

Oil & Gas Forecast

Update and Review

Eric Anderson, CFA - CTO

Oil & Gas Forecast

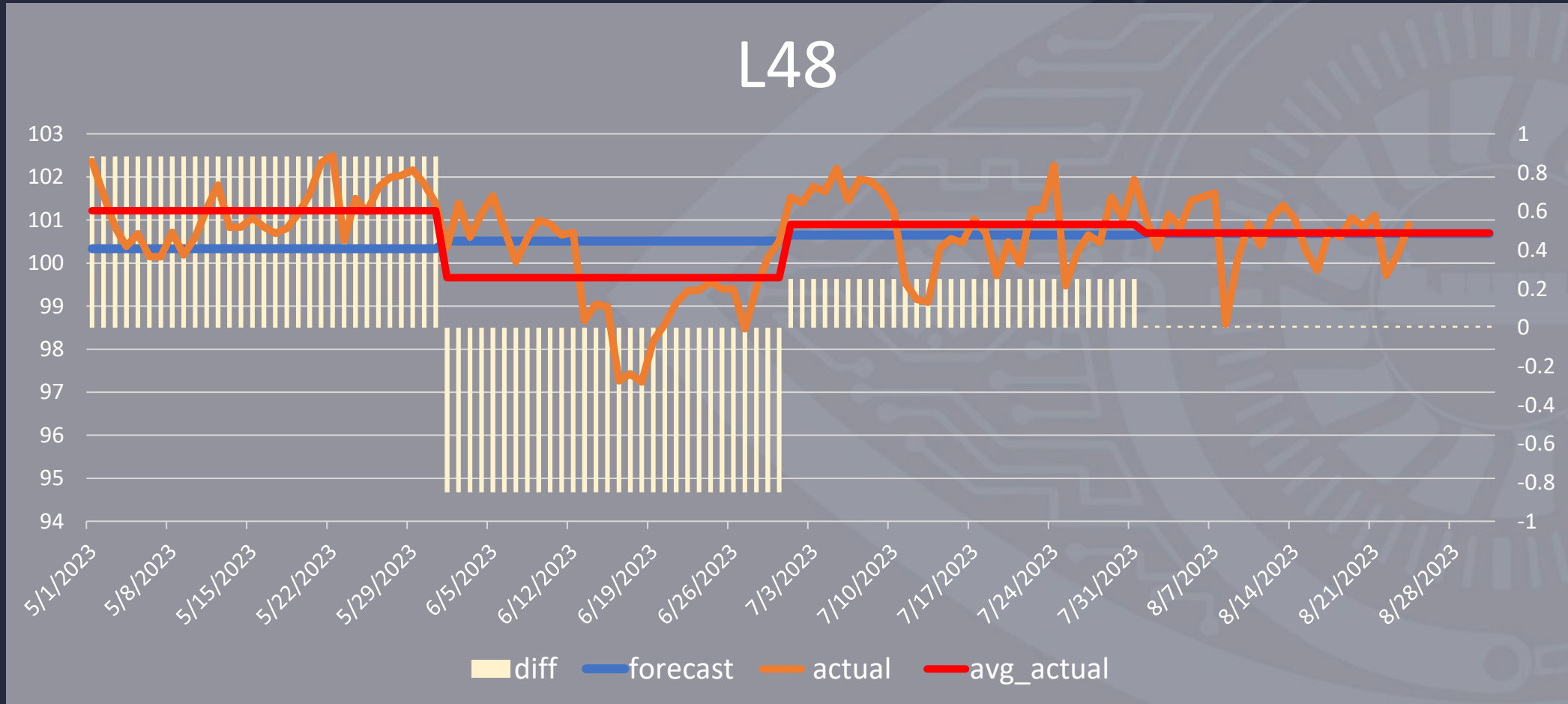
Agenda

- Gas Forecast Performance
- Pipe Scrape Regression Updates
- Producer Earnings Review
- Shut In Analysis
- New Pipelines
- Gas Production Forecast Update
- Oil Forecast Performance and Update
- Q&A

