



# Summer 2024 Natural Gas Market Outlook

## Executive Summary

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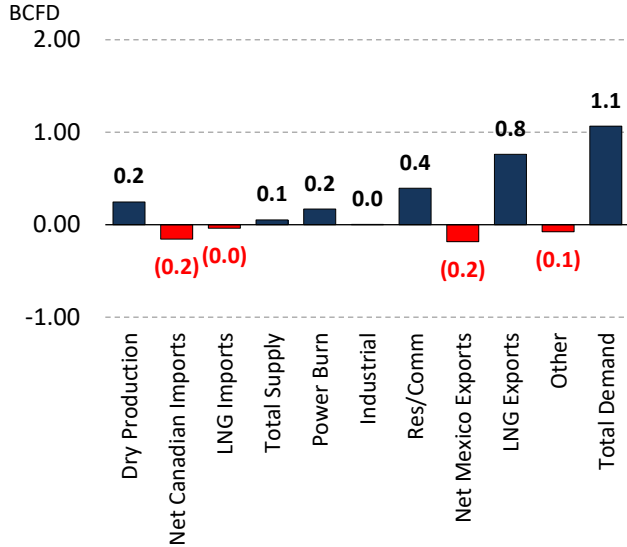
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## Associated Gas Production will drive supply growth for 2024

### Natural Gas Supply and Demand, 2024 Summer vs 2023 Summer



Source: Energy Ventures Analysis

•On the supply side, U.S. natural gas production is expected to increase by less than 0.25 BCFD during Summer 2024 compared to Summer 2023, largely due to gains in natural gas associated with oil production.

•The storage overhang from late 2023 carried into the mild weather of Q1 2024, resulting in a shift in supply for Q2 2024 as producers aligned with guidance to lower output to allow the market to consume gas from storage and thus reduce the storage overhang.

•Canadian imports were also impacted by low U.S. gas prices, as the need for piped gas supply from Canada fell below 5 BCFD after February 2024. Canadian supply is expected to remain muted until demand gains and price recovery resume, which EVA projects to occur towards the end of Q2.

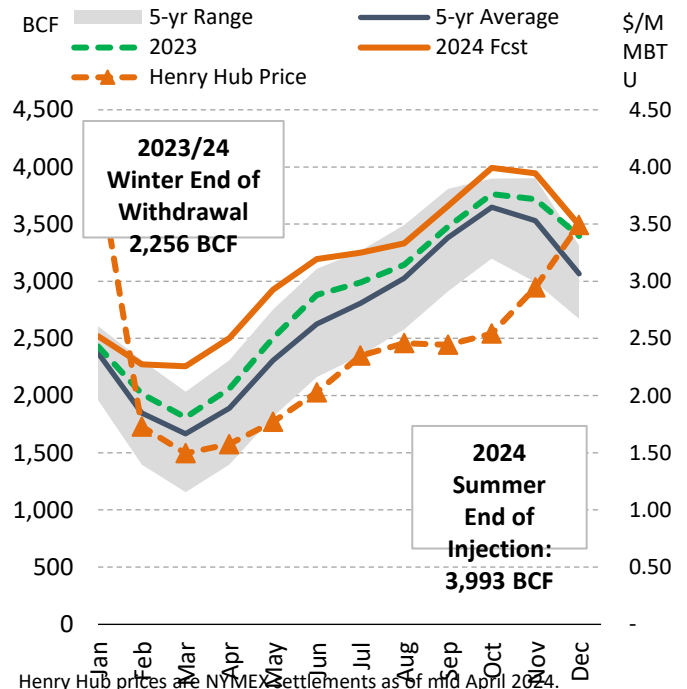
•On the demand side of the ledger, exports and power consumption are expected to drive demand gains.

•The projected 0.2 BCFD growth in power market consumption on a summer over summer basis may appear modest, however the increase is in addition to those of Summer 2023, which was a banner year for power burns. The resilience of power market demand, despite the modest YoY growth estimate, indicates extremely high utilization of gas-fired generation.

