



WINTER 2024/2025 NATURAL GAS MARKET OUTLOOK

EXECUTIVE SUMMARY

Prepared for Natural Gas Supply Association

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PREPARED BY

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This report presents EVA's current view of the natural gas market for the upcoming winter heating season.



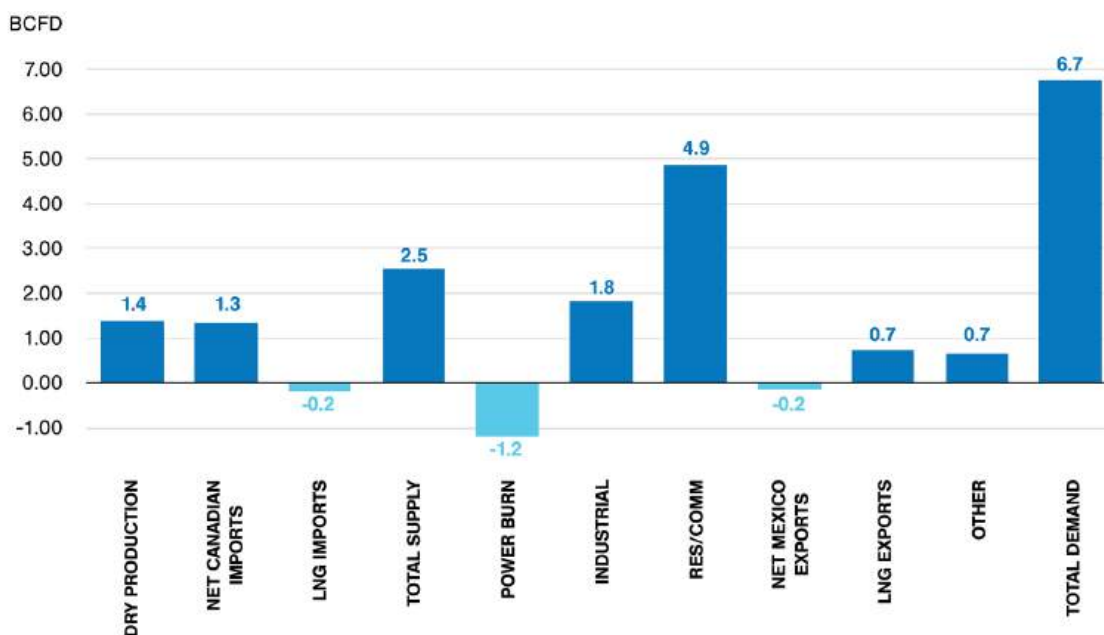
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Resilient Natural Gas Supply Expected at Record Levels For Winter 2024/2025 Despite Below-average Storage Injections, Production Shifts and First Normal (Cold) Winter Weather In Three Years

Significant developments for the 2024/2025 Winter Heating Season include:

- **PRODUCTION:** U.S. natural gas dry gas production has oscillated all year between producer-announced cutbacks during Q2, followed by stronger production during Q3 spurred by rising demand, and back to the potential of supply cuts as we march toward the end of the summer injection season around Nov. 1.
- **STORAGE AND IMPORTS:** Despite shifting production trends in 2024, winter walk-in storage levels haven't changed by much with estimates ranging between 3.9-4 TCF even though power burn levels have reached all-time highs. Canadian imports are expected to rise this winter for two main reasons: first, robust Canadian natural gas storage; and second, the expectation of normal winter heating season demand after two years of warmer-than-normal winters.
- **DEMAND:** Industrial and RES/COMM demand are forecasted to reflect significantly higher pulls, assuming heating degree days (HDDs) near the normal 10-year average. The big YoY gain is due to last winter's warmer-than-normal weather. With rising demand expected to place upward pressure on natural gas prices, power demand could decrease compared to last winter's numbers and less temporary economically-motivated switching from gas-to-coal. Exports are expected to grow this winter driven by competitively-priced U.S. LNG availability to European and Asian markets, in addition to the potential commercial operation of the Plaquemines LNG facility in Q4 2024.