Gas Forecast Performance

May23-Aug23

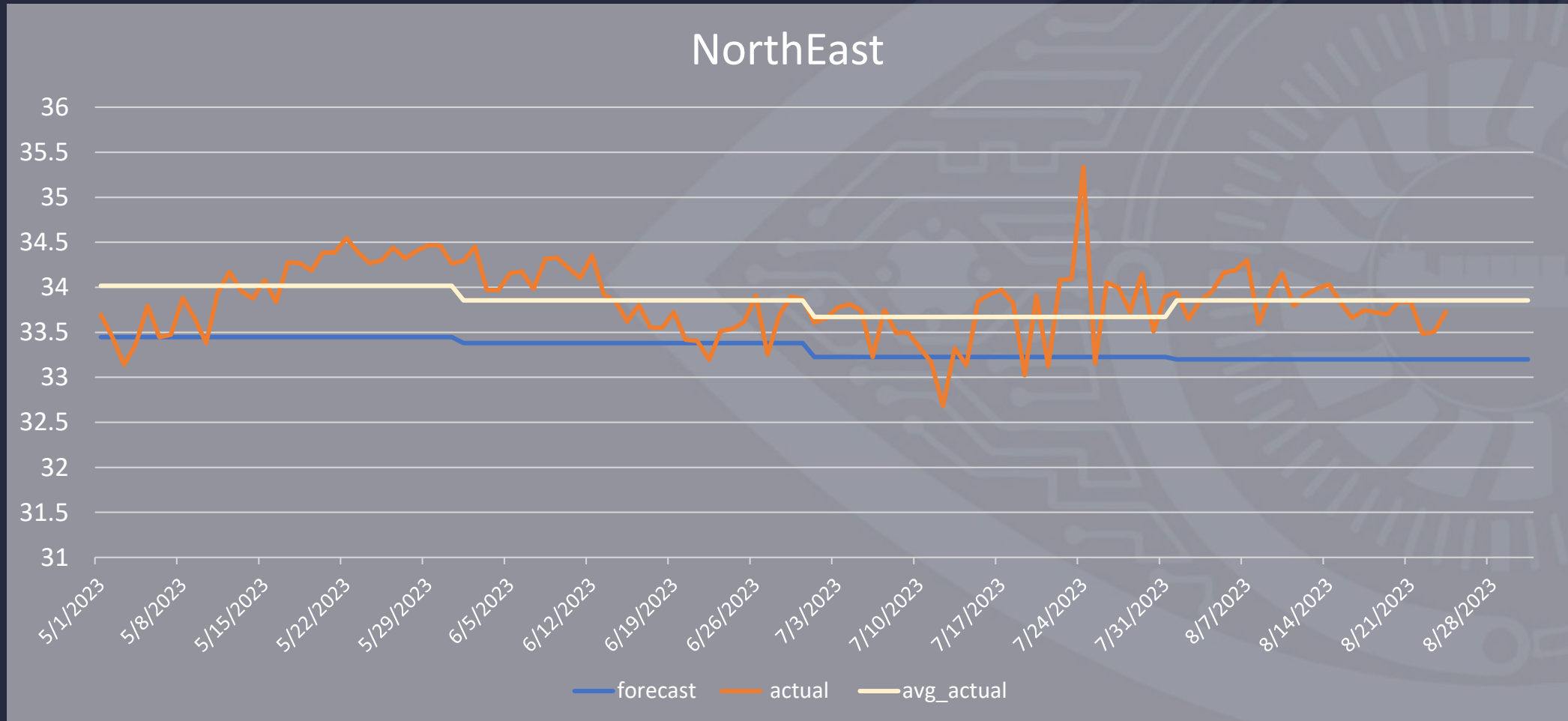
MAE: 0.47 BCFD



Gas Forecast Performance

May23-Aug23

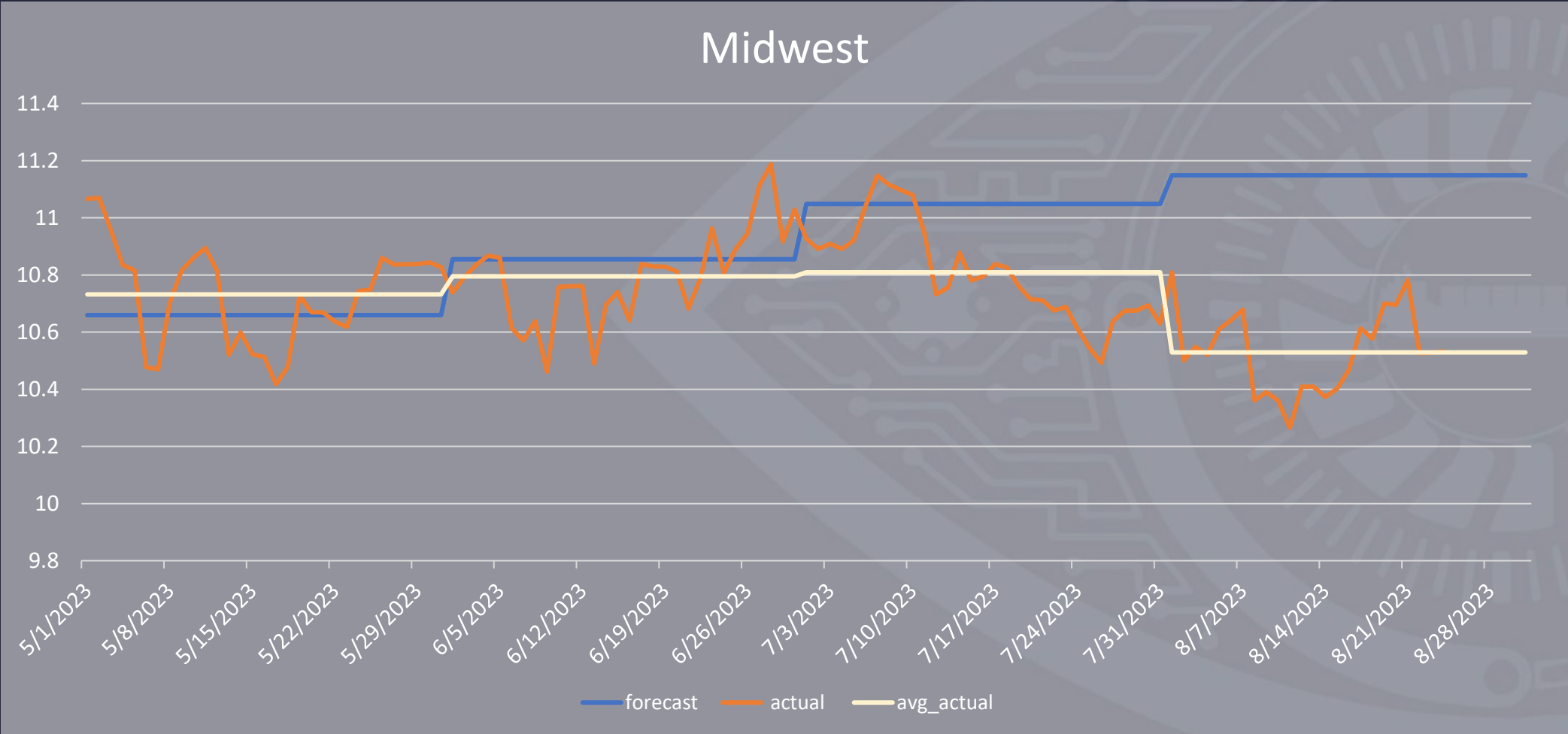
MAE: 0.53 BCFD



Gas Forecast Performance

May23-Aug23

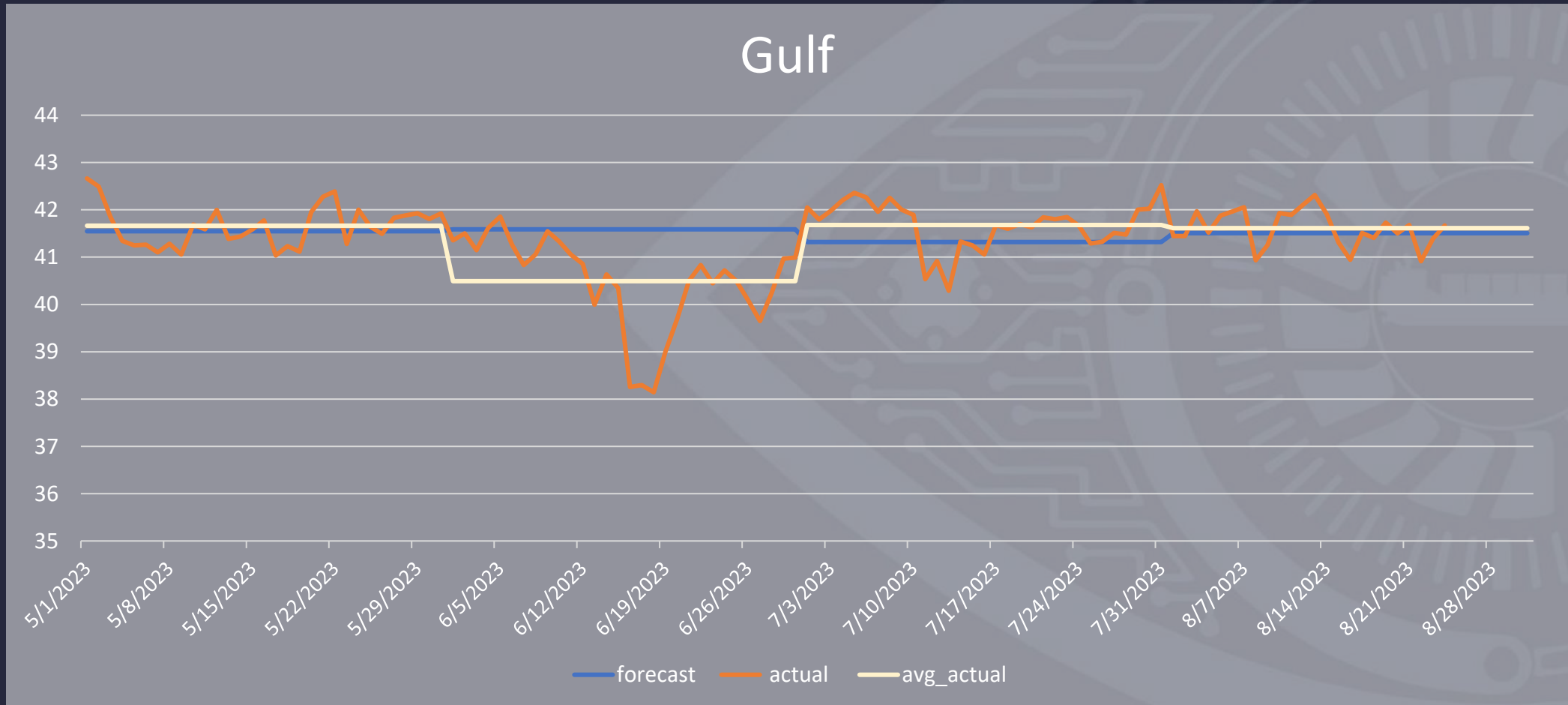
MAE: 0.24 BCFD



Gas Forecast Performance

May23-Aug23

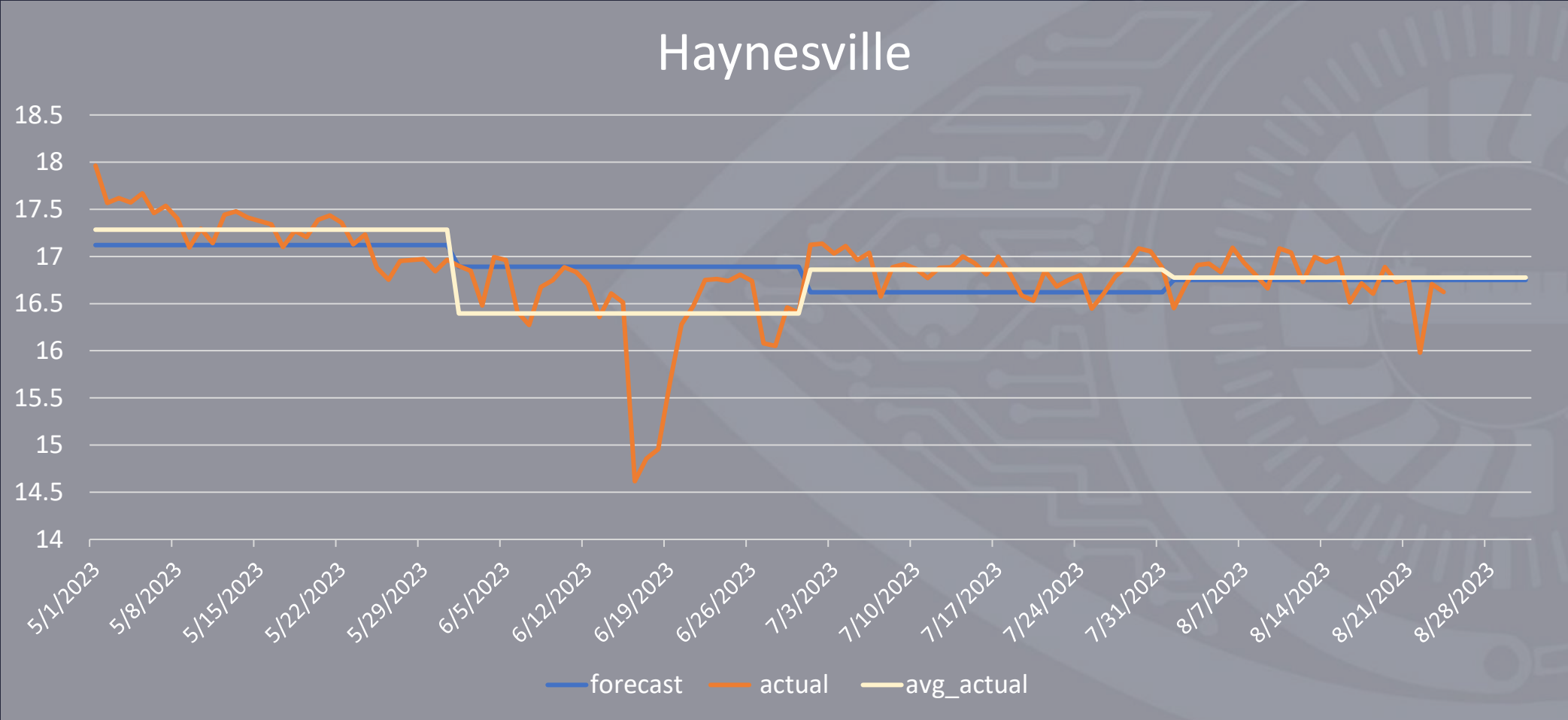