•The export sector once again is expected to lead demand growth, driven by LNG exports. EVA estimates LNG feedgas demand will average just over 0.75 BCFD higher for Summer 2024 with new export facilities Plaquemines and Golden Pass expecting to take test gas during 2H 2024 or 2025.

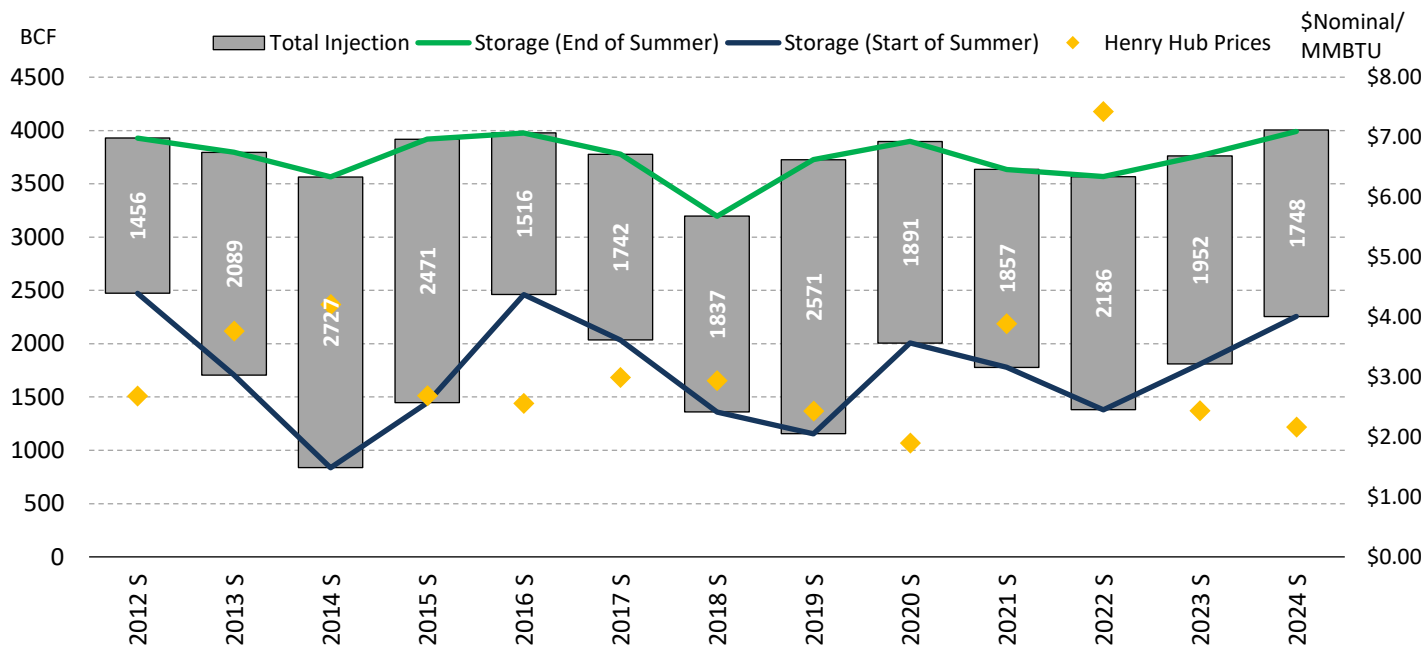
Summer Natural Gas Supply and Demand Summary	2024 Summer	2023 Summer	Difference vs Last Summer	Difference vs Last Three Summers
<b>Supply (BCFD)</b>				
Dry Production	102.2	101.9	0.2	4.3
Net Canadian Imports	5.1	5.3	(0.2)	(0.0)
LNG Imports	0.0	0.1	(0.0)	(0.0)
<b>Total Supply</b>	<b>107.4</b>	<b>107.3</b>	<b>0.1</b>	<b>4.3</b>
<b>Demand (BCFD)</b>				
Power Burn	38.1	37.9	0.2	2.5
Industrial	22.5	22.5	0.0	0.6
Res/Comm	11.9	11.5	0.4	0.4
Net Mexico Exports	6.4	6.6	(0.2)	0.2
LNG Exports	13.5	12.8	0.8	1.9
Other	6.9	7.0	(0.1)	0.0
<b>Total Demand</b>	<b>99.2</b>	<b>98.2</b>	<b>1.1</b>	<b>5.5</b>
Average Injection (BCFD)	8.1	9.1	(1.0)	(1.2)
Total Injection (BCF)	1,748	1,957	(208.2)	(251.6)
CDDs	1,283	1,245	38.0	(49.0)

