Industrial Commission Update

Justin J. Kringstad
Geological Engineer
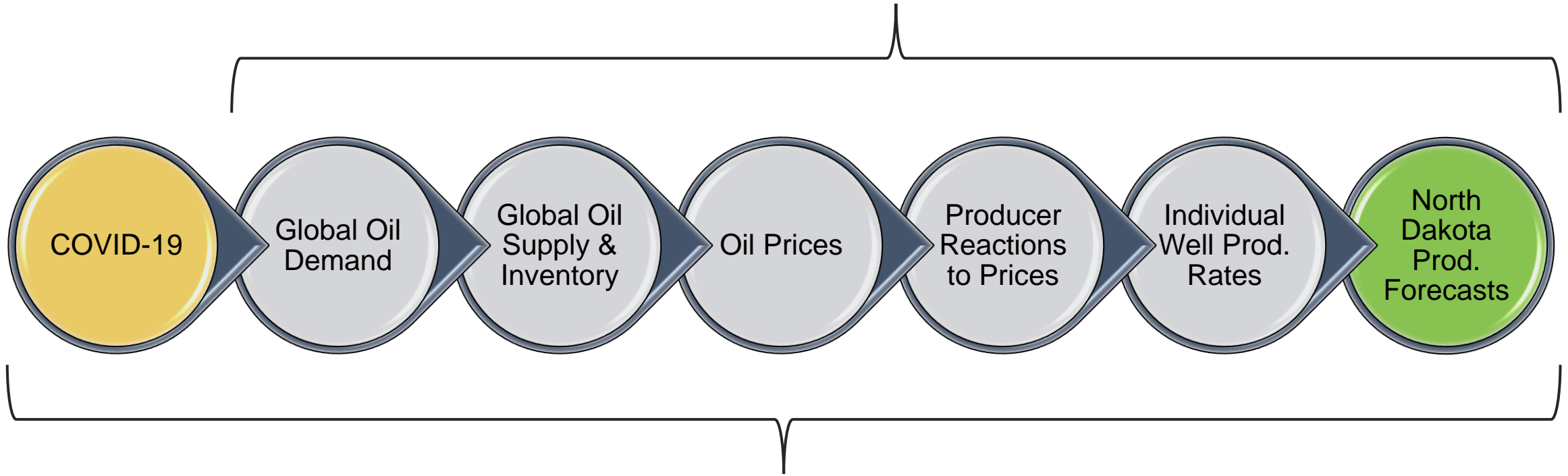*Director*
North Dakota Pipeline Authority

April 28, 2020

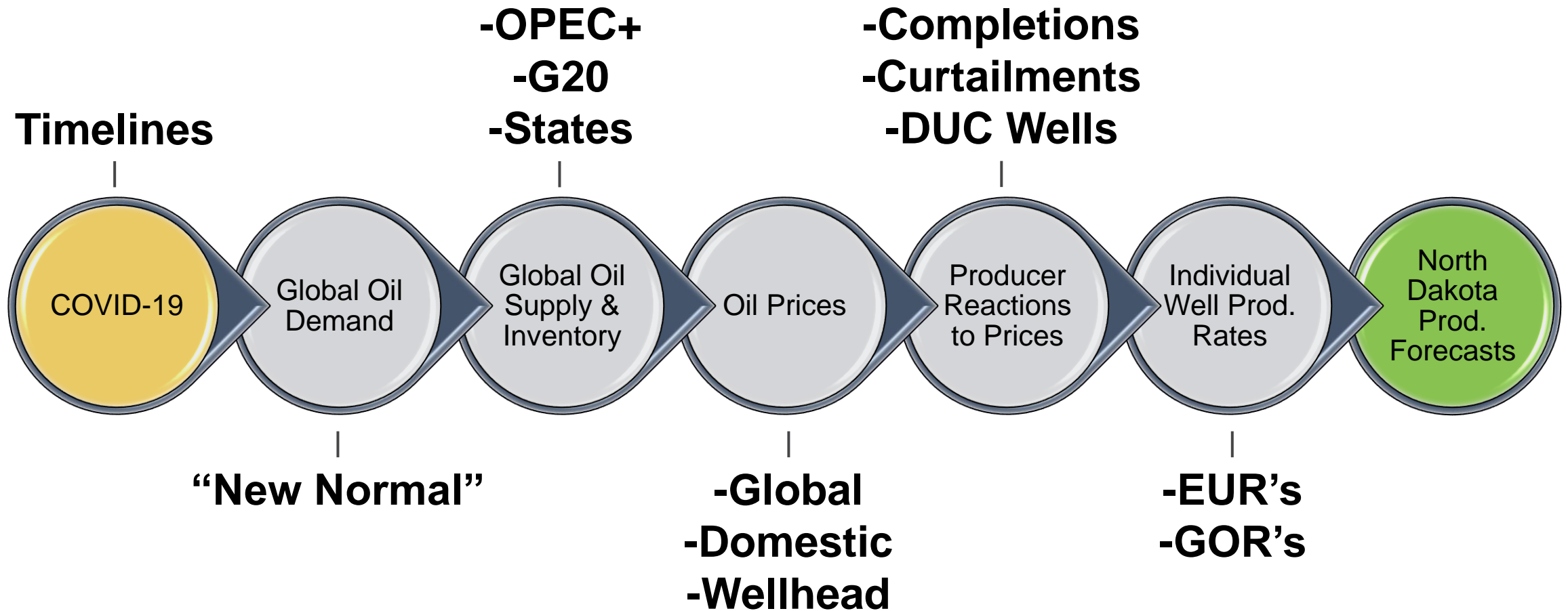# Market Uncertainty Has Never Been Higher

Traditional Levels of Uncertainty

COVID-19 → Global Oil Demand → Global Oil Supply & Inventory → Oil Prices → Producer Reactions to Prices → Individual Well Prod. Rates → North Dakota Prod. Forecasts
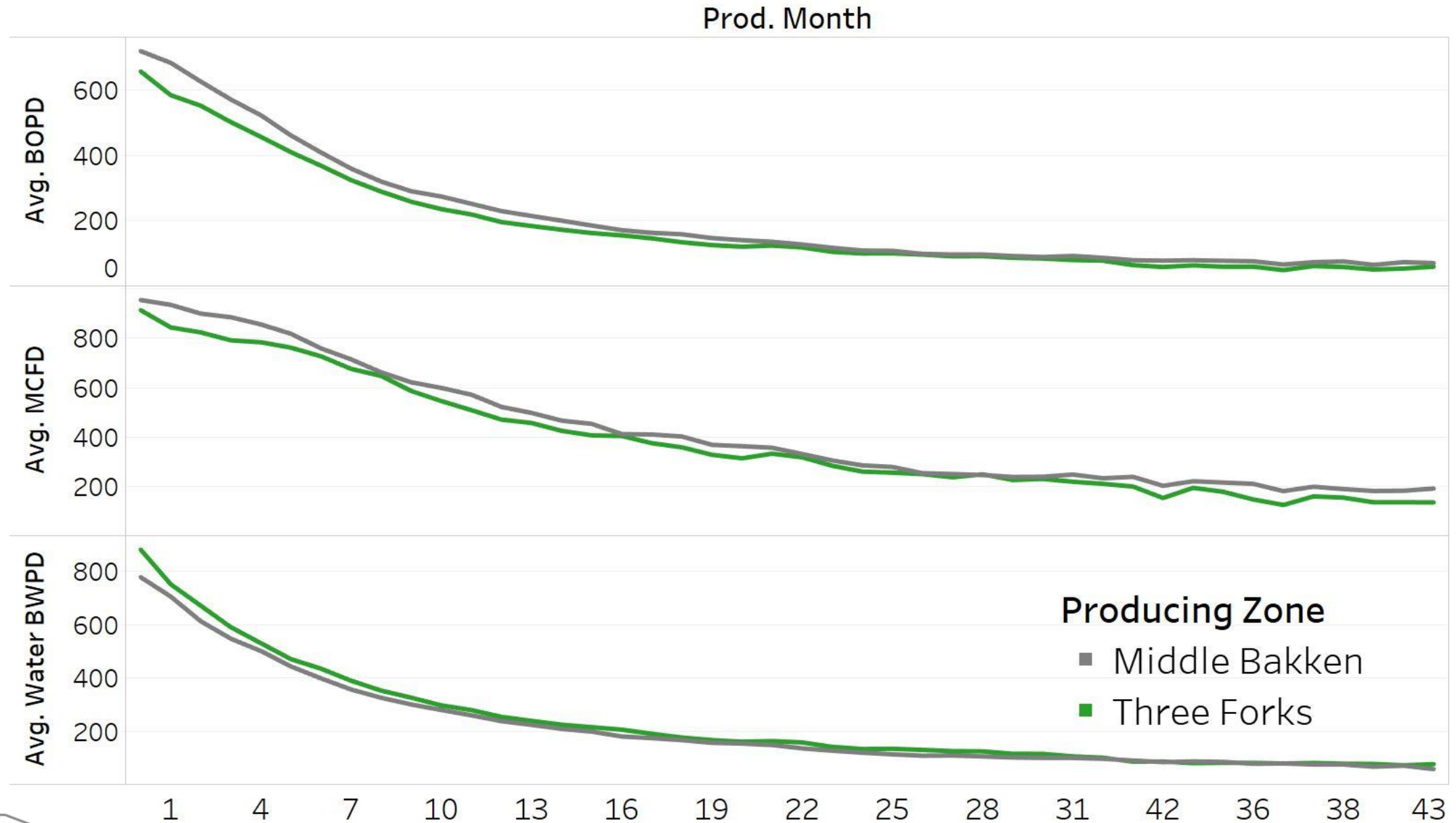
Unprecedented new reality shaping decisions of government, industry, and citizens at the global level

Major New Considerations

Timelines

-OPEC+
-G20
-States

-Completions
-Curtailments
-DUC Wells

COVID-19 → Global Oil Demand → Global Oil Supply & Inventory → Oil Prices → Producer Reactions to Prices → Individual Well Prod. Rates → North Dakota Prod. Forecasts
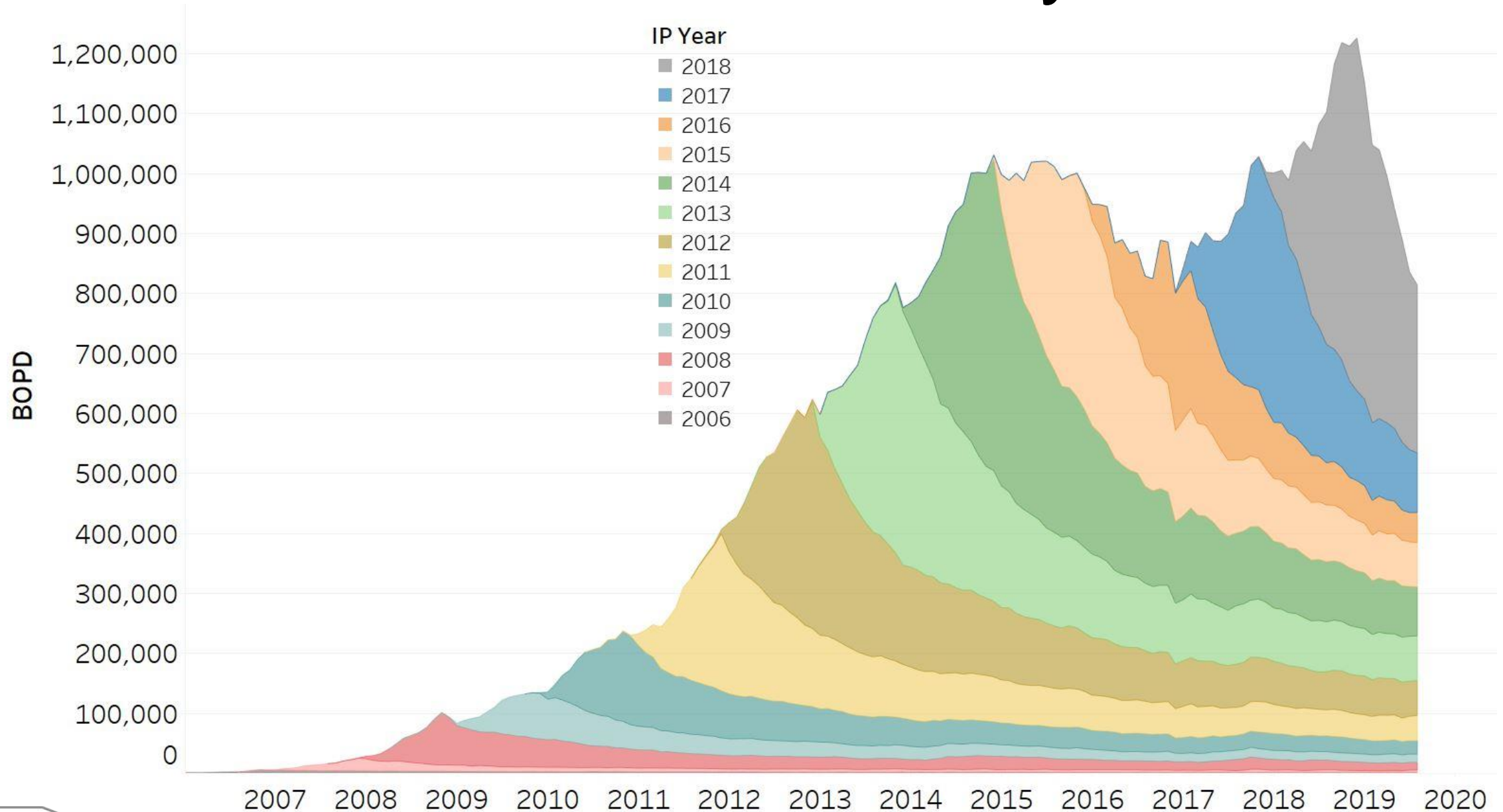
"New Normal"