MAE: 0.39 BCFD



Gas Forecast Performance

May23-Aug23

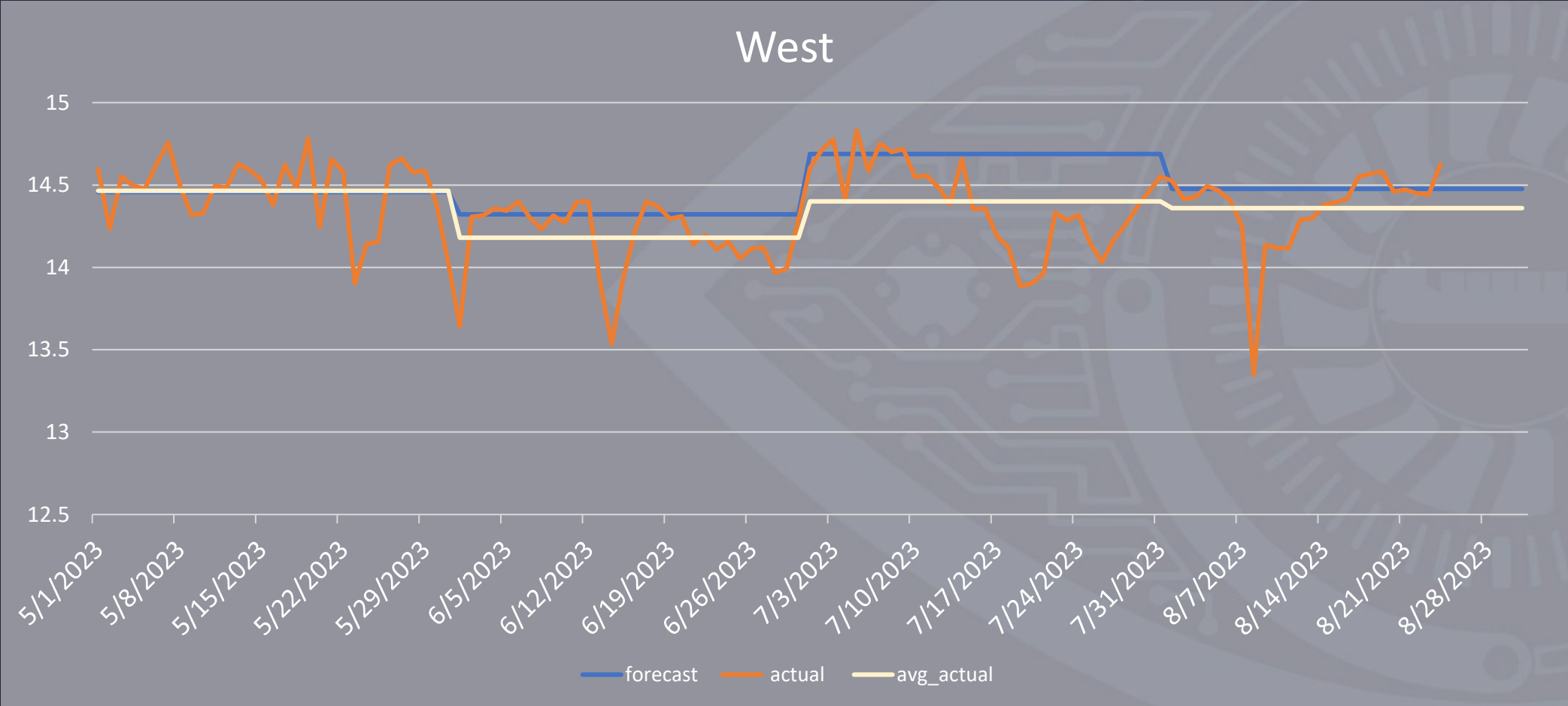
MAE: 0.22 BCFD



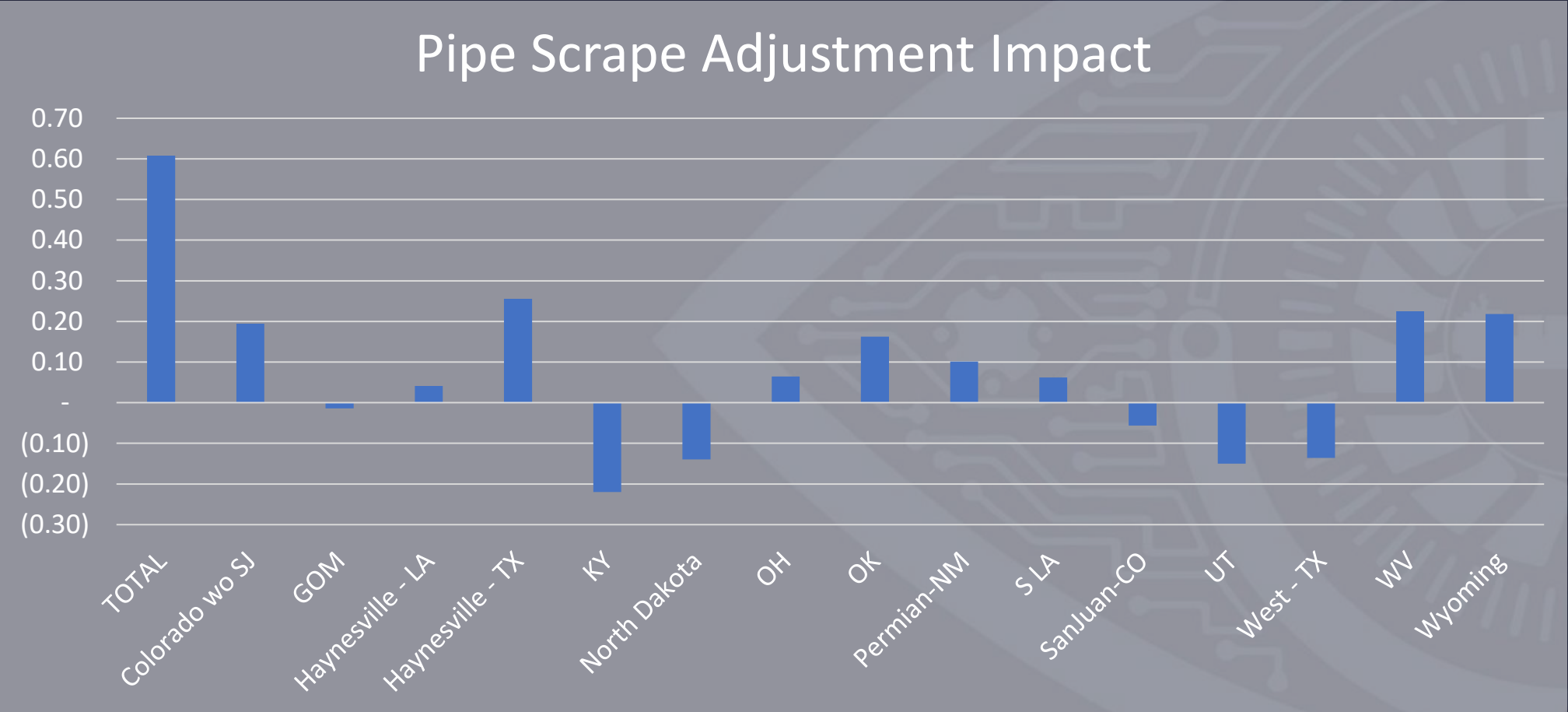
Gas Forecast Performance

May23-Aug23

MAE: 0.13 BCFD



Pipe Scrape Recalibrations





Long-Term NG & Oil Production Forecast: Public Producer Guidance Private Producer Activity Adjustment