### U.S. working gas in underground storage



## U.S. natural gas storage is projected to remain at a surplus to the 5-yr average this summer

### U.S. L48 Summer Gas Storage Injection: Lowest Net Injection Season in 7 Years



- U.S. natural gas storage continues to struggle with the storage overhang. The bearish end to 2023 carried over into early 2024 despite a mid-January Arctic blast that resulted in a record total demand spike and production freeze-offs. However, due to the resiliency of natural gas producers and pipeline/storage operators, there were few reliability events despite the tightened market. The cold snap was short lived, and the remainder of the winter heating season was back on trend, which averaged much warmer than normal for the second consecutive winter.

- Robust production through February 2024, together with a lack of weather-related demand, yielded smaller than expected withdrawals from storage, causing the storage overhang to the 5-yr average to expand. Spot pricing and near-term forwards fell to fresh lows. Producers like Chesapeake and EQT subsequently sharply decreased production at gas-directed plays like Haynesville and Appalachia, in the hope of providing better balance to the storage forecast for the Summer 2024 season.

- As we progress through the Spring 2024 shoulder season, seasonal declines in weather-related demand are being offset with lower supply, yet maintenance and unexpected outages impacting Gulf Coast area LNG export facilities, as well as pipeline maintenance have been causing an expected surplus of natural gas. Therefore, EVA expects to see more reduction in production during Q2 of 2024.

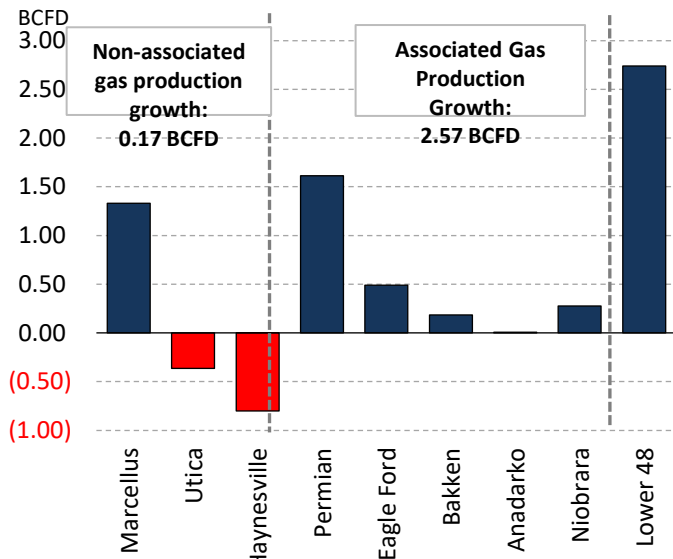
- Like Summer 2023, U.S. natural gas storage is forecast to remain at a surplus to the 5-yr average during the Summer 2024 summer injection season, assuming normal weather and limited price changes to either gas or coal forwards. Gas-fired generation maintains a strong cost competitive advantage to coal-fired generation until late 2024.

- Growth in LNG feedgas demand means that unexpected outages such as those currently impacting Freeport LNG, as well as seasonal maintenance for all facilities, are likely to impact storage balances, especially during shoulder seasons. Demand for U.S. LNG will be a key component of restoring U.S. natural gas storage levels back towards the 5-yr average, assuming that European and Asian LNG buyers continue to bid for U.S. LNG in order to restock their regional inventories.

