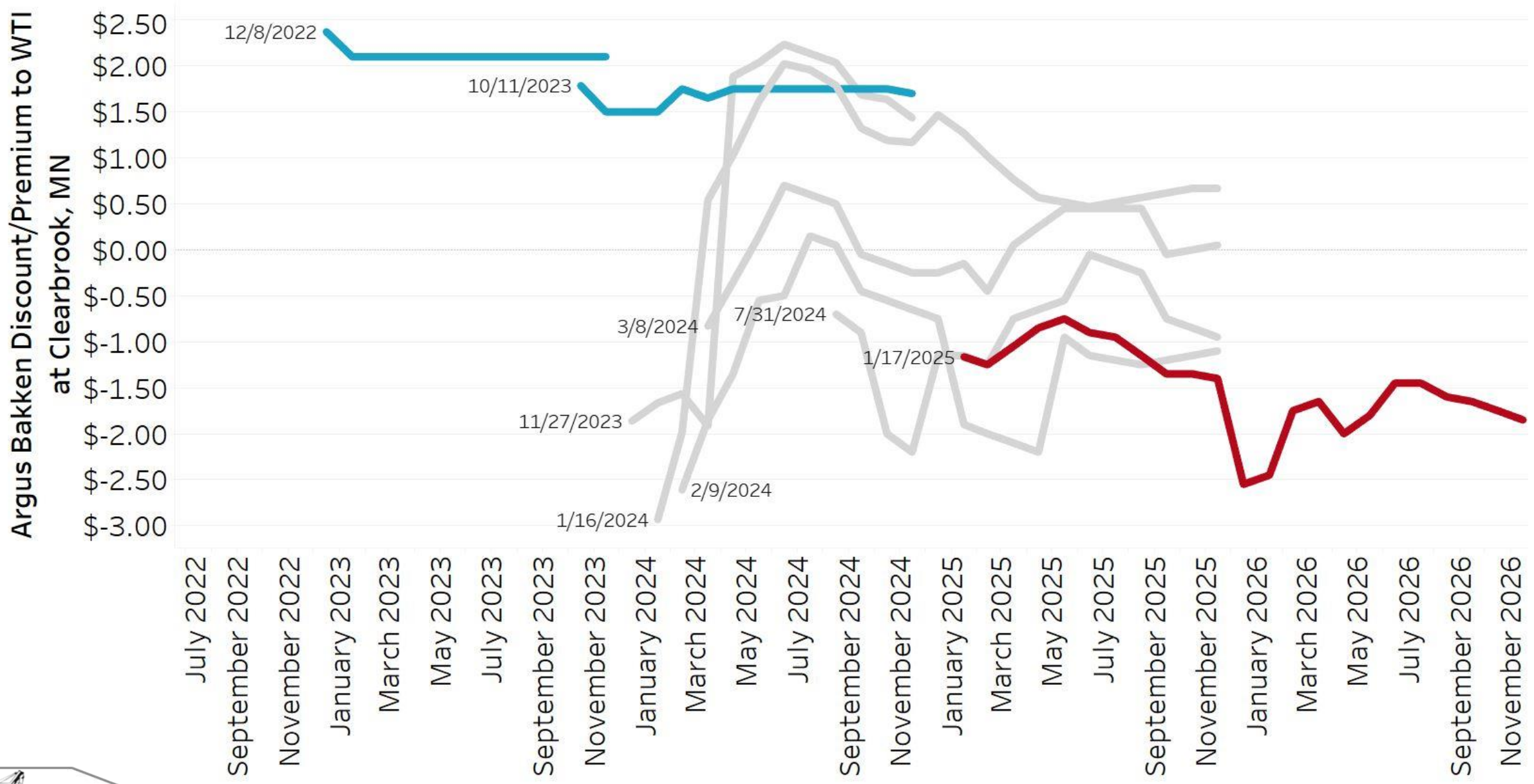
Enbridge Mainline System



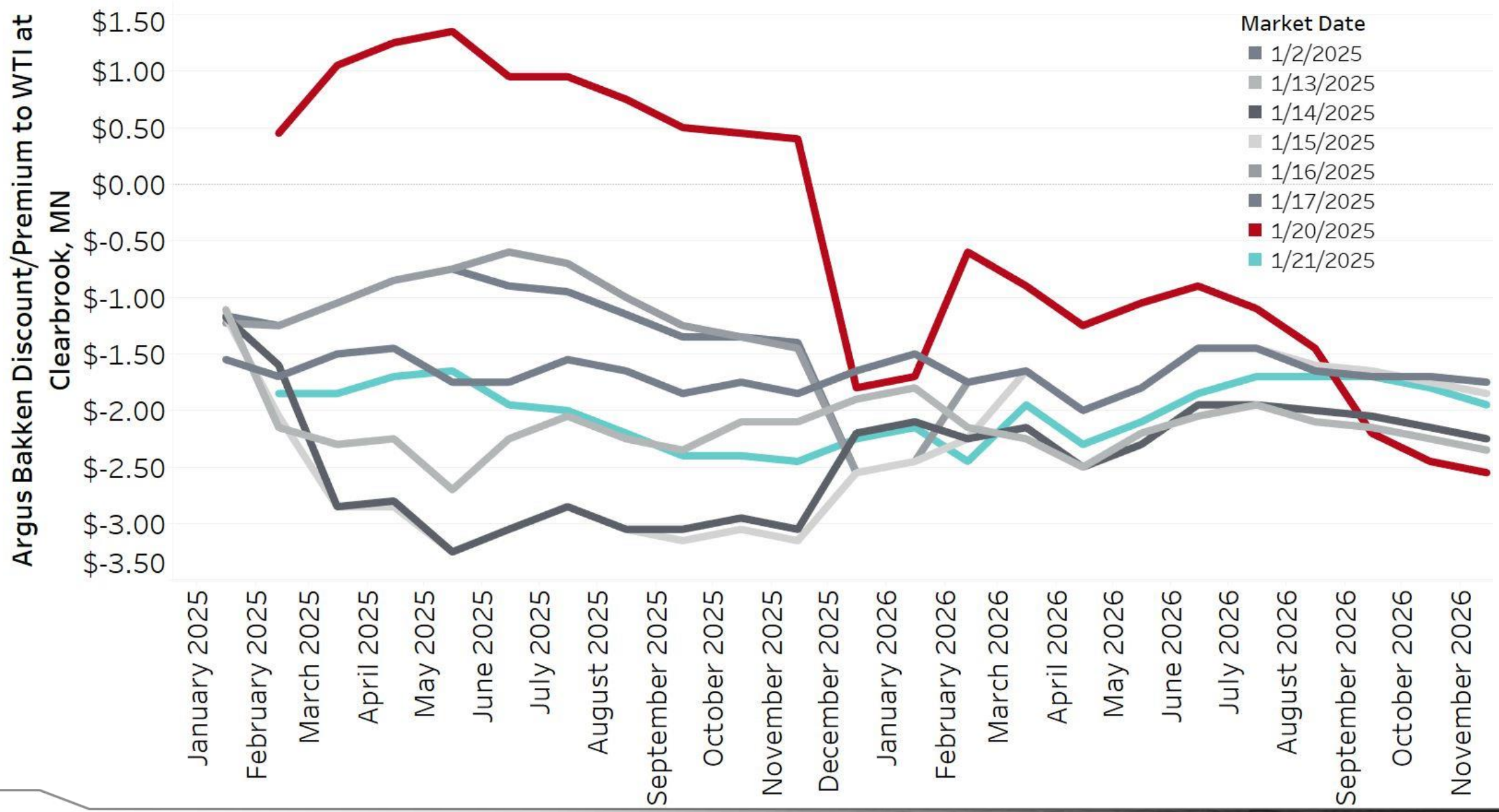




Argus: Clearbrook, MN Bakken Futures*



Argus: Clearbrook, MN Bakken Futures*



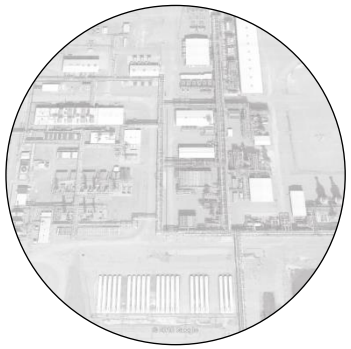
A Complete Natural Gas Solution

Production

- Technology
- Markets
- Forecasting

Gathering

- Capacity
- Connections
- Compression



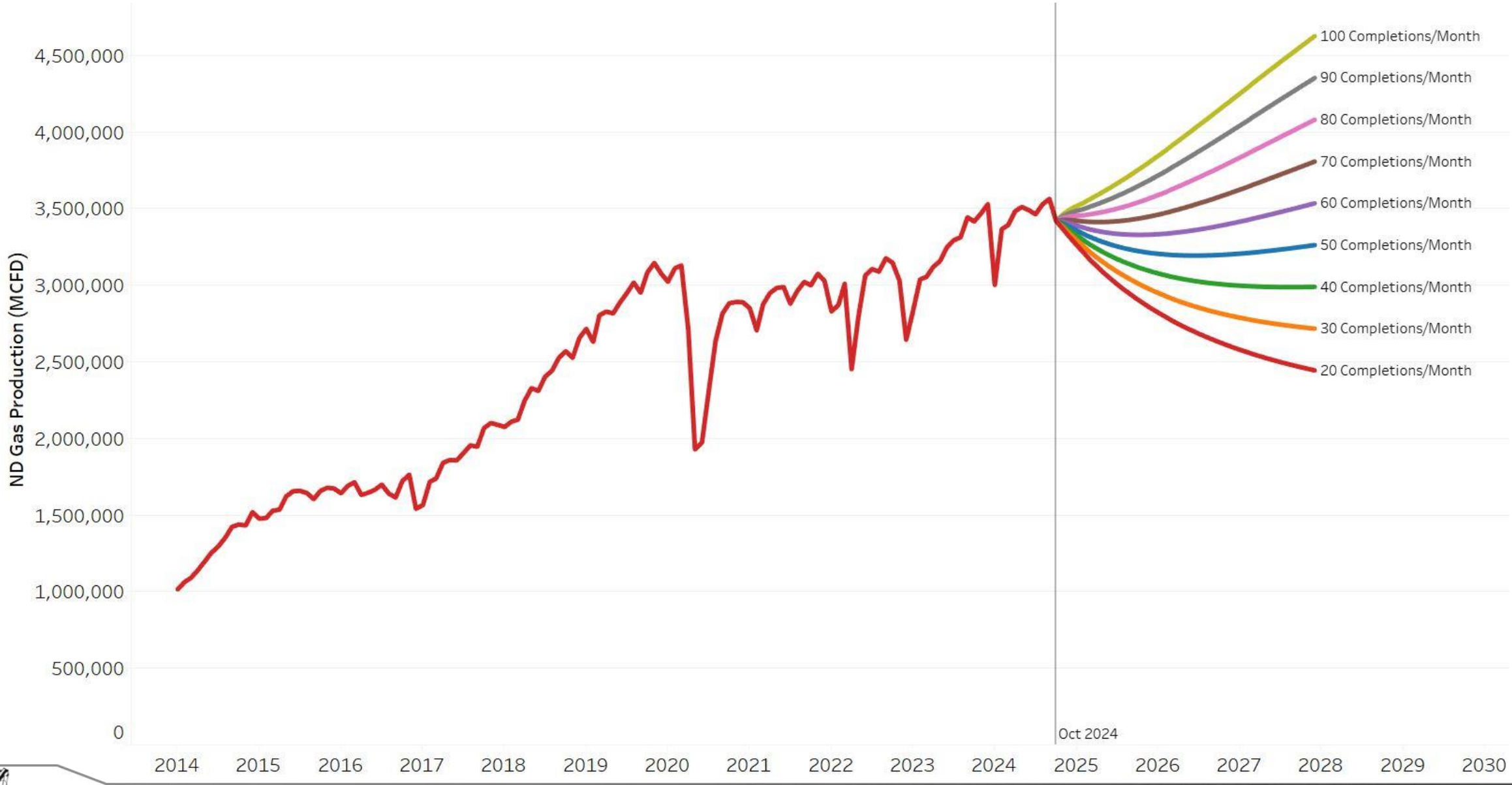
Processing

- Capacity
- Location
- Configuration

Transmission

- Dry Gas
- Natural Gas Liquids
- Storage

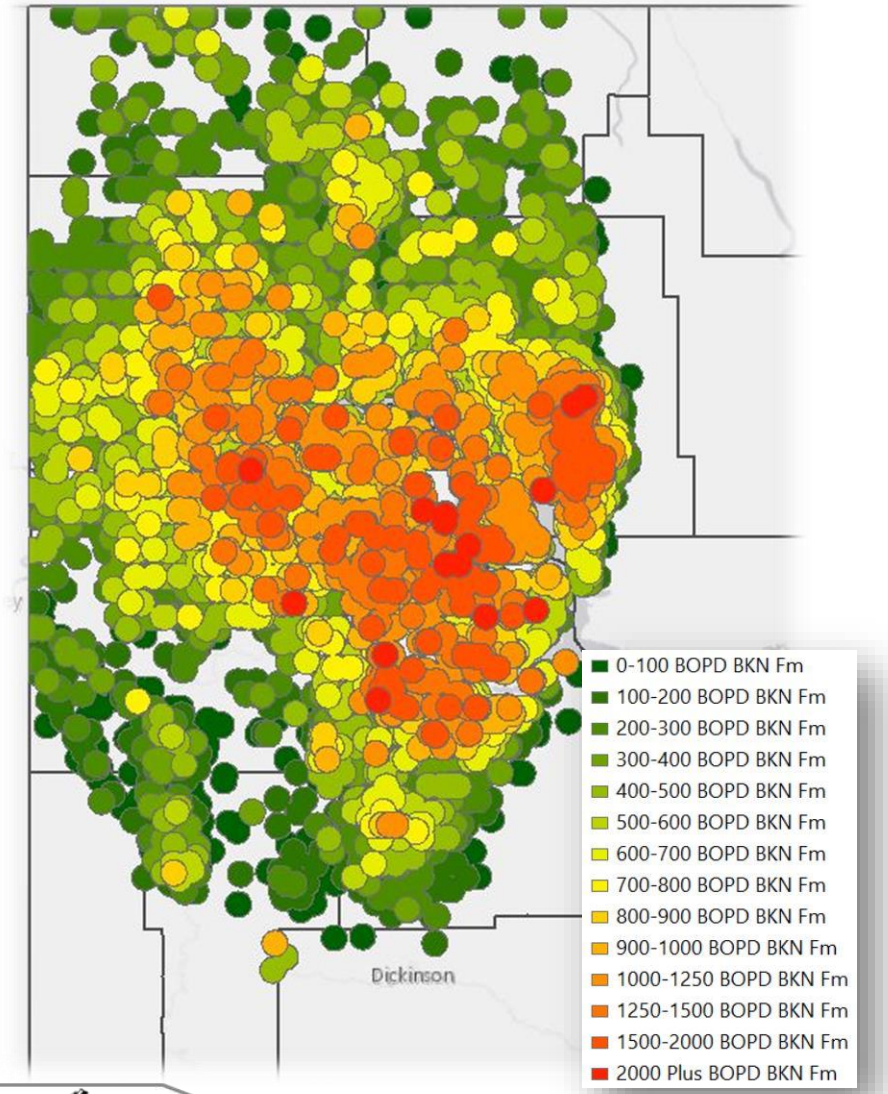
Monthly Completion* Scenarios - Gas



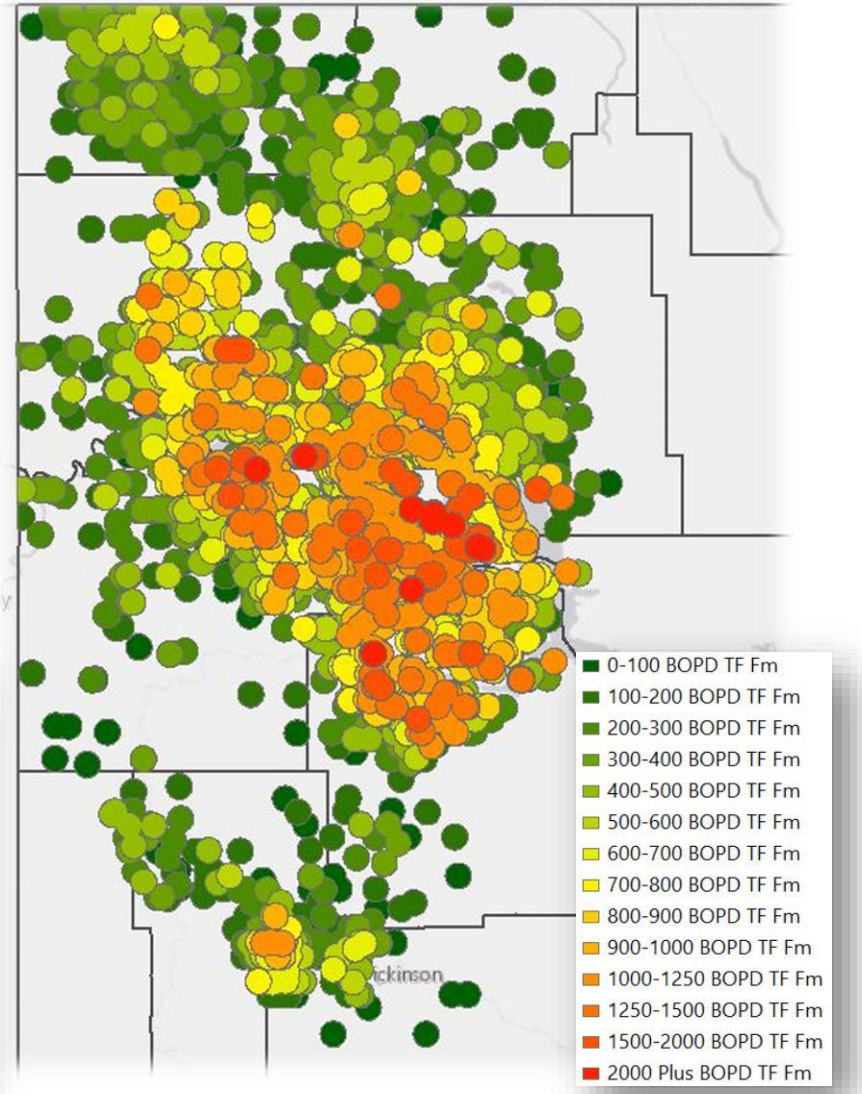
*1,280 Acre Equivalent Spacing

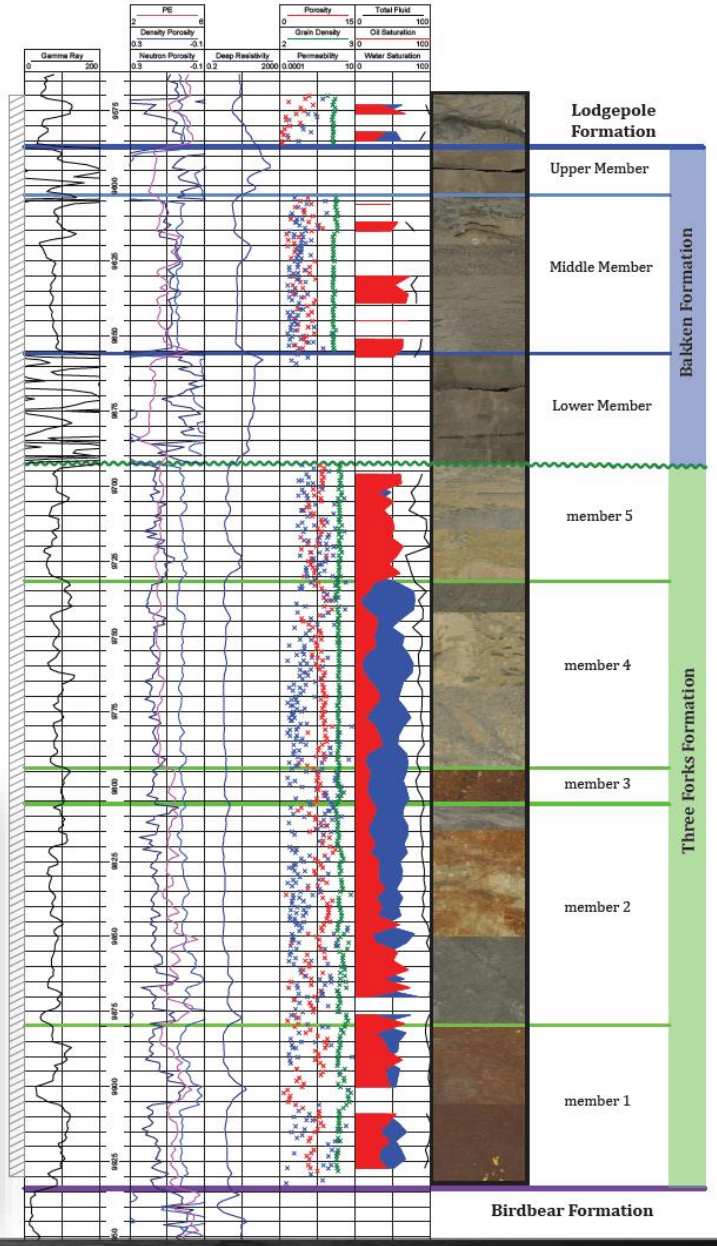
Bakken & Three Forks Formations

Bakken Formation

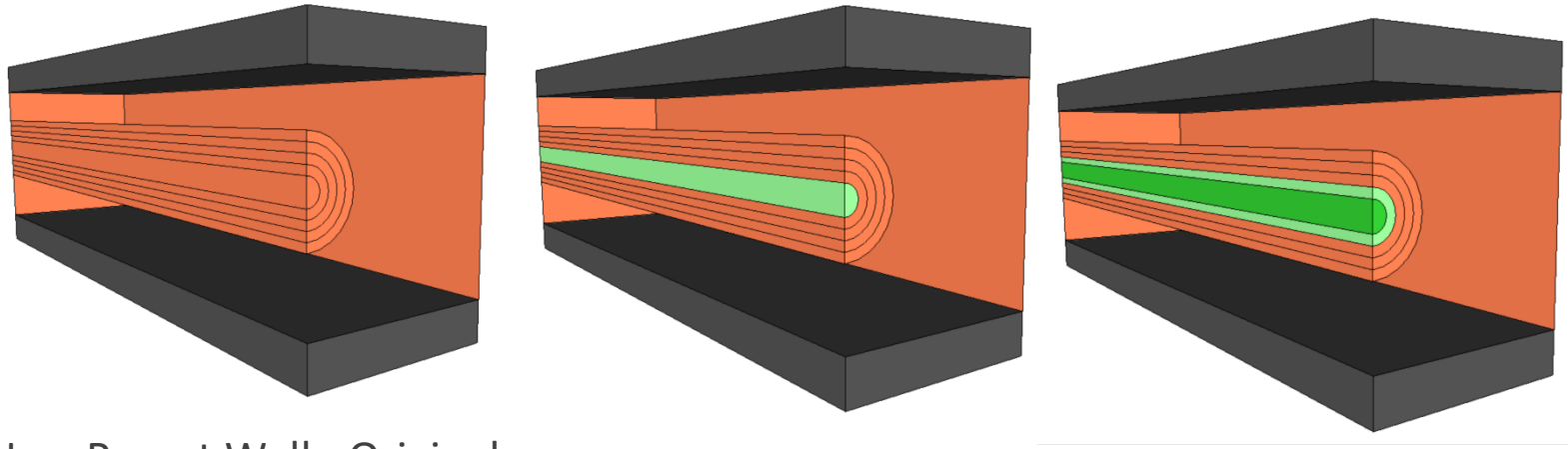


Three Forks Formation