Tony Franjie, Head of Energy Fundamentals

Main Themes From Q2 2023 Producer Earnings Reports

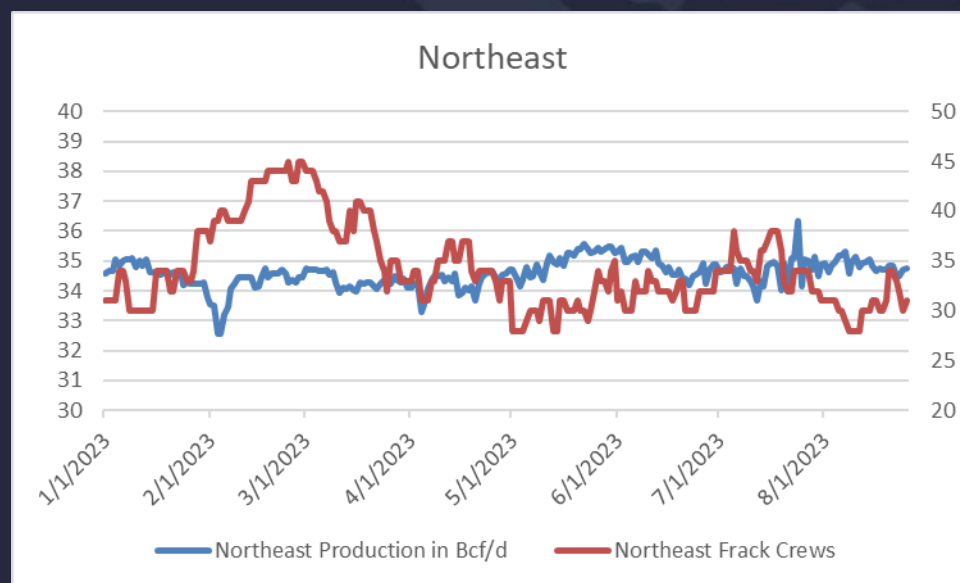
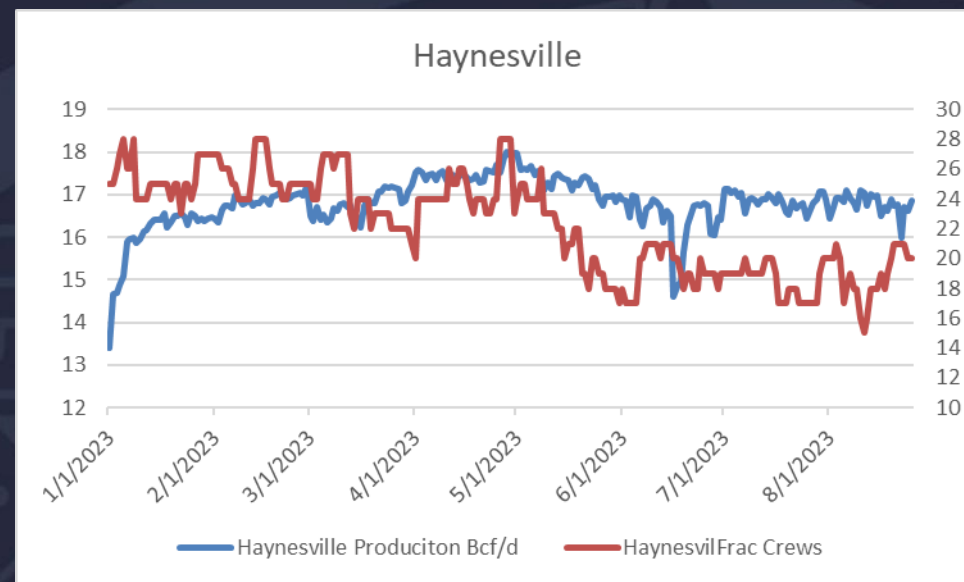
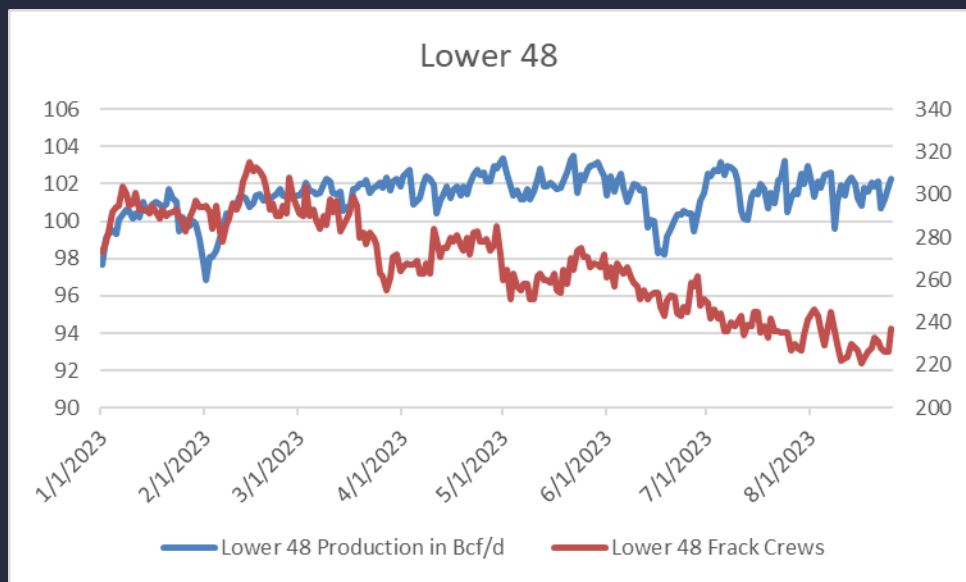
- 1) Lower 48 NG producer guidance forecast for 2023 is revised higher by 1.1 percentage points compared to the prior forecast back in June-2023. Production is now expected to be up 3.9% YOY compared to 2022. Aug-2023 to Dec-2023, production is now expected to be up 0.7 Bcf/d sequentially. Sneak peek into 2024 production guidance.
- 2) Just like the prior quarter, nearly all producers outperformed on their midpoint production guidance for the 2nd quarter 2023. Producer efficiency gains continue and are also accelerating
- 3) Producers continue to achieve record lateral lengths and record cycle times. The more widespread use of 3-mile laterals has been key.
- 4) Service and commodity costs continue to fall for producers.
- 5) Pioneer Resources: “The Company is expanding the development of 15,000-foot laterals from 2022 levels and expects to place more than 100 of these wells on production in 2023. In total, the Company has over 1,000 future locations with 15,000-foot lateral lengths in its drilling inventory”.
- 6) US Oil producer guidance.

Efficiency Gains Still On the Rise & Accelerating

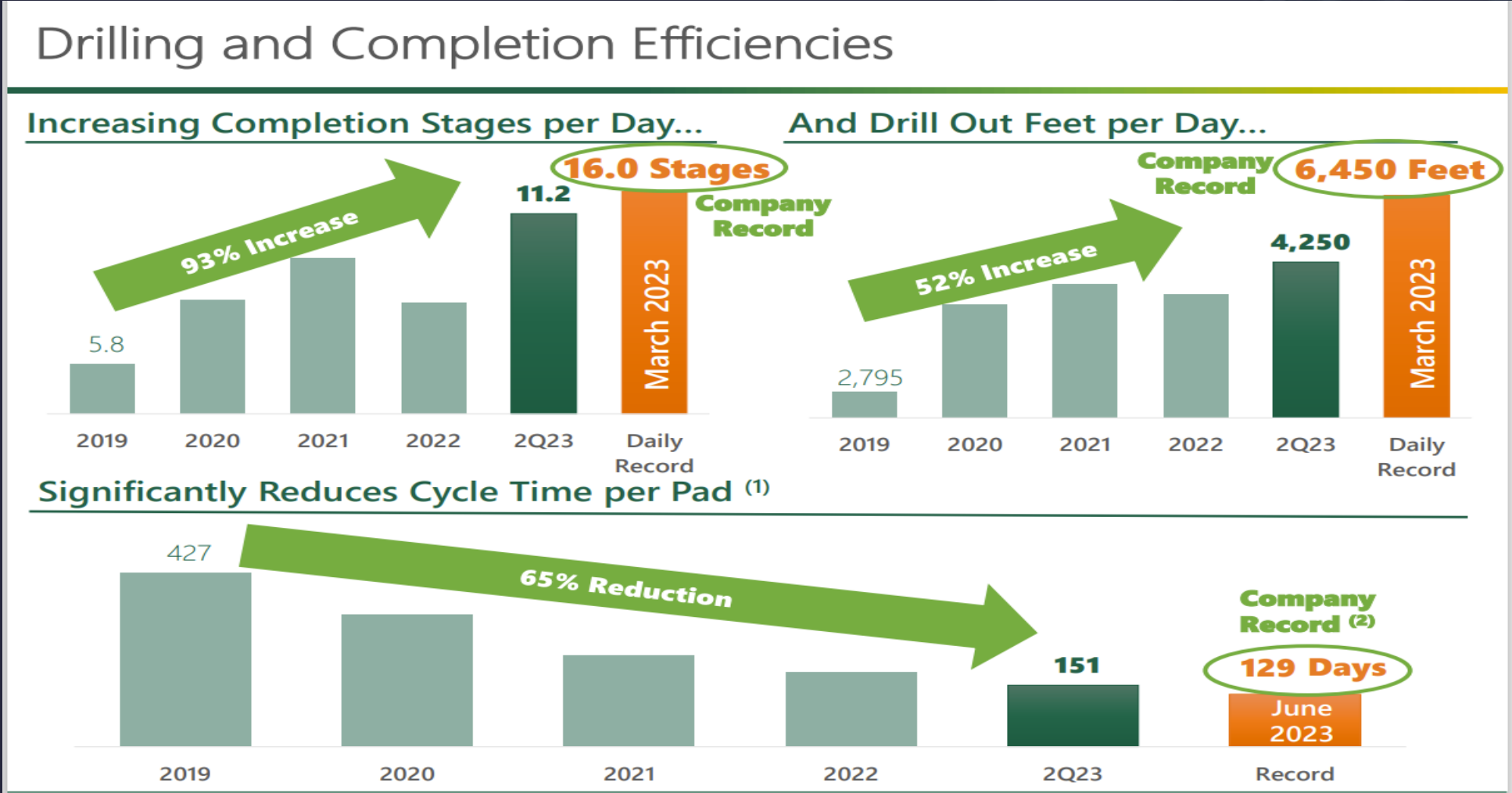
- 1) Once again, producers exceeded the midpoint of Q2 2023 production guidance due to well outperformance.
- 2) Producers continue to achieve record lateral lengths and record cycle times, especially in the Permian. Even the Northeast continues to experience record efficiency gains on a significant double-digit YOY percentage basis.
- 3) EQT: Completion efficiency up 20 percent year-over-year; completed a nearly 4-mile lateral in the second quarter, among the longest in the history of U.S. shale drilling
- 4) Chord Energy: 3-mile lateral lengths increasing EURs by 50% for only 20% higher cost. Q2 2023 performance benefited from strong well performance as we continue to see positive results from our three-mile lateral program.
- 5) EOG Resources: Along with strong performance in the Delaware Basin and Eagle Ford, we are pleased by the outstanding progress across our emerging plays. The South Texas Dorado, Southern Powder River Basin, and Ohio Utica Combo are achieving significant operational improvements, driving lower costs and supporting higher returns.