- U.S. working gas inventory exited the Winter 23/24 heating season at roughly 2.25 TCF at the end of March. EVA projects an injection of just over 1.7 TCF for Summer 2024, which would be the smallest injection season since 2016 and bring storage over 3.9 Tcf going into the winter.

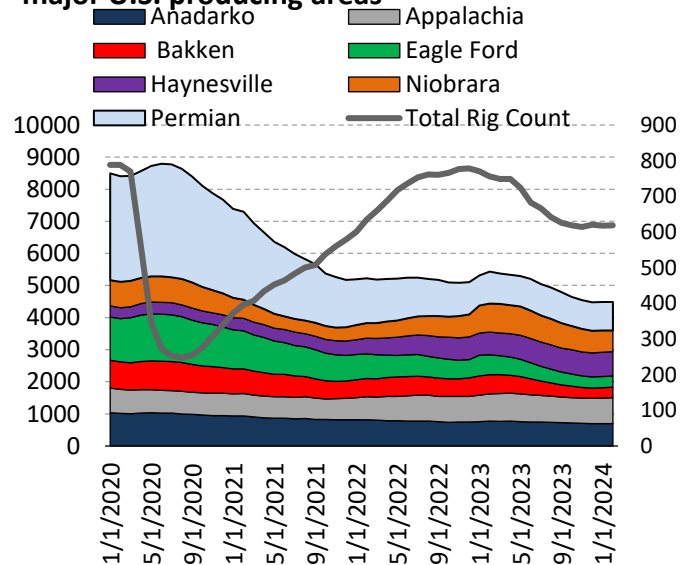
## Reduced production a key factor in reducing the storage overhang

**Year-over-year Production Change by Basin (Winter 22/23 vs Winter 23/24)**



Source: EIA, Energy Ventures Analysis

**Drilled but uncompleted wells inventory in major U.S. producing areas**



- Natural gas production increased throughout 2023, with an output boom during Q4 2023 just ahead of the winter heating season. Natural gas associated with the production of petroleum (“associated gas”) rose due to the stronger petroleum price curve. Meanwhile, the warmer-than-normal winter heating season did little to support spot and forward U.S. natural gas prices, leaving little incentive for gas-directed activity growth.

- Despite the weaker forward curve, Marcellus output rose on a winter-over-winter basis, yet by the end of Q1 2024, both Haynesville and Marcellus production estimates were measured lower as a result of market signals to reduce producer activity.

- EVA expects lower production from these regions to last throughout Q2, or until the market gets a seasonal uplift in demand or prices recover.

- EVA expects U.S. dry gas output to average ~102.5 BCFD in 2024. The production outlook begins to rise late Q2 and assumes output stays relatively flat for Q3 and Q4.

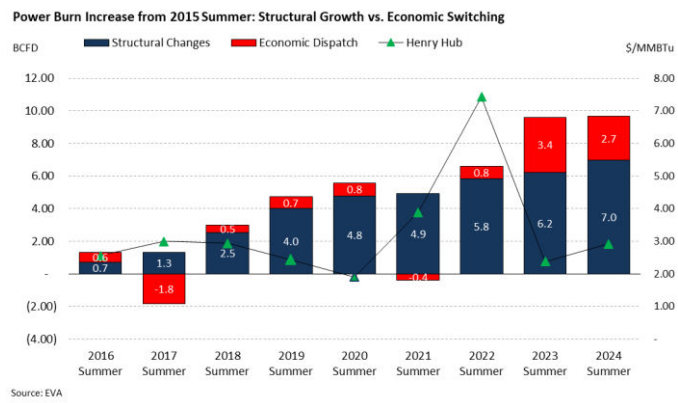
- The low-priced environment for U.S. natural gas prices, in addition to lower producer capital expenditures, has limited rig counts for gas-directed activity. Drilled but uncompleted well inventories fell during late 2023 but have been relatively stable during Q1 2024 due to less activity/investment.