-Global
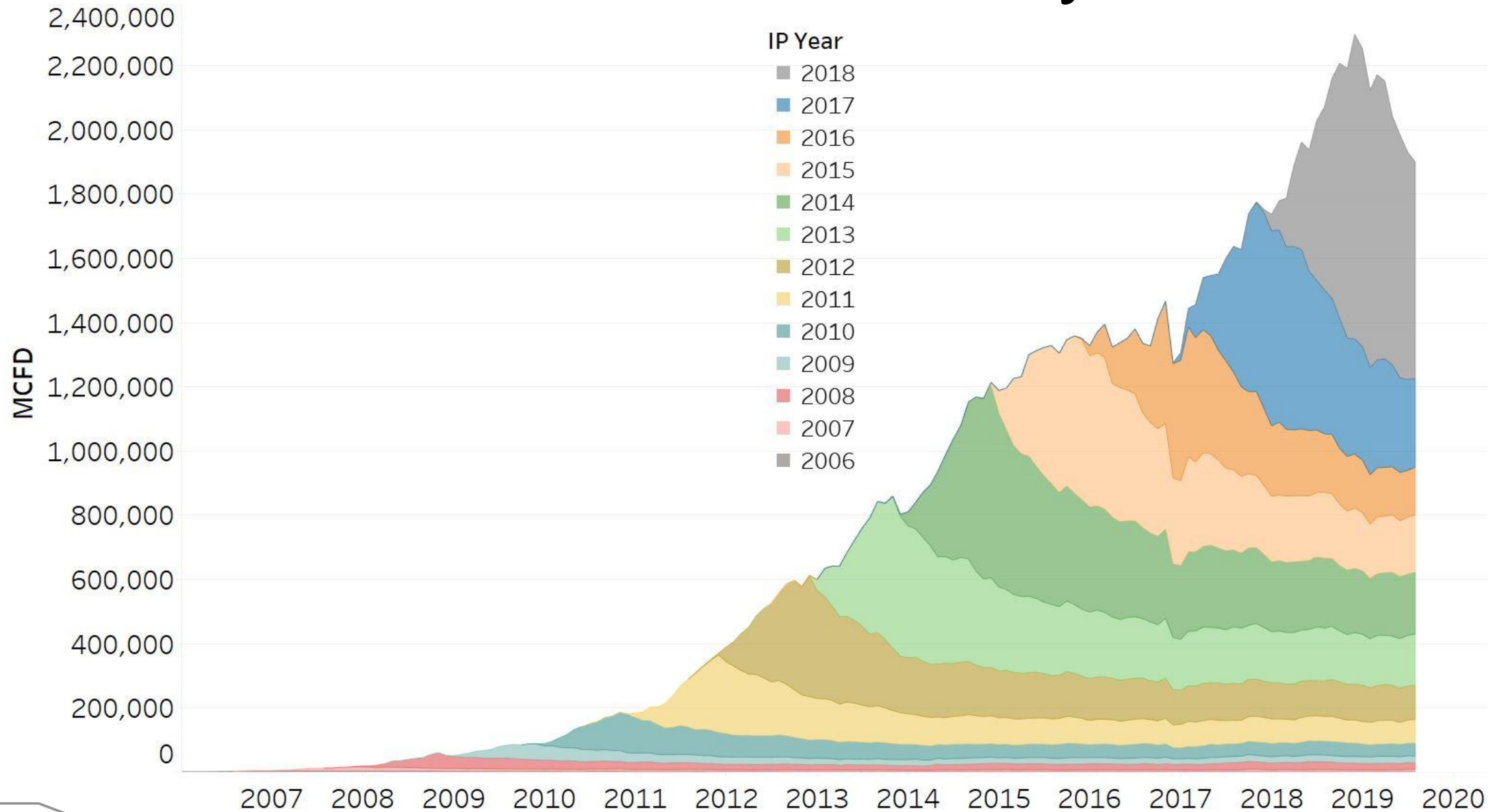-Domestic
-Wellhead

-EUR's
-GOR's

Statewide Well Performance
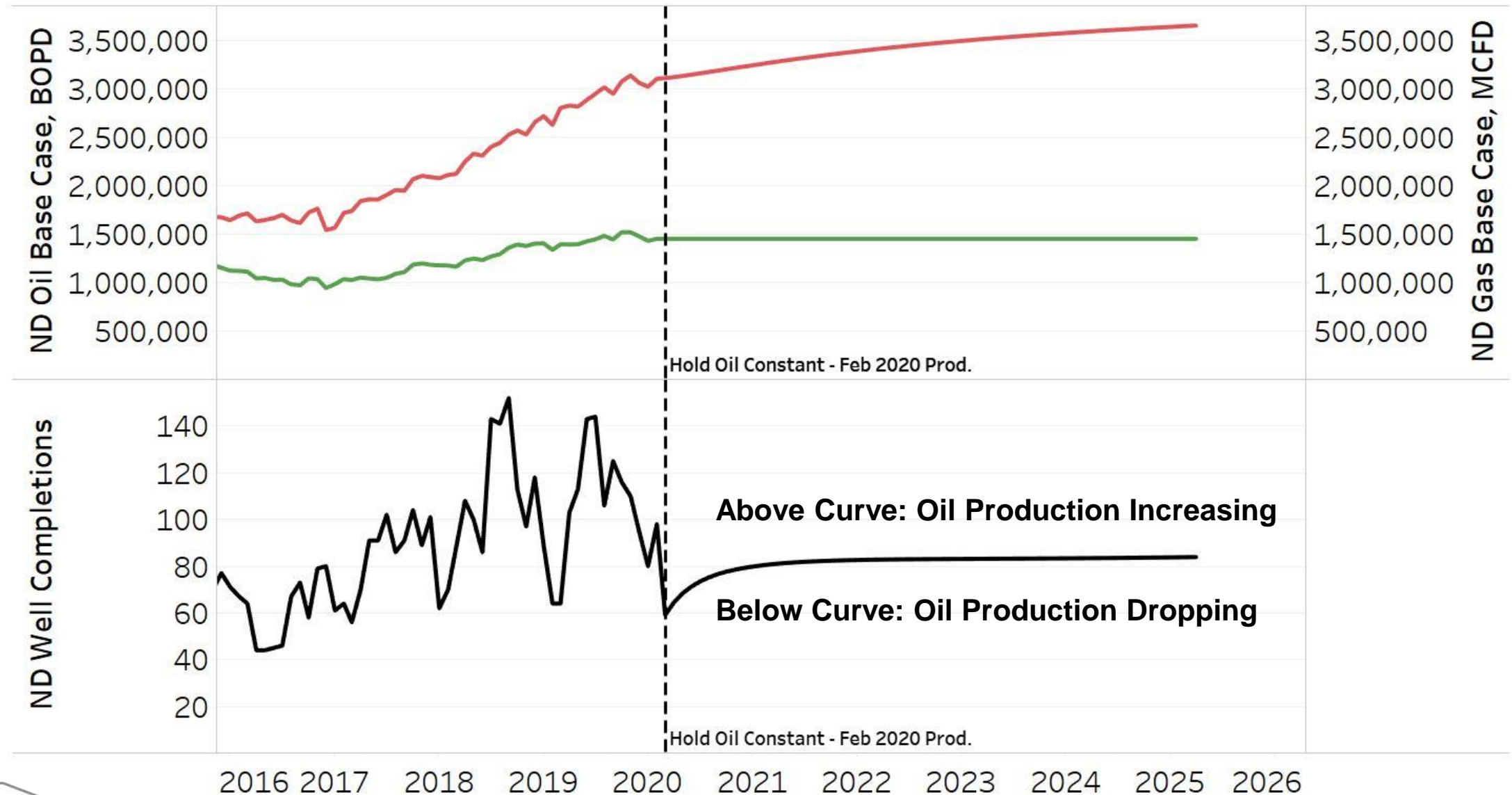
Bakken Oil Production by IP Year
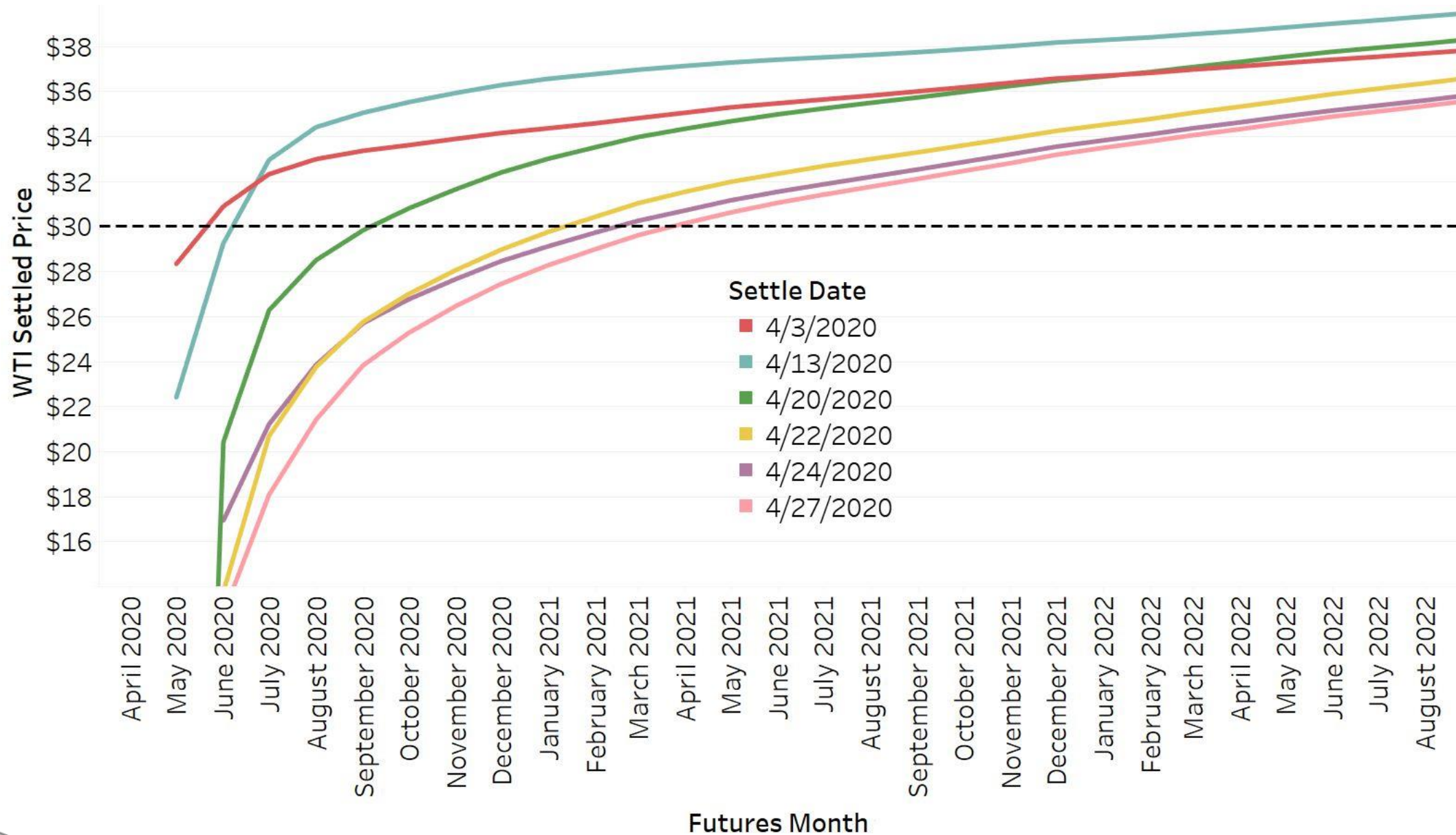
Bakken Gas Production by IP Year