In 2023, Production has gone up while frac crews have fallen. Efficiency

Gains. NE Pipe
Constrained
Still



Antero Resources Efficiency Metrics Are Typical of Producers the Past Few Years (From their Q2 2023 Presentation)



Antero Resources Increasing 2023 Production Guidance and Lowering 2023 Expected Maintenance Capital – Typical of Nearly All Producers for Q2 2023 Earnings & Guidance. All Due to Drilling & Completion Efficiencies Combined with Strong Well Performance

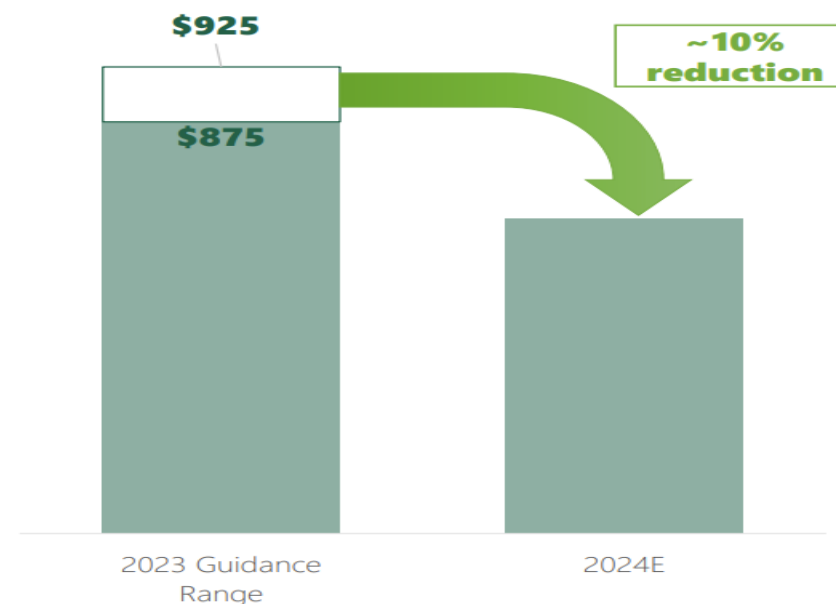
Increased Production Guidance and Lower Expected Maintenance Capital

Drilling and completion efficiencies combined with strong well performance translates to higher production and lower maintenance capital

2023 Production Guidance (MMcfe/d)

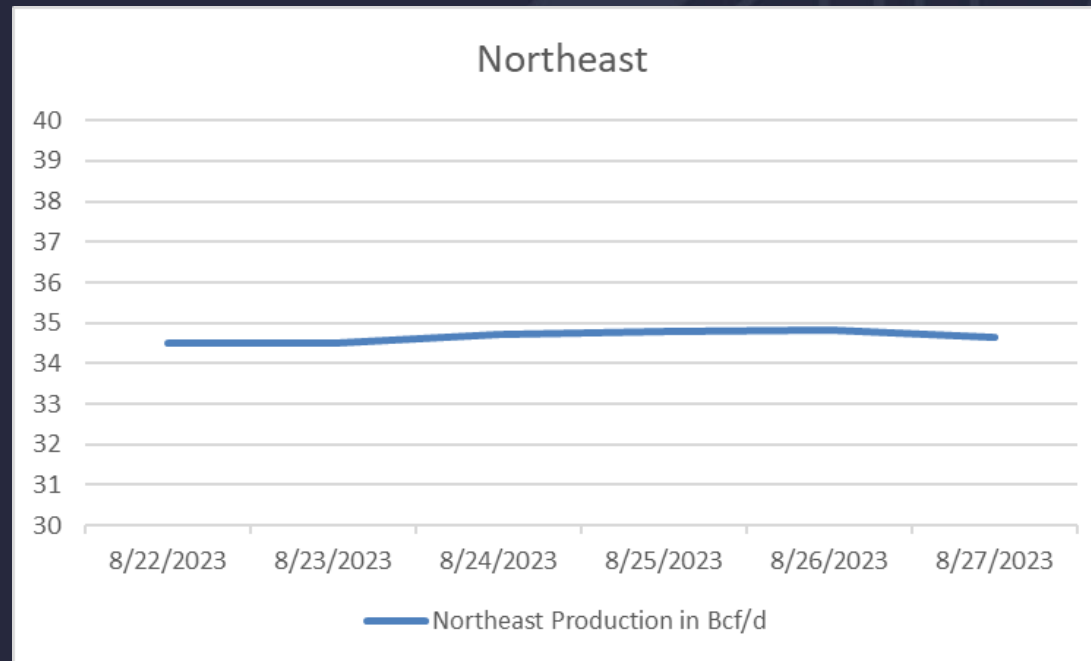


Maintenance Capital (\$MM)



Shut-In Pricing Levels

- 1) Dominion cash prices hit the 90 cent per MMBtu level for the weekend delivery of August 26-28 and Northeast production was still had no shut-ins. Higher NGL prices are lowering break-even levels for the Northeast.



Lower 48 Pipelines

- 1) Whistler pipeline expansion in the Permian. Through the planned installation of three new compressor stations. The compressor stations will increase the pipeline's mainline capacity from 2.0 Bcf/d to 2.5 Bcf/d. The expansion is expected to be in service in September 2023. The 0.5 Bcf/d expansion is expected to be fully utilized when it comes online. Intrastate pipeline.
- 2) Permian Highway pipeline expansion in the Permian. The expansion increases the capacity by 0.55 Bcf/d. The project will involve additional compressor stations to increase deliveries from the Waha area to multiple mainline connections, Katy, Texas, and various U.S. Gulf Coast markets. The target in-service date for the project is anticipated to be December 2023. Kinder Morgan, the parent company of PHP, has stated that the expansion will increase capacity by 0.55 Bcf/d to 2.65 Bcf/d. The project is expected to enter service in November 2023. The expansion is expected to be fully utilized when it comes online. Intrastate pipeline.

Lower 48 Pipelines

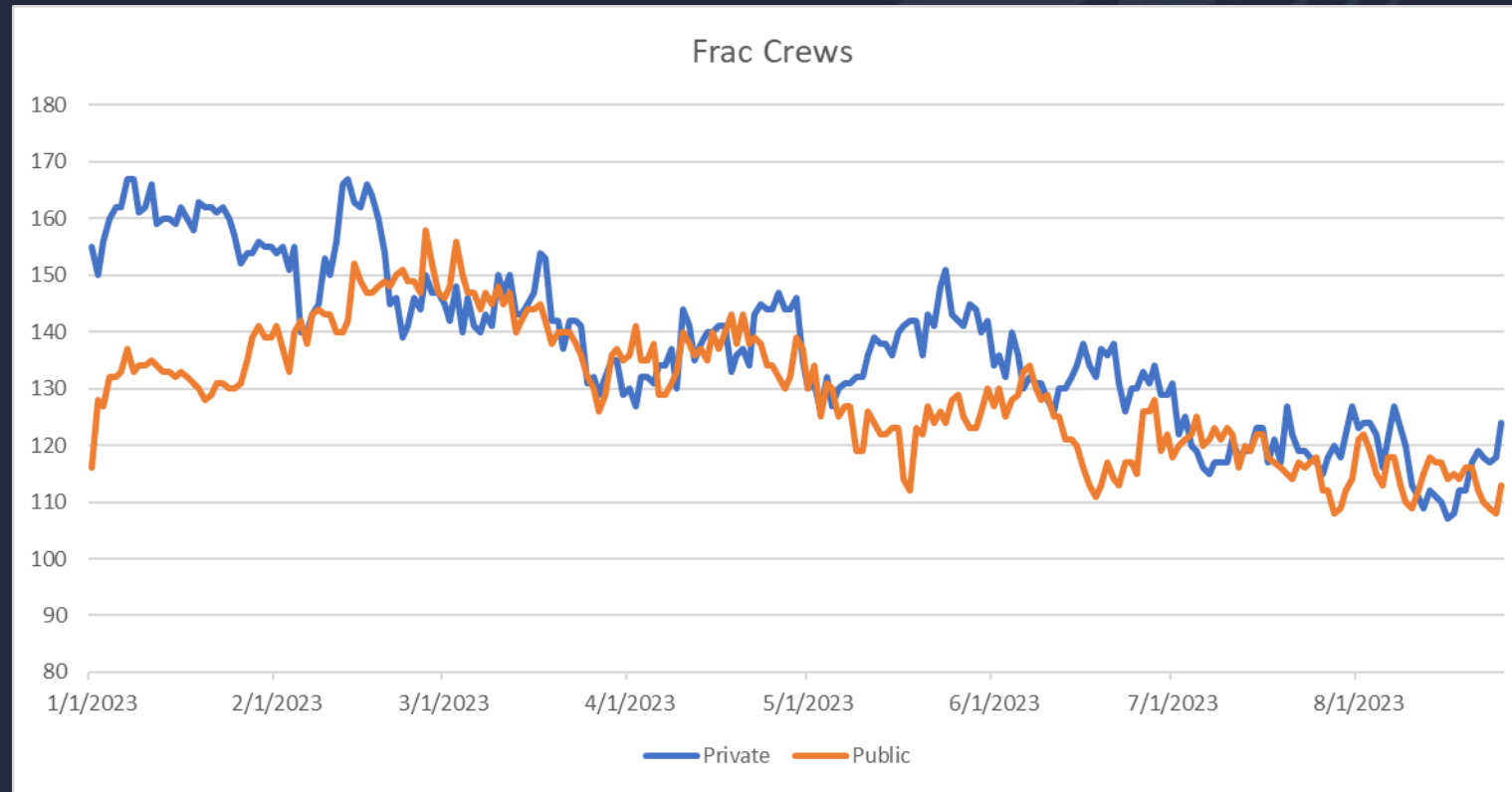
3) Mountain Valley Pipeline (MVP) - The Mountain Valley Pipeline (MVP) is a natural gas pipeline system that spans from northwestern West Virginia to southern Virginia and will be a 2 Bcf/d interstate pipeline. It will be the first interstate pipeline to come online since Gulf Run pipeline came online in Dec-2022. It is highly unlikely that the pipeline will cause Northeast production to expand by 2 Bcf/d, since the Atlantic Coast market will not be able to take an additional 2 Bcf/d of natural gas.