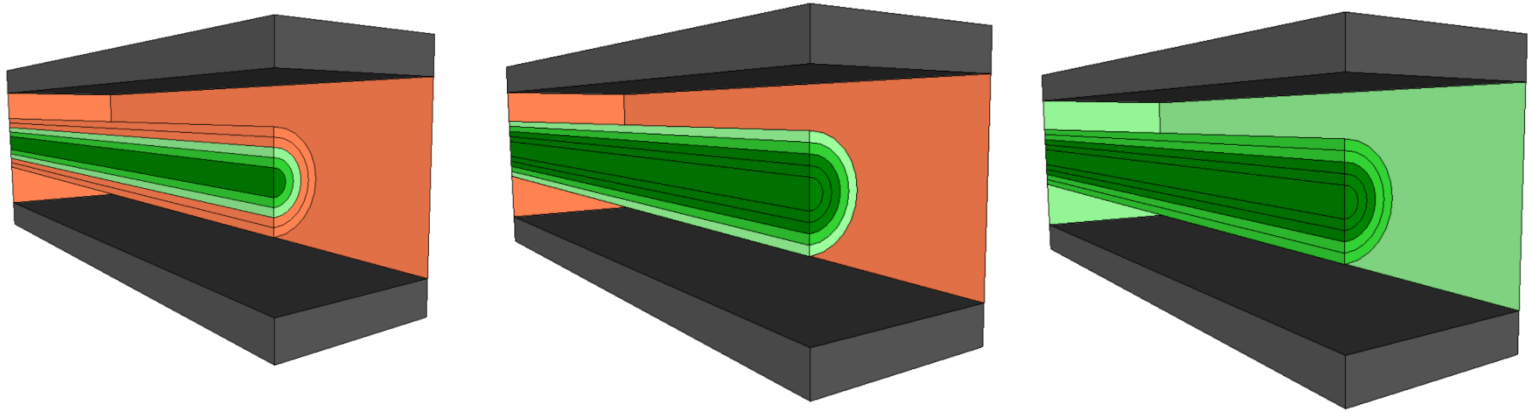




Statewide Bakken Gas/Oil Ratios



New Parent Well - Original Reservoir Pressure



Future – Entire Reservoir Below Bubble Point

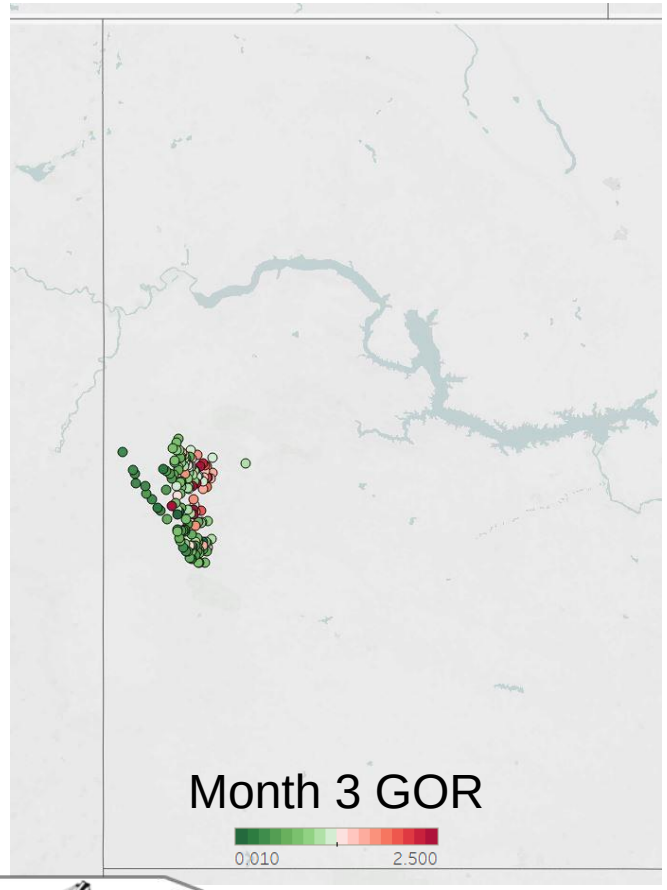
Bubble Point Pressure

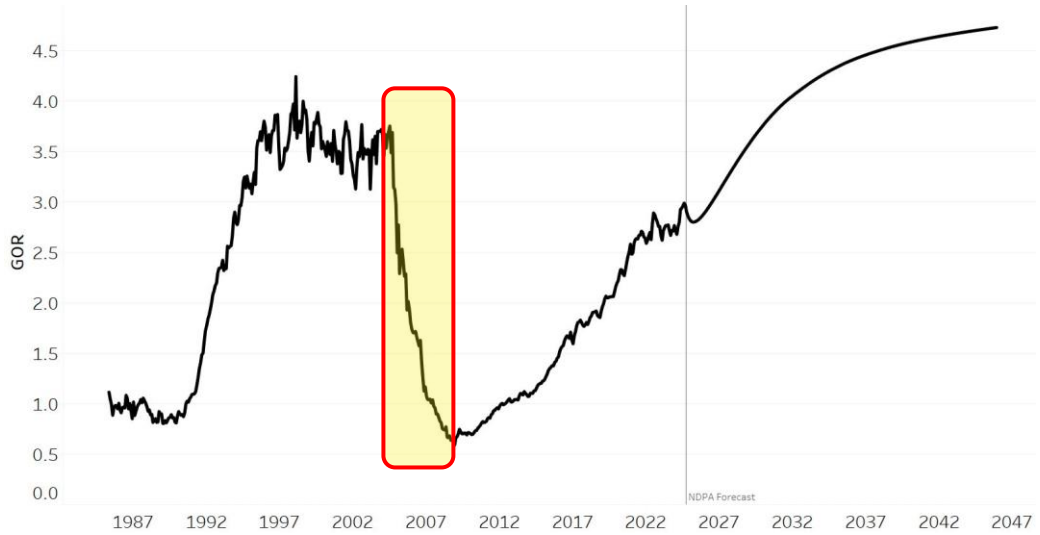
High Reservoir Pressure

Low Reservoir Pressure

The GOR “Reset” and Forward Expectations

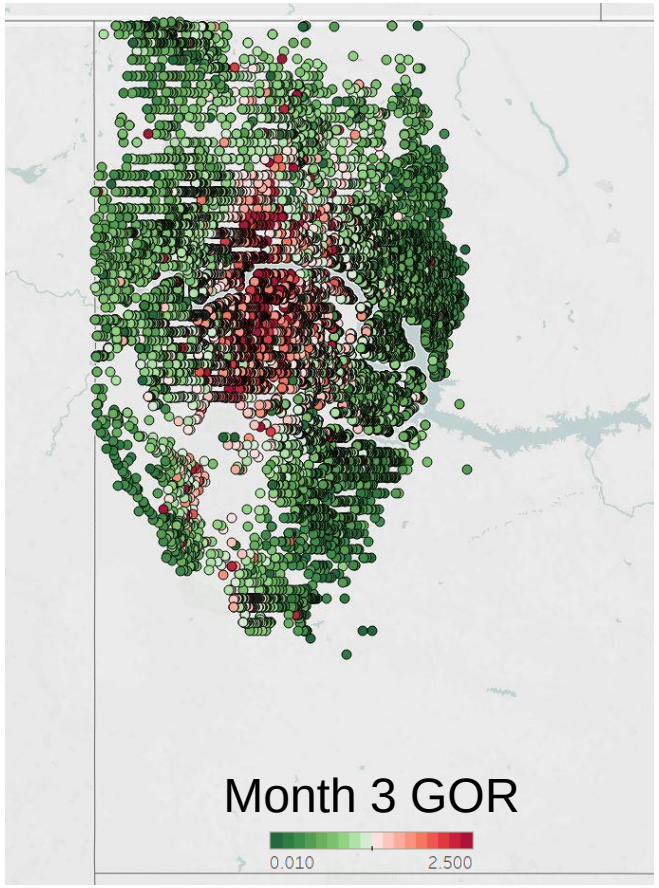
Bakken GOR settles around ~3.6 from 1990’s Bakken development in what is now considered “fringe” acreage



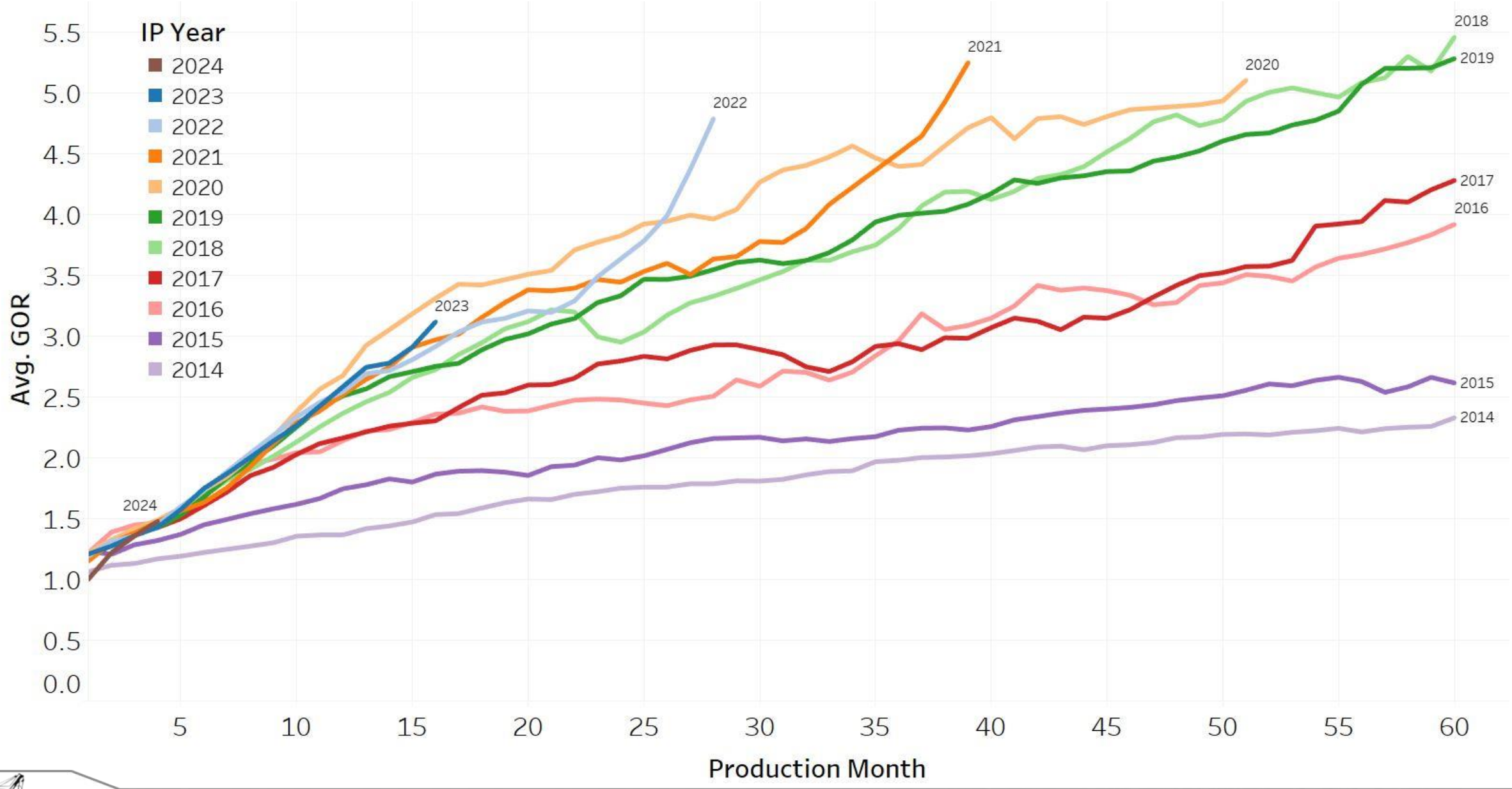


Mid-2000’s: Modern Bakken development begins and statewide average GOR is “reset” with large volumes of new gas production

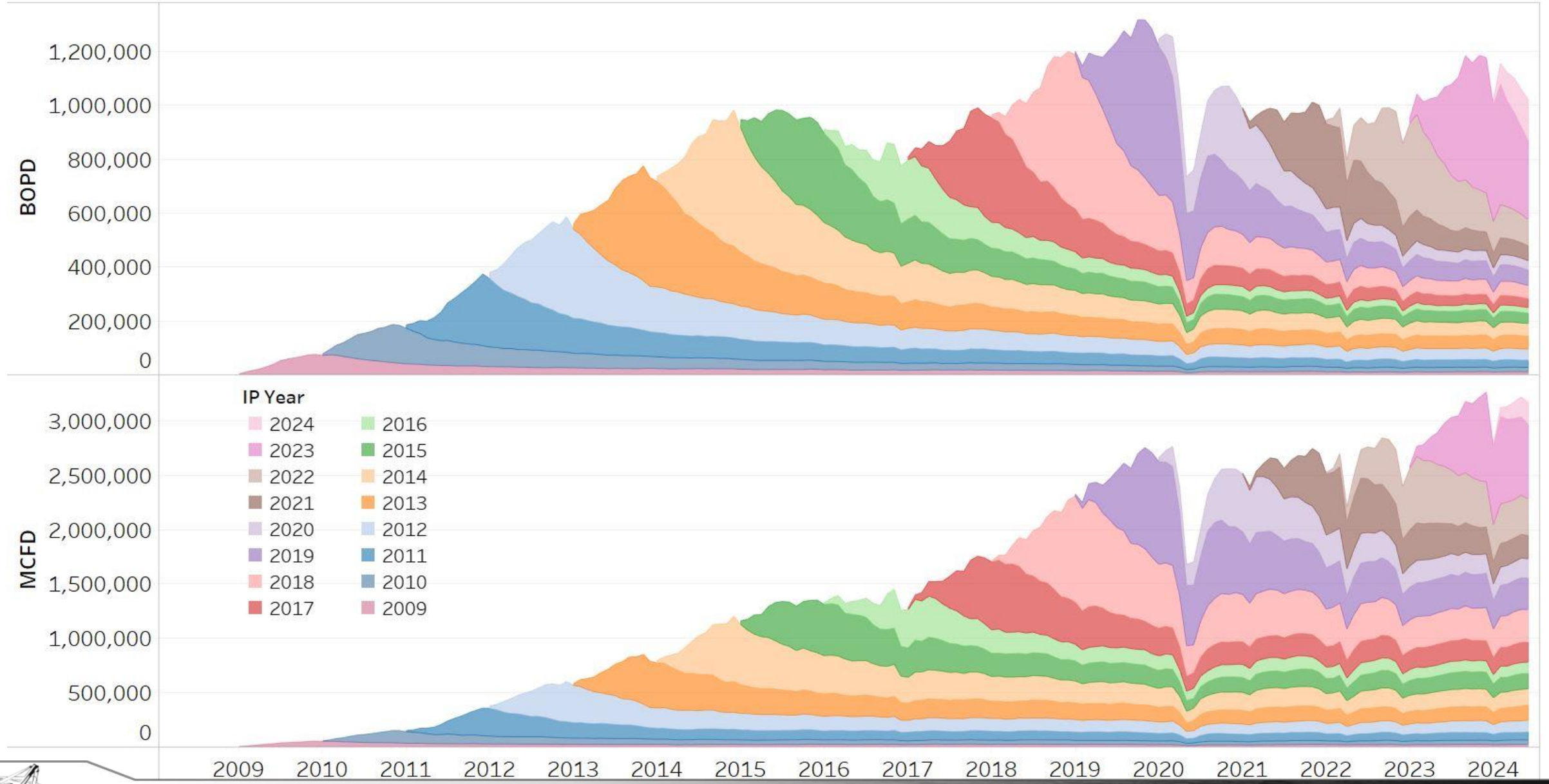
Future GOR will be driven by widespread development including deeper/hotter acreage with higher initial and sustained reservoir GOR