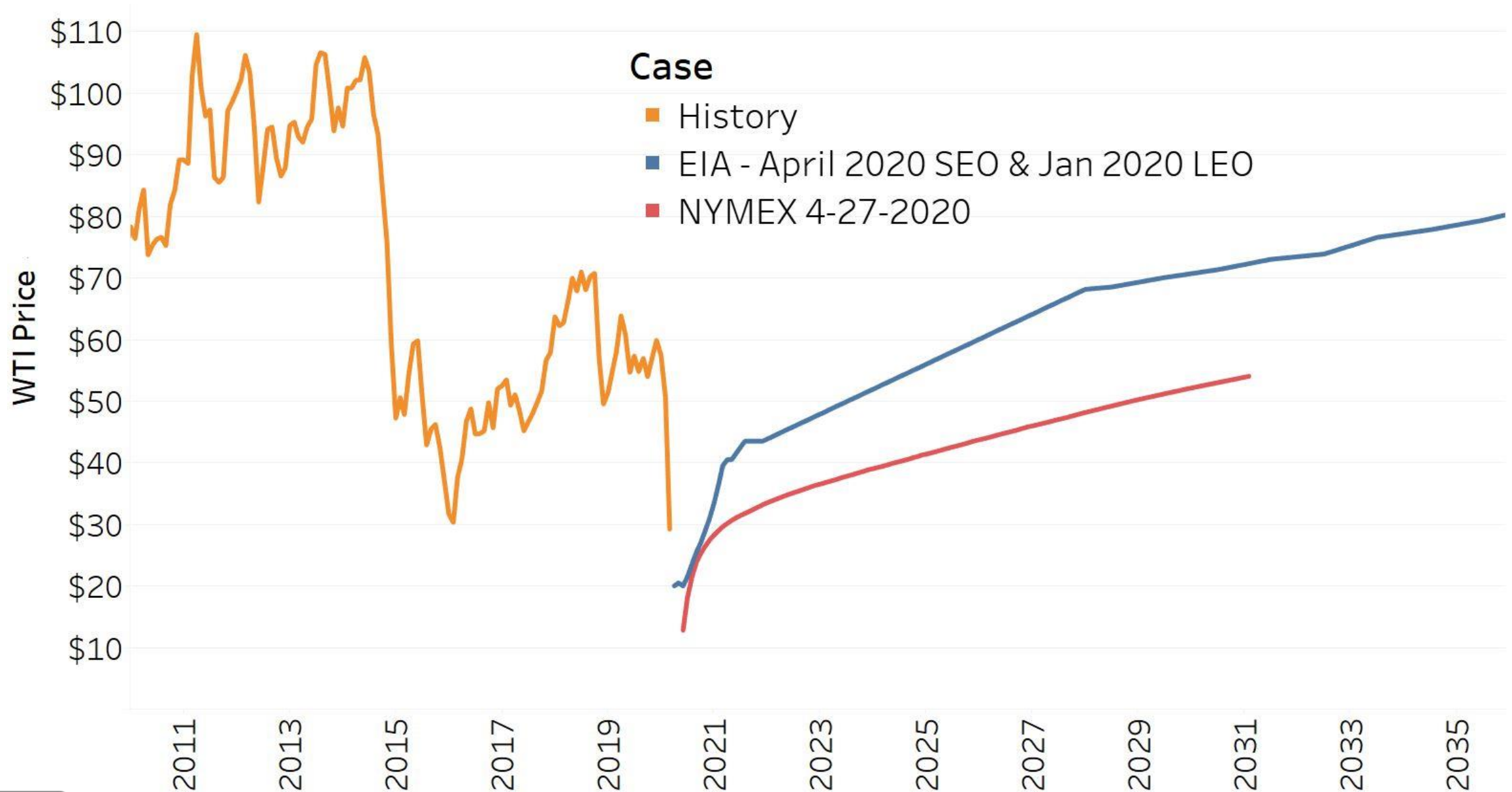# Holding Oil Constant (No Shut-Ins, Weather, Etc.)

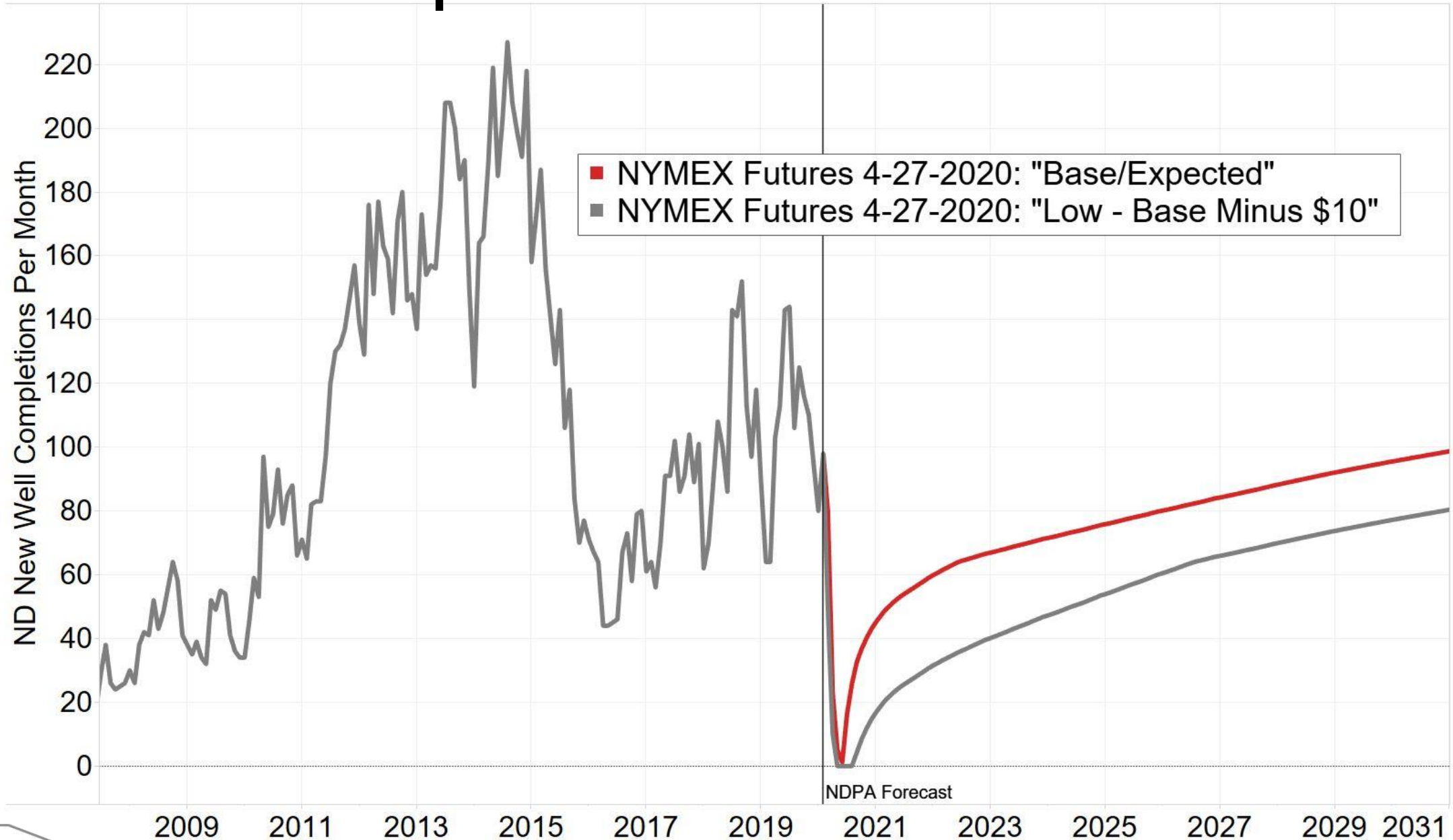Answering the question, "How many well completions to hold oil production flat?"
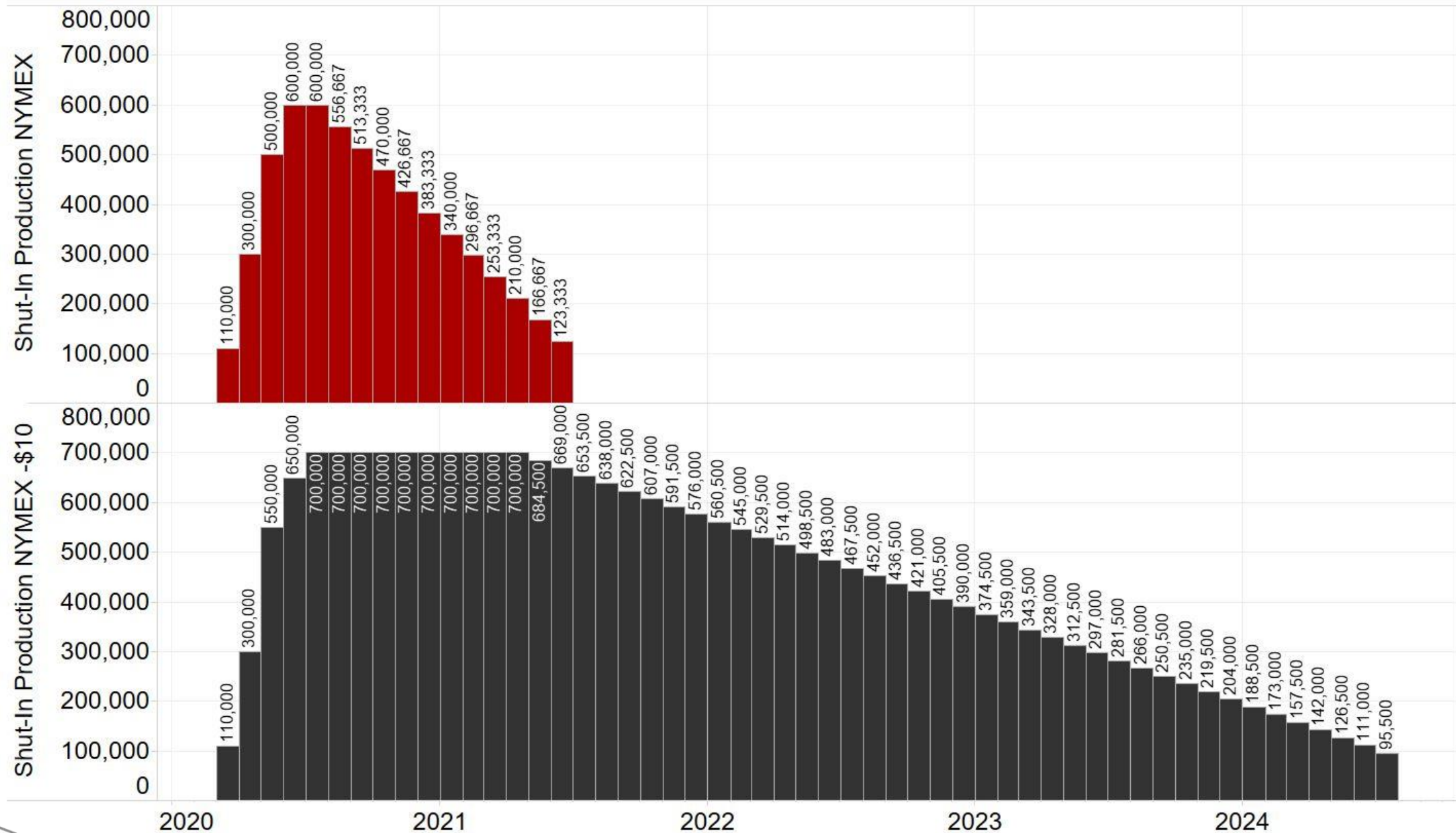
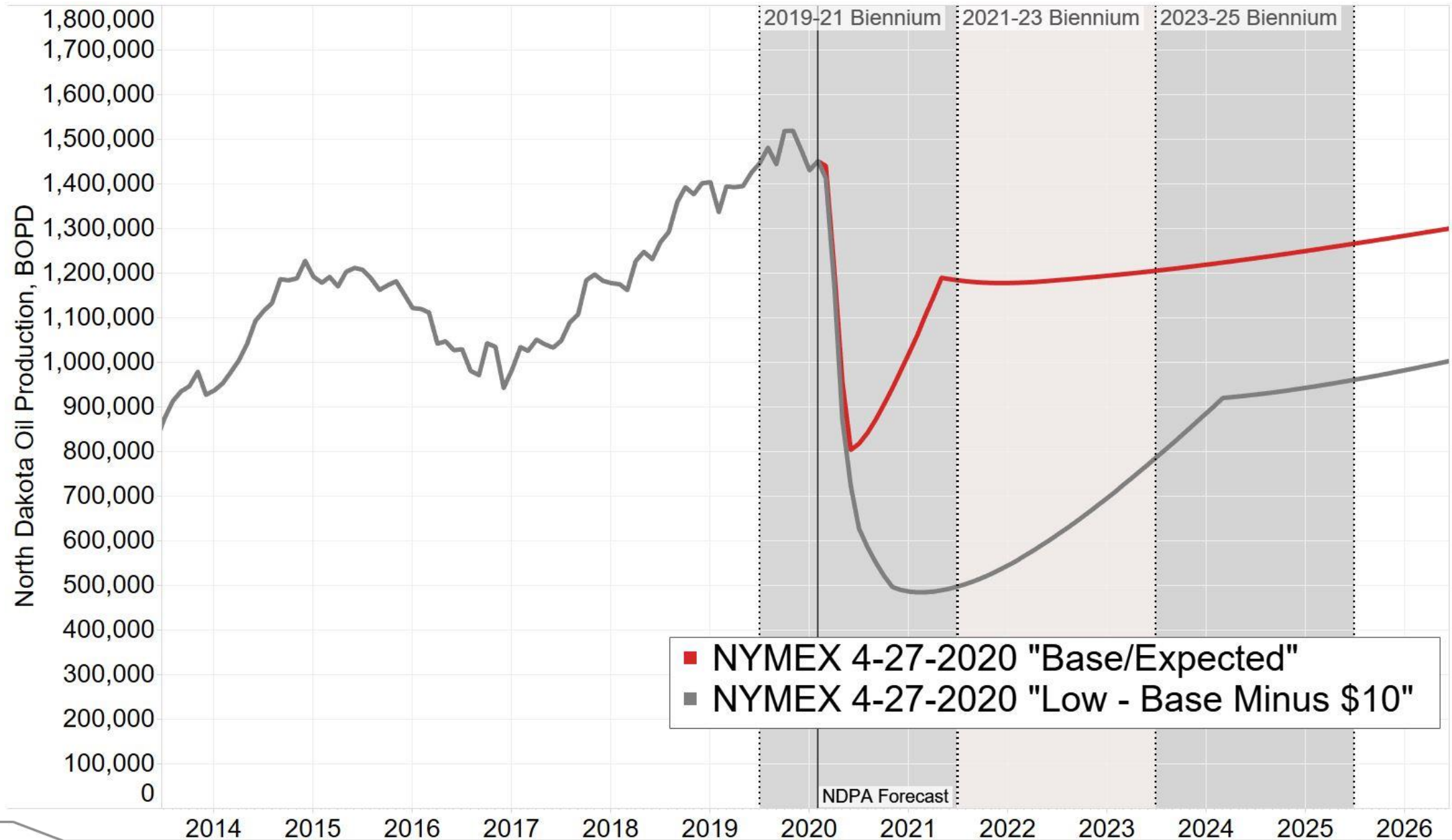# April 2020 Futures Curves