NG Market: Still Bearish 2023, Switched from Bullish to Bearish in 2024, Beyond 2025?

- 1) Hot summer and low wind generation in summer 2023 and the Oct-23 NG contract is ~ unchanged since May 1, 2023.
- 2) NG production growth for 2023 is revised higher from the prior reporting quarter by 0.8% due to continued well outperformance from efficiency gains and 3-mile laterals.
- 3) YOY 2023 NG production growth is expected to 3.9% based on higher revised producer forecast guidance.
- 4) NG production in 2024 is now expected to be higher YOY by ~ 3% based on the latest sneak peek producer guidance forecasts.
- 5) West TX Permian NG production growth is leading the way with ~11% YOY production growth in both 2023 and 2024.
- 6) Oil production growth in 2023 is revised higher as well by ~1% from the prior reporting quarter due to continued well outperformance from efficiency gains and 3-mile laterals.
- 7) West TX Permian is also leading the way in oil production growth with ~7% YOY growth in 2023 and ~5% YOY growth in 2024.

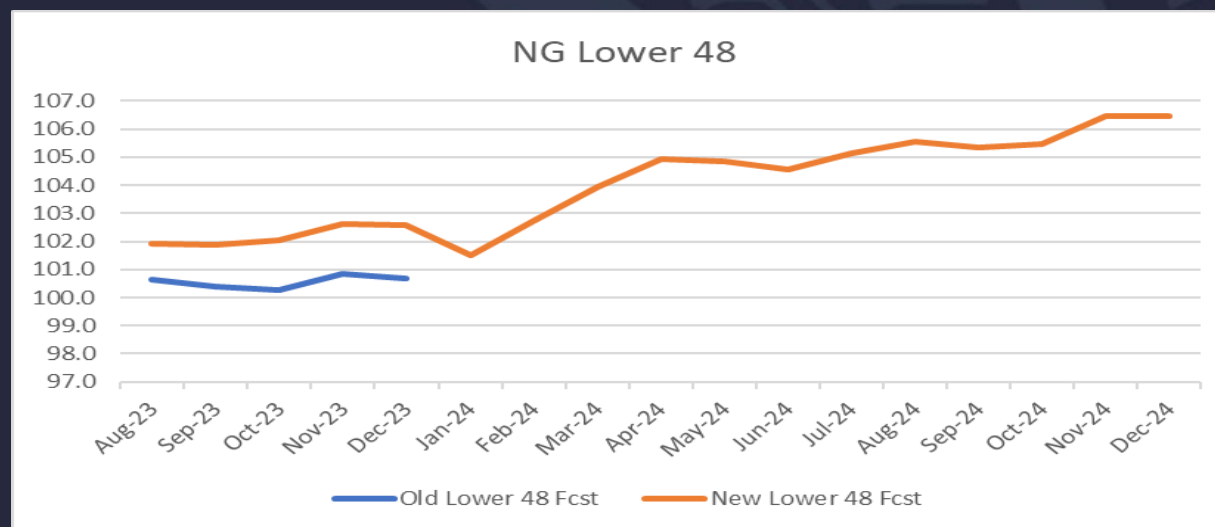
Private versus Public Producers – Lower 48 US

- 1) Private & public fracking activity are about even with each other.
- 2) Private activity is slightly higher than public activity. Assumed to be equal in 2024.



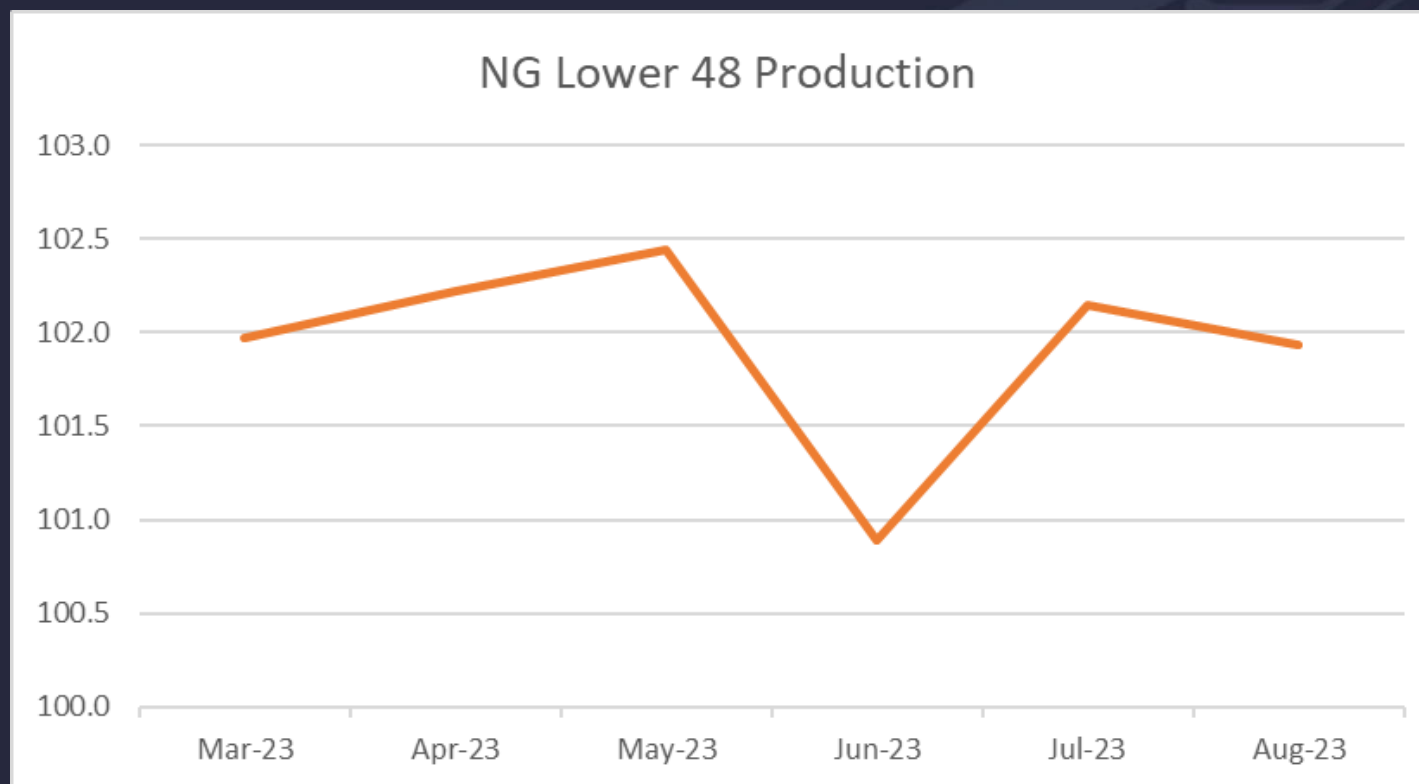
Lower 48 NG Production Forecast (Up 3.9% YOY, Up 1.1% From the Prior Quarter):

- 1) Revised higher by 1.1% for 2023 due to well outperformance, efficiency gains, and better than expected results from producers. Lower 48 US has higher YOY production by 3.9% YOY in 2023.
- 2) Also, production is revised higher due to higher revised actualized pipeline production data in PA and WV.
- 3) Lower 48 US production has been flat since Mar-2023. This is what SynMax expected all along based on producer guidance.
- 4) Production will likely increase by 0.7 Bcf/d from Sep-2023 until Dec-2023. With a short-term pause in September in the Northeast due to Cove Point LNG going down for its annual maintenance in late Sep-2023.
- 5) Producers are producing more with less with more simul-fracking and longer lateral lines. 3-milers have been a difference maker, especially in the Permian
- 6) Sneak peek into 2024 producer guidance from some producers equates to ~ 3% YOY production growth in 2024. Most of the 2024 production growth will be exit to exit growth from Dec-2023 to Dec-2024. Expect freeze-offs in Jan-2024.