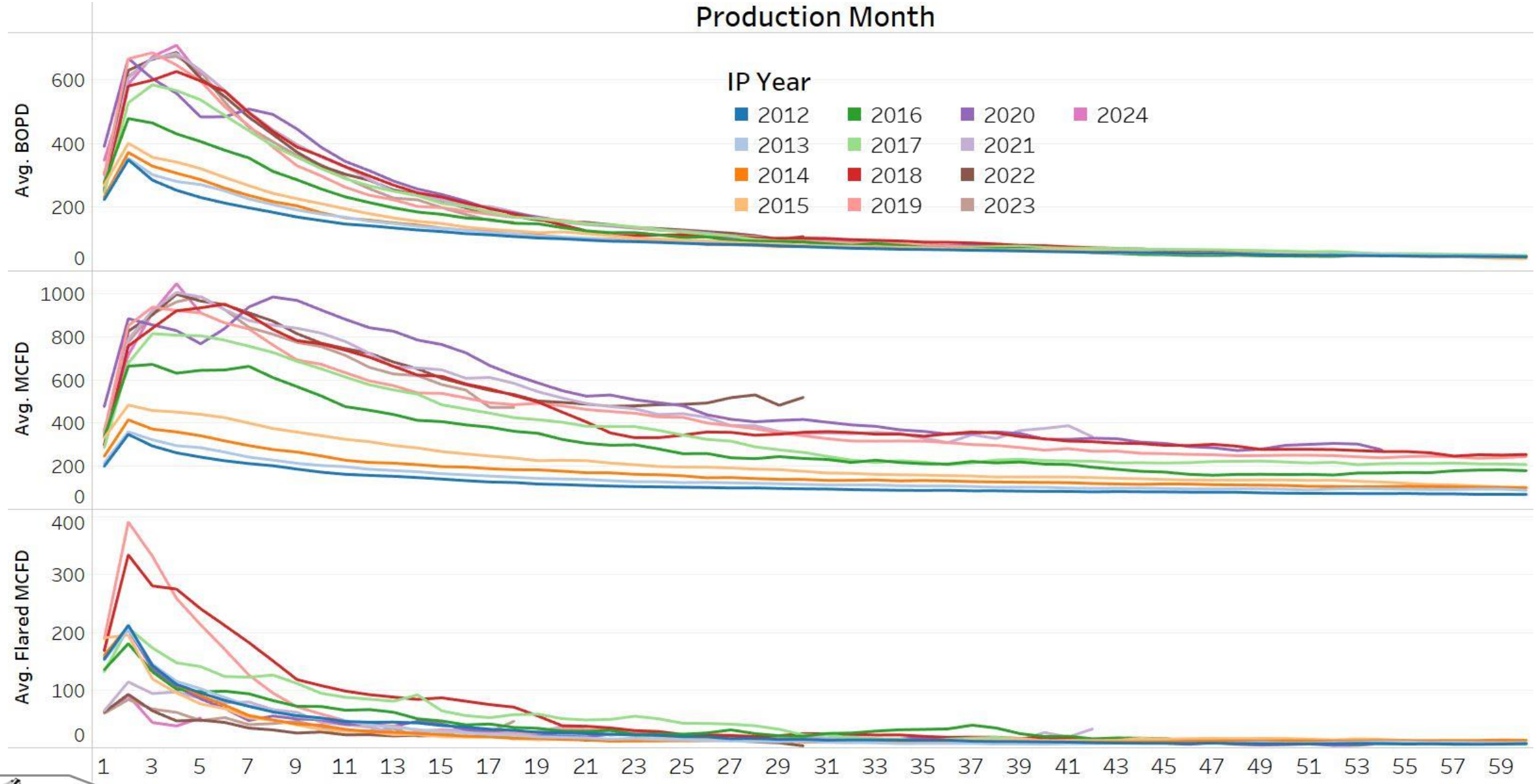
Statewide Bakken Gas/Oil Ratios



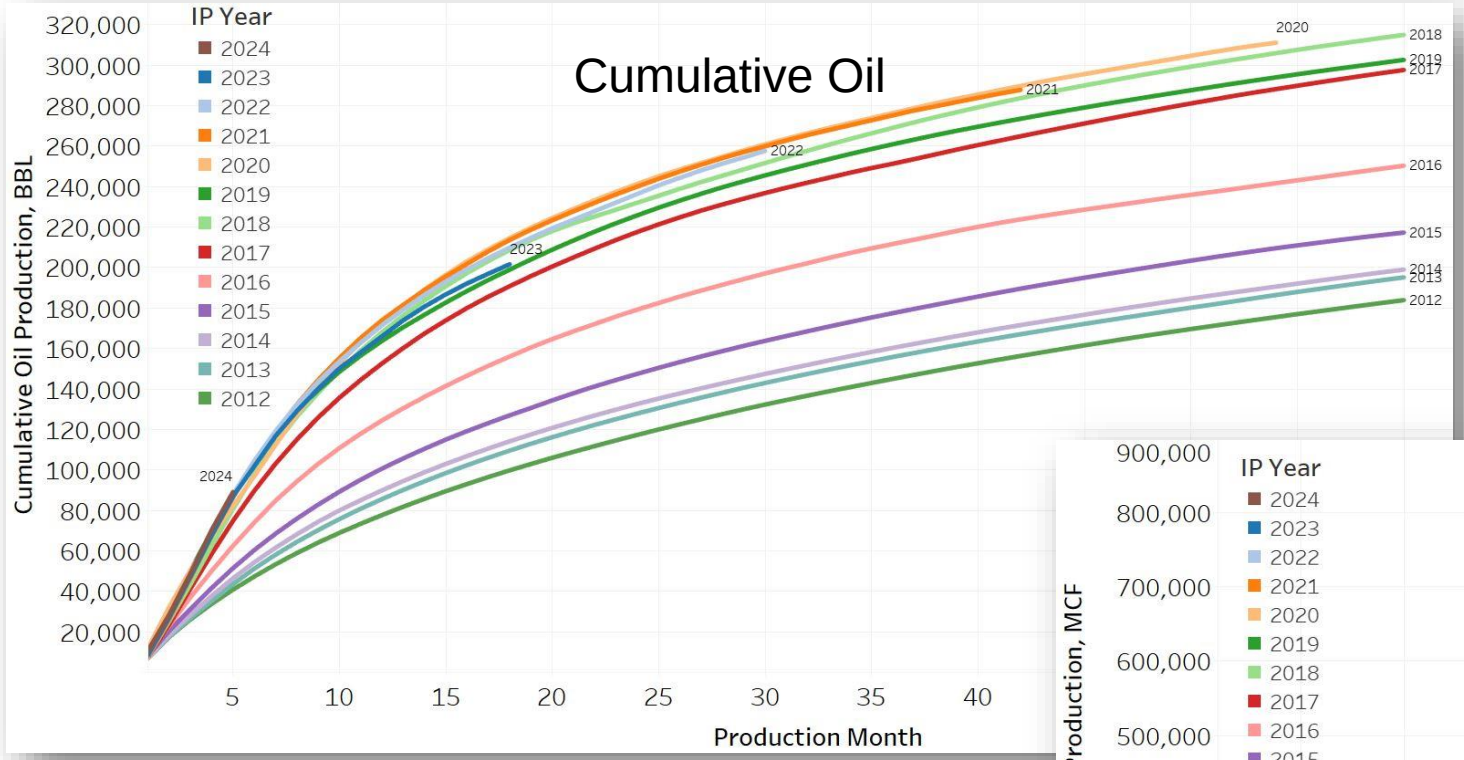
Bakken Base Decline By Well Vintage

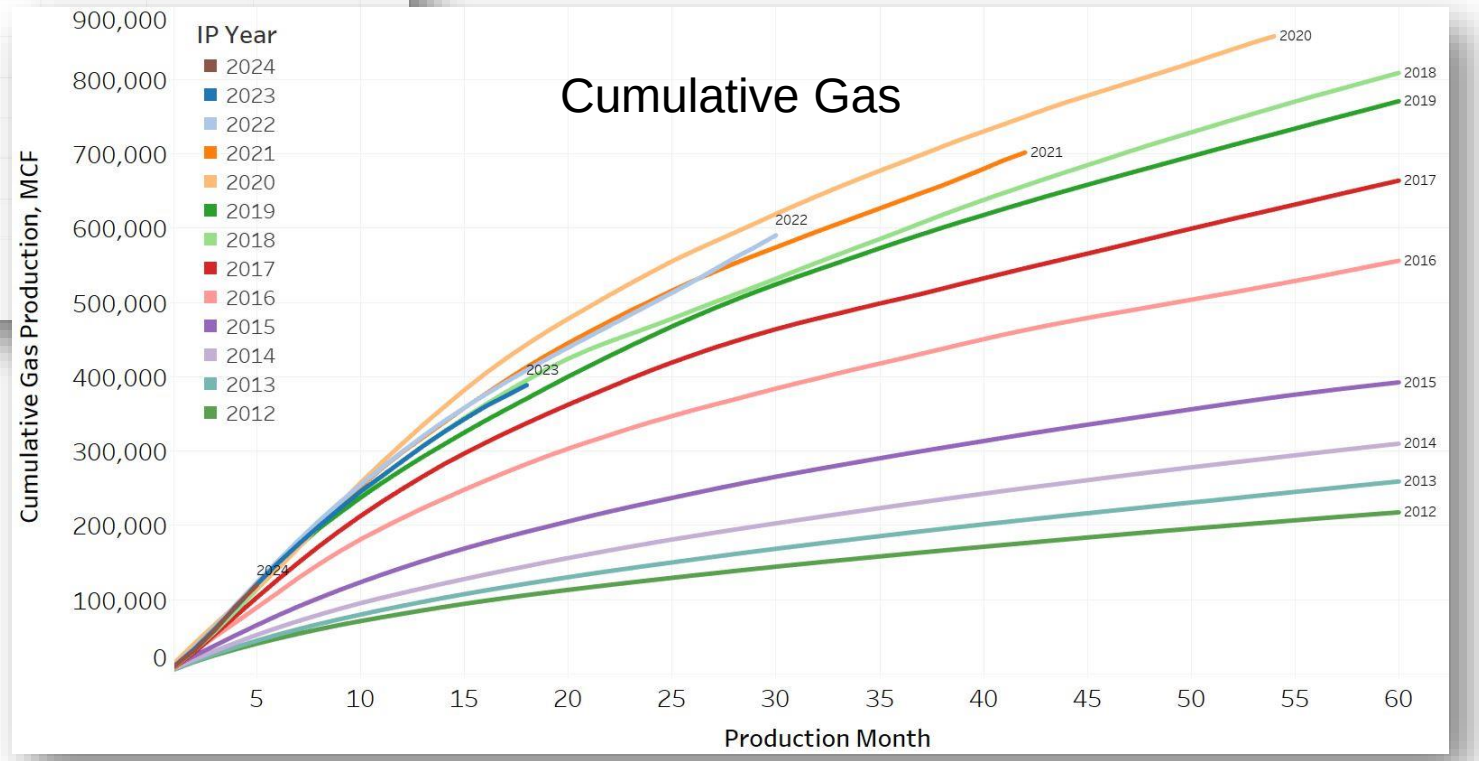


Statewide Bakken Production

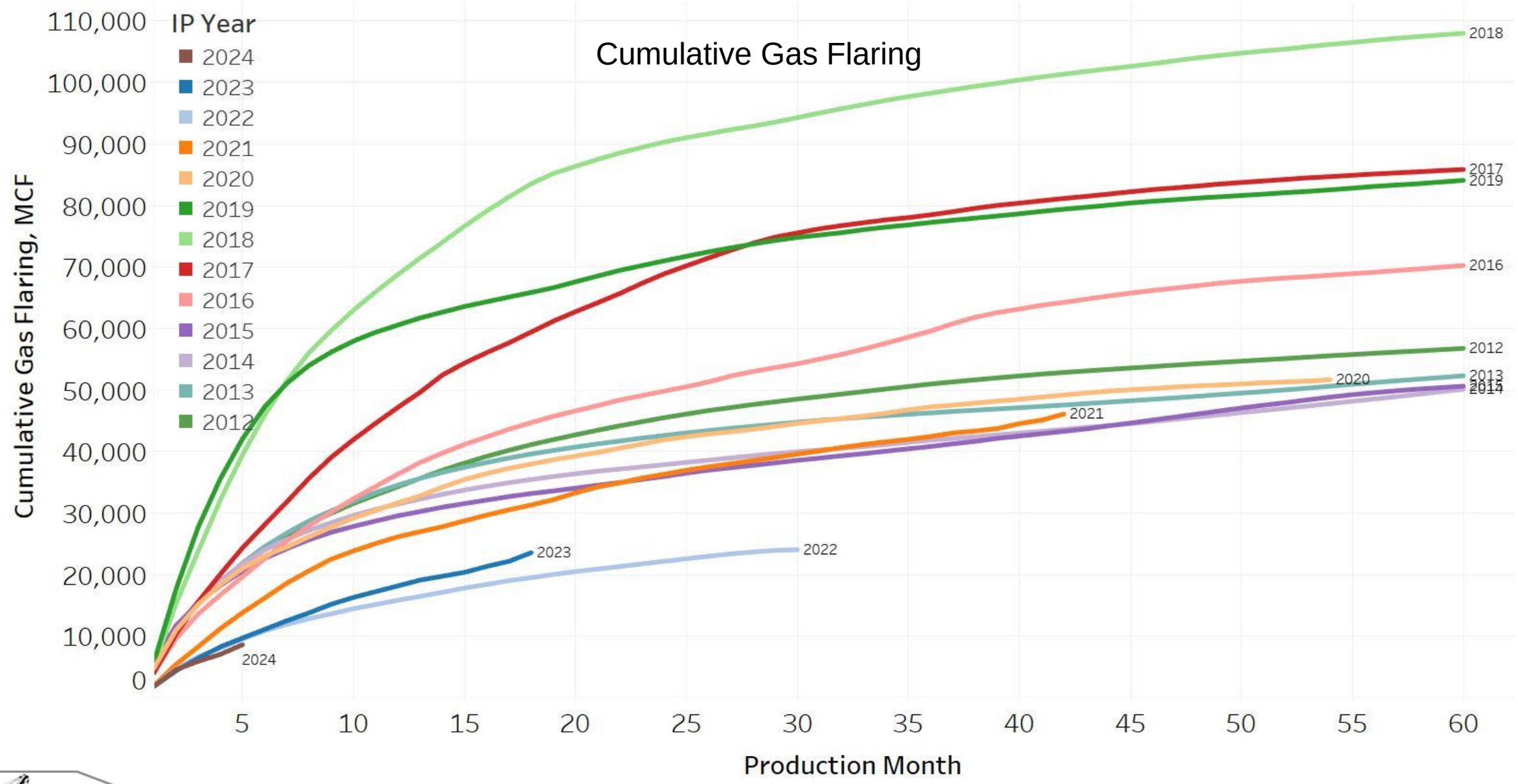


Statewide Bakken Production

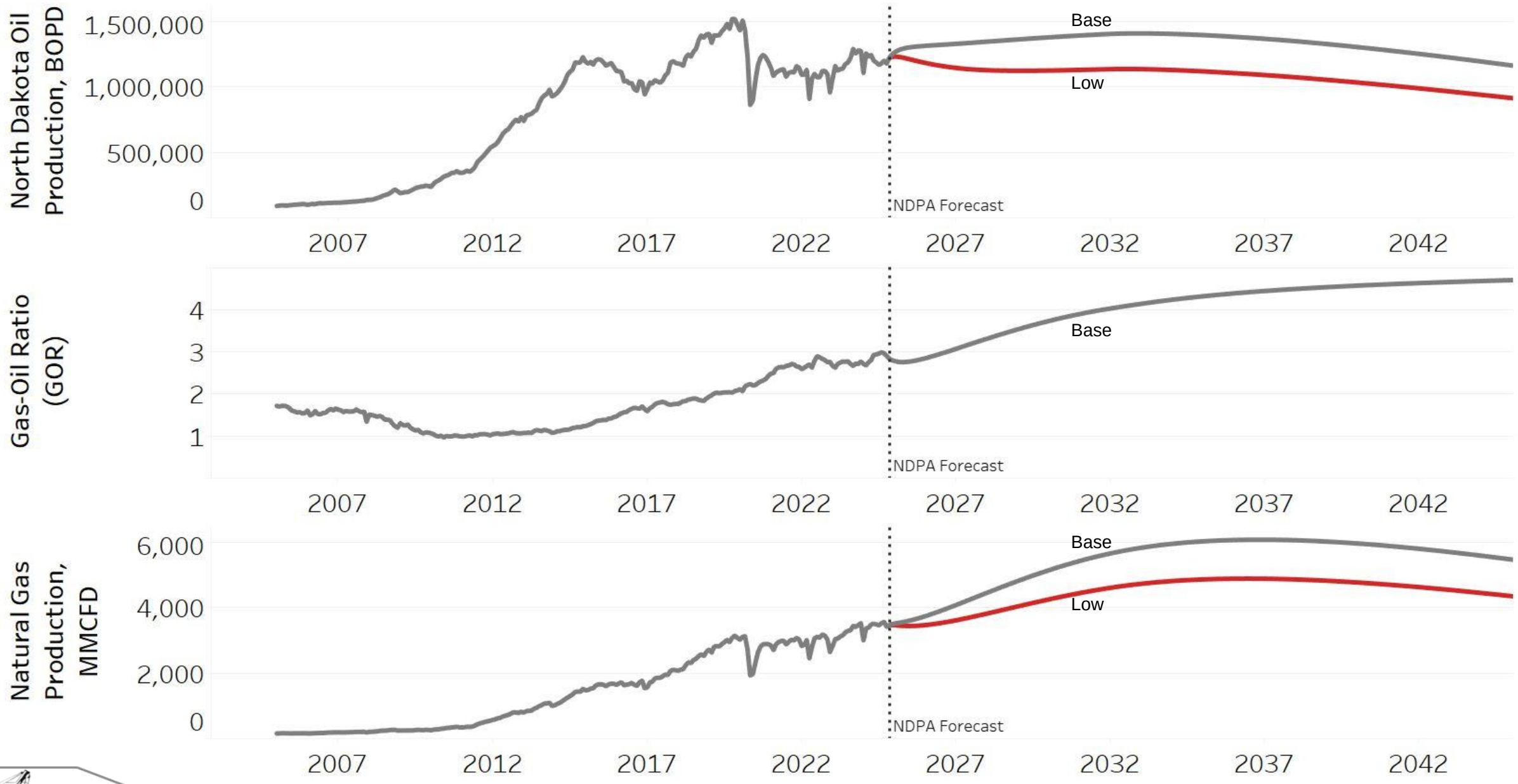




Record Low Gas Flaring



ND Production Forecast: EIA Price Deck



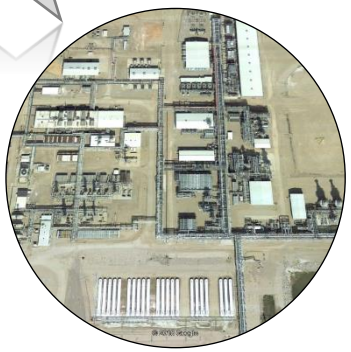
A Complete Natural Gas Solution

Production

- Technology
- Markets

Gathering

- Capacity
- Connections



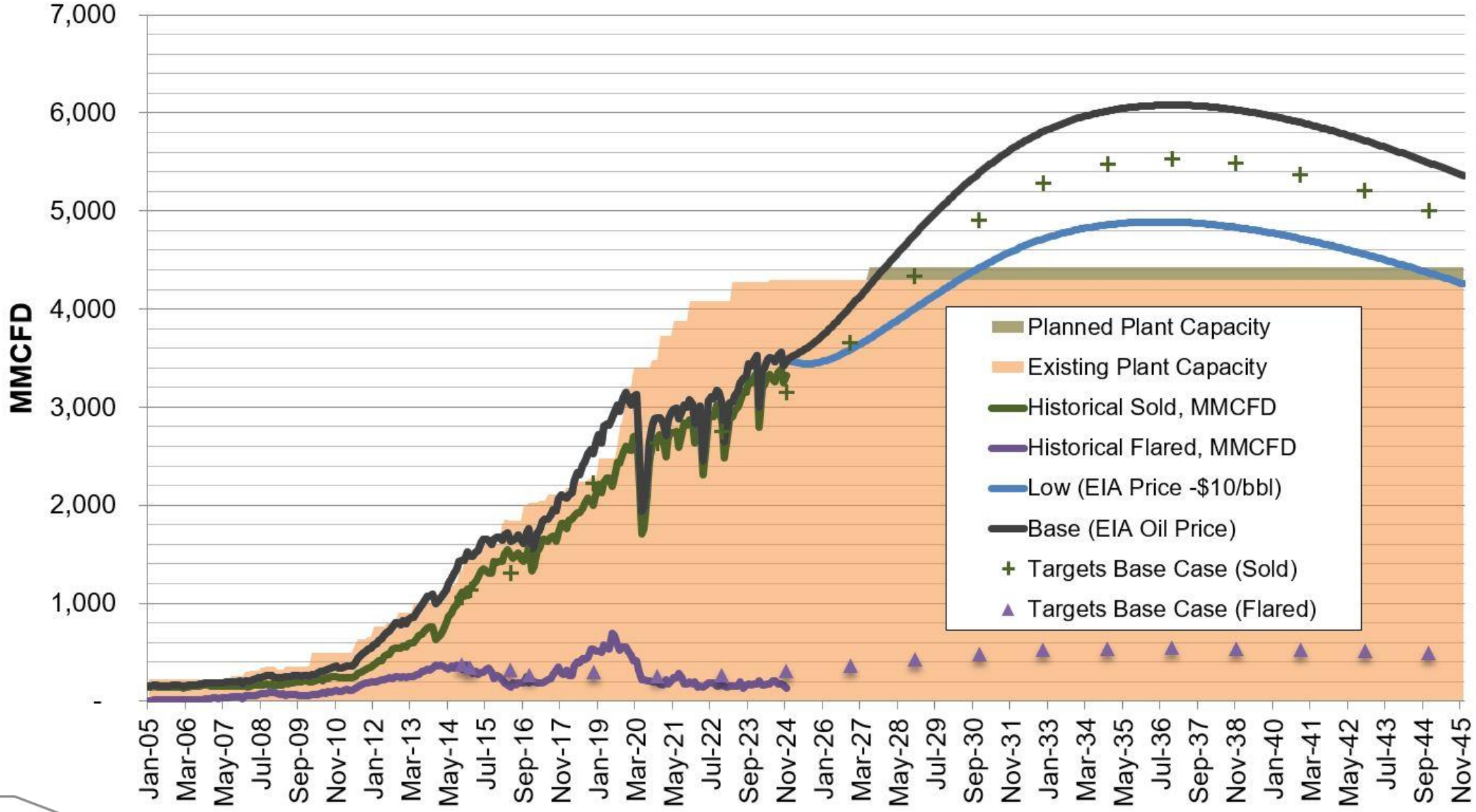
Processing

- Capacity
- Location

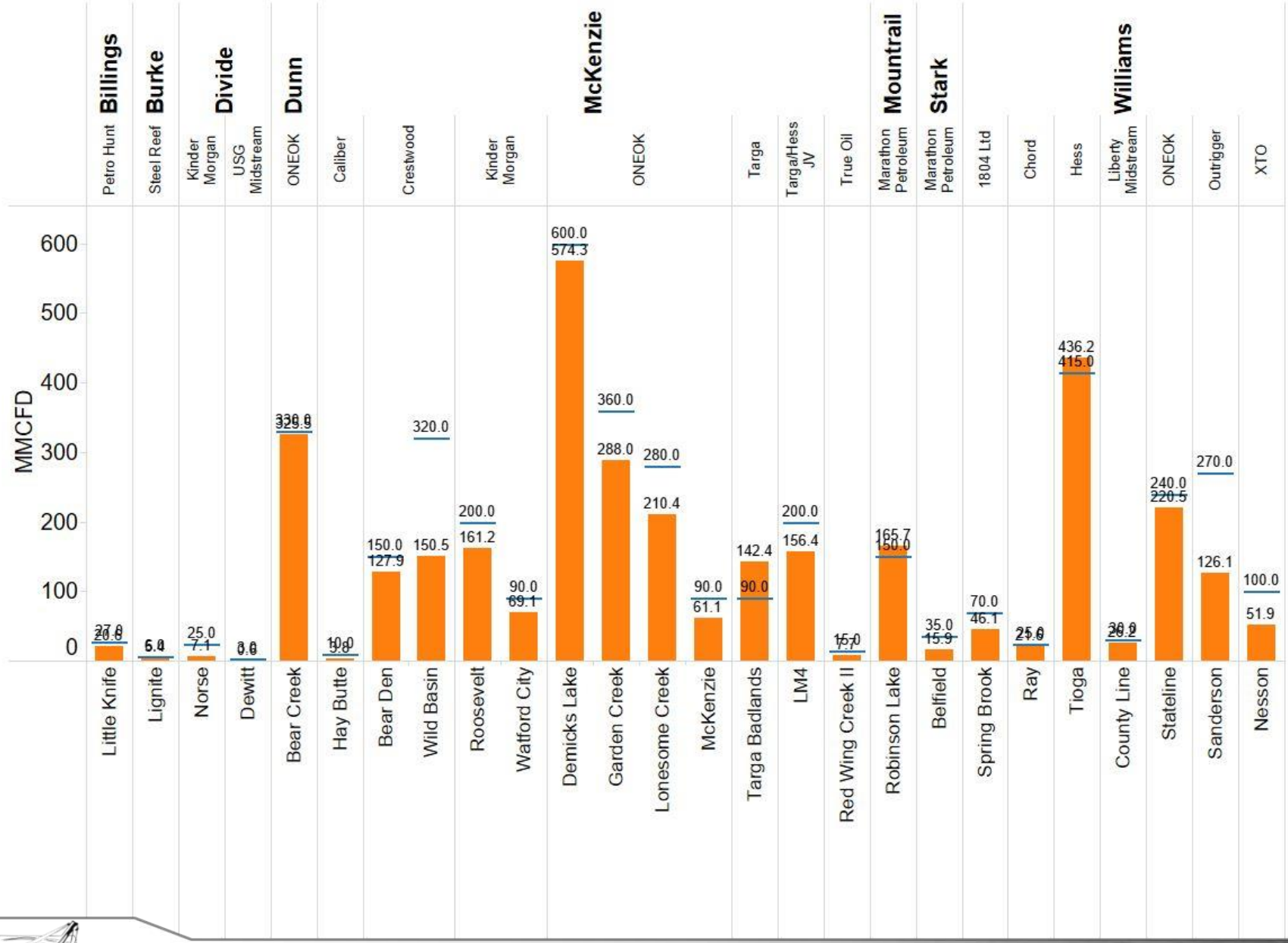
Transmission

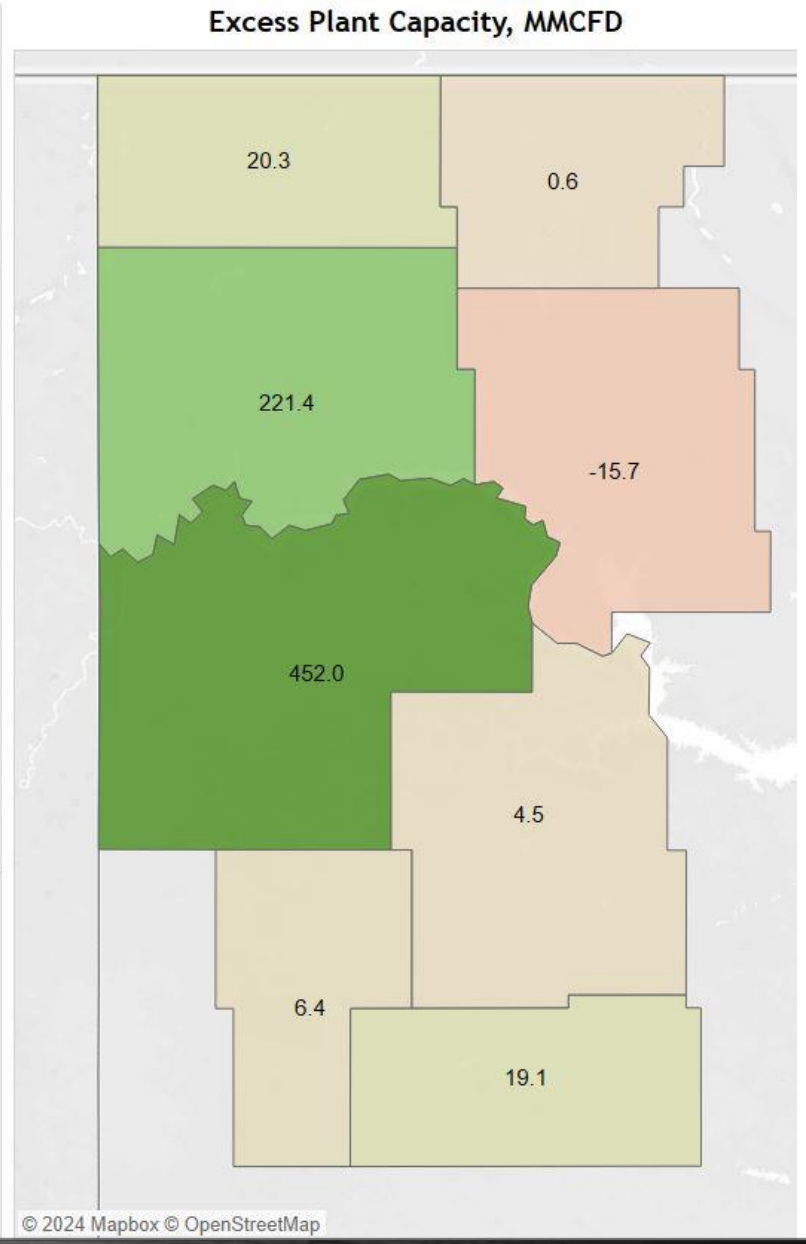
- Dry Gas
- Natural Gas Liquids

North Dakota Gas Processing Outlook



Gas Plant Intake Volumes & Capacity*





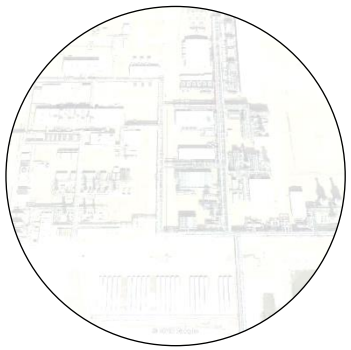
A Complete Natural Gas Solution