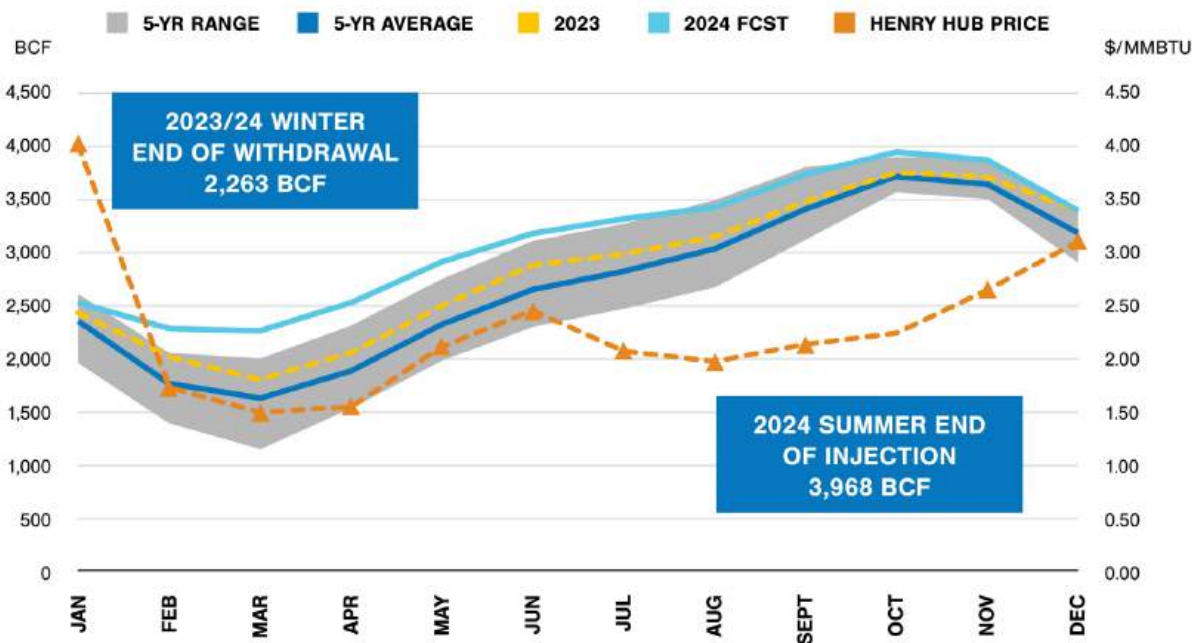
NATURAL GAS SUPPLY AND DEMAND, 2024-2025 WINTER VS 2023-2024 WINTER



Source: Energy Ventures Analysis

Storage Exceeds 5-Year Average and Is Critical Element for Reliability as Demand Grows

U.S. WORKING GAS IN UNDERGROUND STORAGE



Henry Hub prices are NYMEX settlements as of mid August 2024.

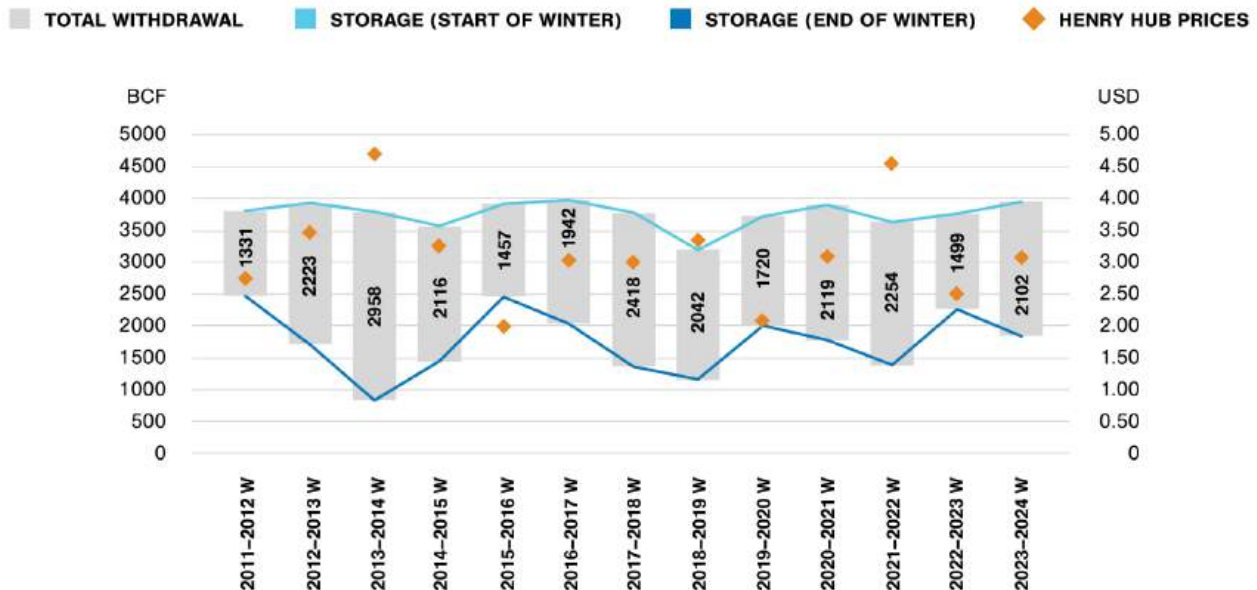
Source: EIA, Energy Ventures Analysis

• STORAGE INJECTIONS:

- Last winter's extreme warm temperatures resulted in lower-than-average withdrawals from storage and a significantly high amount of natural gas in storage headed into the summer injection season. Throughout the summer of 2024, storage has recorded fresh highs to the 5-year average.
- A hot summer and correspondingly high demand for natural gas from the power sector enabled storage refills to level out some of the surplus to the 5-year average.
- It's EVA's view that storage will top 3.9 trillion cubic feet (Tcf) going into the 2024/2025 winter heating season, about 6% above the 5-year average.

U.S. Natural Gas Storage Overhang Should Compress Toward 5-year Average by End of 2024/2025 Winter Heating Season

U.S. LOWER 48 WINTER GAS STORAGE WITHDRAWAL



- STORAGE:** U.S. natural gas storage is projected to finish the summer 2024 injection season at a surplus to the 5-year average. The surplus can be traced back to winter 2023/2024, which featured the warmest average U.S. winter temperature in 130 years. The storage surplus, combined with production growth during Q3, resulted in relatively low natural gas prices.