Two Production Scenarios to Review

Case
- History
- EIA - April 2020 SEO & Jan 2020 LEO
- NYMEX 4-27-2020
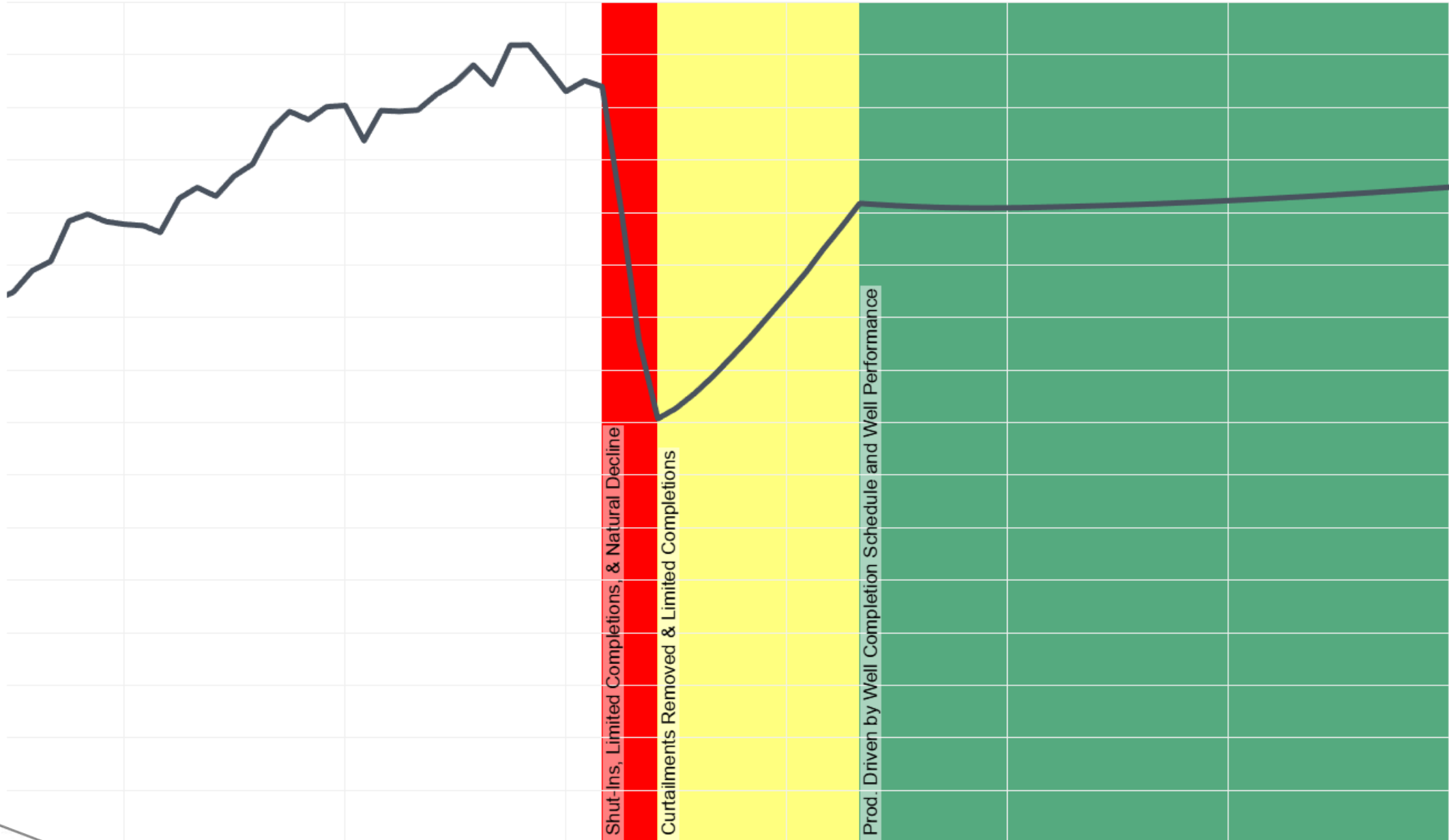
Well Completions: NYMEX Futures

Shut-In Assumptions: NYMEX Futures

ND Oil Production: NYMEX Futures
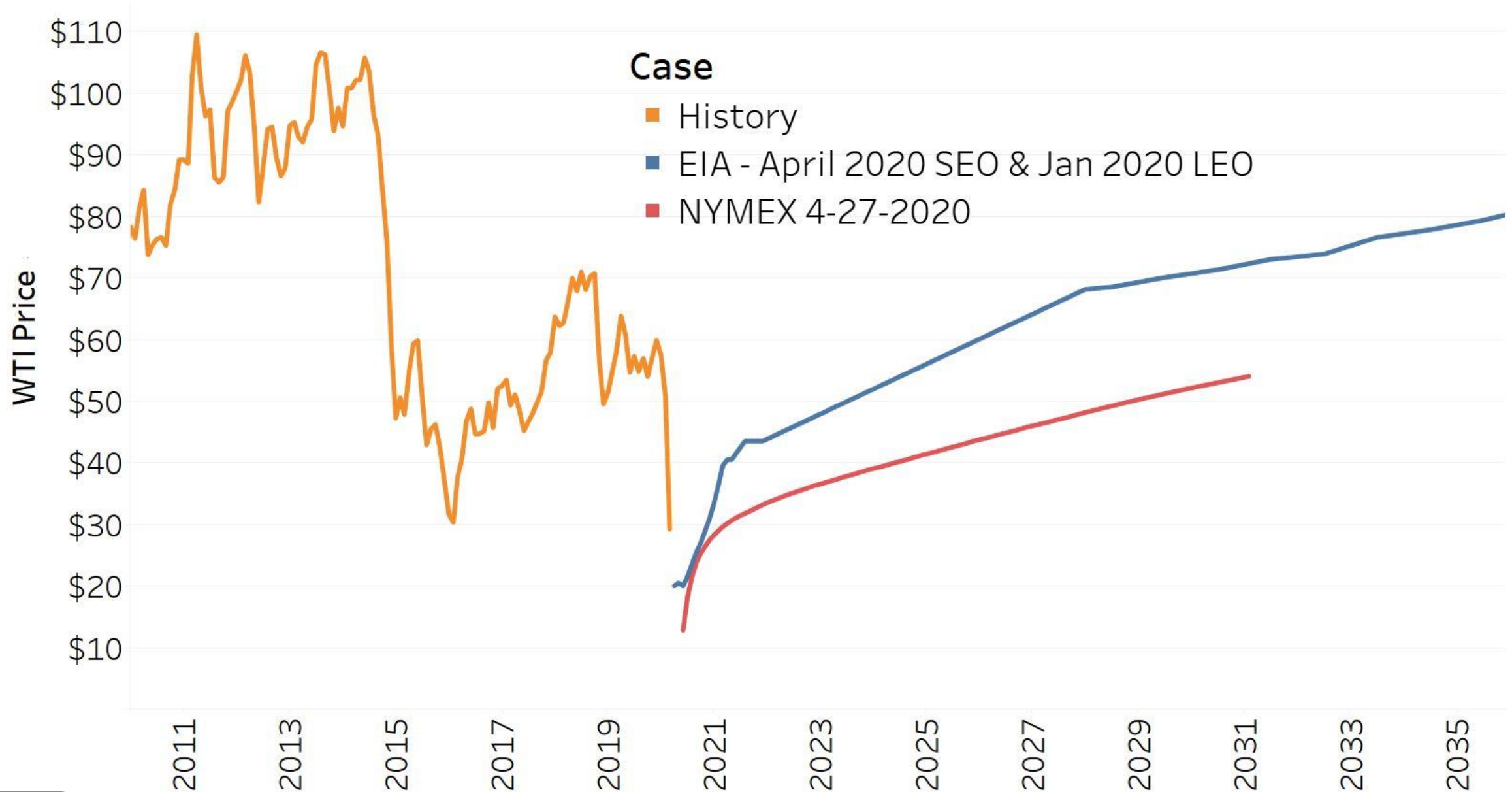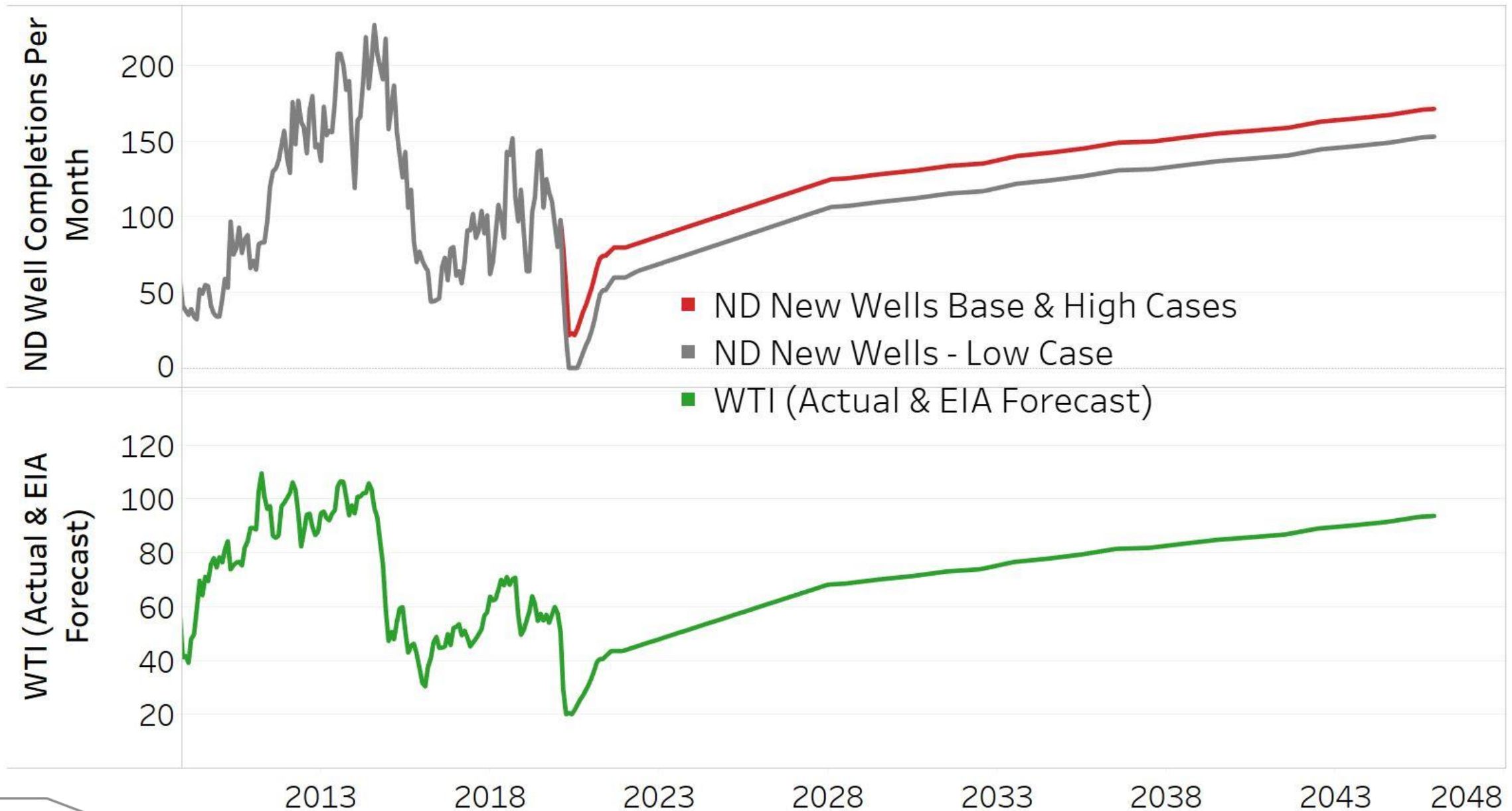
Forecast Shape Explanation

Shut-Ins, Limited Completions, & Natural Decline

Curtailments Removed & Limited Completions

Prod. Driven by Well Completion Schedule and Well Performance

ND Gas Production: NYMEX Futures

ND Gas Case, MCFD

- ■ NYMEX Futures 4-27-2020 "Base/Expected"
- ■ NYMEX Futures 4-27-2020 "Low - Base Minus $10"