Production

- Technology
- Markets

Gathering

- Capacity
- Connections



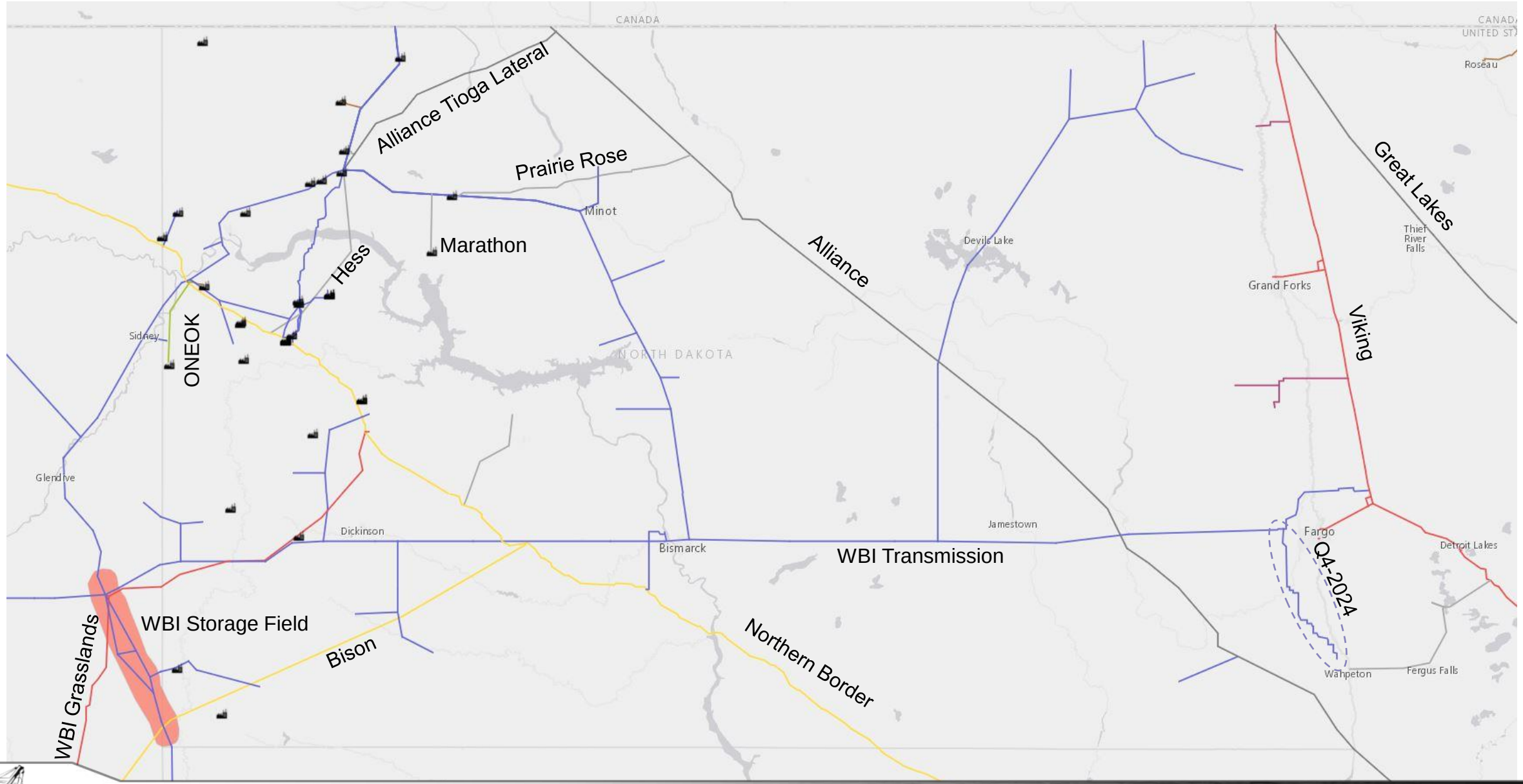
Processing

- Capacity
- Location

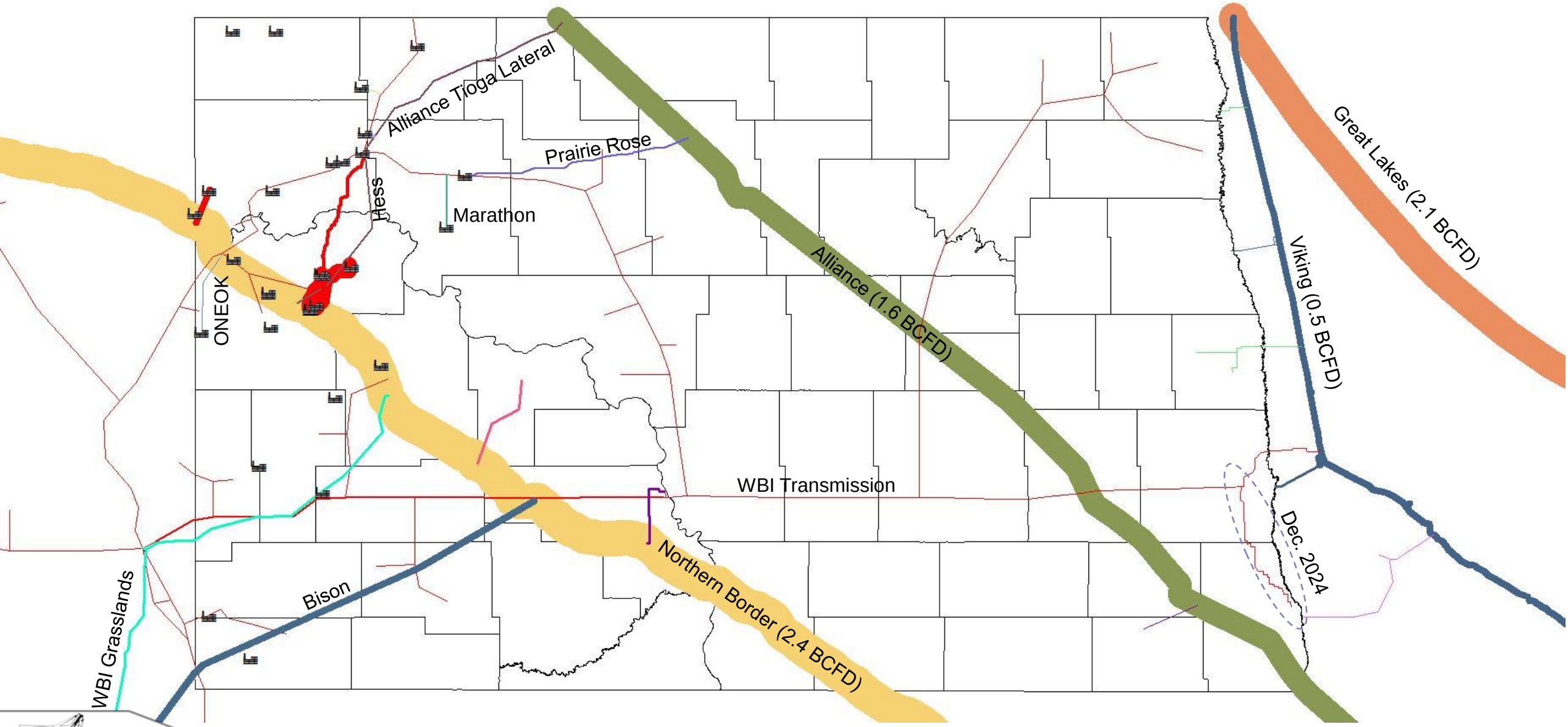
Transmission

- Dry Gas
- Natural Gas Liquids
- Storage

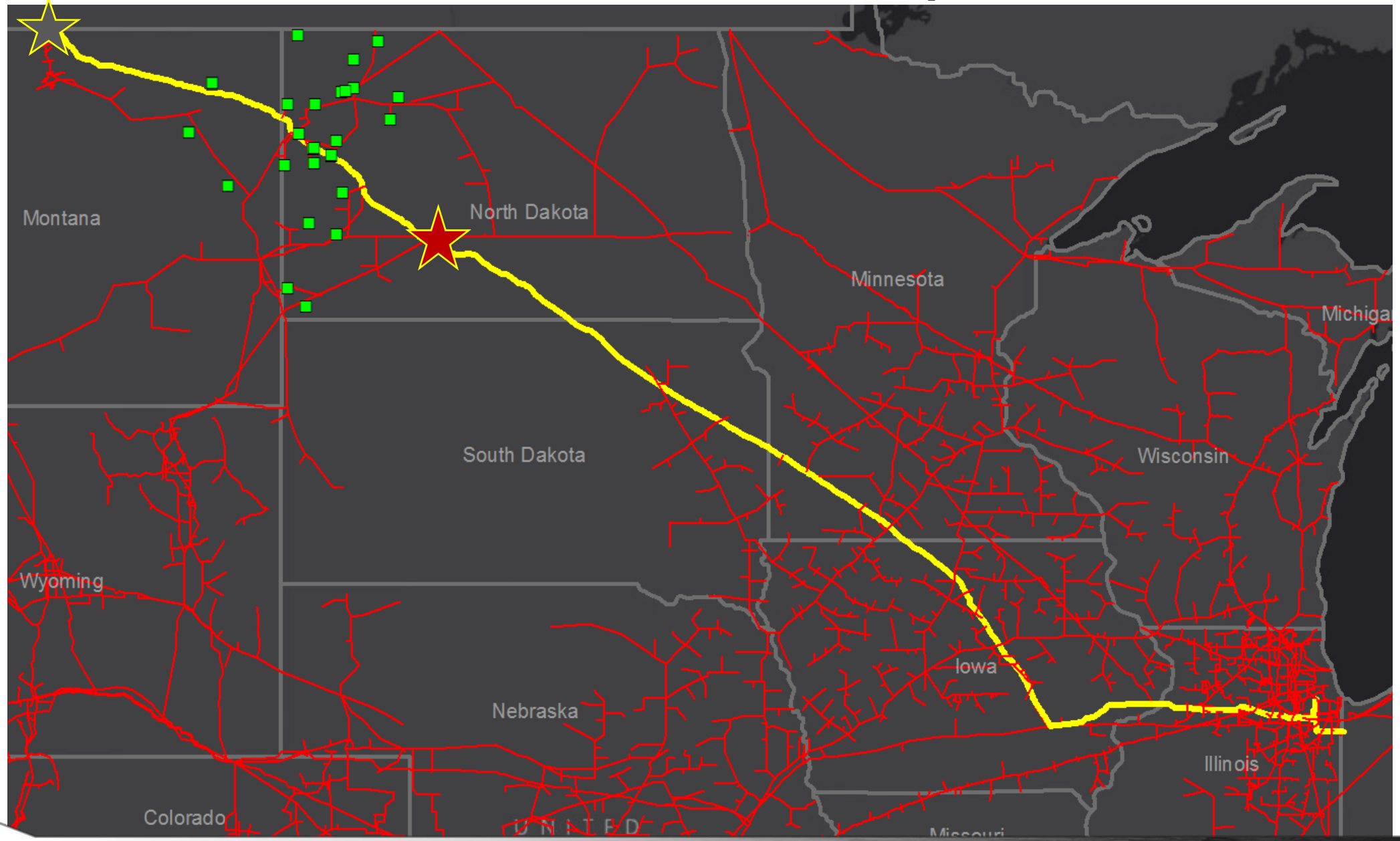
Major Residue Gas Pipeline Infrastructure



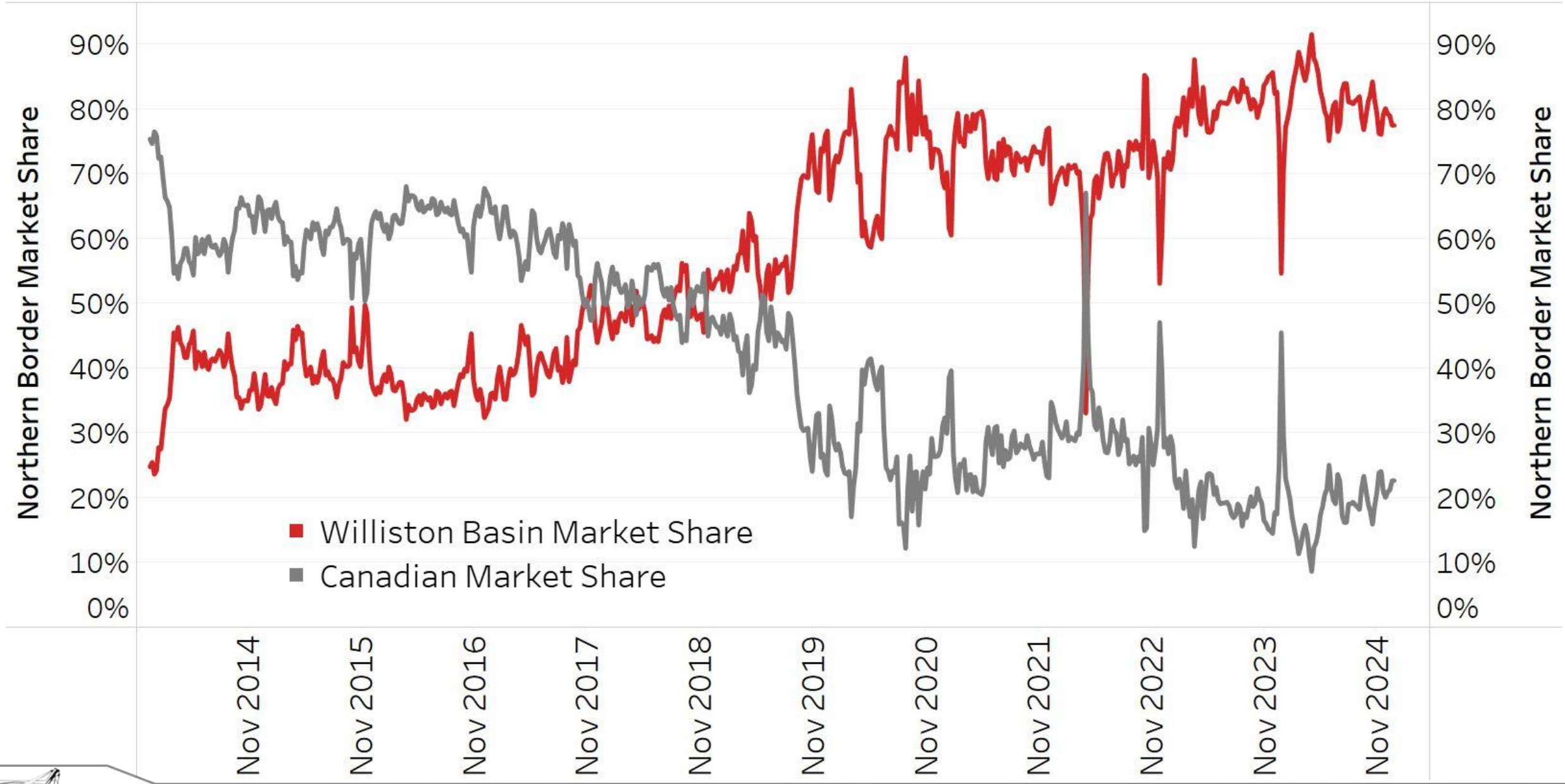
Residue Gas Pipeline Capacity Visualization



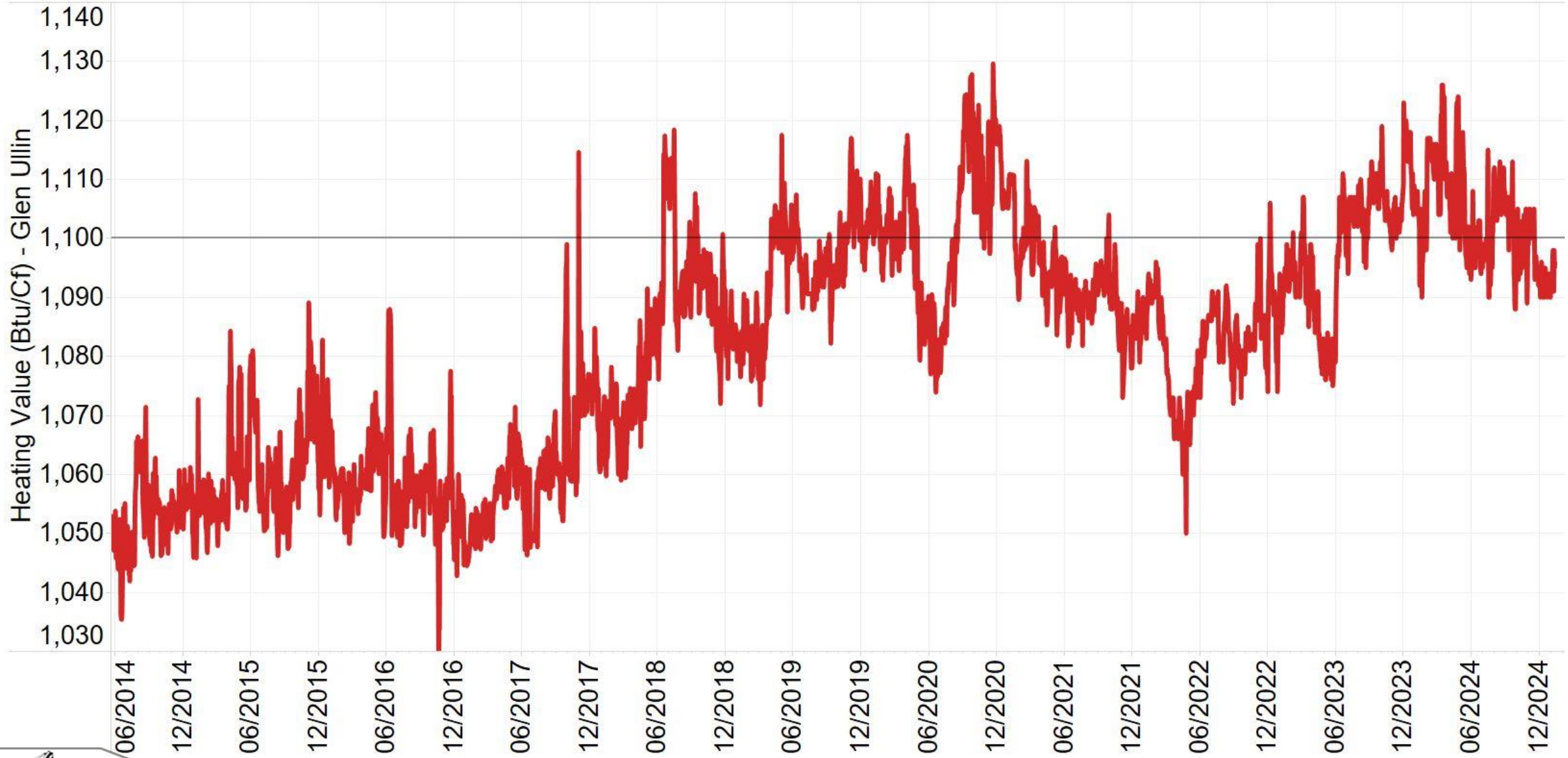
Northern Border Pipeline



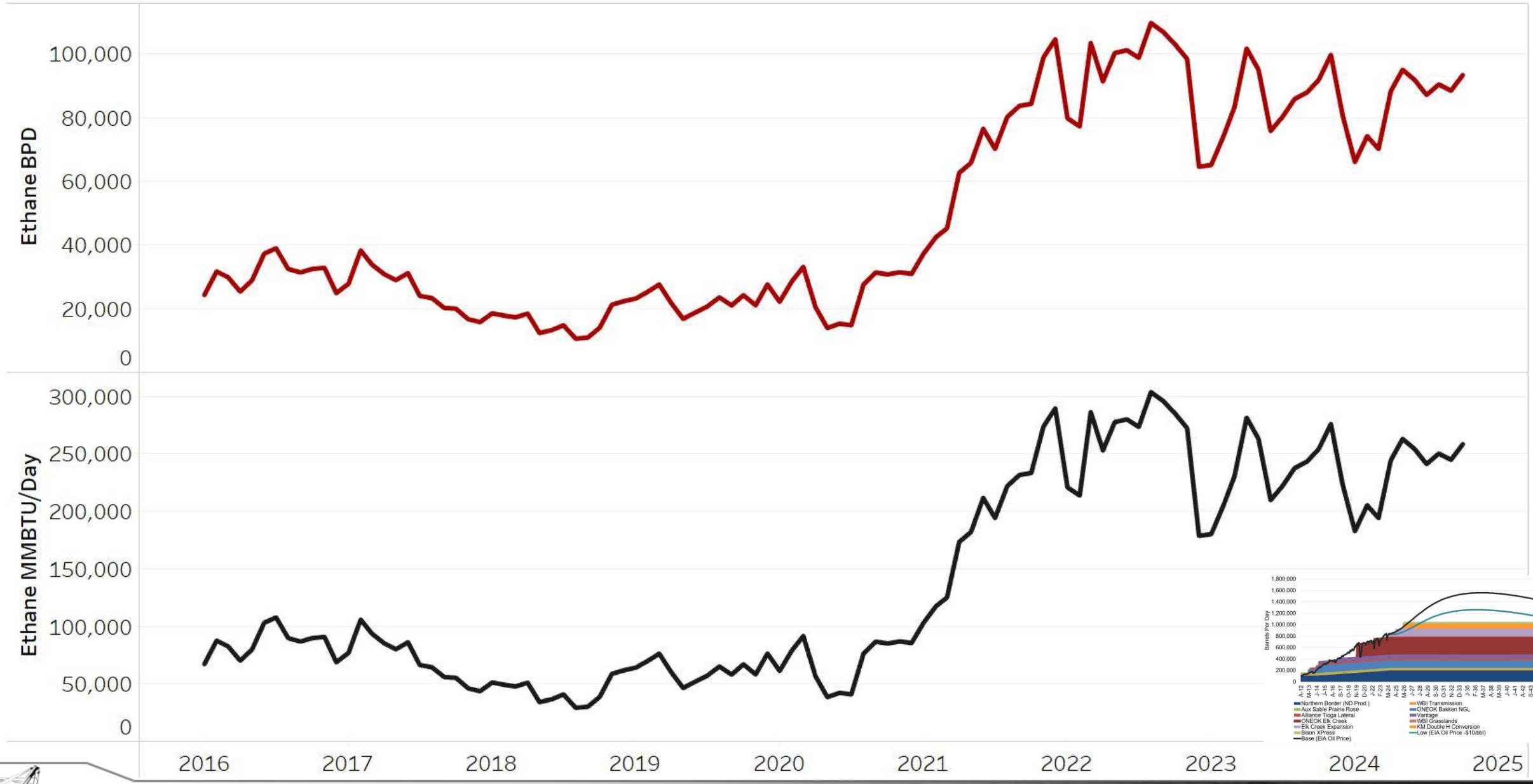
Northern Border Pipeline Market Share



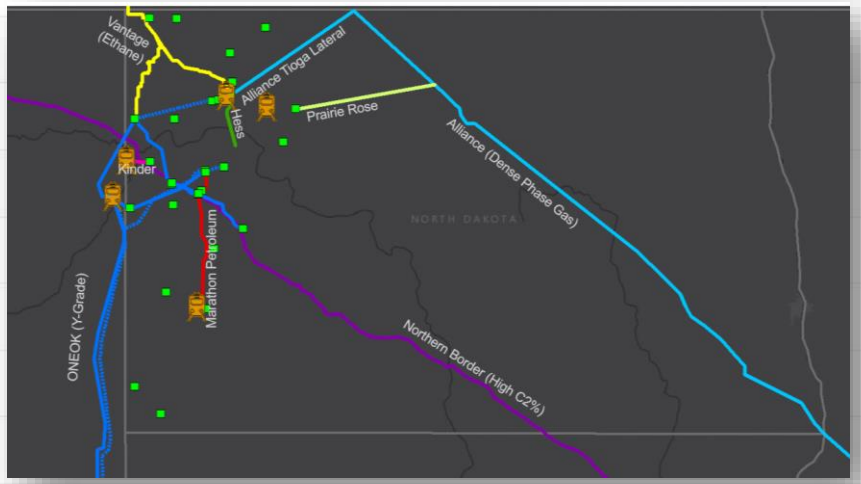
Northern Border BTU at Glen Ullin, ND



Rockies NGL Pipes Driving Down NB BTU & Market Share



PADD II to PADD IV NGL Pipeline Flows



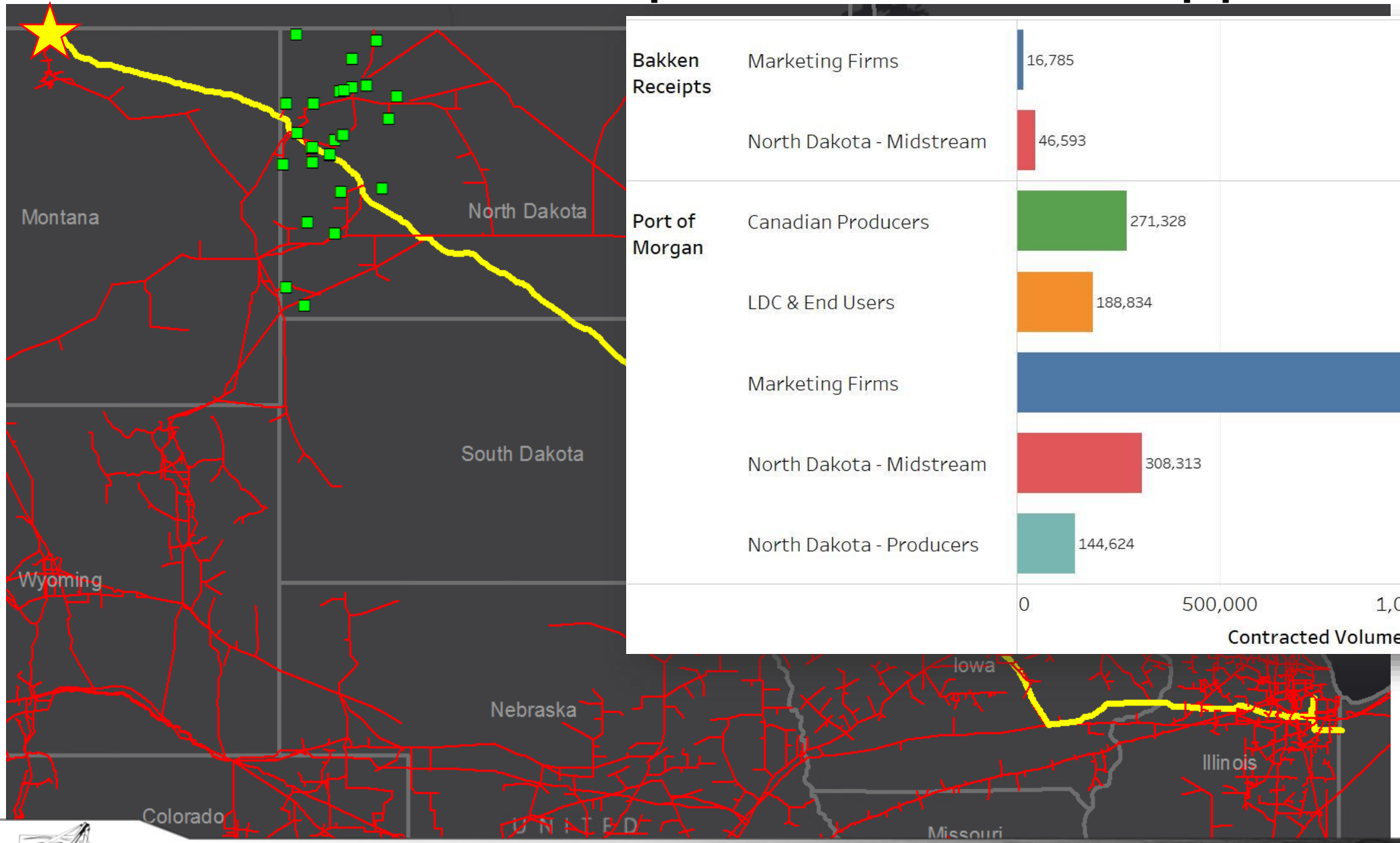
Barrels Per Day

160,000
150,000
140,000
130,000
120,000
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0