- DEMAND:**

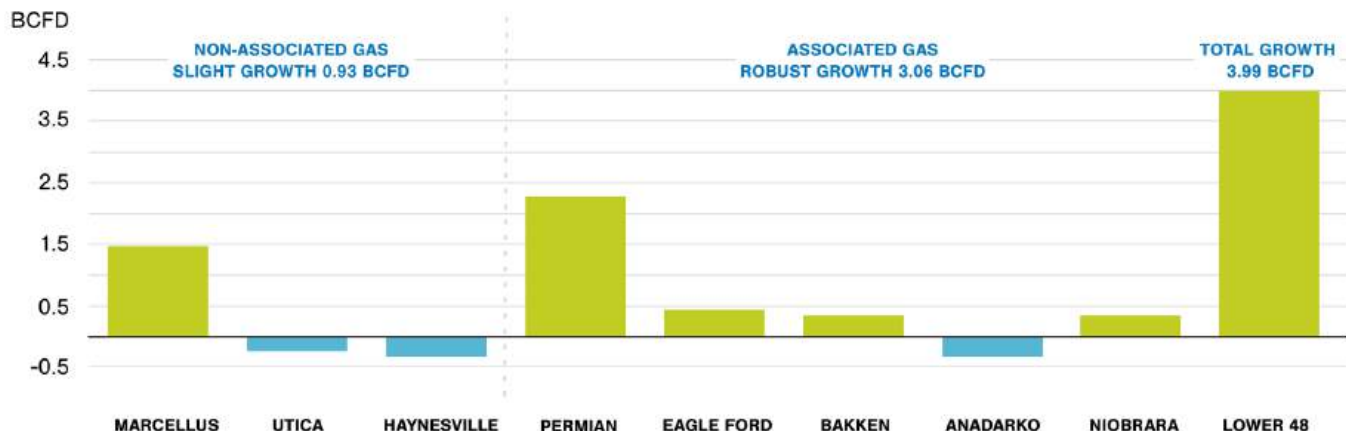
- These low prices across the lower 48 states (L48) opened the door for demand gains, particularly from the price-sensitive power generation sector. Additionally, low U.S. natural gas prices supported healthy Mexican piped gas and LNG exports.
- In addition, Henry Hub gas prices disconnected from regional gas prices across the L48. Pipeline maintenance and elevated storage levels helped to fuel the basis differentials. EVA expects Henry Hub gas prices to average \$2.30/MMBTU for calendar year 2024, while

regional prices across the five major gas regions are further suppressed. The lower gas price curve incentivized power burn gains and displaced coal-fired generation during the majority of Summer 2024, with the exception of some short-term coal generation growth caused by spiking electric demand during record heat waves. In contrast, renewable generation didn't make as great an impact on power sector demand due to the need for fossil generation, which was necessary to support reliability needs.

- EVA assumed 10-year normal weather in its Winter 2024/2025 modeling. In the wake of last winter's warmer-than-normal heating season and resultingly lower heating demand, EVA expects tighter supply-demand balances this winter, despite the expectation for production gains and relatively flat power consumption. Stronger heating demand and a robust export picture will drive storage compression.

Winter 2024/2025 Production Growth Driven by Associated Gas Supply While Marcellus Production Increases Are Driven by New Takeaway Capacity

PRODUCTION GROWTH BY BASIN: COMPARISON OF TWO RECENT WINTERS (2022-2023 WINTER VS. 2023-2024 WINTER)