NDPA Forecast

2012   2017   2022   2027
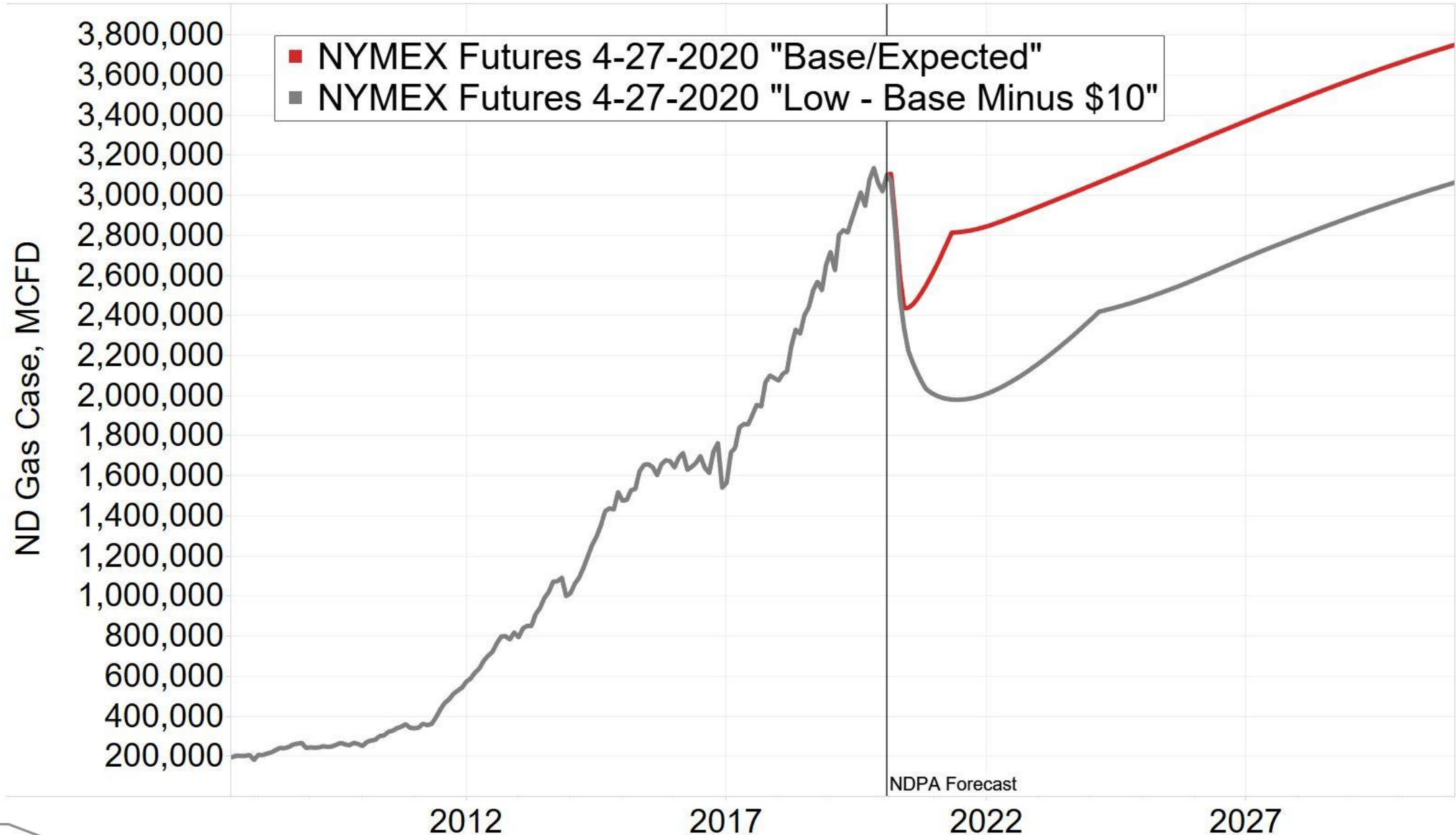
Two Production Scenarios to Review

Well Completions: EIA Price Deck

Legend:
- ND New Wells Base & High Cases
- ND New Wells - Low Case
- WTI (Actual & EIA Forecast)

Shut-In Assumptions: EIA Price Deck

ND Oil Production: EIA Price Deck

Chart showing North Dakota Oil Production, BOPD (y-axis from 0 to 2,200,000) versus years (x-axis from 2007 to 2047). A vertical dotted line at 2021 marks "NDPA Forecast" separating historical data from forecasts.