Propane
Ethane
Normal Butane
Natural Gasoline
Isobutane

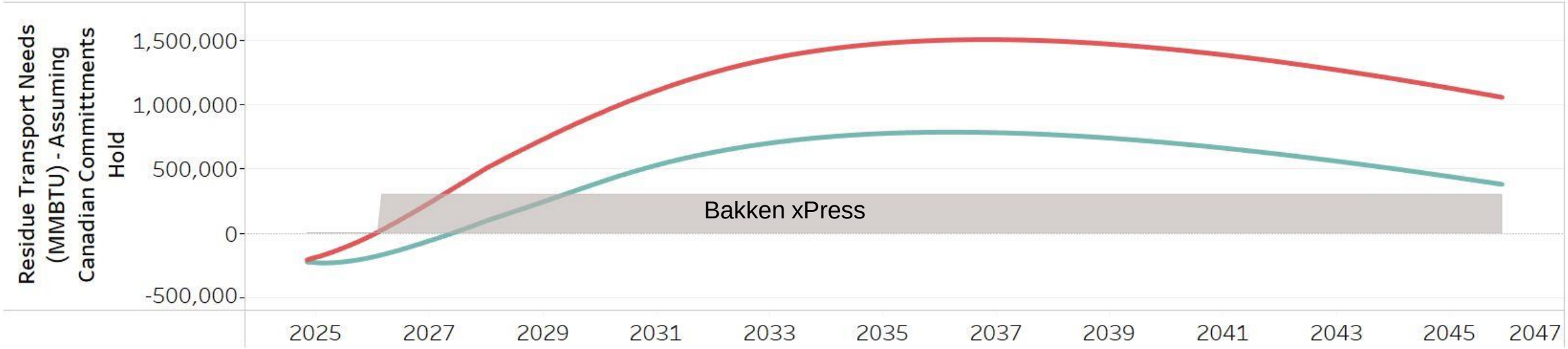
2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026

Northern Border Pipeline P.O.M. Shipper Mix: 2024

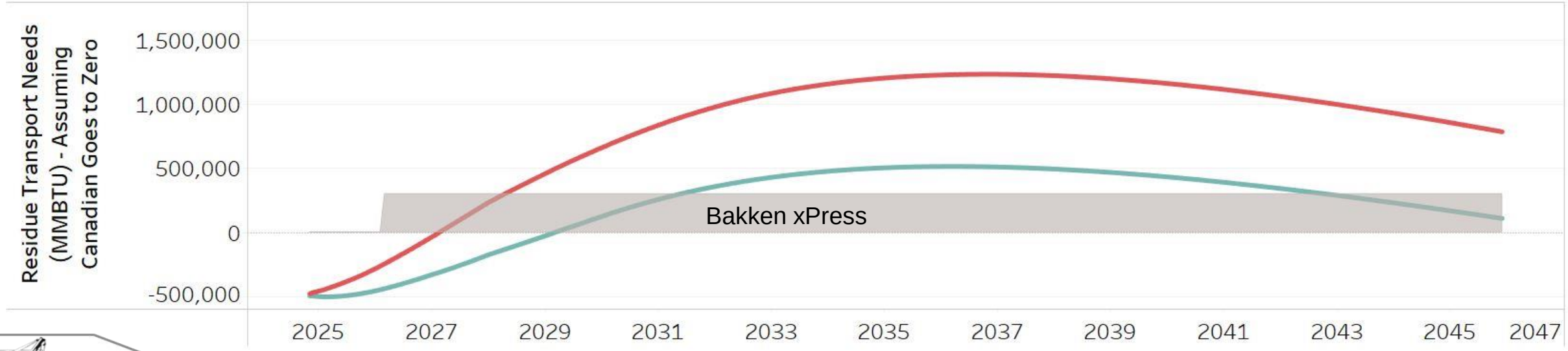


Residue Capacity Needs : **Glen Ullin 1,100 BTU**

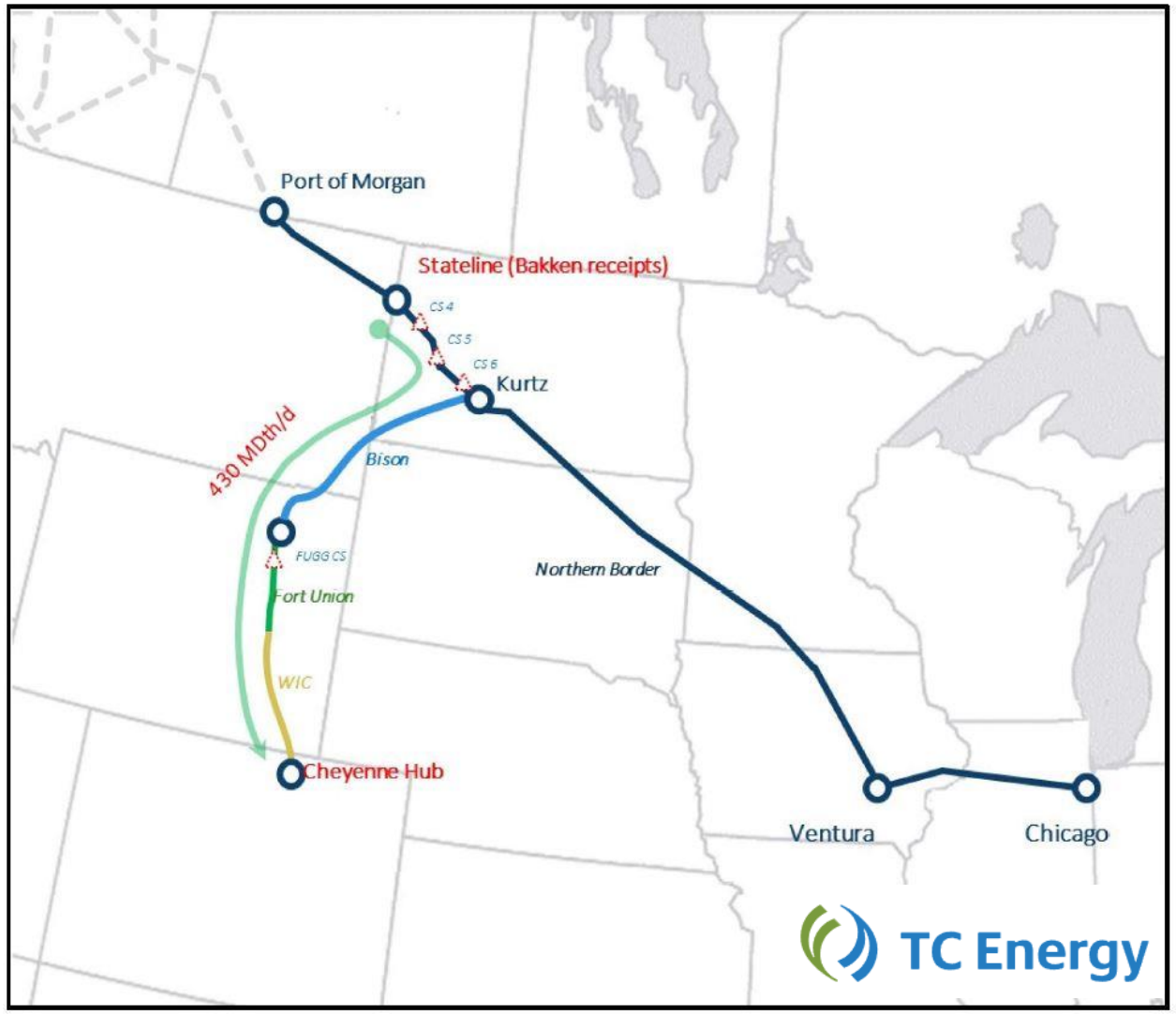
Residue Capacity Need: Port of Morgan at Contract Level: Glen Ullin BTU 1,100



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



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 (430,000 Offered)
- 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
- $555 million: $347 Replacement/$208 Expansion

Proposed 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

Options Beyond 2026: The 5 “C’s”

Construction (Interstate)

- Long-haul Pipe to New or Expanded Markets

Compete

- Price Canadian Volumes to Flow Elsewhere

Compression

- Increase Capacity on Existing Interstate Systems

Consumption

- Intra Region Gas Demand Expansion

Contraction

- Reduce E&P Activity to Meet Limited Gas Options

Options Beyond 2026: The 5 “C’s”

Construction (Interstate)

- Long-haul Pipe to New or Expanded Markets

Compete

- Price Canadian Volumes to Flow Elsewhere

Compression

- Increase Capacity on Existing Interstate Systems

Consumption

- Intra Region Gas Demand Expansion

Contraction

- Reduce E&P Activity to Meet Limited Gas Options

WBI Energy: Proposed Bakken East Project

Natural Gas Pipeline Project Highlights

- Non-binding open season Dec 16 – Jan 31, 2025
- 375 Miles: 30” & 24” Pipe
- Proposed Capacity 760,000 Dth/Day
- Phase 1 (West) : Nov 2028 targeted in-service
- Phase 1 (East) : Nov 2029 targeted in-service
- Seeking commitments 20yrs or Longer

Estimated Rates

- $0.85 to $0.90/Dth + Fuel/Electric/Commodity
- Anchor Shipper Minimum: 100,000 Dth/Day
- Foundation Shipper Minimum: 250,000 Dth/Day

Driving Forces for New Gas Pipelines

Supply Push

Demand Pull

System Reliability/Security

Who Signs Up For Project Capacity?

Shippers

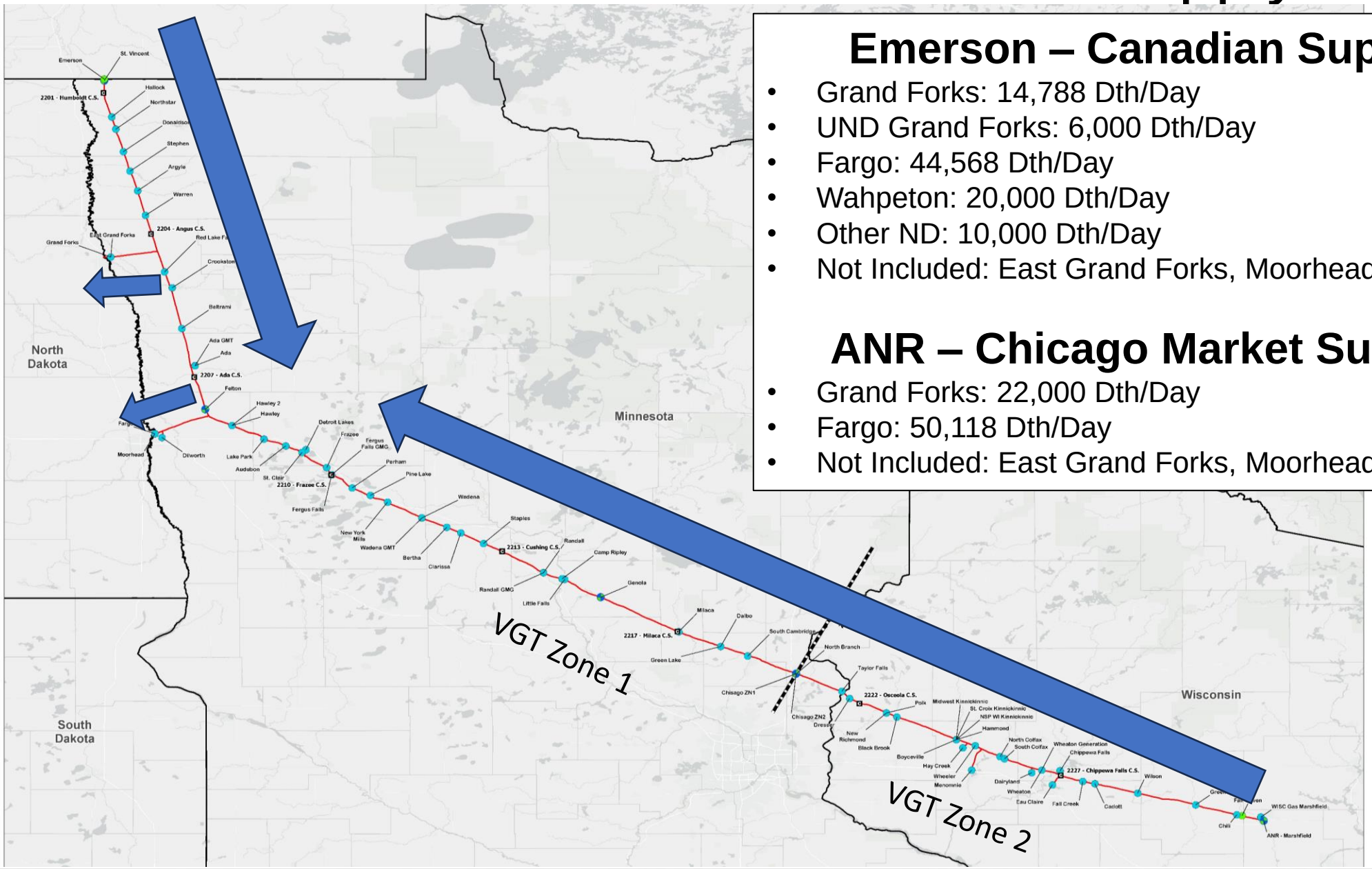
Producers/Midstream

Marketing Firms

Industrial Consumers/LDC

State of North Dakota (PA/IC)

Current Eastern North Dakota Gas Supply



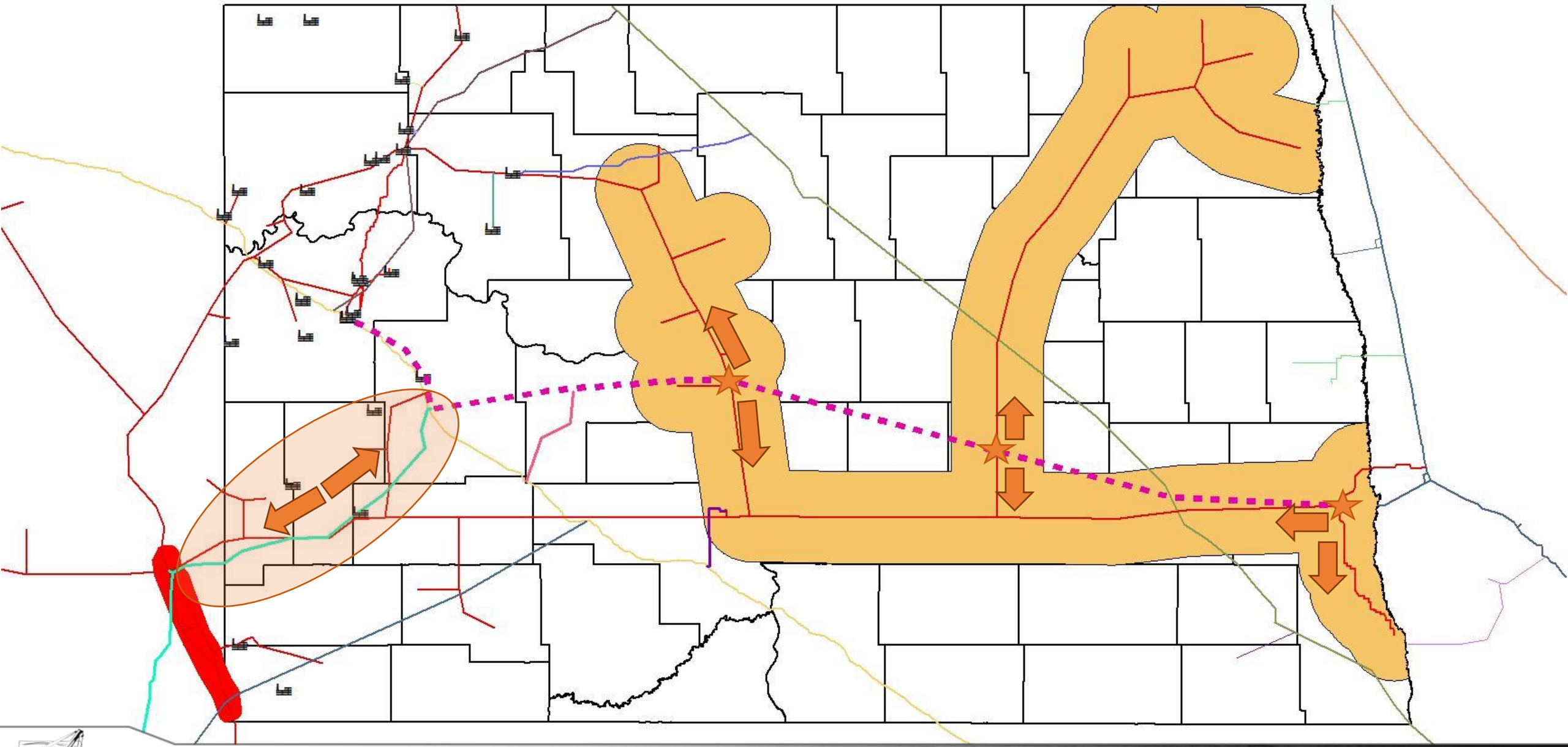
Emerson – Canadian Supply

- Grand Forks: 14,788 Dth/Day
- UND Grand Forks: 6,000 Dth/Day
- Fargo: 44,568 Dth/Day
- Wahpeton: 20,000 Dth/Day
- Other ND: 10,000 Dth/Day
- Not Included: East Grand Forks, Moorhead, Etc.

ANR – Chicago Market Supply

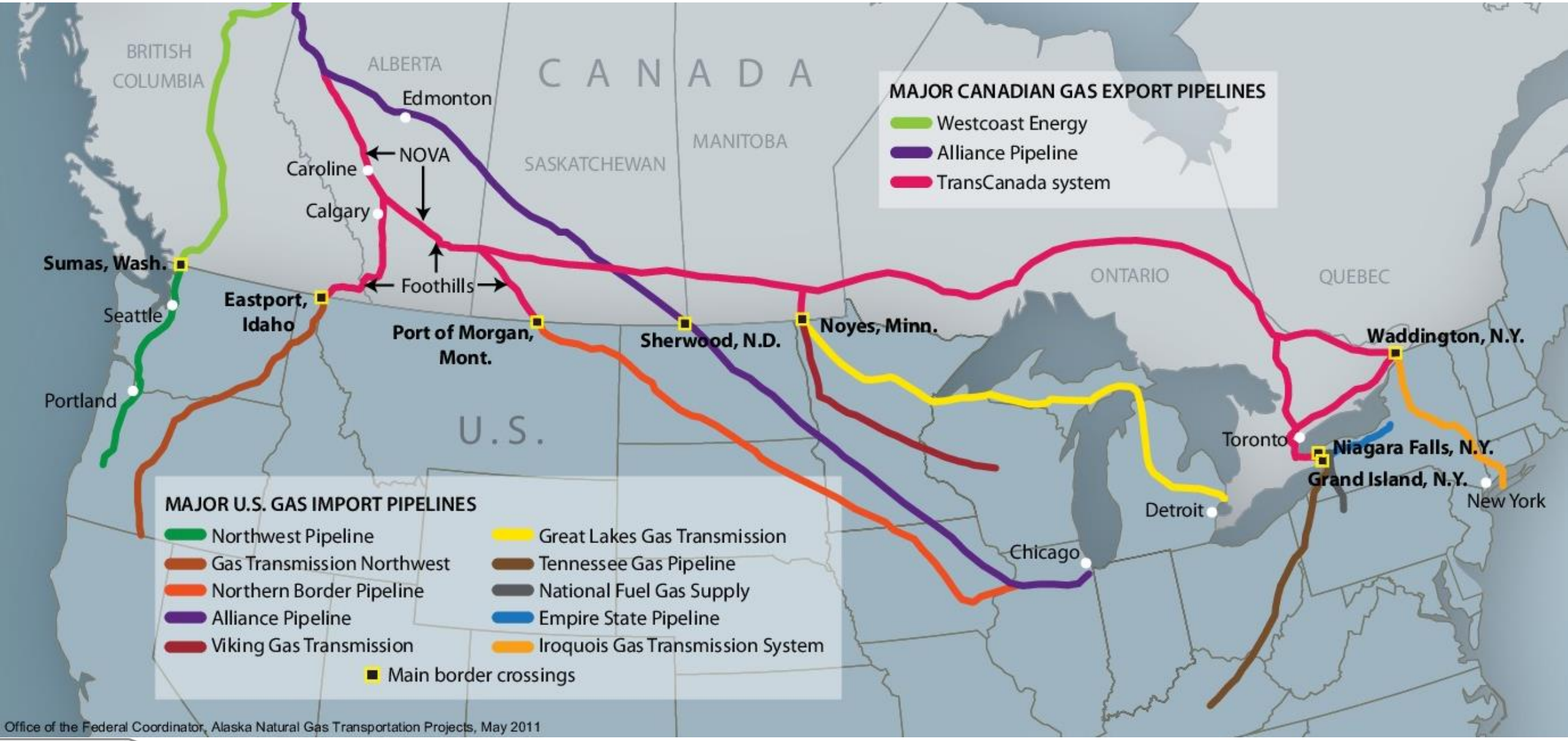
- Grand Forks: 22,000 Dth/Day
- Fargo: 50,118 Dth/Day
- Not Included: East Grand Forks, Moorhead, Etc.