Source: Energy Ventures Analysis, EIA

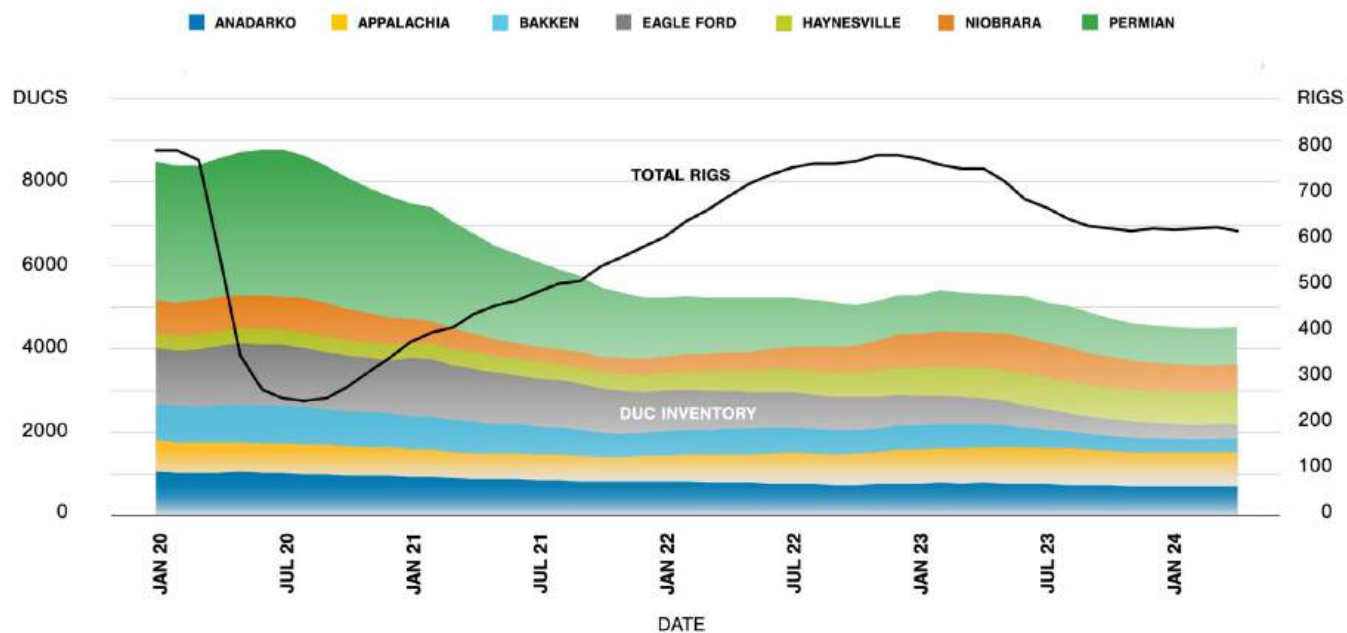
• SUPPLY:

- Summer 2024 production gains from associated supply growth continue to drive U.S. gas supply increases. The Permian has been the primary region behind the associated supply gains. Pipeline maintenance and supply gains have created frequent constraints in transporting natural gas out of the Permian, resulting in Waha delivered gas prices settling at negative prices on a spot basis since March. As of late September, the Matterhorn Express pipeline has begun to alleviate some of those constraints
- U.S. dry gas production is forecasted to materialize at record levels this winter. EVA estimates production will average 104.5 billion cubic feet per day (BCFD) for Winter 2024/2025, which is measured as 1.4 BCFD higher on a YoY basis.

Rigs and drilled uncompleted wells (DUCs) dropping, but natural gas output strong due to production efficiencies

• **SUPPLY:**

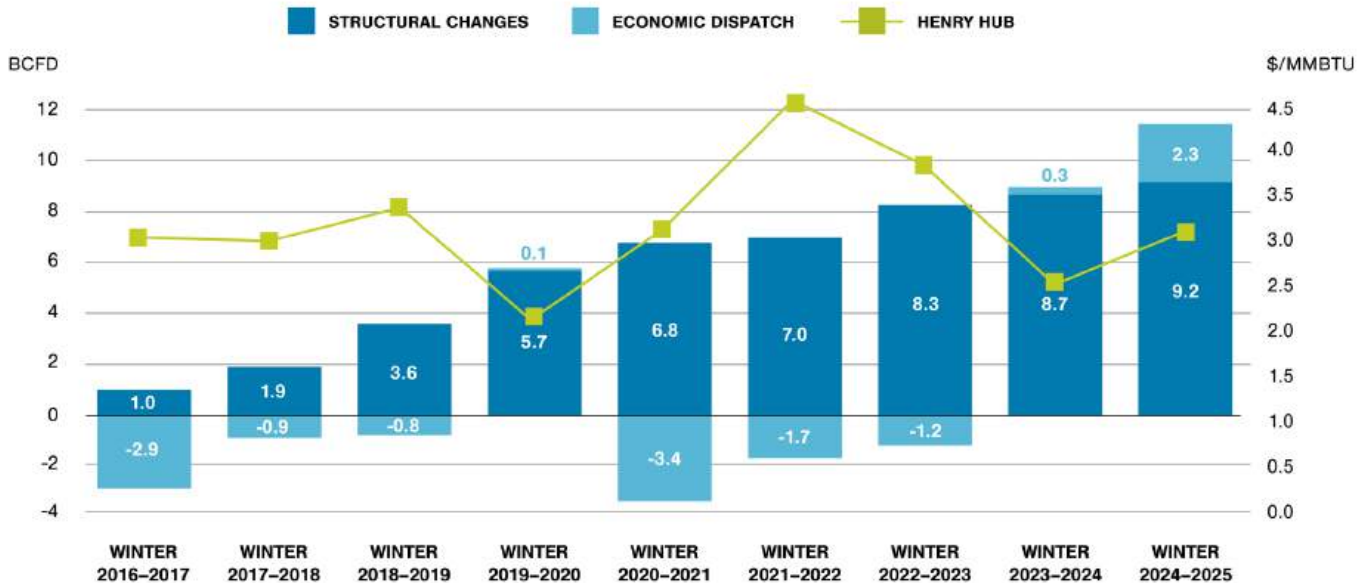
- Drilled-but-uncompleted well (DUC) inventories have held steady throughout 2024 due to reduced producer activity. As of late August 2024, publicly-available producer guidance suggests that there will be more producer-sponsored reductions before the end of the summer injection season. In addition to seasonal demand gains, this will tighten the storage surplus.
- The 2-BCFD Mountain Valley Pipeline entered service June 2024 despite several court challenges, which has improved the flow of Appalachian gas to the Southeast.
- EVA assumes the 2.5-BCFD Matterhorn Express pipeline will begin service Q4 2024, which will enhance takeaway capacity from the Permian and help to ease market pressure.