Legend:
- Base (EIA Oil Price)
- High (EIA Oil Price & Tech. Increase)
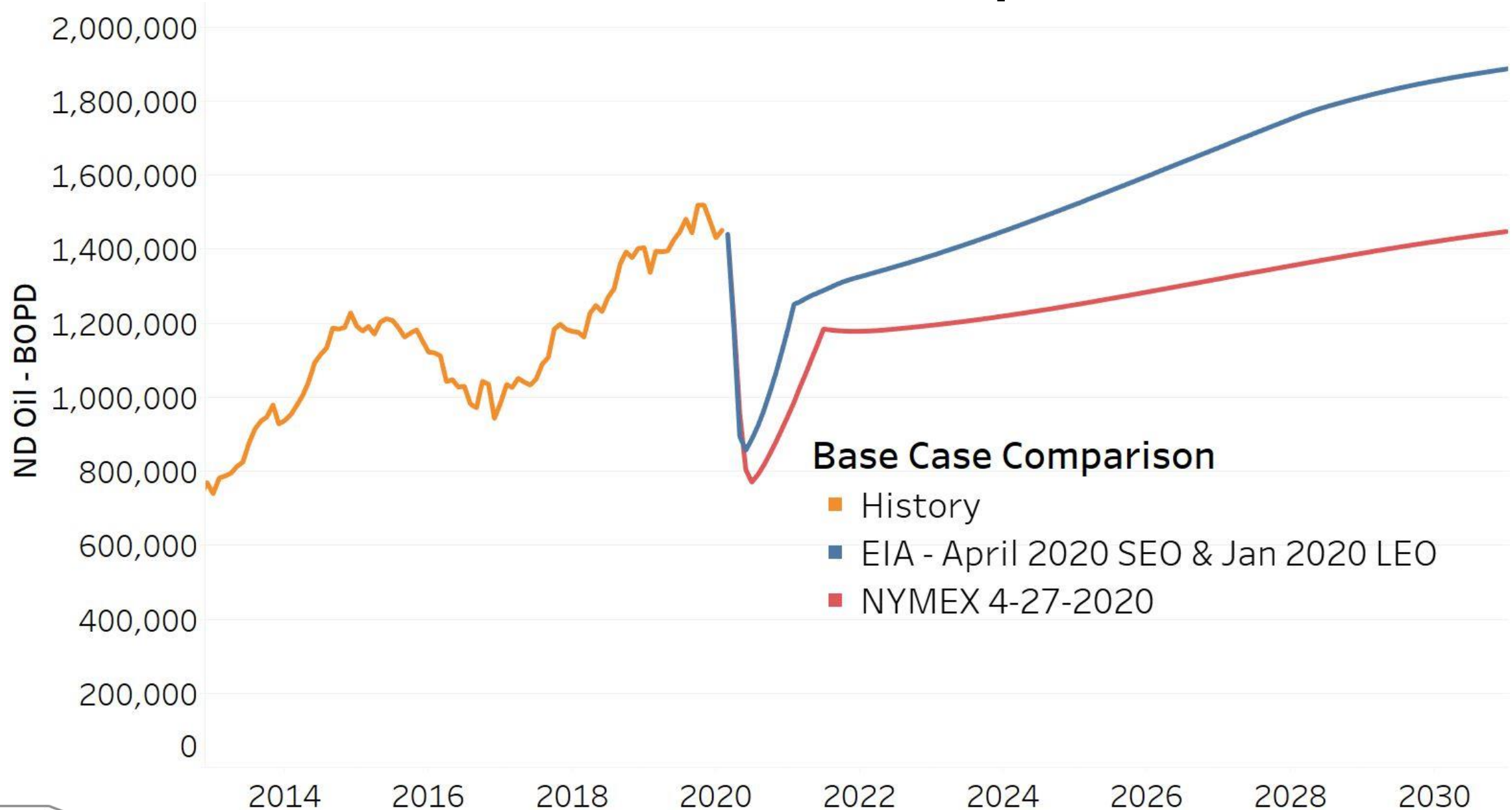- Low (EIA Price -$10/bbl)
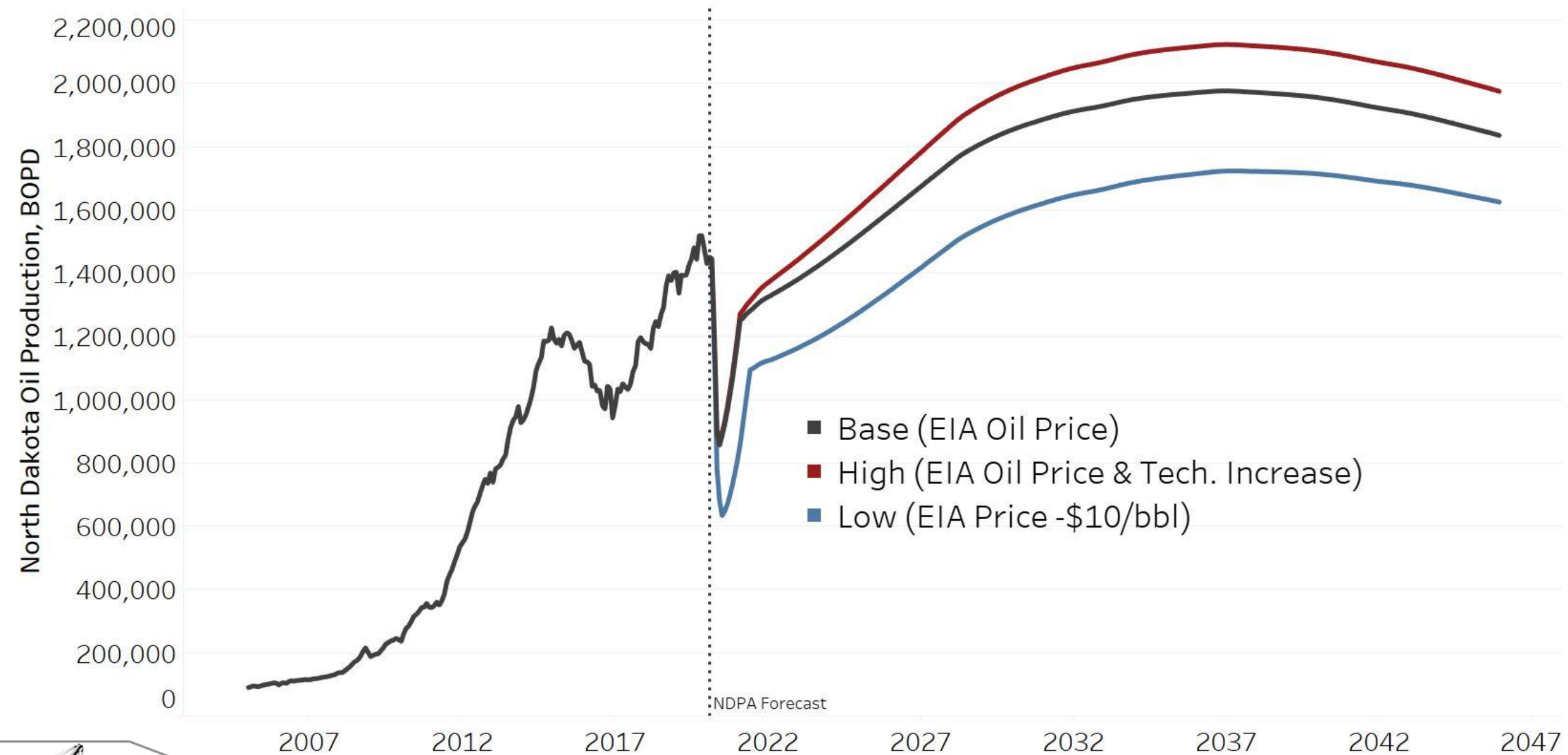
ND Oil Production: EIA Price Deck
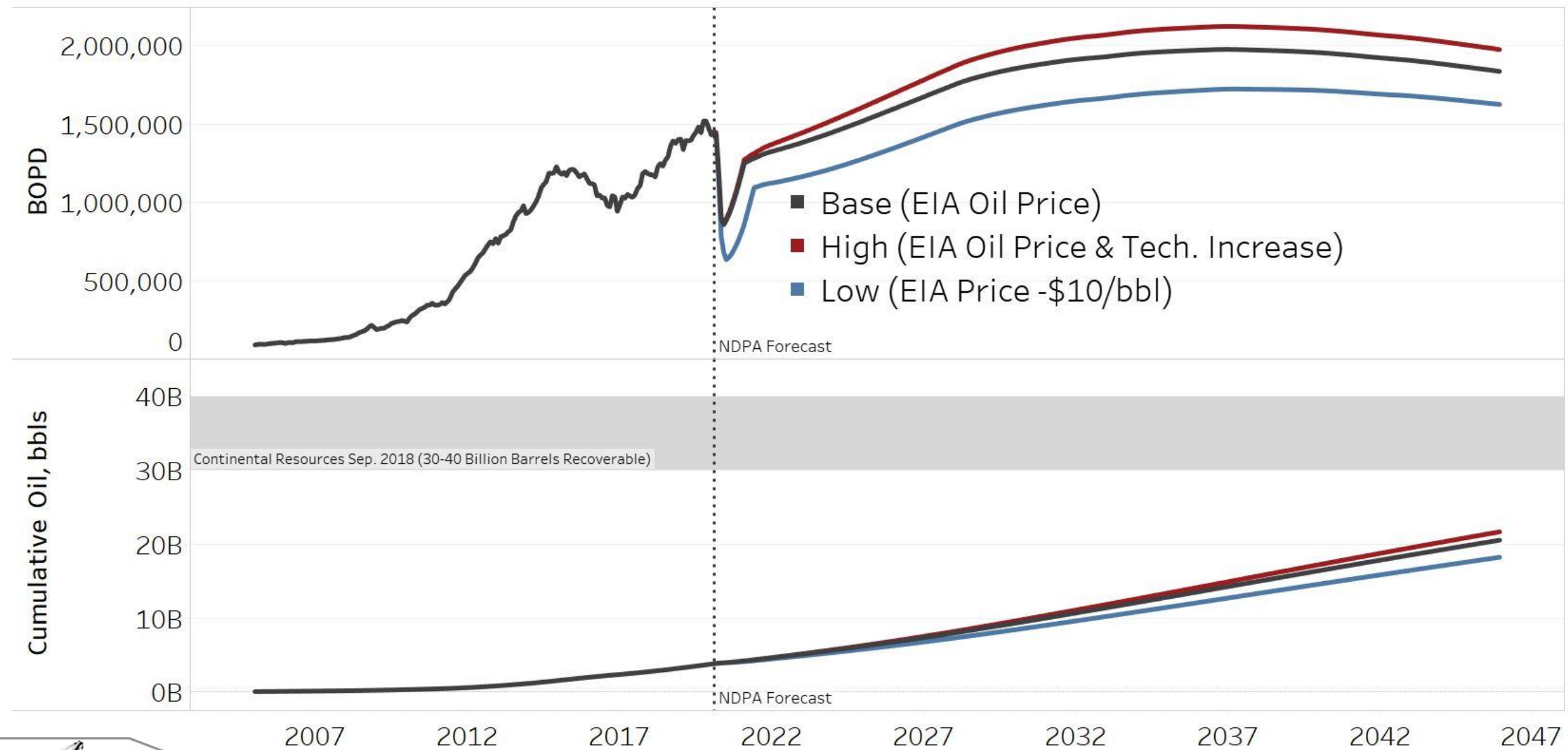
ND Gas Production: EIA Price Deck
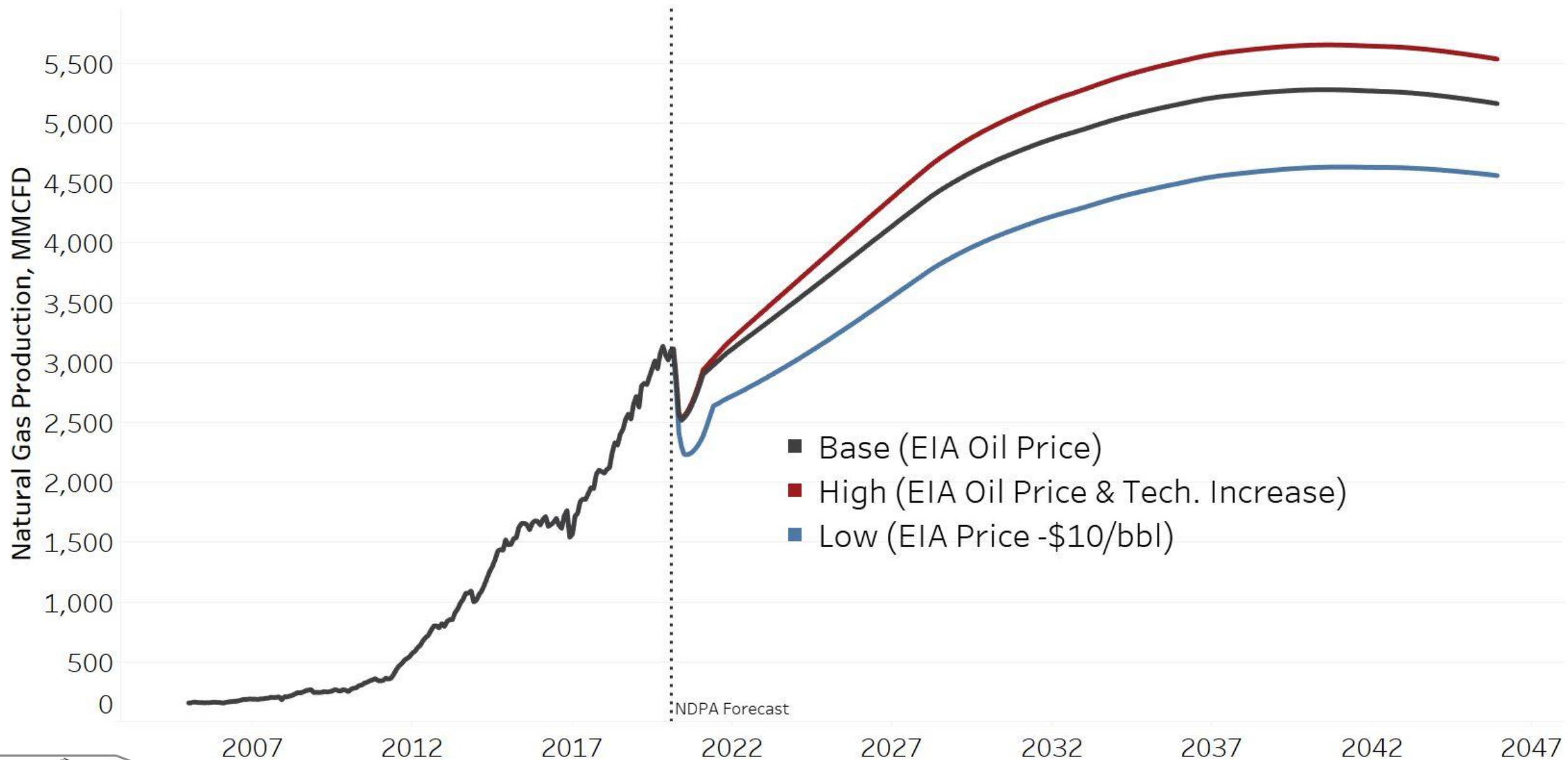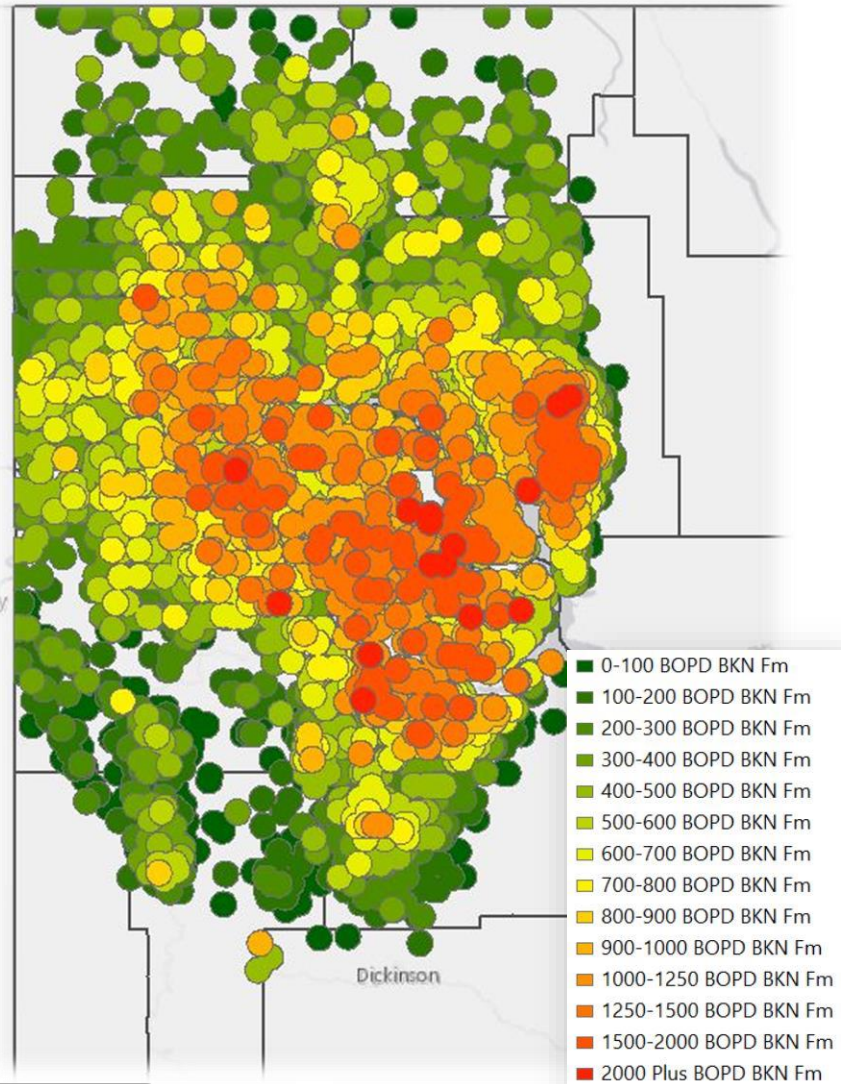
Base Case Oil Comparison

Supporting Slides
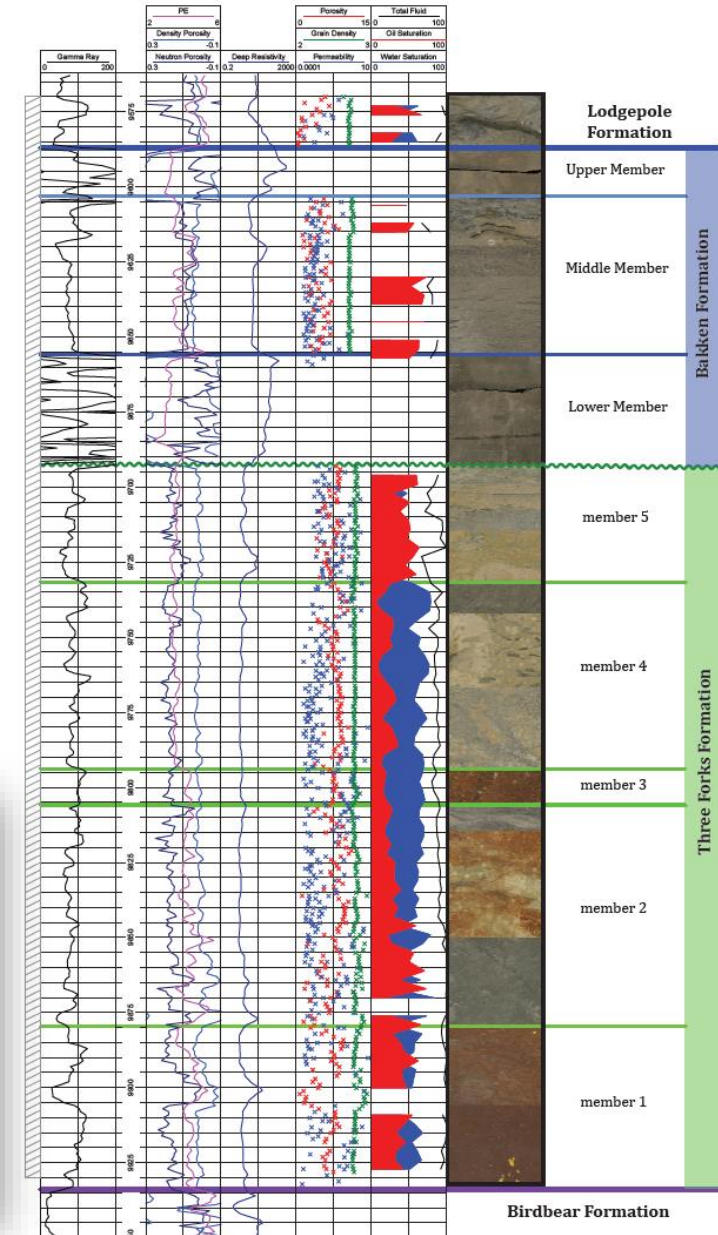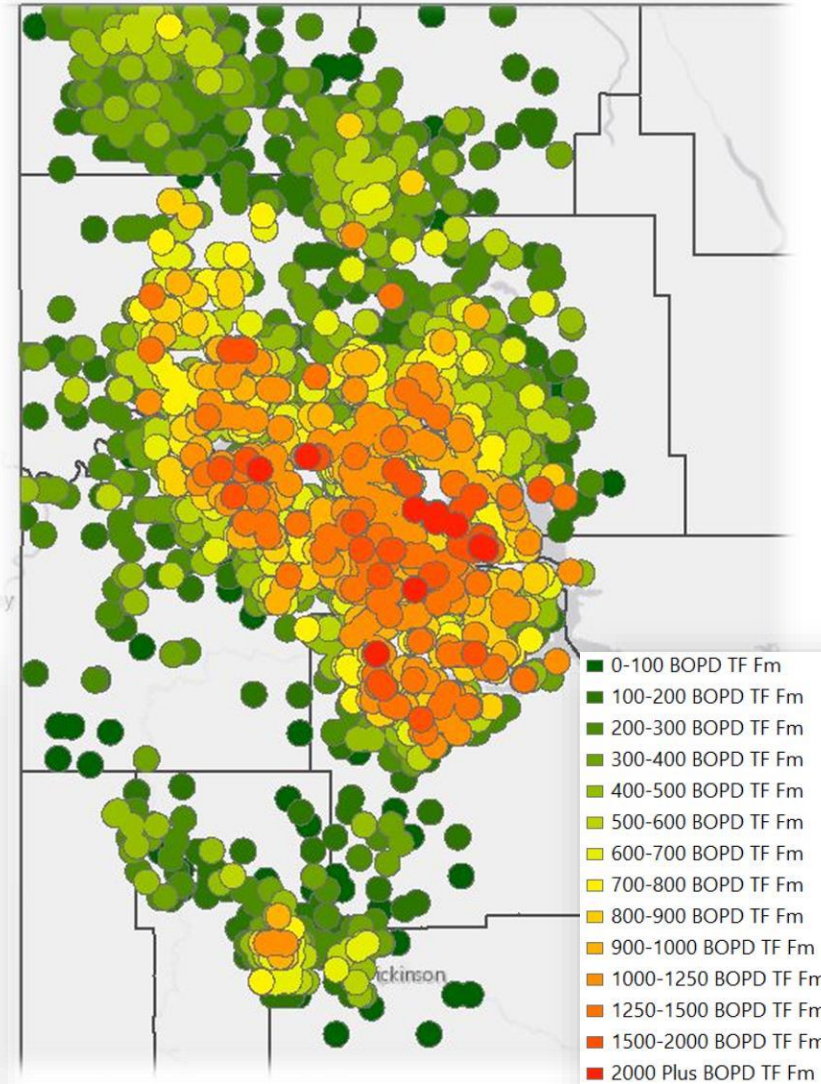
Non-Confidential DUC Well Review
March 2020