Bakken East: Benefits Could Extend Beyond Route

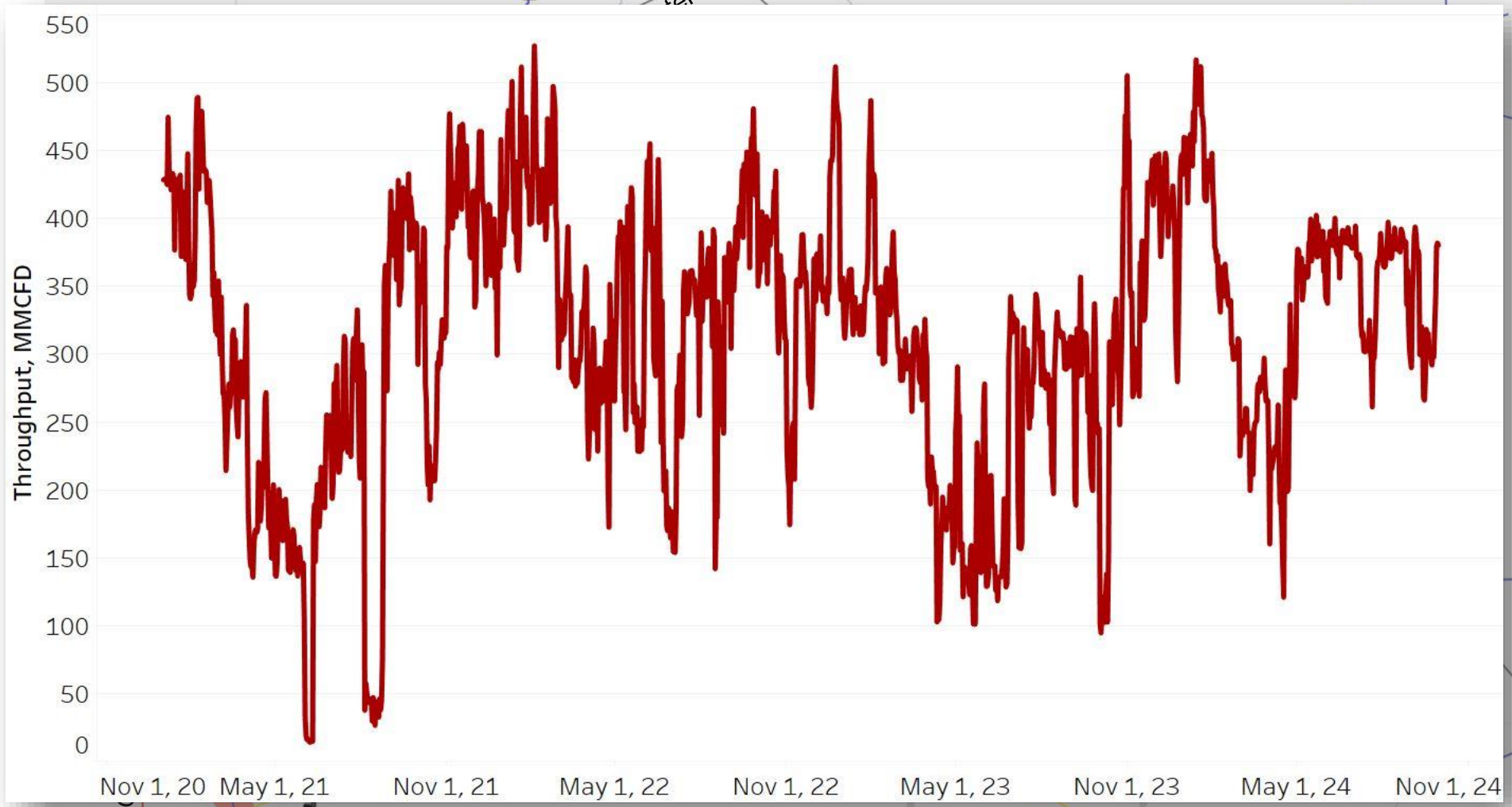


WBI Bakken East Interstate Pipeline Interconnection Options

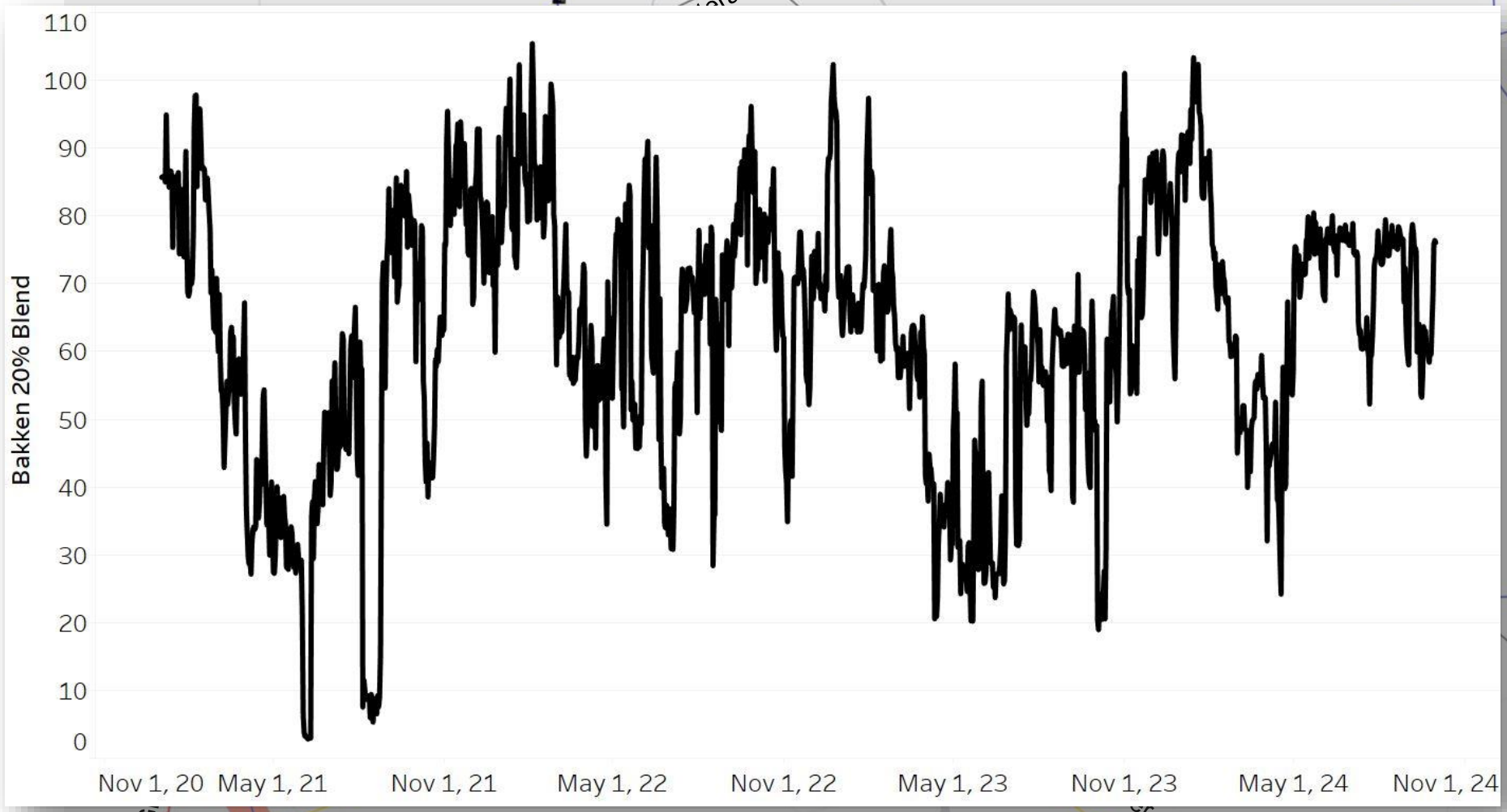
Canadian Gas Pipeline Connectivity



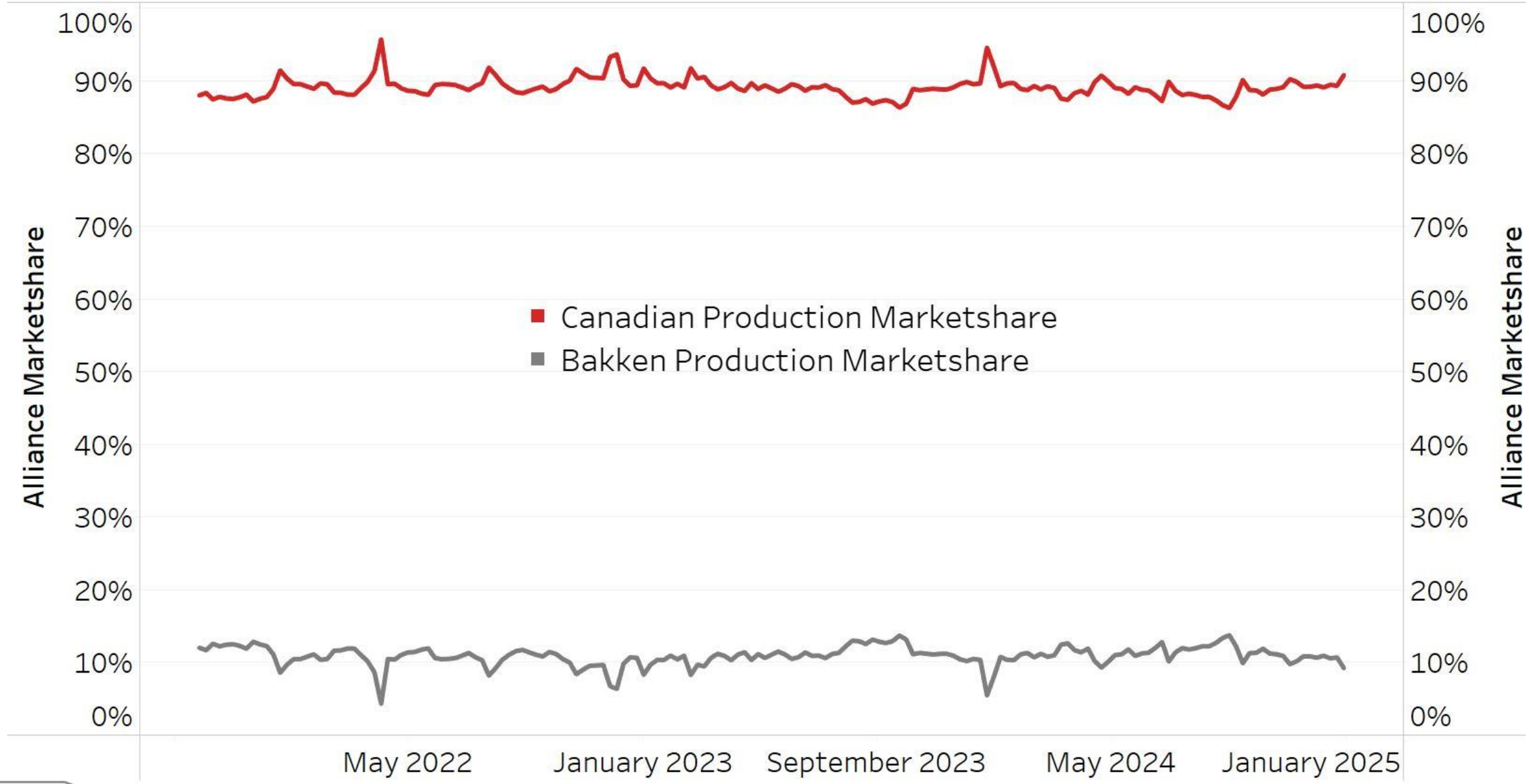
Viking South Volumes (~500 MMCFD Cap.)



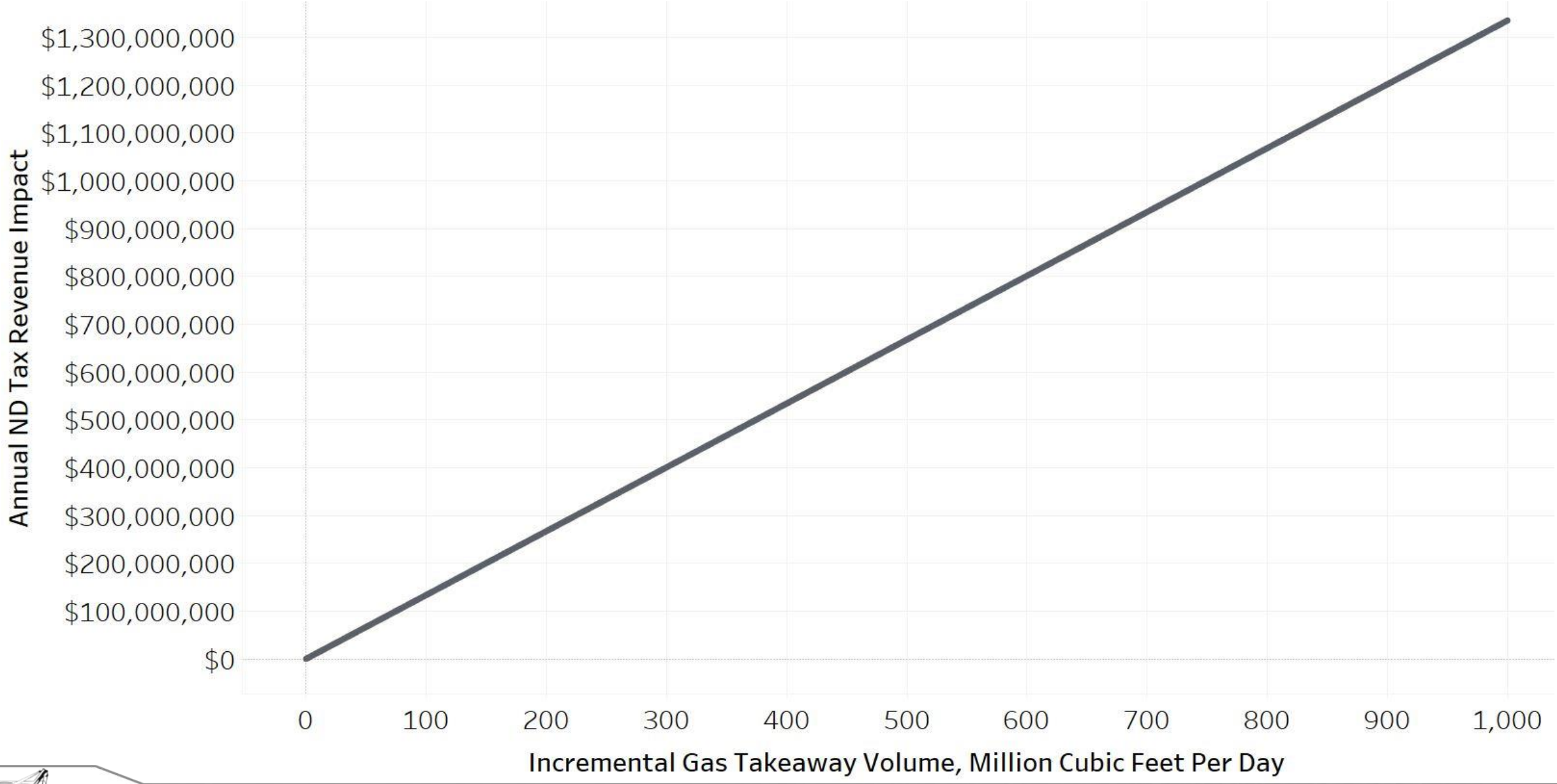
Viking Blending Estimates* @1,100 BTU



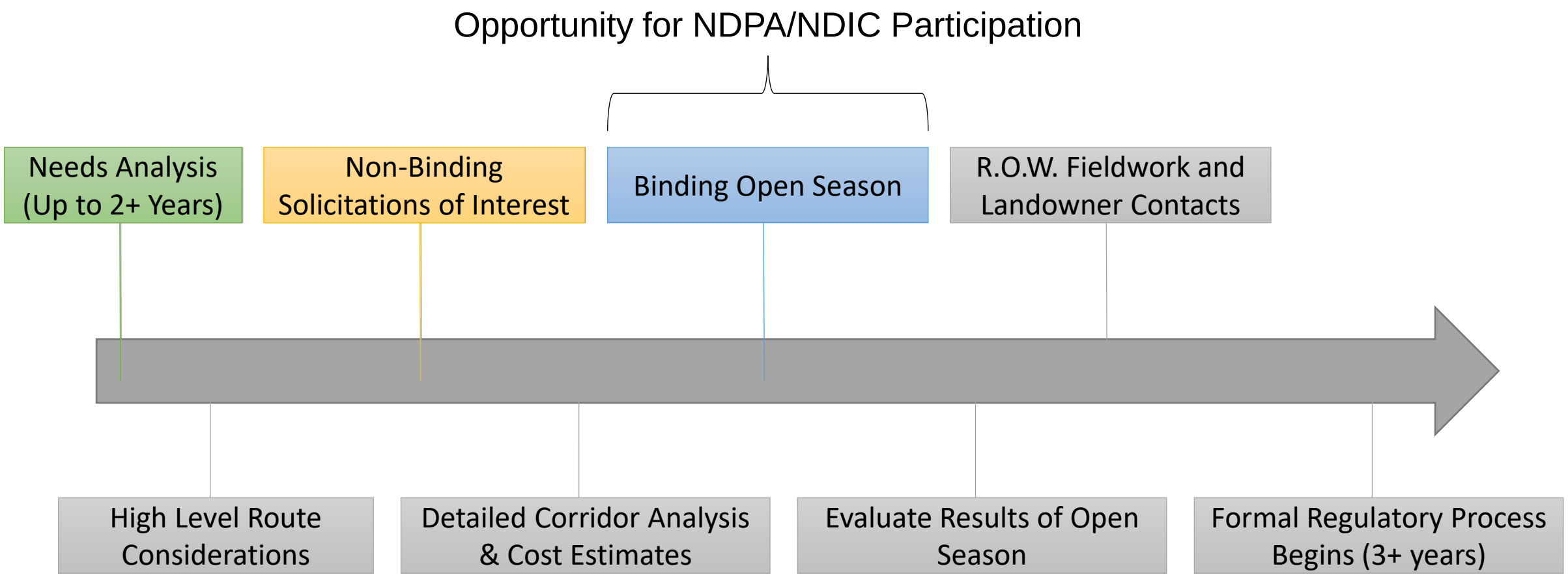
Alliance Pipeline Market Share: ~1.6 BCFD Capacity



ND Tax Impact of Incremental Gas Capacity



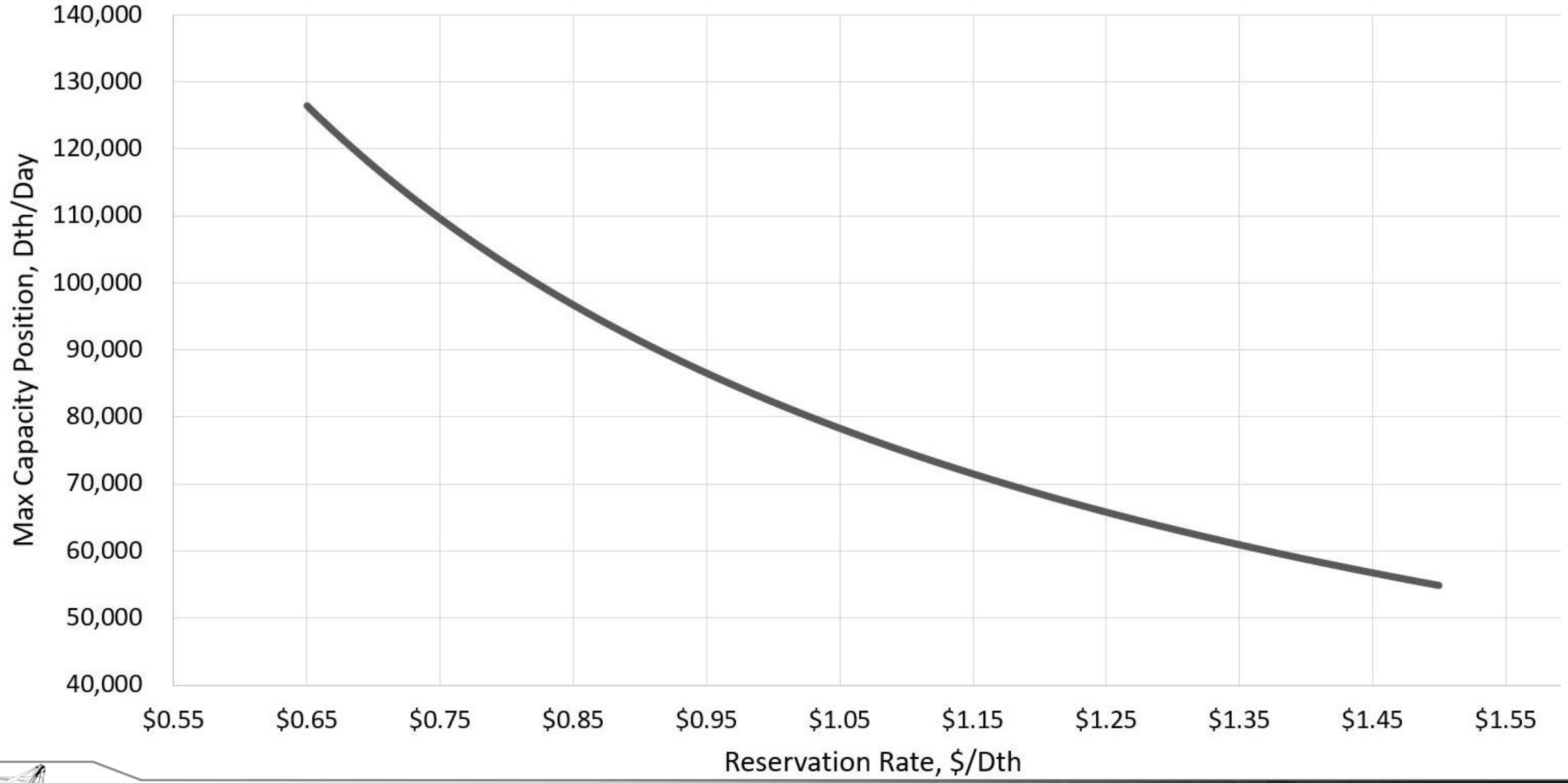
Early Stages of Pipeline Development



Pipeline Authority Century Code– 54-17.7-04.

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. 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.

Capacity and Reservation Rate at $30M/Yr



How Will NDPA Manage Contracted Capacity?

Most Desirable

Least Desirable

Release capacity to replacement shipper(s) in increments greater than one year at FERC required rate structure

Release capacity to replacement shipper(s) in increments less than one year at bid rates *(Limited by 54-17.7-04 Subsection 3)*

Release of capacity to an asset manager for an appropriate term length

Pay obligated precedent agreement rates until a release or asset management agreement is established

Options Beyond 2026: The 5 “C’s”

Construction (Interstate)