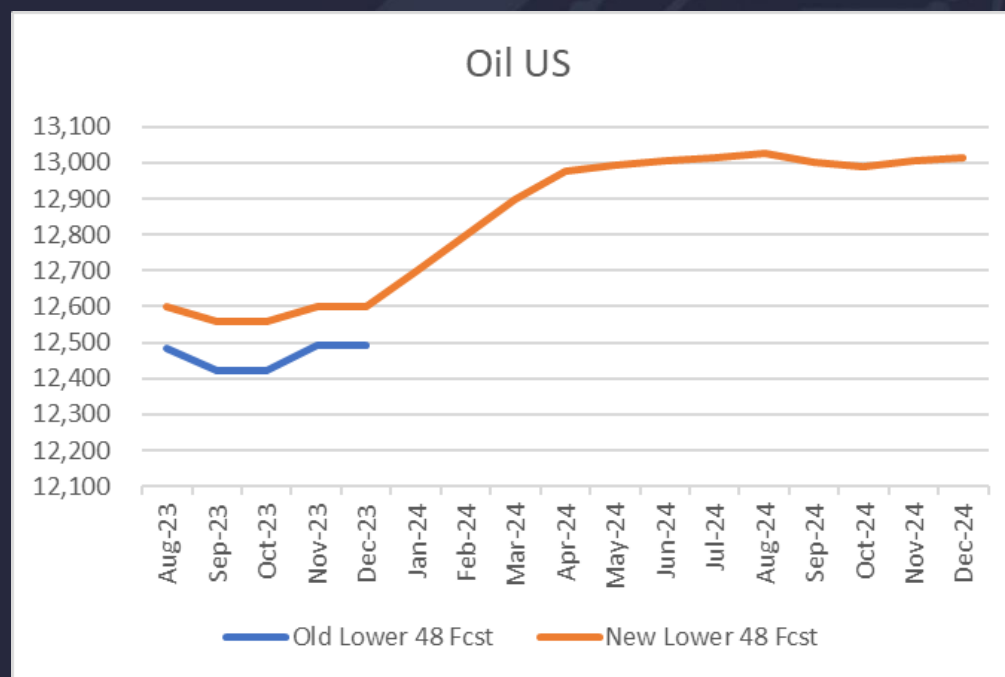
Lower 48 NG Production Has Been Flat Since Mar-2023

1) This is what SynMax has been expecting this year based on producer guidance.



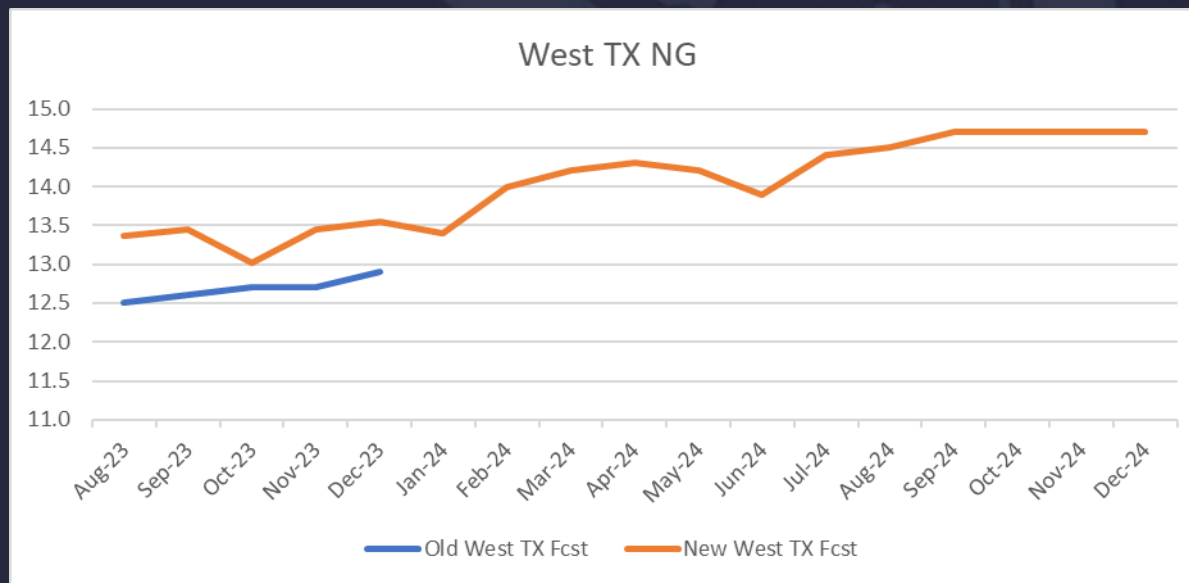
US Oil Production Forecast (Up 5.9% YOY, Up 0.9% From the Prior Quarter):

- 1) 2023 oil production forecast was also revised higher by ~1% due to well outperformance, efficiency gains, and better than expected results from producers. The US has higher YOY oil production by 5.9% in 2023.
- 2) Overall flat oil production profile from Sep-2023 until Dec-2023.
- 3) 2024 US oil production is expected to be higher YOY by 2.7%.
- 4) Most of the growth in 2024 will be exit to exit growth from Dec-2023 to Dec-2024.
- 5) Producers are doing more with less with more simul-fracking and longer lateral lines, especially in the Permian.



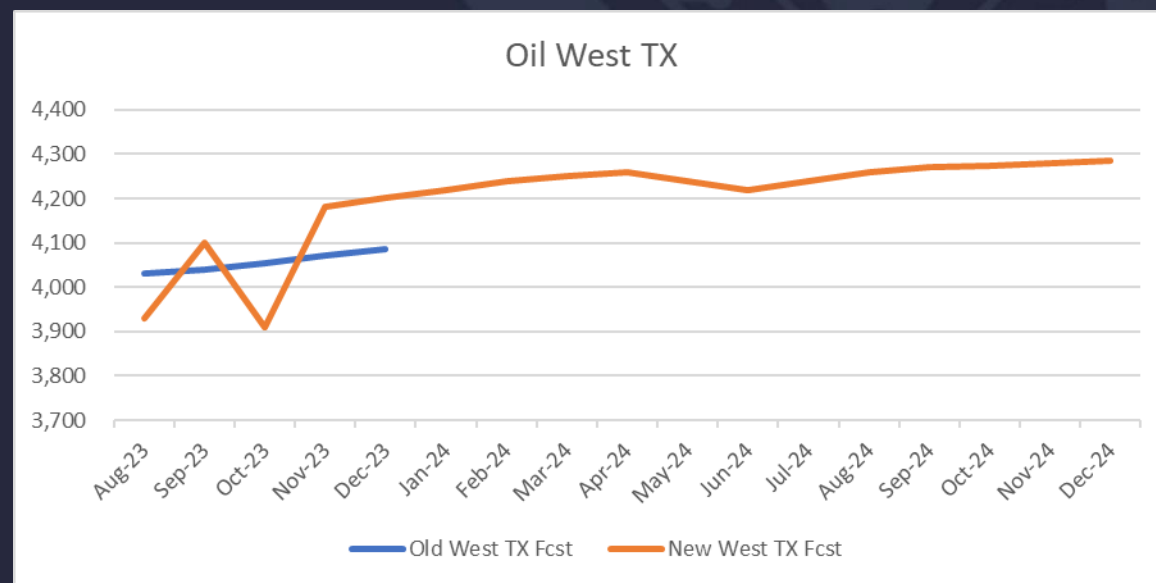
West Texas NG Production Forecast (Up 10.7% YOY, Up 1.4% From the Prior Quarter):

- 1) Higher production profile from Sep-2023 until Dec-2023. Slight drop in Oct-2023 production as storage will be full in Texas by then. Production should rebound with the Whistler expansion and the Permian Highway expansion in Q4 2023.
- 2) 2023 production is expected to be higher YOY by 10.7%.
- 3) 2024 production is also expected to be higher YOY by 10.6%.
- 4) Pipeline expansions will allow for more production growth in the Permian.
- 5) Pioneer Natural Resources: Expects to bring on 100 new wells in 2023 that are 3-mile laterals.
- 6) Chevron: Still expects Permian growth to be back end loaded as number of new wells increase.