Source: Energy Ventures Analysis, BakerHughes

Gas-fired and Coal-fired Generation Price Competition Will Increase This Winter

POWER BURN GROWTH: STRUCTURAL GROWTH VS. ECONOMIC SWITCHING



Source: Energy Ventures Analysis

• DEMAND:

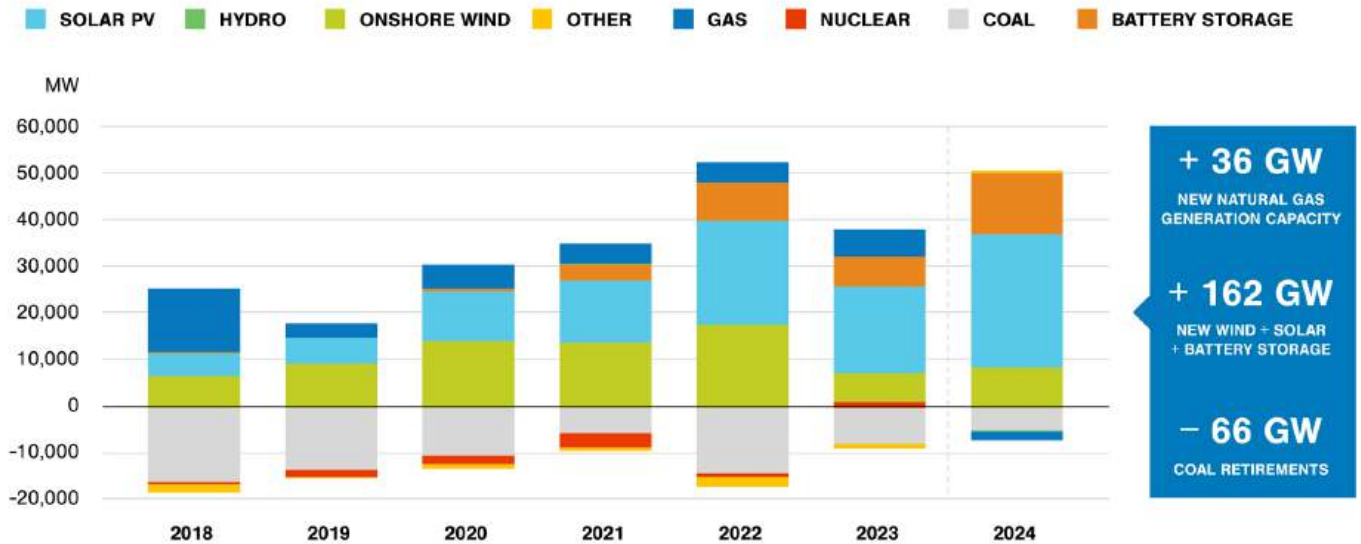
- Coal-fired generation gains were observed during the Summer 2024 hot weather stretch despite lower natural gas prices supporting a cost competitive advantage for gas power plants. The need for fossil generation increased this summer due to record electric demand and underperforming renewable generation.
- A strong response from coal and gas power plants due to robust electric demand needs did not affect power prices significantly: power prices averaged lower than market forwards were trading.

• SUPPLY:

- Comparing Winter 2024/2025 to a baseline of 2015, EVA projects:
 - A structural gain of 9.2 BCFD from new gas-fired generation; and
 - A gain of 2.3 BCFD from temporary, economically-motivated dispatch of natural gas-fired generation

Evolving Fuel Mix Underscores Critical Role of Natural Gas

U.S. POWER GENERATION FUEL MIX NET CHANGE IN THE U.S. GENERATING CAPACITY



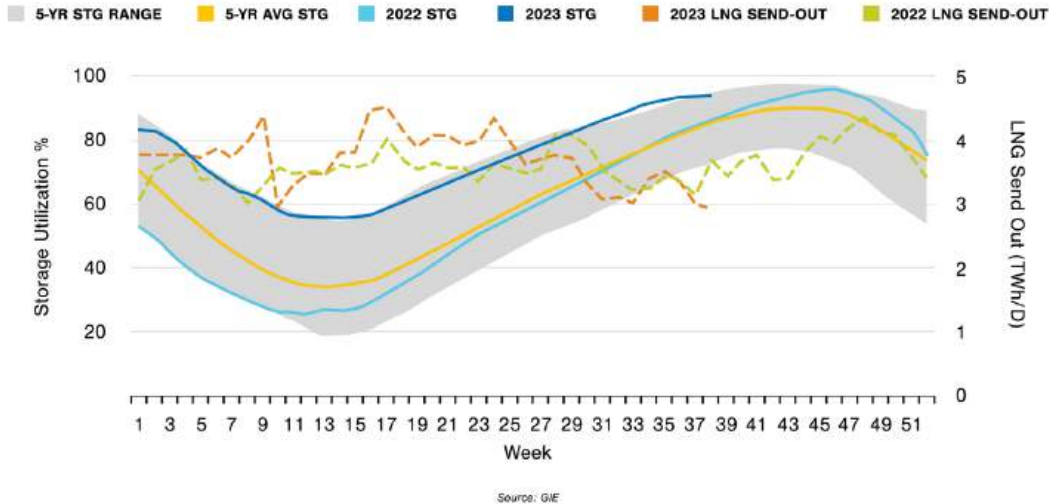
Source: Energy Ventures Analysis, EIA

• FUEL MIX:

- As highlighted in previous reports, ongoing coal generation retirements will continue to limit the ability of power markets to switch from natural gas to coal in response to price signals.
- EVA estimates that 50 GW of new wind, solar, and battery storage resources are expected to be installed by year end 2024.
- Looking beyond this winter, power demand growth spurred by fast-spreading data demand centers, electric vehicles, new housing, and electrification goals will continue to present opportunities for natural gas-fired generation.

European Natural Gas Storage Expected to Finish 2024 Injection Season Well Above Normal, Similar to 2023

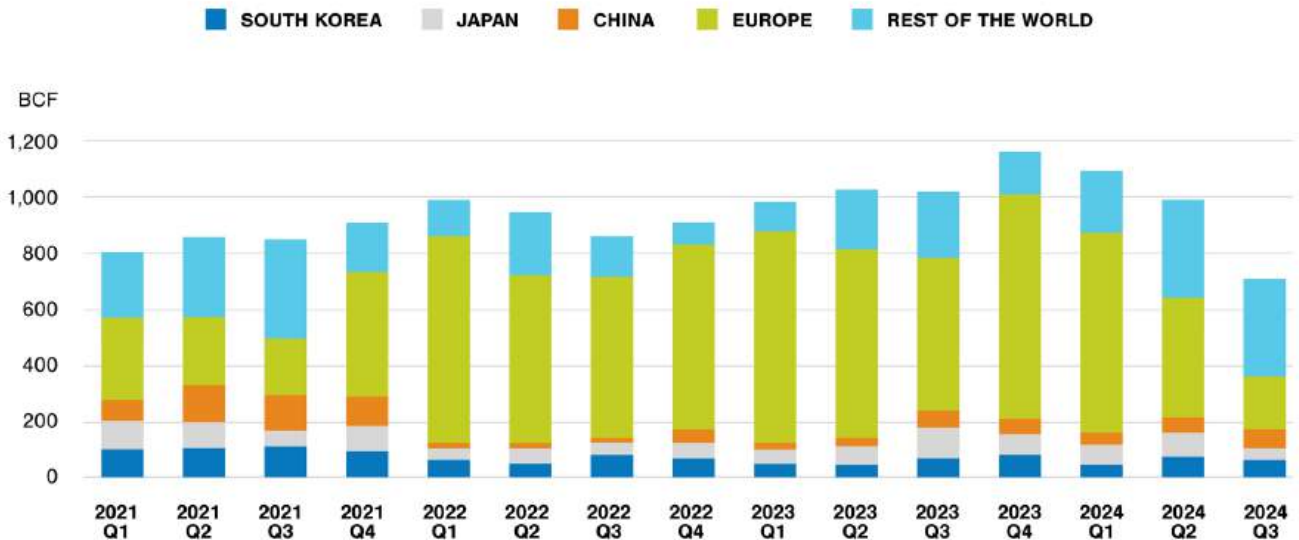
EU GAS STORAGE UTILIZATION & LNG SEND-OUT



- **EU STORAGE:** As of late September 2024, total natural gas inventory in Europe sits at 95% full, well ahead of regional goals and historical levels.
- **EXPORTS:**
 - European and Asian gas benchmarks are trading at high levels relative to the cost of delivered U.S. LNG. EVA expects that U.S. LNG exports to both Europe and Asia will remain near U.S. export capacity throughout the winter heating season as LNG buyers continue to seek replacement volumes as winter progresses.
 - Global geopolitical tensions are driving bid support for European and Asian natural gas prices, which translates to the ongoing need for U.S. LNG.
 - A steady supply of U.S. LNG will be essential to maintain reliability as we progress through the traditional winter heating season. Europe experienced its warmest average temperatures in 175 years from December 2023 to February 2024, but a cold winter this winter could quickly draw down the EU's storage.

Europe Continues to Contract for U.S. LNG, Meanwhile Asian Buyers Working to Attract Even More U.S. Supply