- Long-haul Pipe to New or Expanded Markets

Compete

- Price Canadian Volumes to Flow Elsewhere

Compression

- Increase Capacity on Existing Interstate Systems

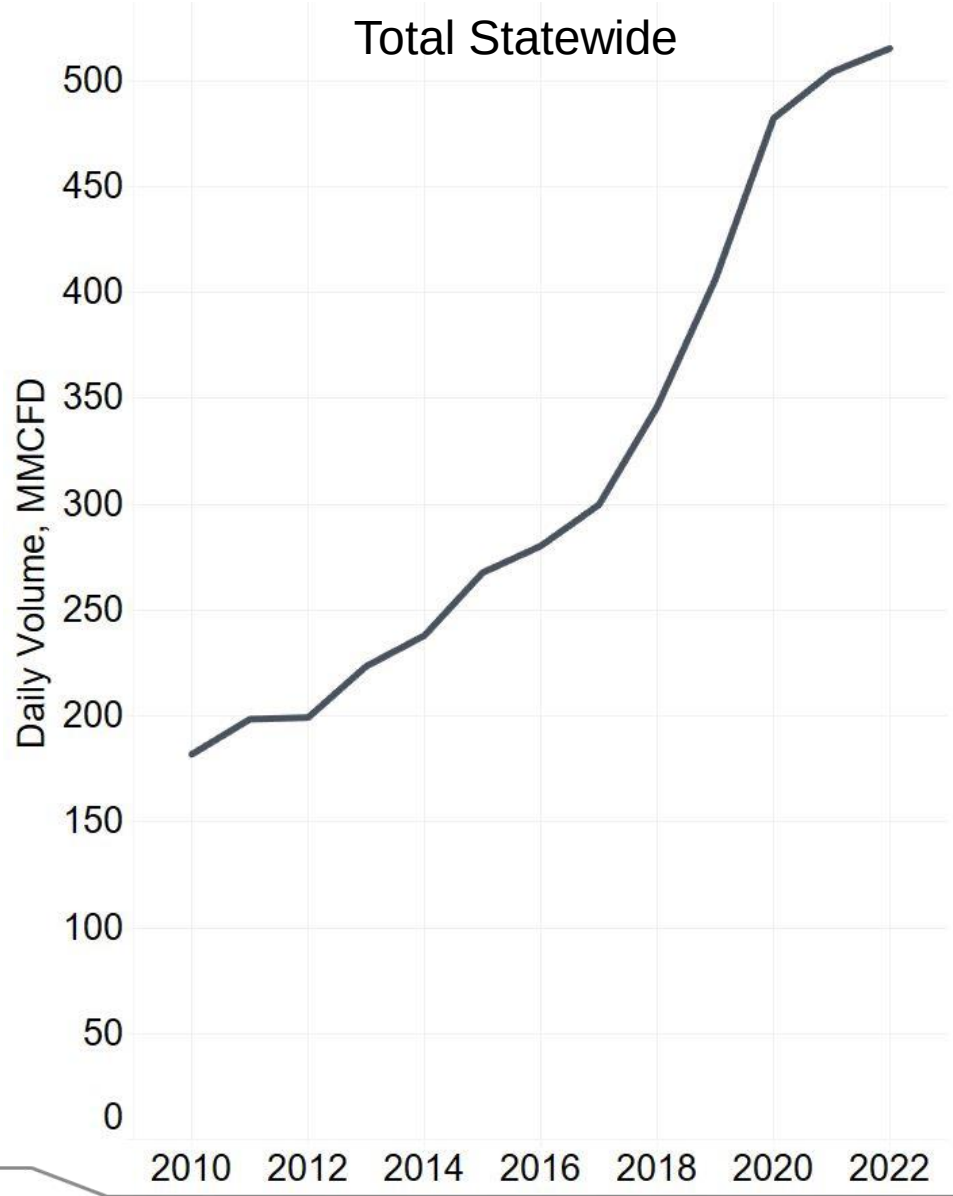
Consumption

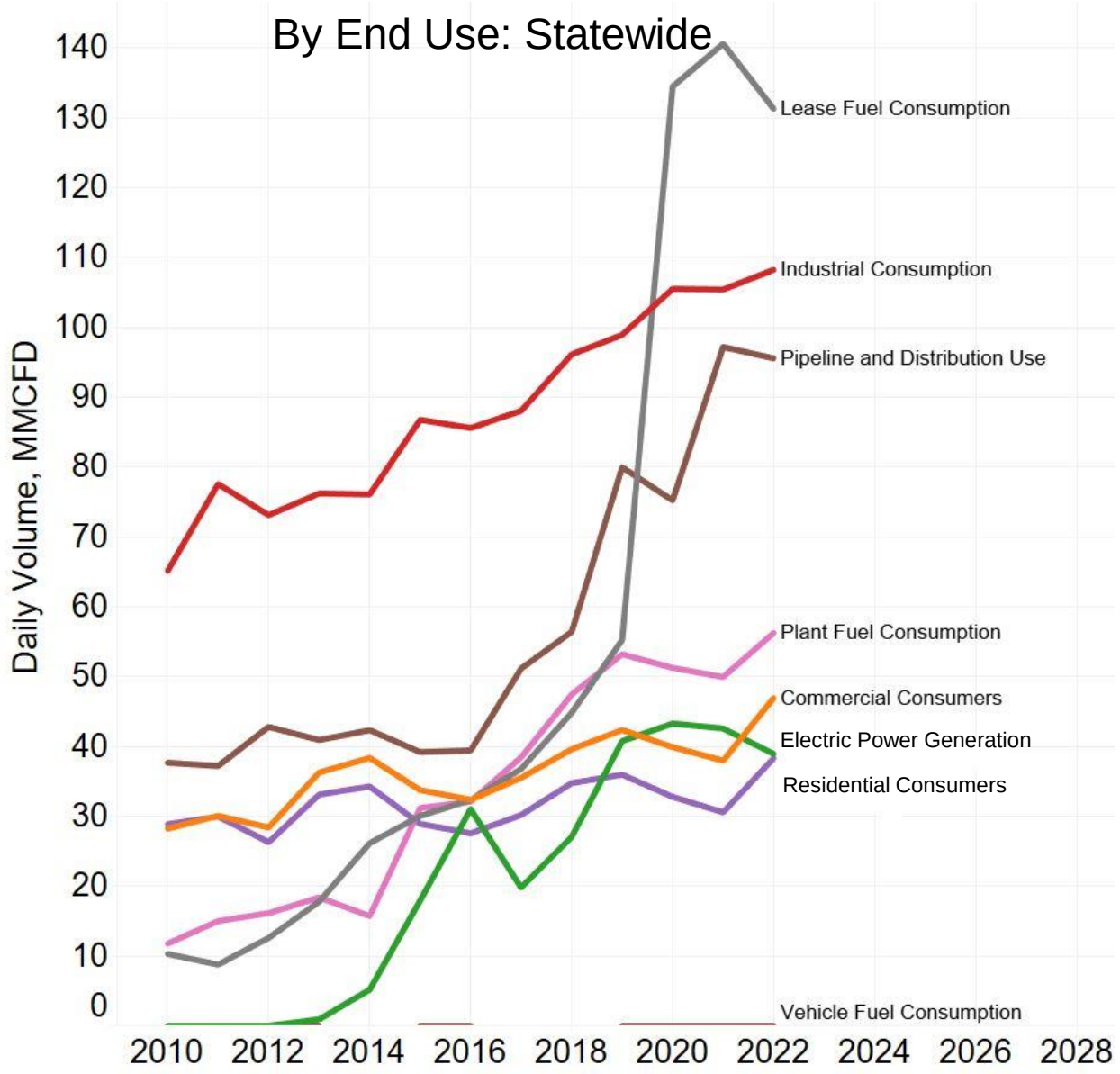
- Intra Region Gas Demand Expansion

Contraction

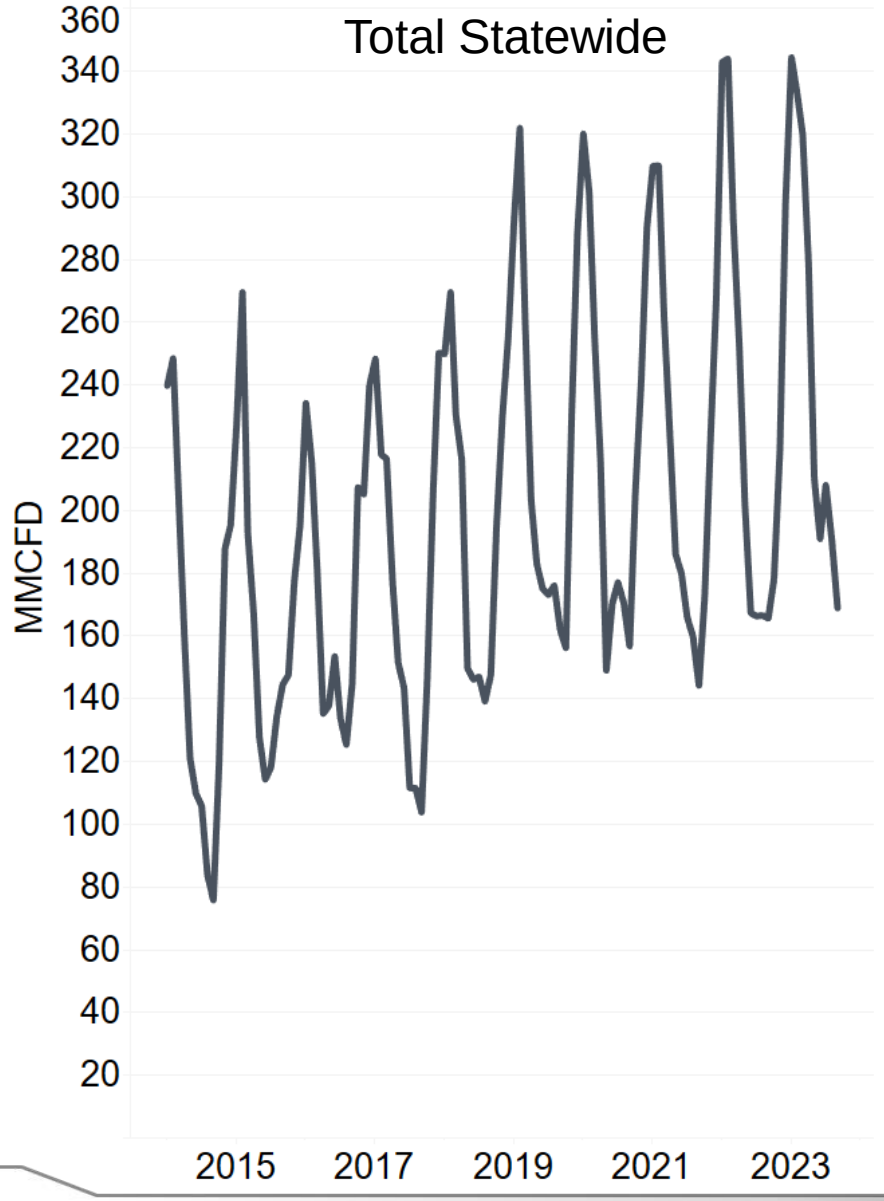
- Reduce E&P Activity to Meet Limited Gas Options

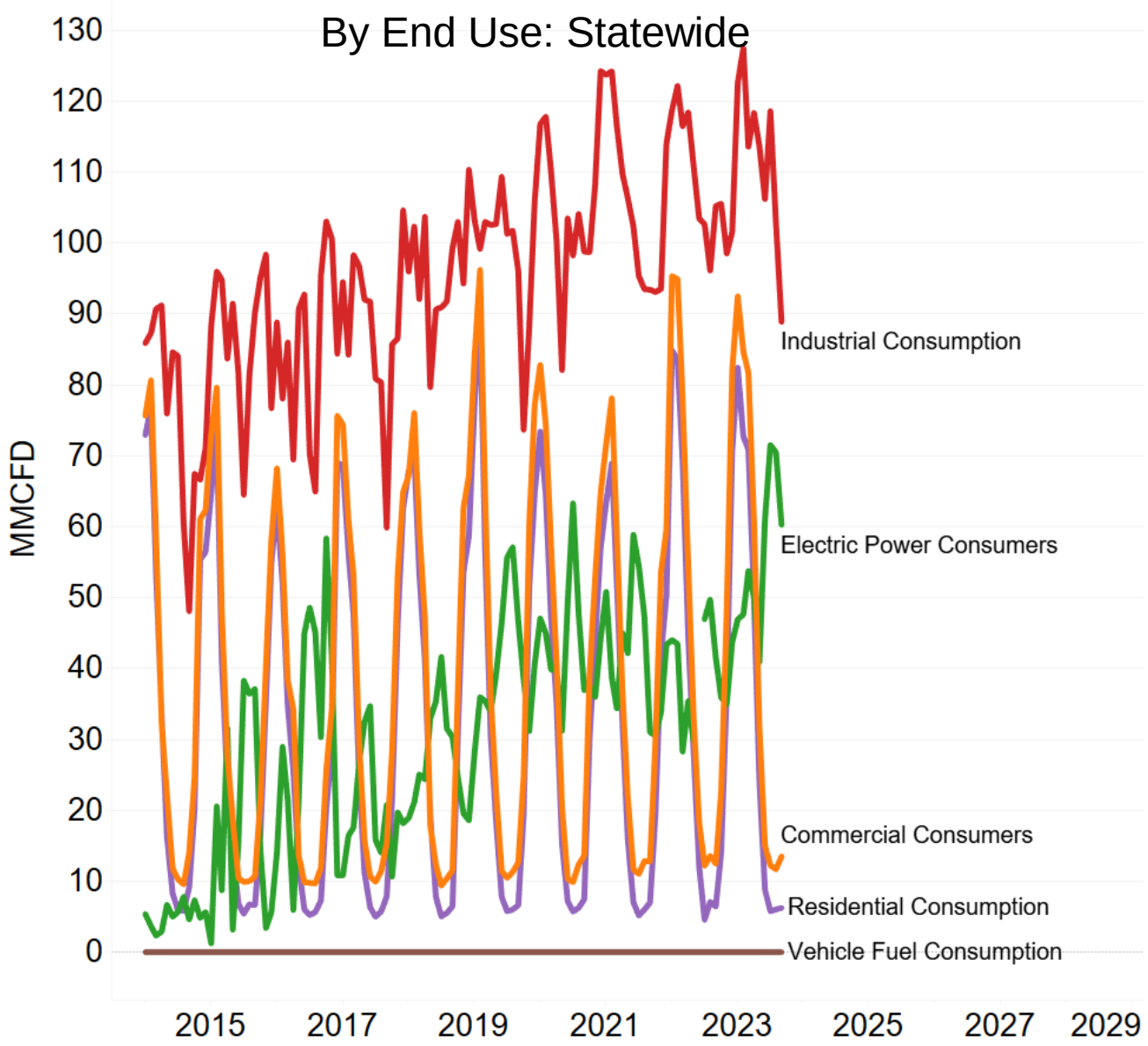
North Dakota Gas Consumption (Annual)





Non-Midstream Consumption (Monthly)





Local Gas Demand Outlook Changing Rapidly

AI Agenda

Two AI Developers Are Plotting $125 Billion Supercomputers

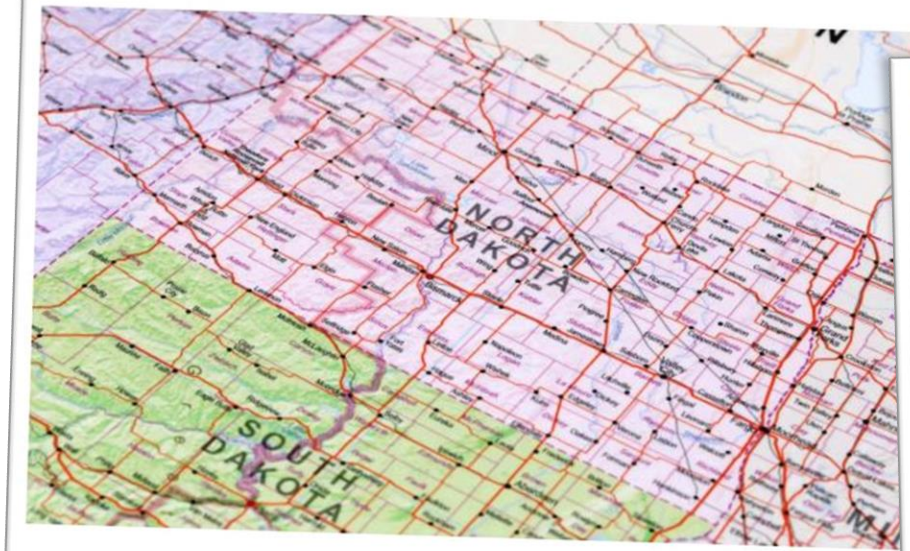


Photo via Adobe S

By Anissa Gardizy

The Information

2024, 7:00am

Developers of artificial intelligence say they need bigger and bigger data centers to concentrate processing power so that it produces better versions of the technology.

The companies are notoriously secretive about the details of those plans, though, which is

Utility plans another gas-fired power plant for North Dakota

BY: JEFF BEACH - MAY 15, 2024 6:48 PM

Todd Brickhouse, CEO of Basin Electric Power Cooperative, participates in a roundtable discussion on the energy supply during the Williston Basin Petroleum Conference at the Bismarck Event Center on May 15, 2024. (Michael Achterling/North Dakota Monitor)

North Dakota Monitor

Company proposes to upcycle Minnesota iron mine waste in central North Dakota

$10M in state funding awarded to effort to produce low-carbon pig iron

BY: JEFF BEACH - FEBRUARY 8, 2024 5:00 AM

North Dakota Monitor

Natural gas conversion project near Williston also includes carbon capture

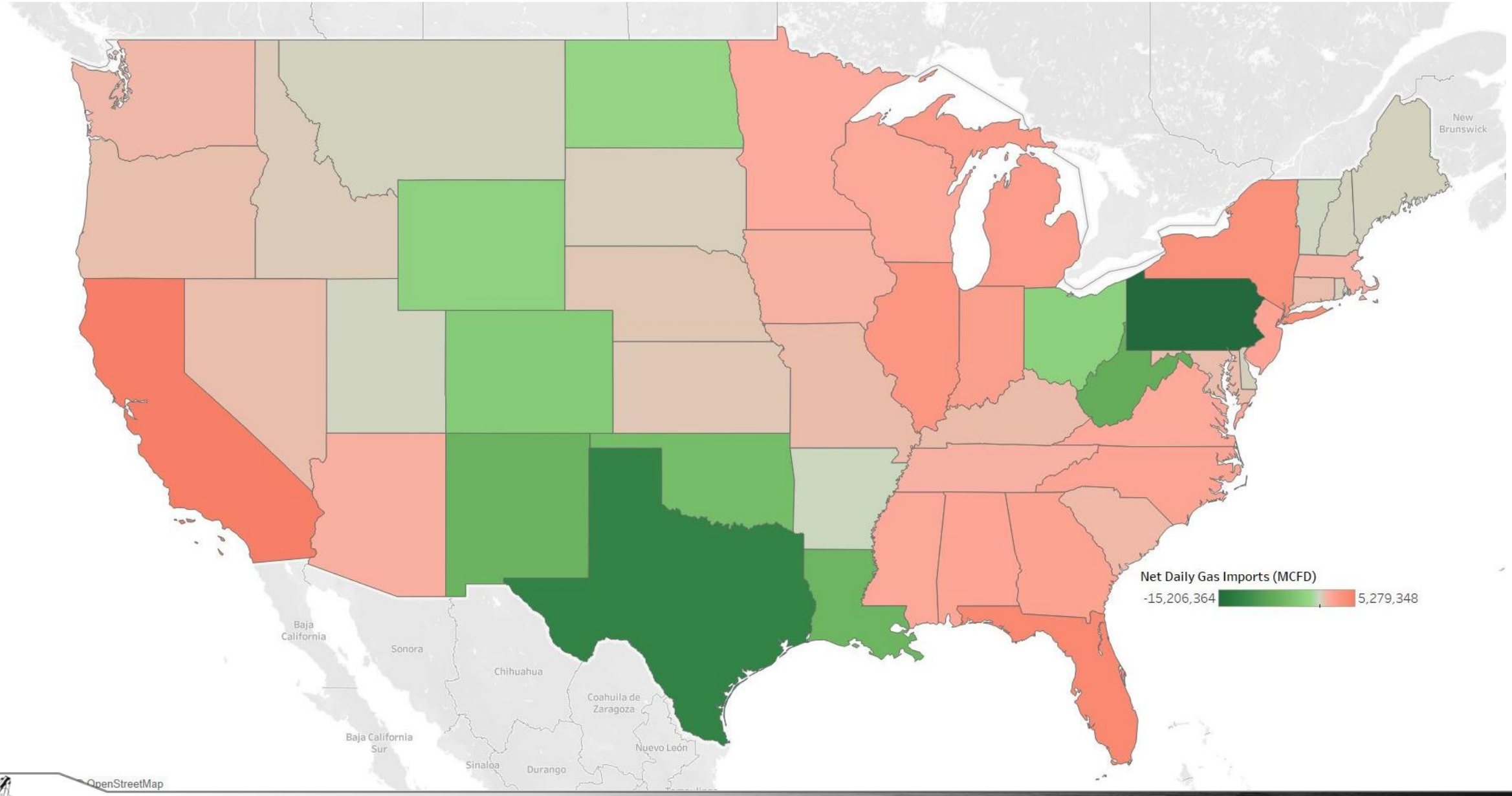
BY: JEFF BEACH - JUNE 17, 2024 5:00 AM

A rendering of a natural gas-to-liqu

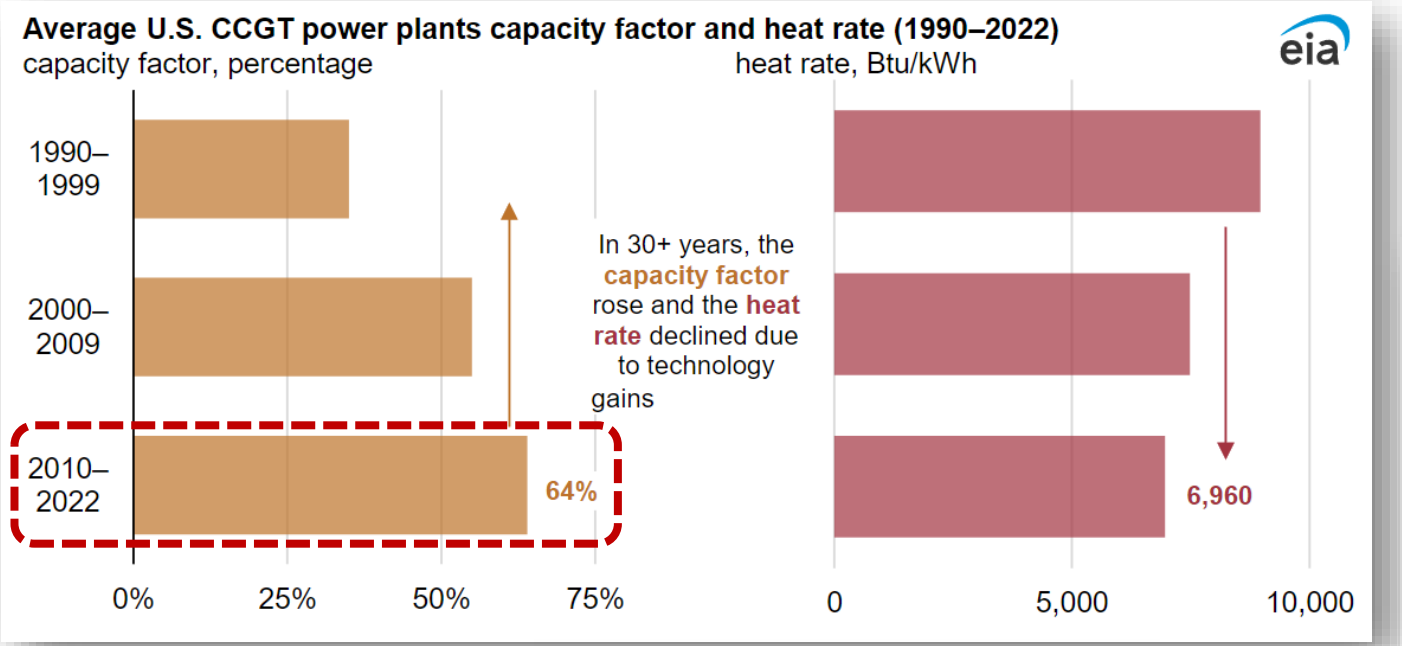
A proposed multi-billion dollar facility to turn natural gas from North Dakota's oil fields into liquid

North Dakota Monitor

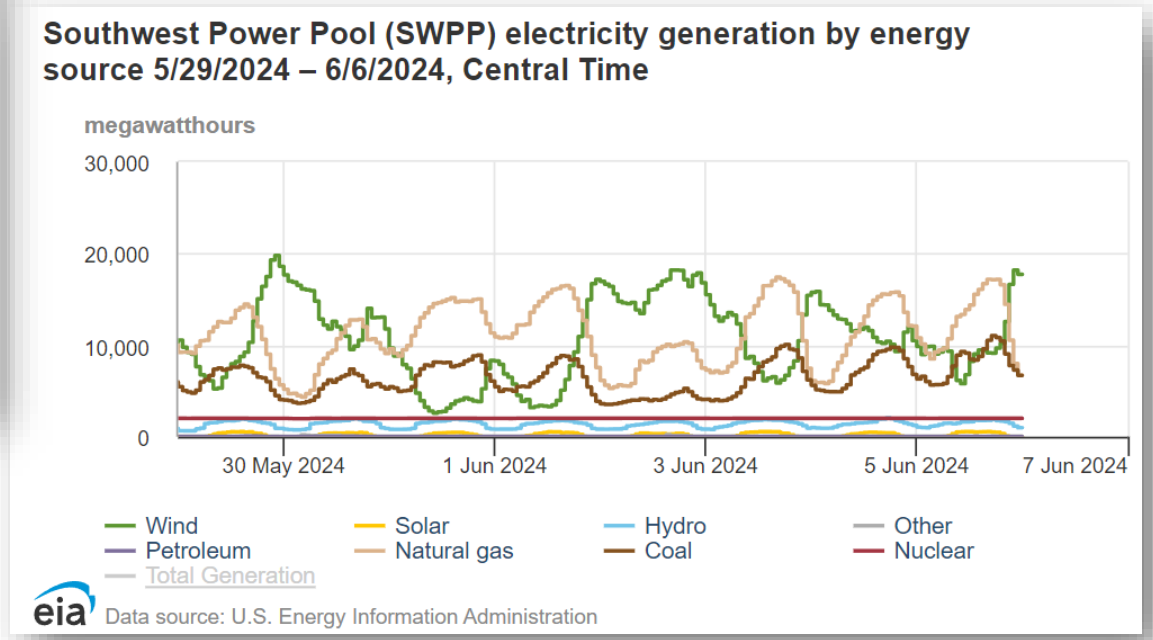
Natural Gas Production/Consumption

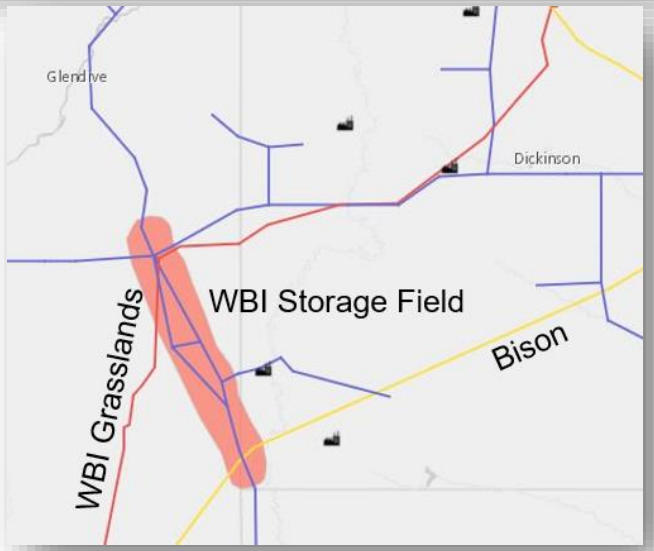


Intermittent Gas-Fired Generation Challenging to Match Oilfield Output



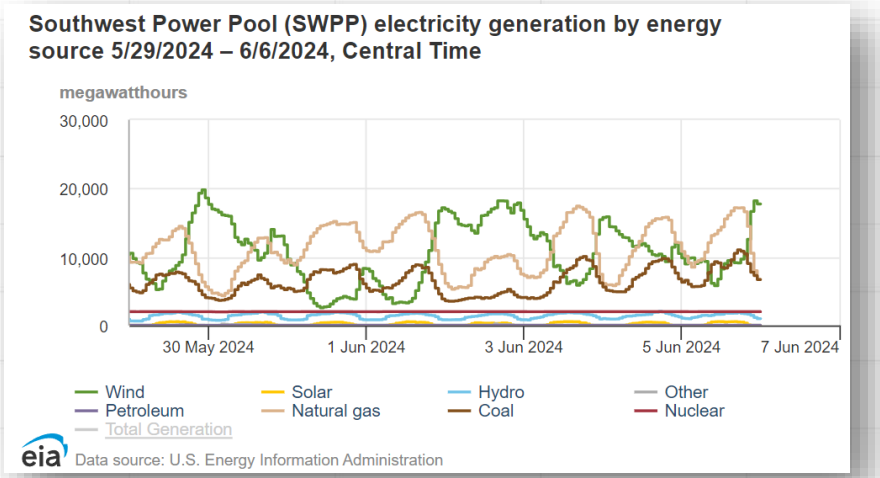
Gas-fired demand can fluctuate hourly, daily, and weekly, depending on system load, weather, etc.