- The 2-BCFD Mountain Valley Pipeline (MVP) commercial online date (COD) continues to shift due to ongoing legal challenges. EVA assumes a COD for MVP during 2H 2024. Once MVP is operational, 2 BCFD of Marcellus and Utica supply will flow towards the Southeast.

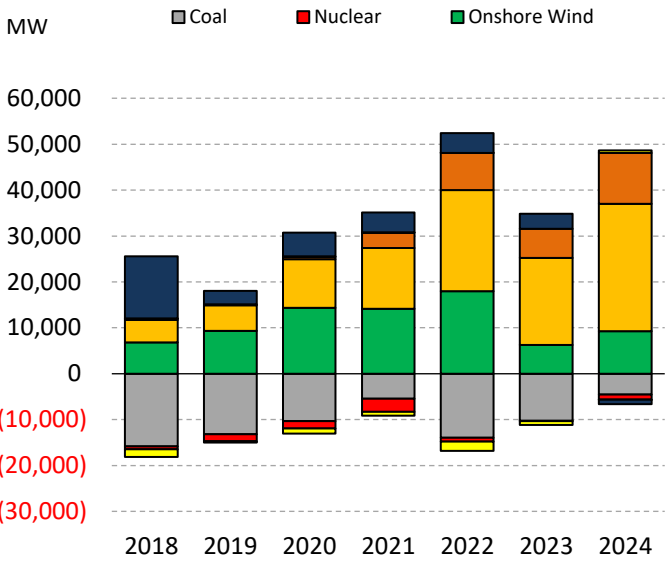
- Additionally, EVA assumes that the Matterhorn Express pipeline will be operational in late 2024, which will support 2.5 BCFD of Permian gas supply towards Houston area, as LNG exports from the Gulf Coast are expected to increase.

- EVA assumes no new major pipeline projects for Summer 2024, with the exception of infrastructure needed to support Gulf Coast LNG expansion. The Department of Energy’s LNG “pause” has not yet impacted pipeline projects.

# Summer natural gas-fired generation supports coal-to-gas switching economics and growth of power market demand for natural gas



## Net change in U.S. generating capacity

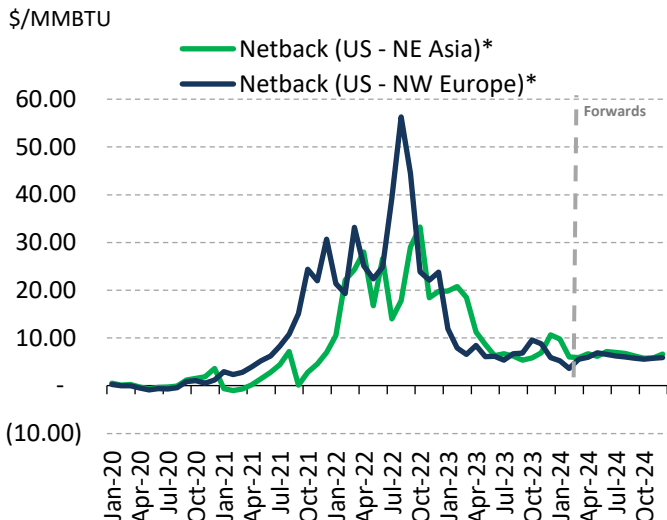


- Power burns outperformed expectations during Winter 23/24, largely due to the lower spot gas curve that drove significant coal-to-gas switching. Under normal winter weather, the seasonal uplift in natural gas prices opens the door for increased coal-fired generation. However, as highlighted, this market construct failed to occur last winter, as coal prices were resilient at the same time that gas prices moved to sub \$2/MMBTU across the L48 in a very short timeframe. The switch from coal- to gas-fired output was massive and drove a big change in the generation stack.
- **The current Summer 2024 gas forward curve will leave the door open for a new record power burn outlook.** Gas-fired generation is expected to maintain a cost competitive advantage throughout the summer injection season.
- Comparing Summer 2024 to a baseline of 2015 (the first year there was a measurable shift in the installed base between coal plant retirements and gas plant new builds), **EVA estimates a gain of 7 BCFD of long-term structural demand growth from new combined-cycle gas units (CCGT) and an increase of 2.7 BCFD of economic switching for Summer 2024.**