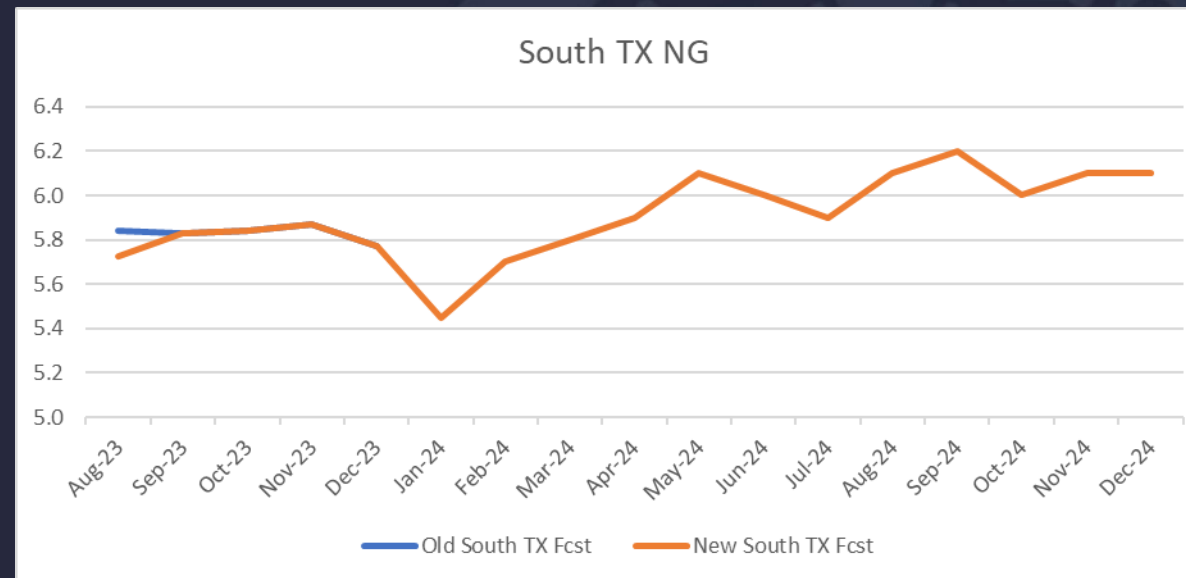
West Texas Oil Production Forecast (Up 6.6% YOY, Up 0.6% From the Prior Quarter)

- 1) Higher production profile from Sep-2023 until Dec-2023.
- 2) 2023 West TX oil production expected to be higher YOY by 6.6%.
- 3) 2024 West TX oil production expected to be higher YOY by 5.2%.
- 4) Chevron: Expect Permian growth to be back end loaded as wells increase.
- 5) Diamondback Energy : Becoming more efficient with more simul-fracking and longer lateral lines.
- 6) Matador: 50% of their wells are now being simul-fracked.



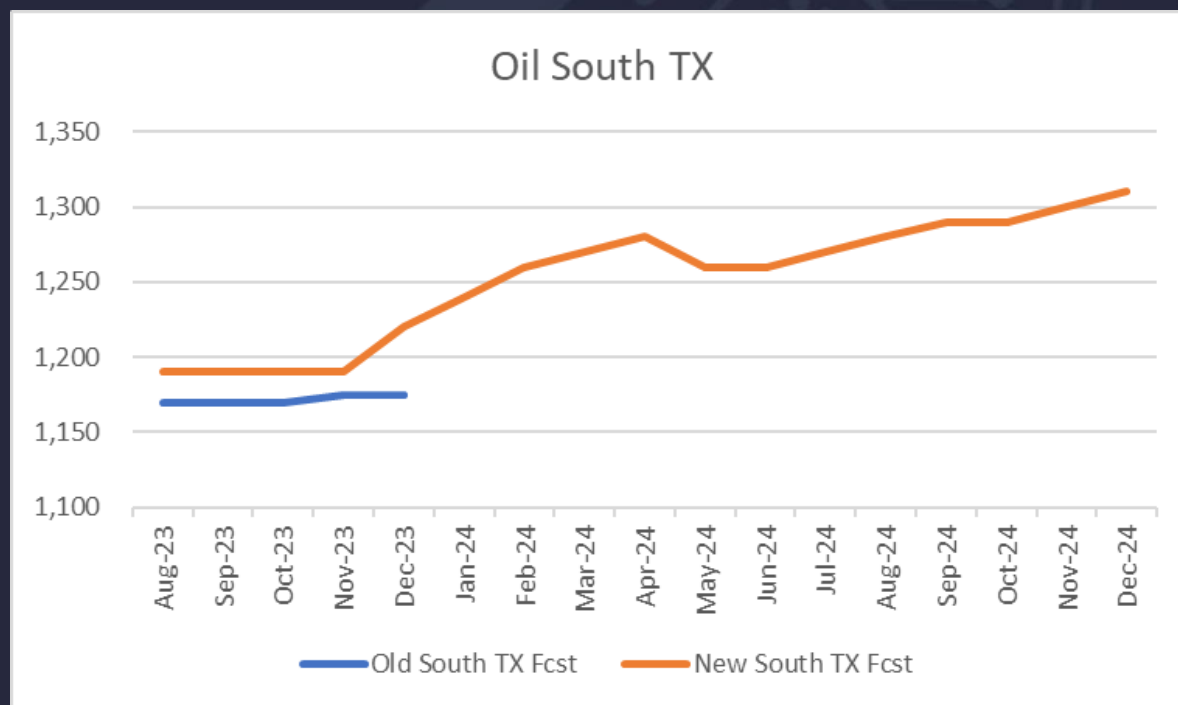
South Texas NG Production Forecast (Up 3.7% YOY, ~ Unchanged From the Prior Quarter):

- 1) Flat to slightly lower production profile from Sep-2023 until Dec-2023.
- 2) 2023 production expected to be up 3.7% YOY.
- 3) 2024 production expected to be up 2% YOY.
- 4) SM Energy: Strong well performance, steel costs are lower, rig costs are flattening.
- 5) EOG Resources: Strong well performance in the Eagle Ford.
- 6) Eagle Ford is having more focus on the oil side of production.
- 7) More optionality between oil and natural gas for producers in the Eagle Ford and overall South TX.



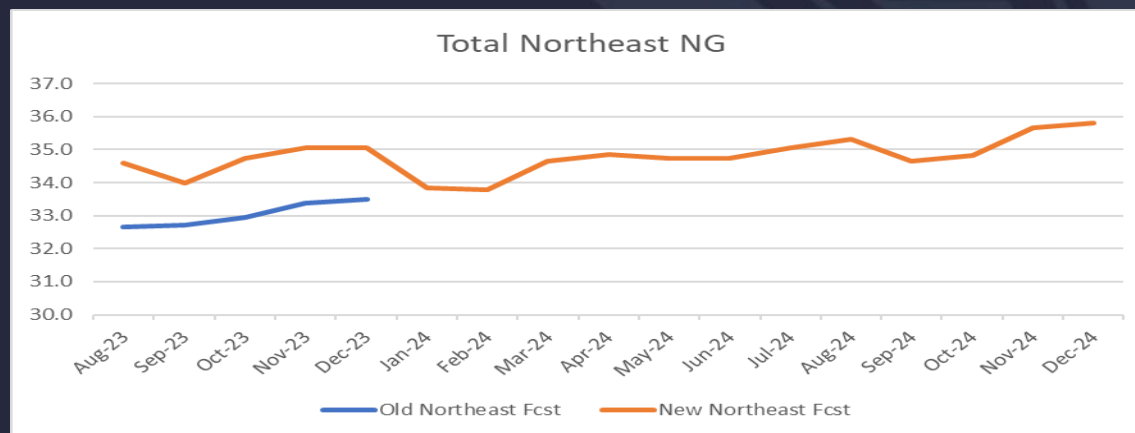
South Texas Oil Production Forecast (Up 4.9% YOY, Up 2.6% From the Prior Quarter):

- 1) 2.5% increase in production from Sep-2023 until Dec-2023.
- 2) 2023 oil production is up 4.9% YOY.
- 3) 2024 oil production is up 5.1% YOY.
- 4) SilverBow Resources: Both of their rigs are now dedicated to oil parts of the Eagle Ford for the rest of 2023.
- 5) SM Energy: Strong well performance, steel costs are lower, rig costs are flattening.
- 6) EOG Resources: Continued strong oil performance in the Eagle Ford. Recently drilled a 15,500 feet lateral in the Eagle Ford. Looking to extend laterals to 3 miles and beyond.



PA, OH, & WV Production Forecast (Up 1.1% YOY, Up 2% From the Prior Quarter):

- 1) Revised upward from its base due to revised pipeline production data.
- 2) Strong efficiency gains and well outperformance in Marcellus and Utica.
- 3) Slight drop-off in late Sep-2023 production due to the potential of production shut-ins when Cove Point LNG undergoes annual maintenance in the 2nd half of September-2023.
- 4) Higher production profile in Q4 2023 due to seasonal tendencies and much higher NG pricing.
- 5) 2023 production is up 1.1% YOY. Expect freeze-offs in Jan-2024.
- 6) 2024 production is up 1.2% YOY. MVP expected to come online 1st half of 2024. Should increase production by 0.5 Bcf/d.
- 7) EQT: Completion efficiency up 20 percent year-over-year; completed a nearly 4-mile lateral in the second quarter, among the longest in the history of U.S. shale drilling.
- 8) Antero Resources: During the quarter, we achieved new company quarterly drilling and completion records, including footage drilled in a 24-hour period and completion stages pumped per day.



Haynesville LA & TX Production Forecast (Up 16.2% YOY in LA, Up 7.4% in TX, LA is Revised Upward by 4.1% & TX is Revised Downward by 2.4% From the Prior Quarter for the Short-Term Forecast Inclusion):

- 1) Flat production profile from Sep-23 until Dec-23. Upward production profile for Haynesville TX from Sep-2023 until Dec-2023 due to increased Bossier activity from Comstock.
- 2) Strong YOY growth in 2023 for Haynesville LA & TX. Up 16.2% YOY for Haynesville LA, up 7.4% YOY for Haynesville TX.
- 3) 2024 YOY growth will be slower at 3.6% growth for both Haynesville LA & TX.
- 4) Antero Resources: Frack crews and rig counts are expected to bottom soon based on current forward NG pricing.
- 5) Comstock Resources: Comstock continues to have success in its Western Haynesville exploratory play.