Regional gas storage could provide a balancing solution for intermittent generation, but who pays for the required expansion?

Gas Disruptions Could Be Costly Without Alternatives



Options Beyond 2026: The 5 “C’s”

Construction (Interstate)

- Long-haul Pipe to New or Expanded Markets

Compete

- Price Canadian Volumes to Flow Elsewhere

Compression

- Increase Capacity on Existing Interstate Systems

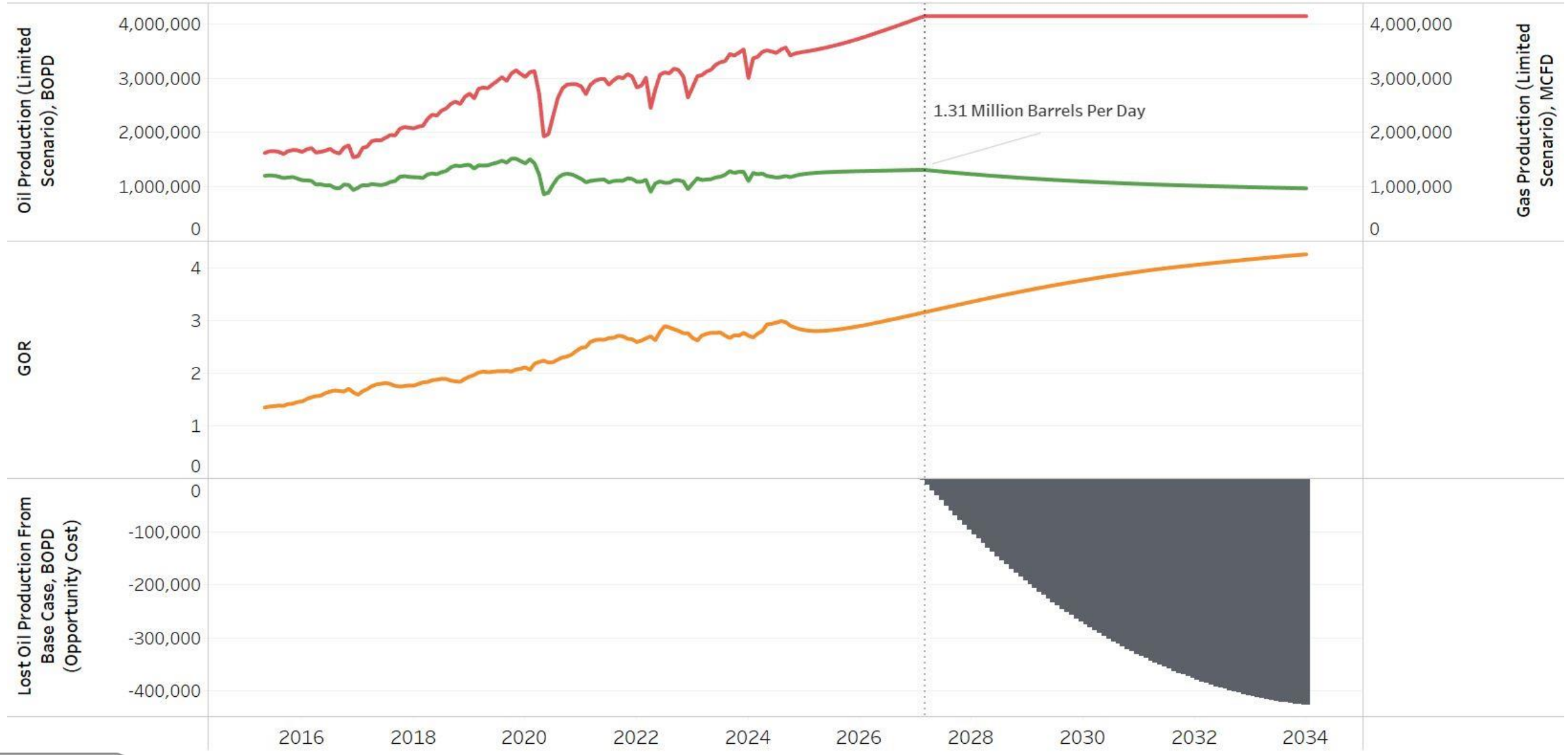
Consumption

- Intra Region Gas Demand Expansion

Contraction

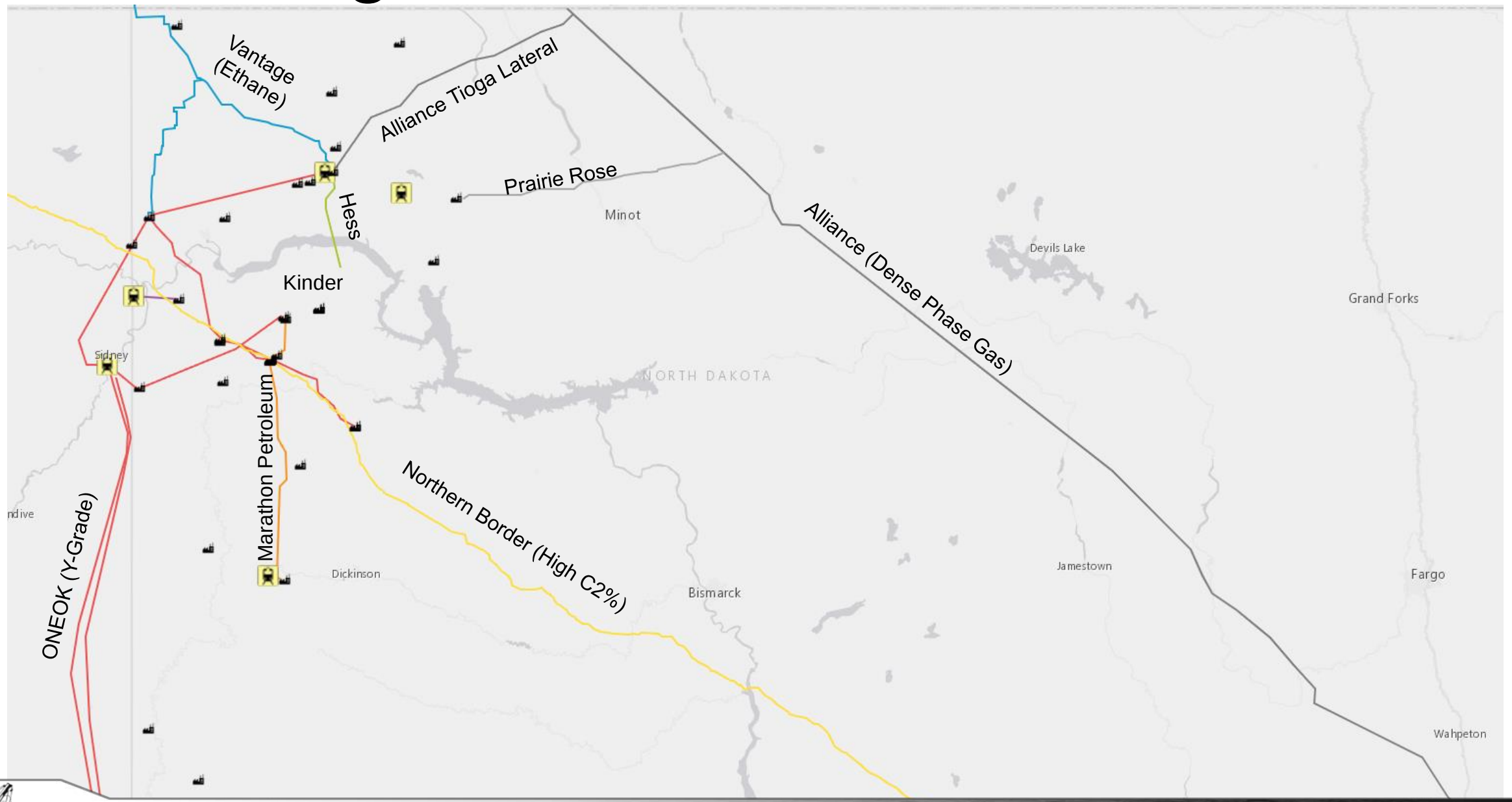
- Reduce E&P Activity to Meet Limited Gas Options

Gas Limitations Could Force Oil Production Down As GOR Rises

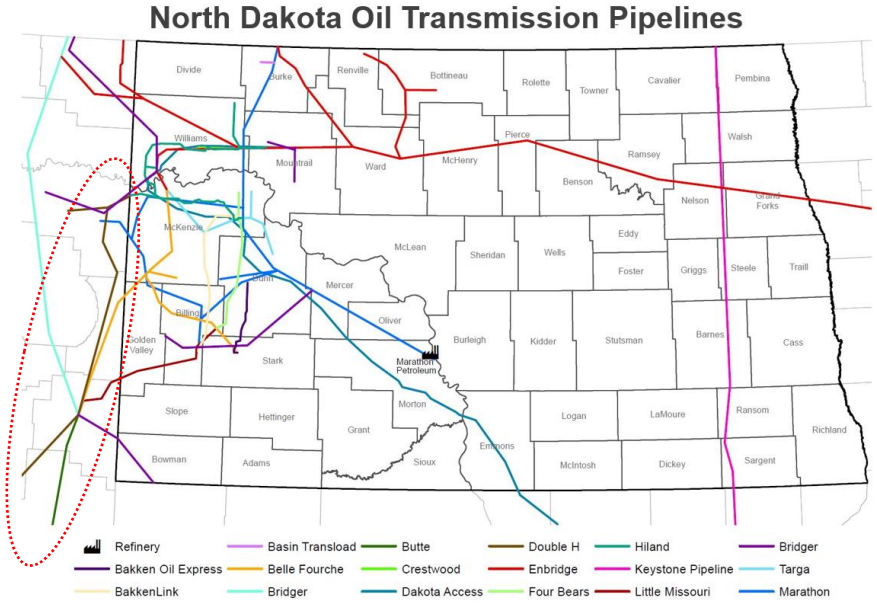


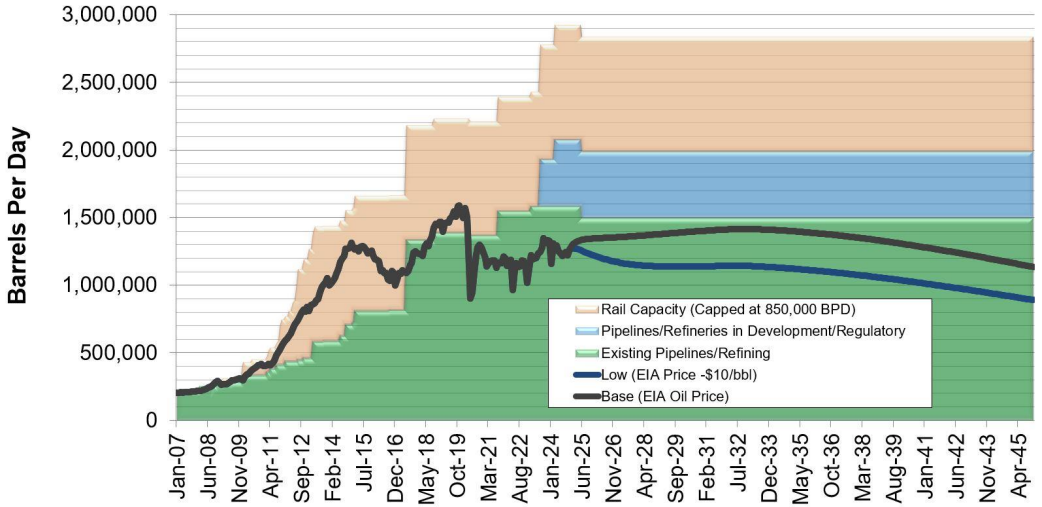
⚠ *Assumes NB Canadian Flows at 271,000 MMBTU & 1,100 BTU (Dec-2024)*

Regional NGL Infrastructure

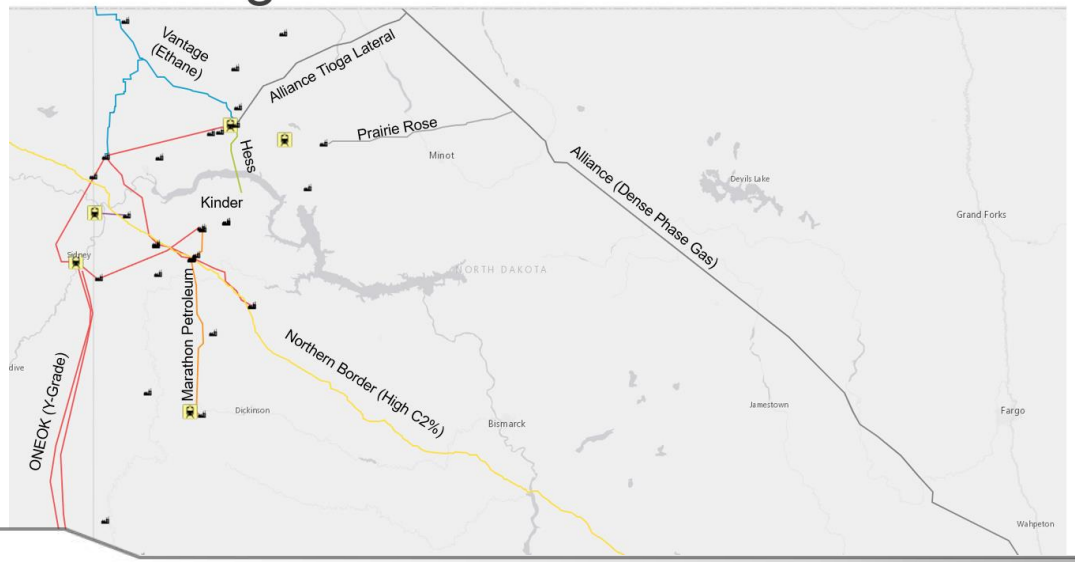


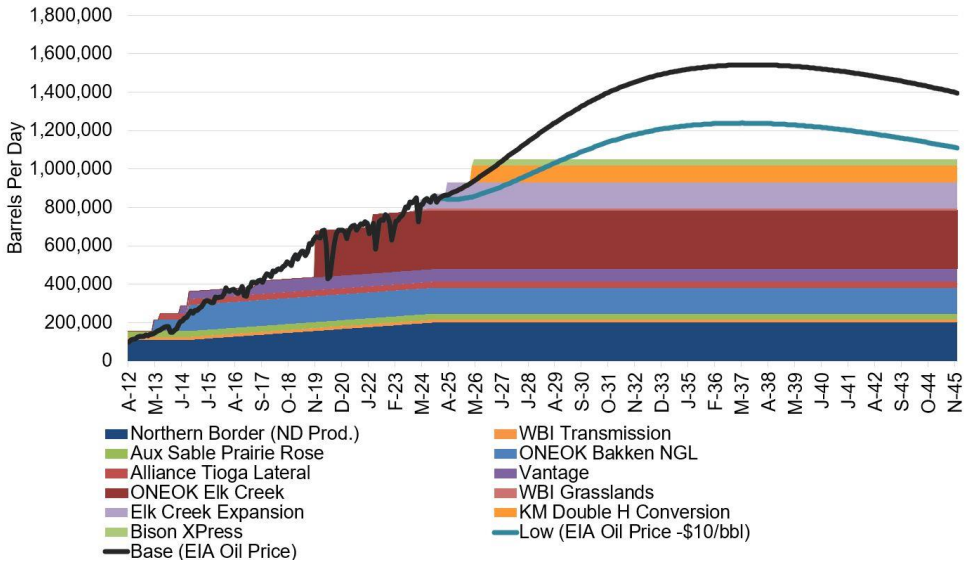
Kinder Morgan Double H Pipeline Conversion



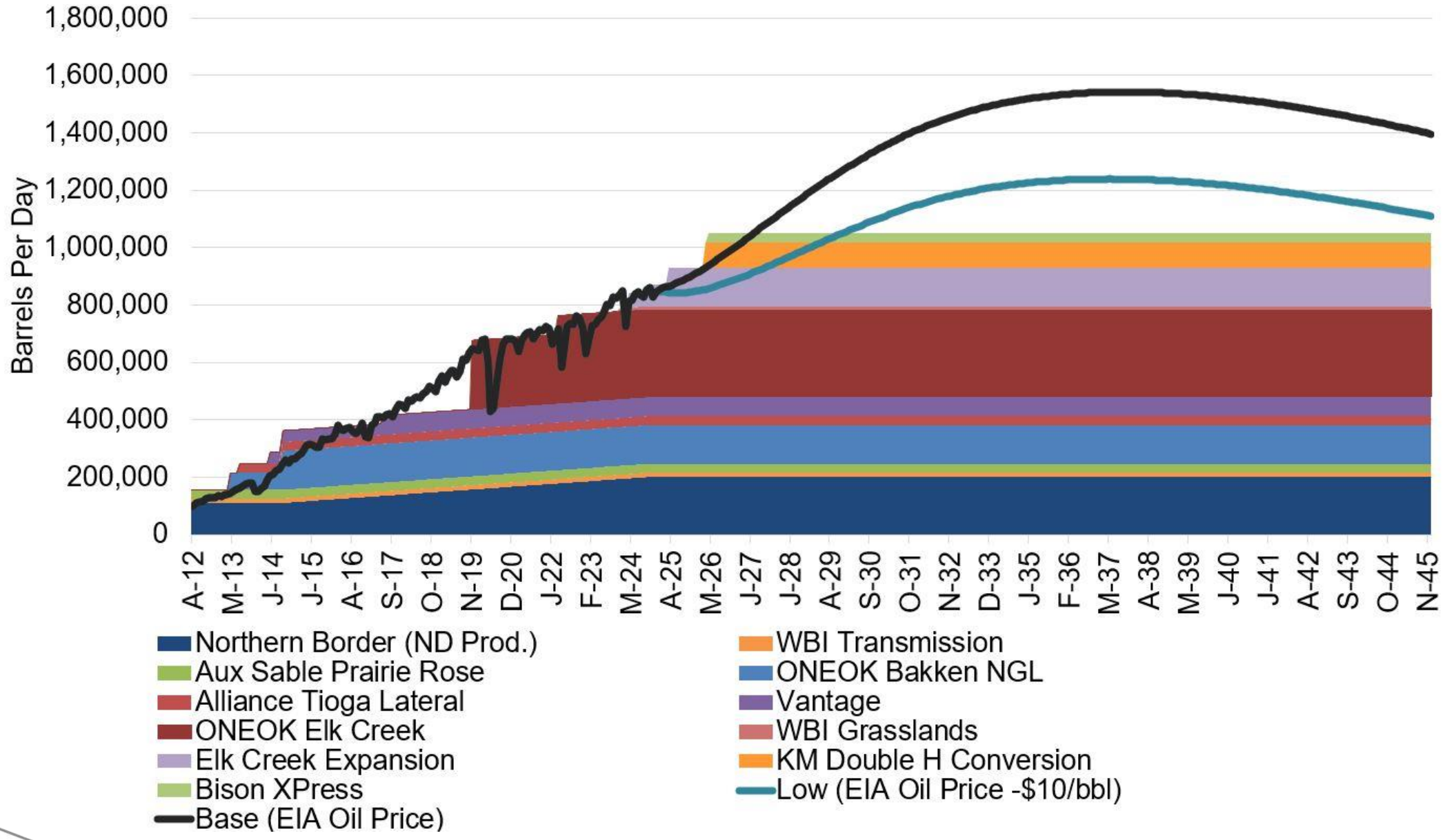


Regional NGL Infrastructure





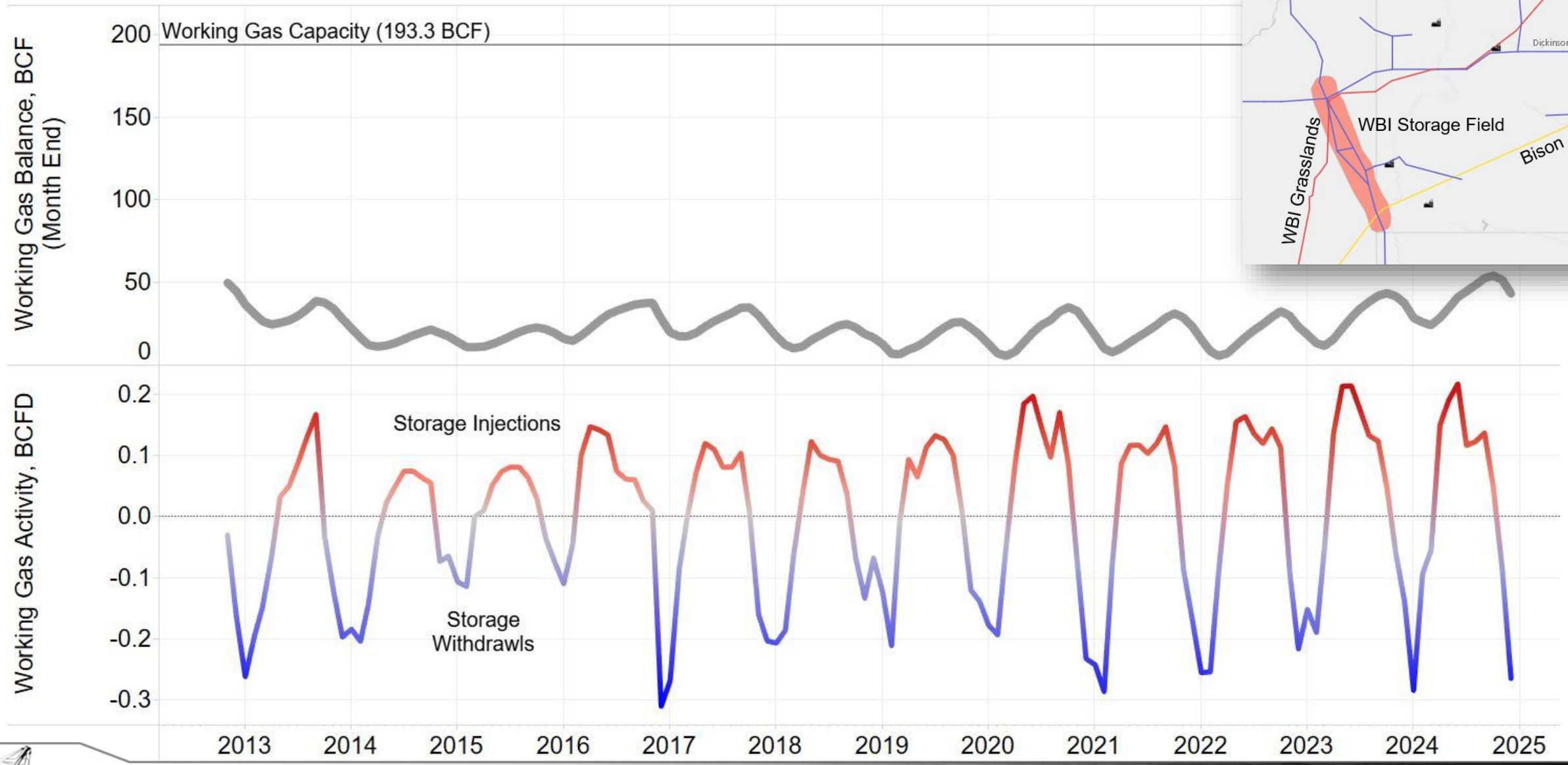
NGL Transport Needs* – With New Cheyenne Pipes



*Rail and Local Trucking Not Included

Regional Natural Gas Storage

Residue Gas Storage – WBI Energy*



*WBI Energy Storage Fields: Baker & Elk Basin

Contact Information

Justin J. Kringstad, Director

North Dakota Pipeline Authority

600 E. Boulevard Ave. Dept. 405
Bismarck, ND 58505-0840

Phone: (701)220-6227
E-mail: jjkringstad@ndpipelines.com

811 Know what's below. Call before you dig.

Website:

www.northdakotapipelines.com