- Between 2023 and 2024, EVA anticipates nearly 15 GW of coal capacity will be retired. The magnitude of retirements is slowing as the coal plant base shrinks.
- Coal generator retirements will support higher utilization at gas-fired plants. However, the swing factor to the power generation outlook will be renewable installations. Solar installations for 2024 are expected at nearly 28 GW, which, along with offshore wind project development, will eventually reduce the need for fossil generation to meet electricity demand.
- The wildcard for Summer 2024 and beyond will be electric demand growth. Sectors like electric vehicles, digital data demand centers, new housing starts, etc. in addition to electrification goals, will open the door for all generating resources. Weather will also play a major role in how the generation stack is dispatched/utilized.

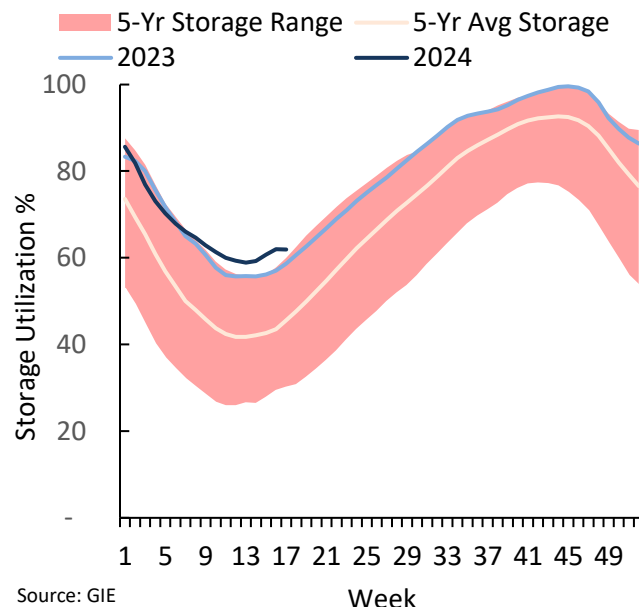
## Exiting Winter 23/24, European natural gas storage is well above historical levels, partially offsetting geopolitical risks

### Netbacks for U.S. LNG exports



Source: Energy Ventures Analysis. Historical netbacks are based on cash settlements. Future netbacks are based on mid-April 2024 forward curves.

### EU gas storage utilization



Source: GIE

- Based on the current forward market settlements, estimated netbacks of U.S. LNG exports to NW Europe and NE Asia range between \$6-\$7/MMBTU for the remainder of 2024. The shift in international benchmarks will drive U.S. spot market flows, especially in the near term.

- EVA expects U.S. LNG feedgas demand to average 14 BCFD for the remainder of 2024. However, there is some risk to this outlook as we exit the maintenance season, as well as the potential for a shift in commercial online dates for both Plaquemines and Golden Pass.