Bakken & Three Forks Formations

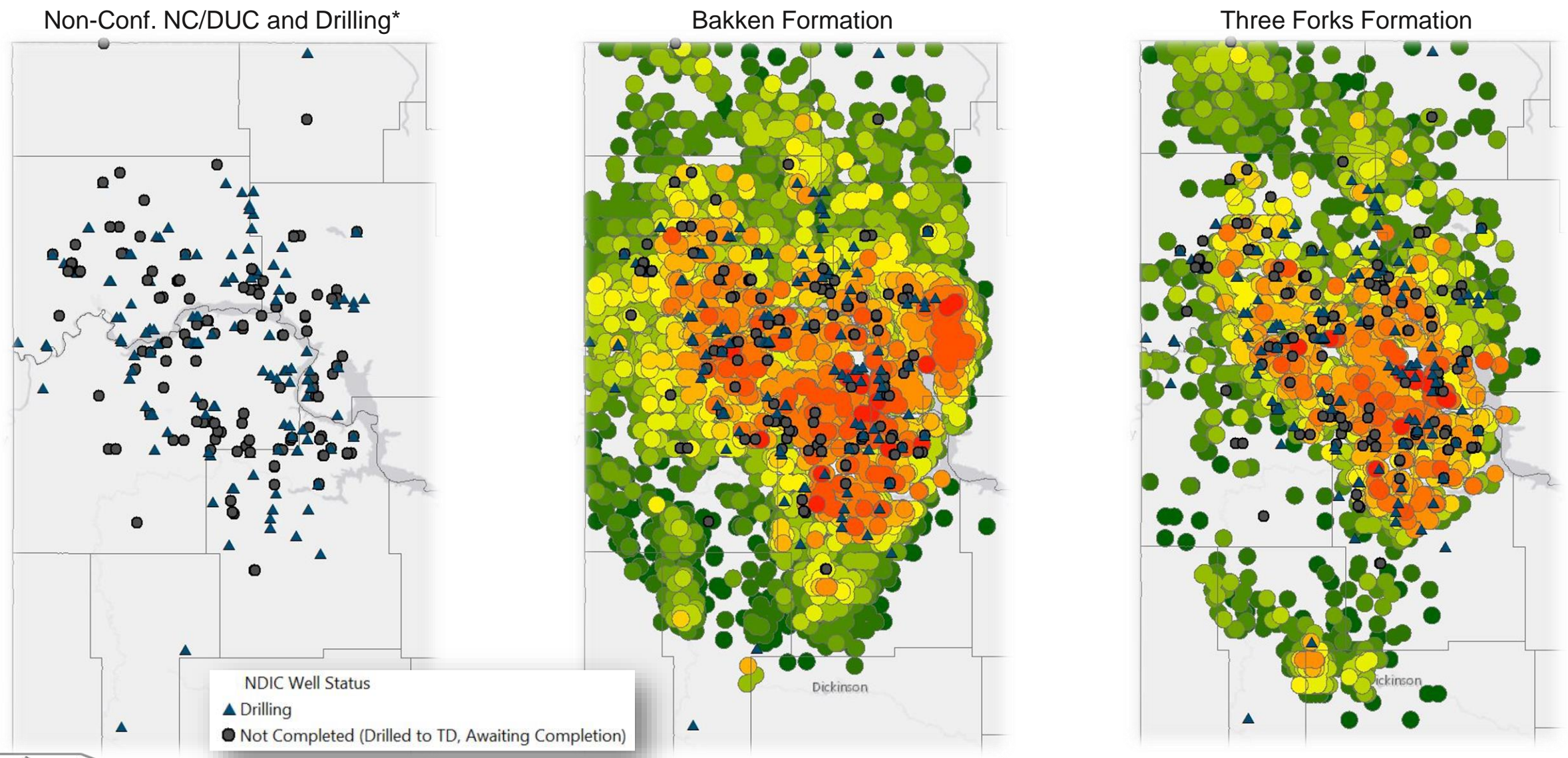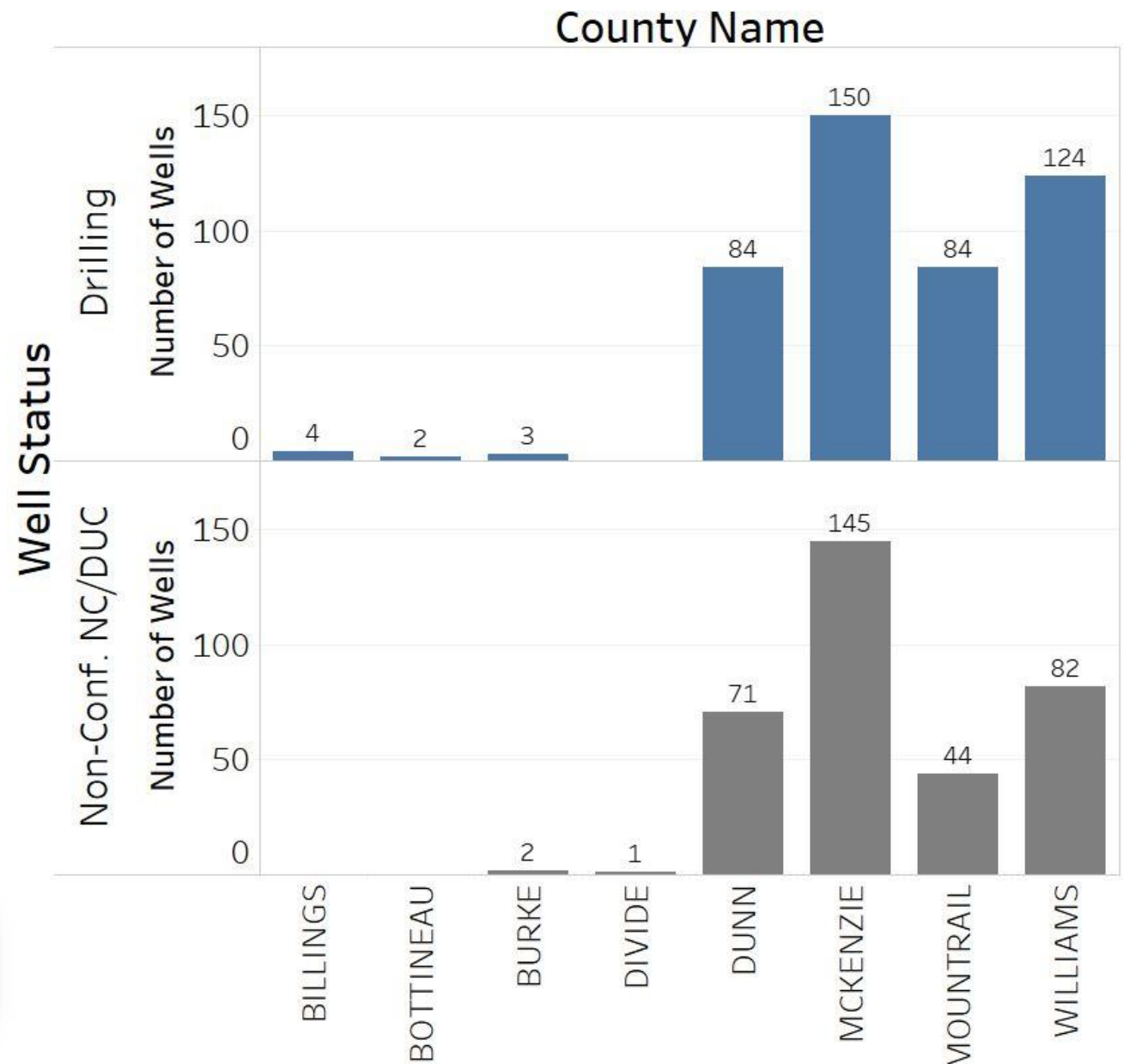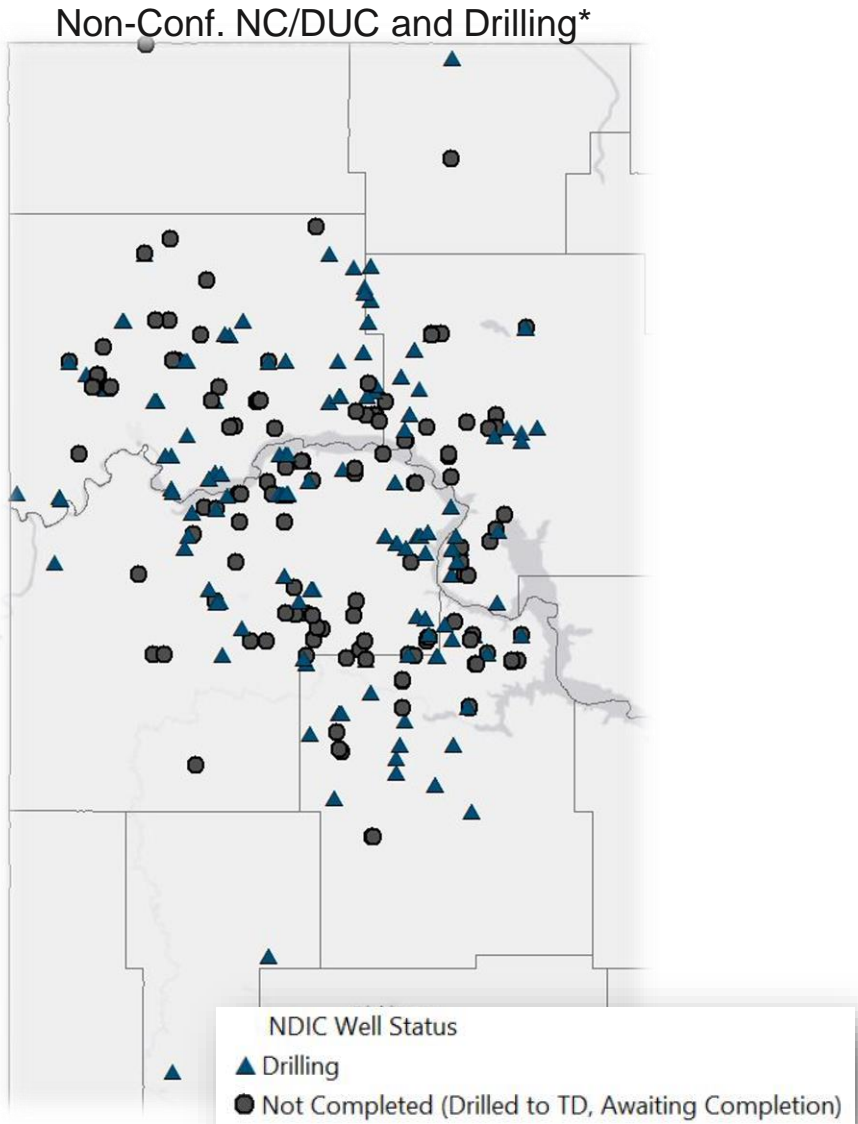# Uncompleted Wells Proximity to High Performance Wells

Non-Conf. NC/DUC and Drilling*

Bakken Formation

Three Forks Formation

NDIC Well Status
▲ Drilling
⬤ Not Completed (Drilled to TD, Awaiting Completion)

Dickinson

ickinson

Uncompleted Wells Proximity to High Performance Wells

Non-Conf. NC/DUC and Drilling*

NDIC Well Status
▲ Drilling
● Not Completed (Drilled to TD, Awaiting Completion)