U.S. LNG EXPORT BY DESTINATION

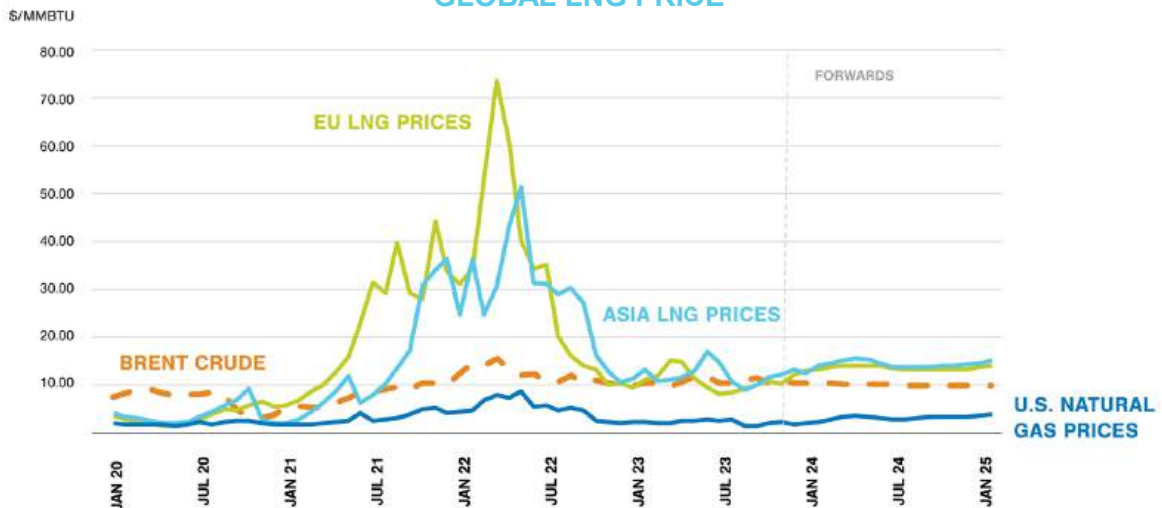


Source: EVA/KPLER

EXPORTS:

- European and Asian bid interest for U.S. LNG is expected to remain strong throughout Winter 24/25 with competitive prices and healthy netbacks fueling a thriving market.
- Asian and European LNG buyers will continue to compete to attract U.S. LNG, especially if winter heating degree days average normal to stronger than normal.

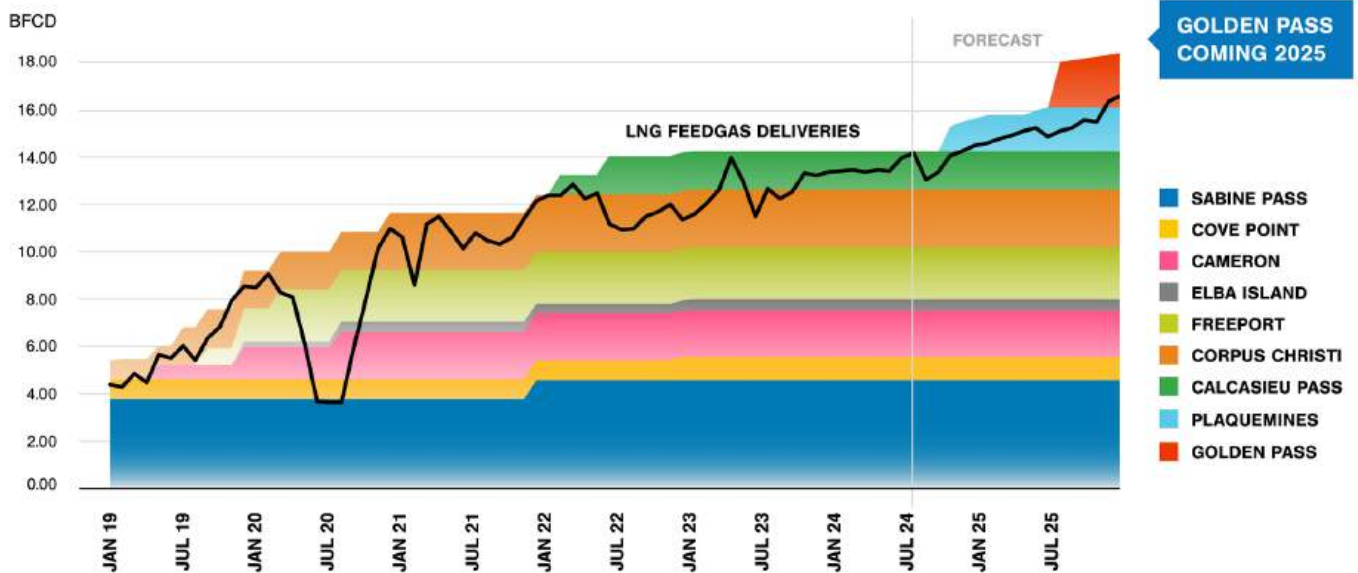
GLOBAL LNG PRICE



Source: ICE. Future curves are based on August 2024 settlements

Era of Tremendous Growth for U.S. LNG

U.S. LNG EXPORT CAPACITY VS. FEEDGAS DELIVERIES



Source: EIA, Energy Ventures Analysis

• EXPORTS:

- EVA expects U.S. LNG feedgas demand to average 14.5 BCFD during Winter 2024/2025, which is ~0.75 BCFD higher on a YoY basis.
- The addition of Plaquemines LNG export facility will support EVA's view that the U.S. will remain one of the top global LNG suppliers.
- Both Mexican and Canadian LNG developers will support a stronger North American LNG outlook as new projects approach commercial on-line dates (COD).