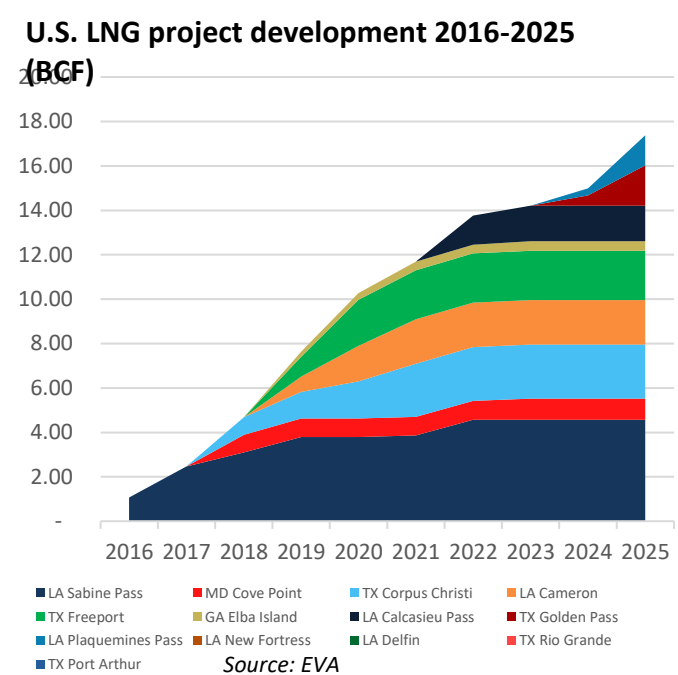
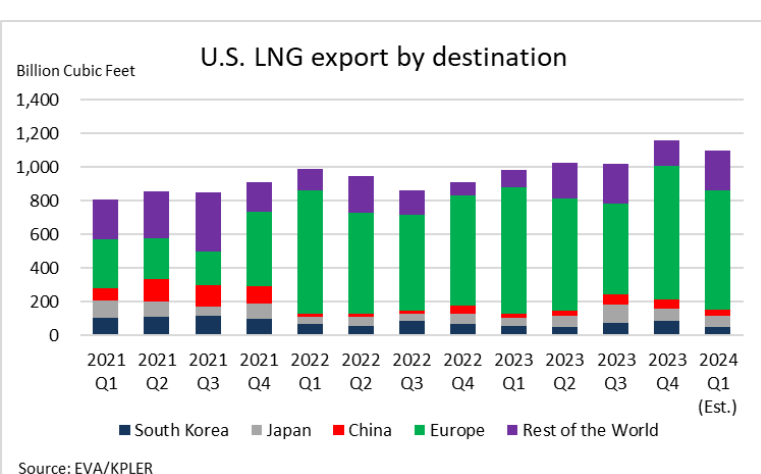
- The warmer-than-normal winter, demand conservation efforts, and renewable generation limited the withdrawal from storage for Europe.

- Total European natural gas storage sits in the low 60% range as of 1H April 2024, which is nearly 20% higher than the 5-yr average.

- As you'd expect with robust storage, regional spot and forwards have fallen to multi-year lows. However, the much lower U.S. natural gas spot and forward market continues to yield healthy netbacks to Europe. Netbacks to Asia are also robust. The ongoing price battle between European LNG buyers and Asian LNG buyers should continue to be a major factor when setting regional prices to attract U.S. LNG supply.

- Geopolitical tension in Europe and the Middle East will also play its part in LNG global trade flows. Not only will European and Asian gas benchmarks move somewhat in tandem as storage balances shift due to progression (prices will rise and fall to attract LNG supply depending on the re-stocking rate), but additional supply fears stemming from military activity in and around LNG-exporting nations will drive price volatility throughout the summer injection season.

## U.S. LNG netbacks will determine destination as price competition between European and Asian benchmarks continues



- Europe has been the primary buyer of U.S. LNG since late 2021. However, there is a possibility we will see a shift in U.S. LNG export flows during Summer 2024 due to robust European natural gas storage levels and the evolving netback of U.S. LNG competition with Asia.

- U.S. LNG exports should continue to operate at/near 100% utilization for Summer 2024. As discussed, maintenance and unexpected outages at U.S. LNG export facilities will play a major role in 2024. As the export base grows, EVA believes the potential swing in feedgas demand could influence domestic prices or international benchmarks, should supply become temporarily difficult to obtain.