Uncompleted Wells Proximity to High Performance Wells

Non-Conf. NC/DUC and Drilling*

Max Zone (30-Day IP)
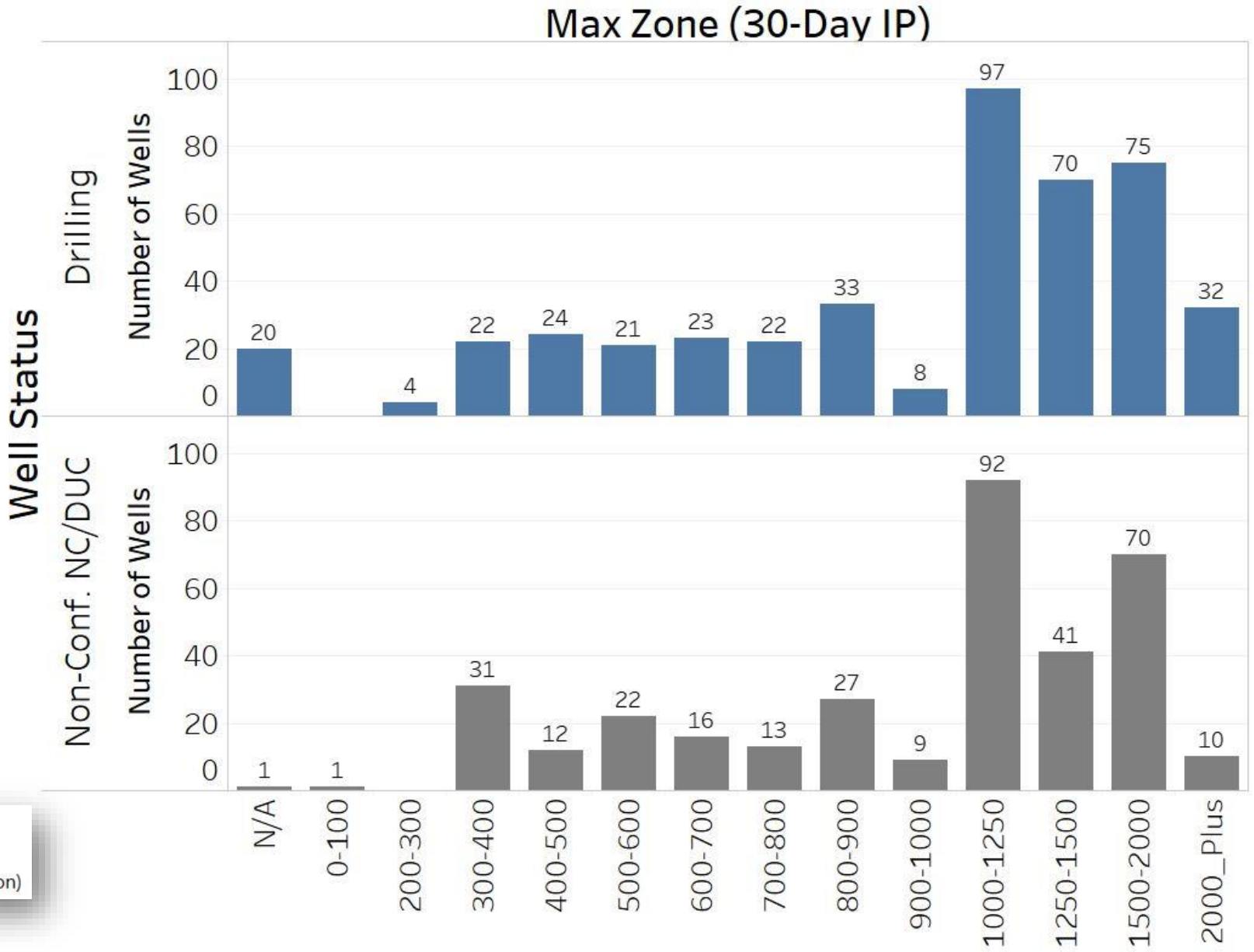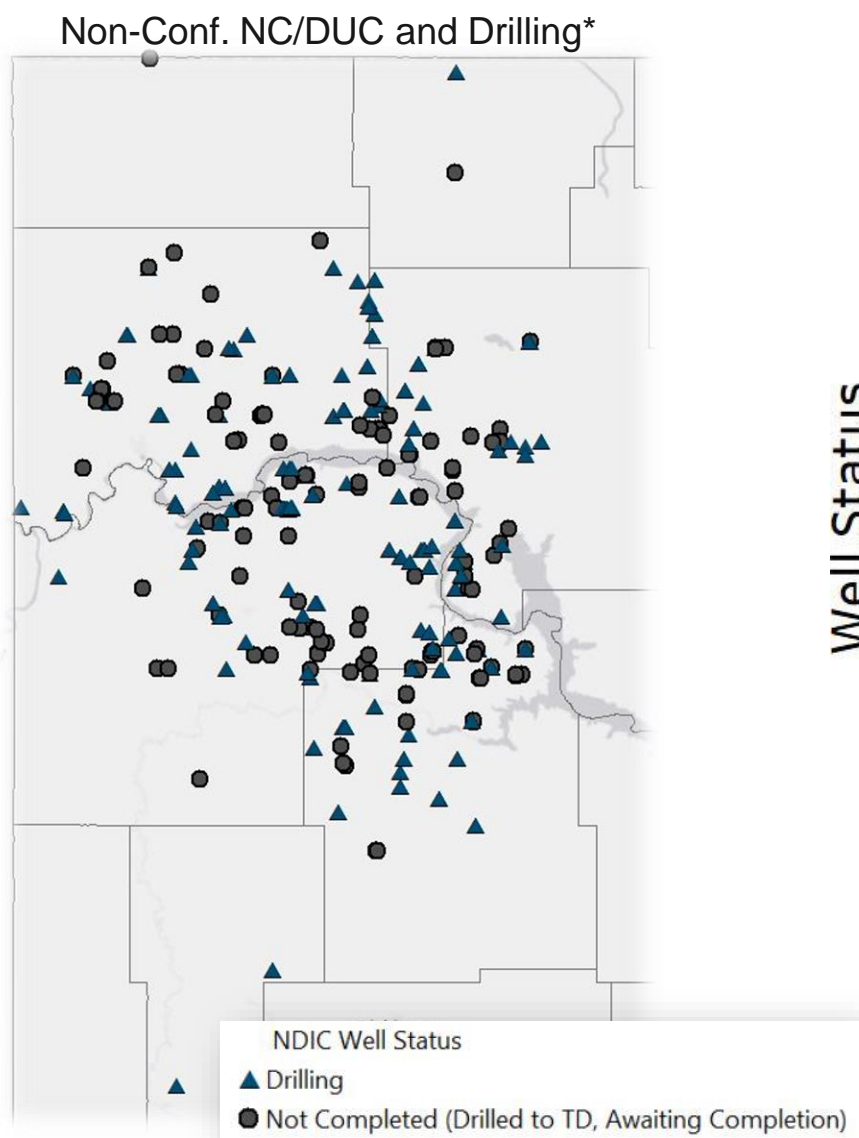
Uncompleted Wells Proximity to High Performance Wells
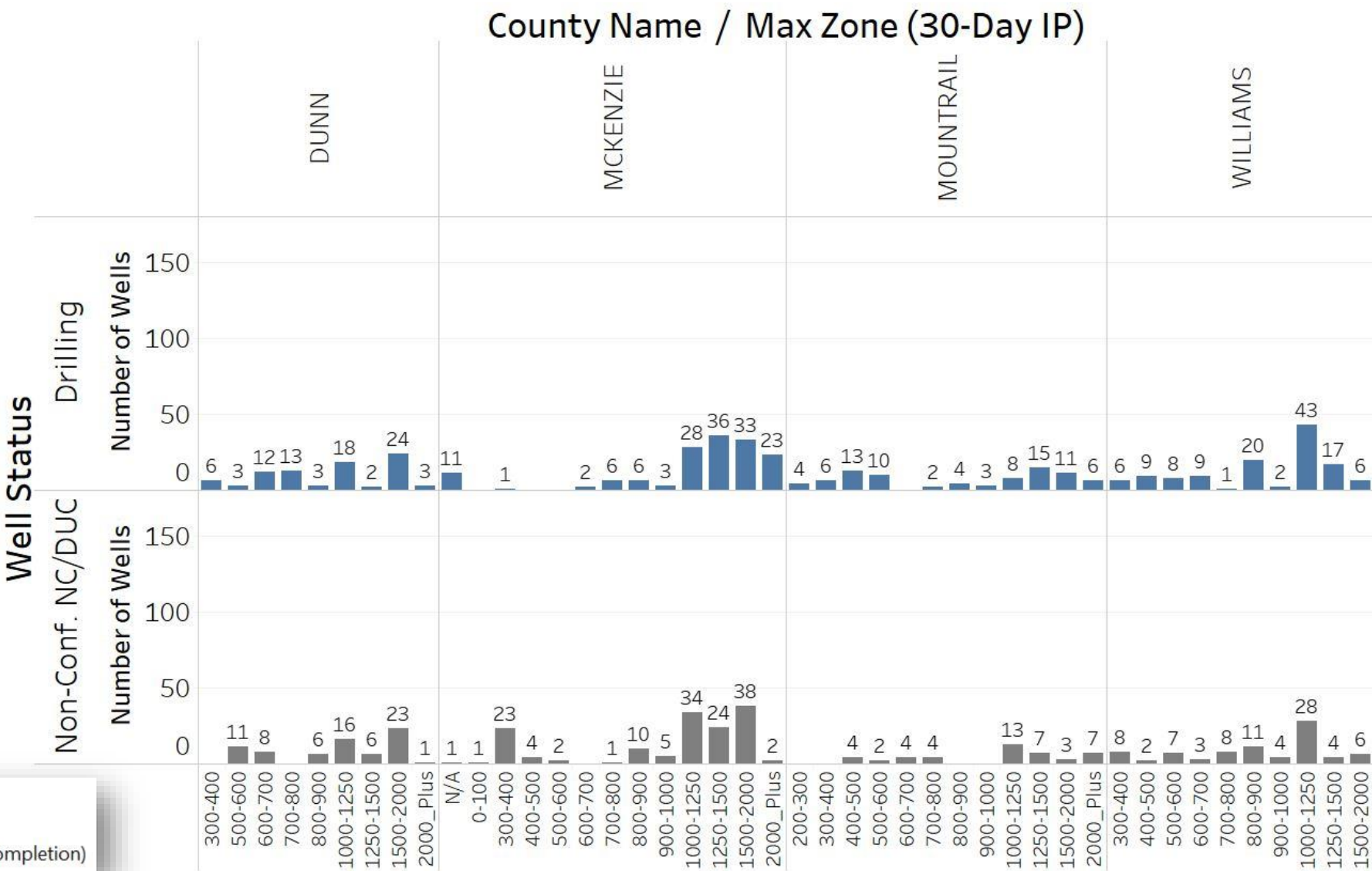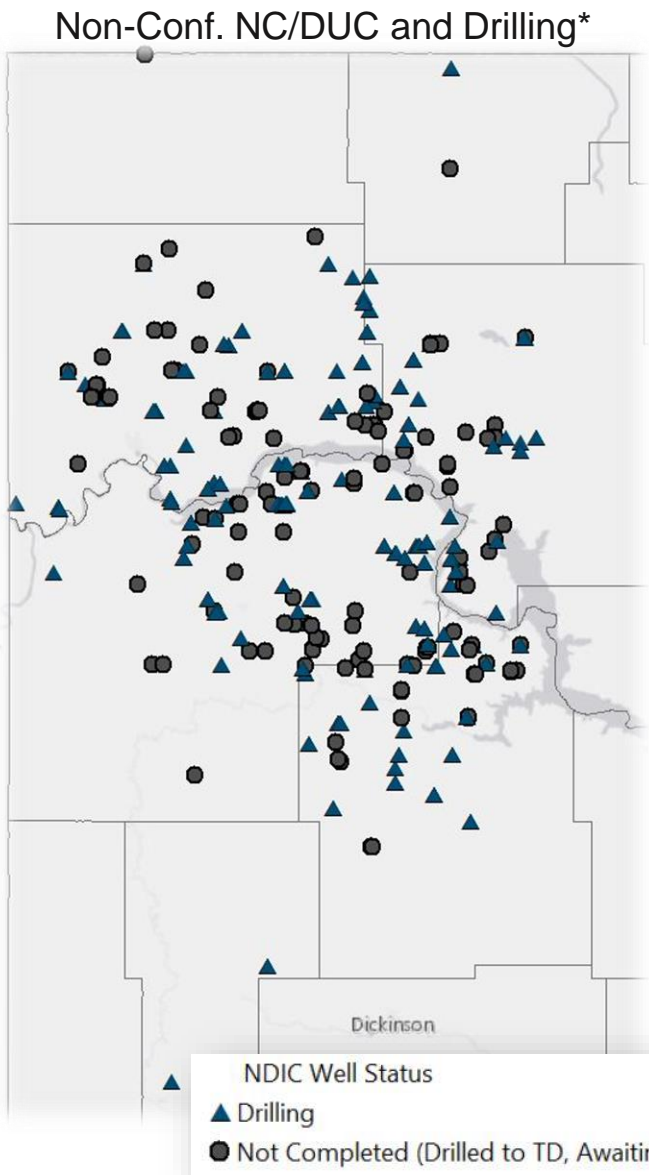
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