Structural Growth Is Expected Due To New Industrial Projects And Exports

INDUSTRIAL PROJECTS AND GAS DEMAND



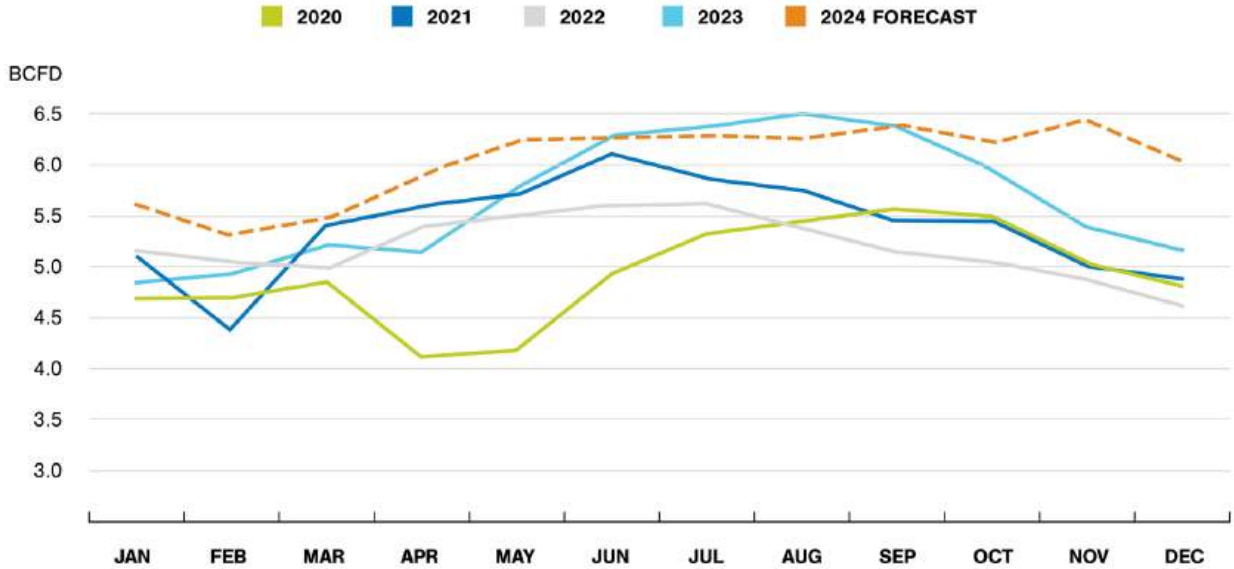
Source: EVA

GROWTH:

- According to the U.S. Federal Reserve, the industrial capacity utilization is averaging 78% over the first 6 months of 2024, which is a decrease of nearly 1.5% on a YoY basis for the same stretch of time. Industrial capacity utilization is a key indicator of energy use by existing facilities, however there are a significant number of new facilities and expansions expected to come online in the short period before 2028.
- As of August 2024 projection, there are 19 projects expected to come online from 2024-2028, with total gas demand of 0.9 BCFD and total investment of \$39 billion.

U.S. Natural Gas Exports Fuel Infrastructure Growth in Mexico

U.S. EXPORTS TO MEXICO



Source: EVA

• EXPORTS:

- Piped natural gas imports from the U.S. will continue to play a critical role in Mexico’s infrastructure development. 2024 brings new record piped gas exports to Mexico. More gains are expected over the next few years as new pipelines, Mexican LNG, gas-fired power plants and industrial demand gains are expected.
- Exports to Mexico are expected to average 5.75 BCFD for Winter 2024/2025, which is nearly flat to the average observed last winter.

SUMMARY: Key Factors in Outlook for Winter 2024-2025

| WINTER NATURAL GAS SUPPLY AND DEMAND SUMMARY | 2024-2025 WINTER | 2023-2024 WINTER | DIFFERENCE VS. LAST WINTER | DIFFERENCE VS. LAST THREE WINTERS |
|--|------------------|------------------|----------------------------|-----------------------------------|
| SUPPLY (BCFD) | | | | |
| Dry Production | 104.5 | 103.2 | 1.4 | 4.6 |
| Net Canadian Imports | 7.0 | 5.6 | 1.3 | 1.5 |
| LNG Imports | 0.1 | 0.3 | (0.2) | (0.1) |
| Total Supply | 111.6 | 109.1 | 2.5 | 6.0 |
| DEMAND (BCFD) | | | | |
| Power Burn | 31.1 | 32.3 | (1.2) | 0.5 |
| Industrial | 25.5 | 23.7 | 1.8 | 1.1 |
| Res/Comm | 39.5 | 34.6 | 4.9 | 3.1 |
| Net Mexico Exports | 5.7 | 5.9 | (0.2) | 0.1 |
| LNG Exports | 14.6 | 13.9 | 0.7 | 1.9 |
| Other | 9.1 | 8.5 | 0.7 | 1.0 |
| Total Demand | 125.6 | 118.9 | 6.7 | 7.8 |
| Average Withdrawal | -14.0 | -9.8 | (4.2) | (1.8) |
| Total Withdrawal (BCFD) | -2,112 | -1,478 | (634.4) | (272.8) |
| HDDs | 3,433 | 3,219 | 214.0 | 131.3 |