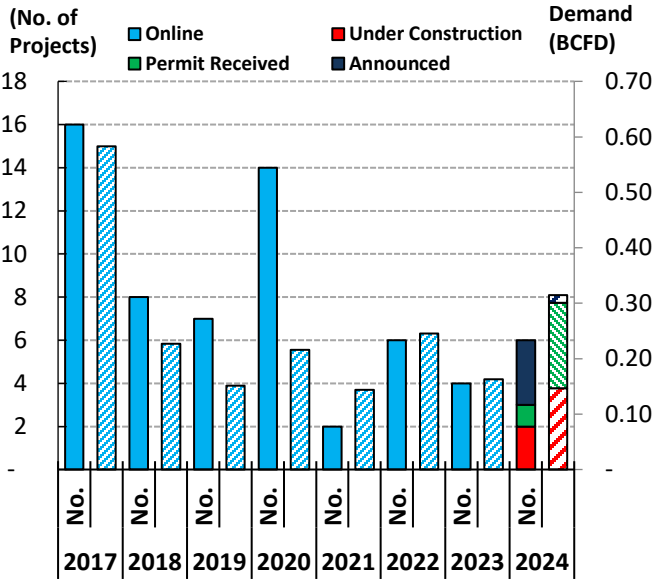
- Several U.S. LNG projects that preceded the DOE’s “pause” on LNG are expected to advance over the next few years. EVA anticipates two new projects over the next year, Golden Pass 2.41 BCFD and Plaquemines Pass, which are assumed to begin taking test gas during 2H 2024 or early 2025.

- The United States was the top LNG exporter during 2023. EVA expects the U.S. will maintain its position as the top LNG exporter in 2024.

- Geopolitical tension and sanctions will drive global LNG trade flows, in addition to the ongoing nature of international gas storage re-stocking efforts and uncertainties surrounding the “pause.”

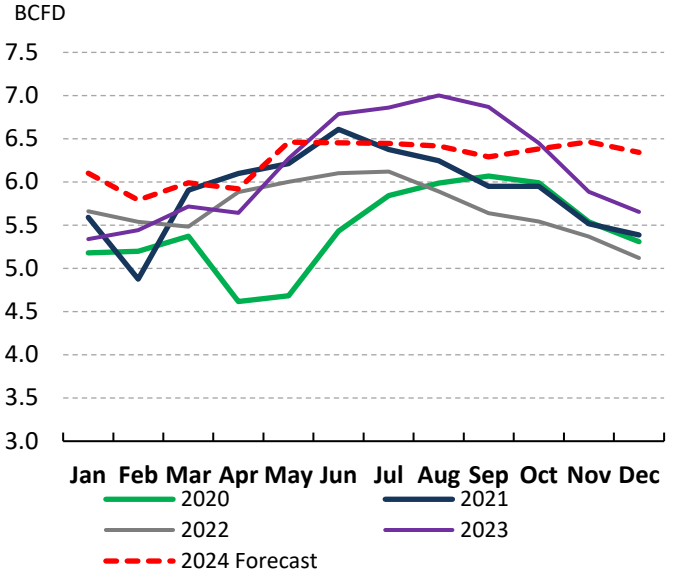
## Structural growth from industrial customers and Mexican exports is on the horizon

### Industrial Projects and Gas Demand



Source: EVA

### U.S. Exports to Mexico



Source: EVA

- According to the U.S. Federal Reserve, the industrial capacity utilization rate is averaging just north of 78% through the first two months of 2024, which is roughly 1% lower YoY for the same tenure. Economic factors will continue to impact industrial demand. EVA's industrial tracking database shows new projects are expected in 2024. Six projects totaling near 0.30 BCFD are expected to begin service in 2024.
- The development of new industrial projects will continue to support the structural growth of industrial demand. Since the end of 2022, 10 new projects categorized as online, under construction, permitted or announced are expected to drive nearly 0.50 BCFD of new industrial demand.
- The U.S. is a critical supplier to Mexico's energy sector. U.S. natural gas exports to Mexico are expected to average 6.3 BCFD during 2024.
- Piped gas exports to Mexico are a key component of export demand. EVA forecasts that demand in Mexico will remain solid, especially with the development of LNG export terminals and additional gas-fired generation new builds over the next few years.
- Along with plans in Mexico to build up to 5 Bcf/d of LNG export capacity, the state utility Comisión Federal de Electricidad also plans on developing over 7 GW of gas-fired generation by next year. It is estimated that these plants would require an additional +1 Bcf/d of gas supply. As a result, there is upside to this forecast assuming accelerated completion of new demand.