# Winter Energy Market and Electric Reliability Assessment

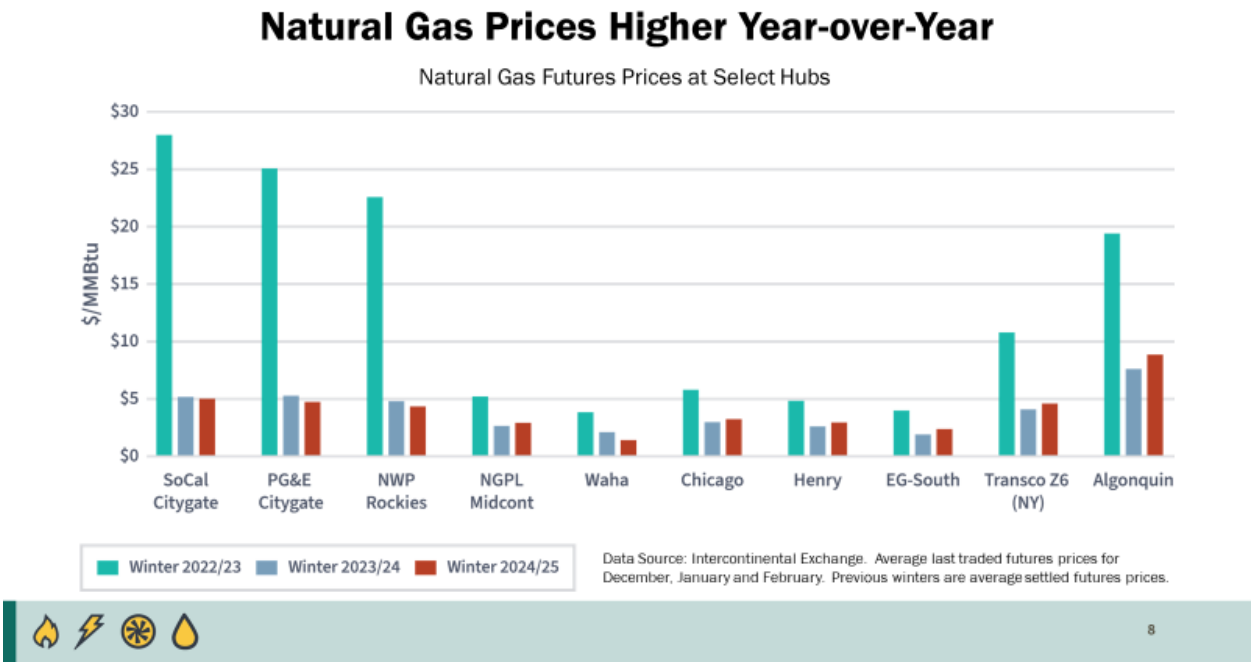
## A Staff Report to the Commission

November 21, 2024

FEDERAL ENERGY REGULATORY COMMISSION
**Office of Energy Policy and Innovation**
**Office of Electric Reliability**

# Natural Gas Fundamentals

Slide 8




## Natural Gas Prices

Modestly rising natural gas demand and flat production are expected to exert upward pressure on natural gas prices for winter 2024-2025. Prices are expected to increase at major trading hubs across the United States compared to last winter but remain lower than winter 2022-2023.[17] The hubs shown in **Slide 8** include the national benchmark Henry Hub in Louisiana and nine other major supply and demand hubs in the Lower 48 States. Consistent with the past two winters, hubs in New York, New England, and California are expected to have the highest prices this winter.

As of November 14, the Henry Hub futures contract price averages $2.95/Million British thermal units (MMBtu) for this winter, up 13% from last winter's settled futures price average of $2.61/MMBtu and 43% lower than the average of $4.84/MMBtu settled for winter 2022-2023. Toward the end of last winter, natural gas prices at Henry Hub fell to

[17] Natural gas futures prices are price quotations of contracts for the exchange of natural gas, as either a physical or financial settlement, at a specified time in the future. Winter futures prices in this section are the average quotes of the last traded futures contracts, as of September 10, 2024, for the winter months of December 2024, January 2025, and February 2025 as retrieved from InterContinental Exchange, Inc. Previous winter averages are the final settled futures prices for each month as retrieved from InterContinental Exchange, Inc.

record lows in part due to mild weather, which led to lower natural gas consumption (with lower demand for space heating), and relatively high natural gas storage inventories.[18]

In Northern California (PG&E-Citygate), as of November 14, 2024, natural gas futures prices for winter 2024-2025 averaged $4.74/MMBtu, a 10% decrease from last winter's average settled futures price, and natural gas futures prices in Southern California (SoCal-Citygate) averaged $5.02/MMBtu, 3% below last winter's average settled futures price. This continues a trend of lower than usual prices at the hub. Mild winter weather, higher natural gas storage inventories, and increased hydroelectric power generation drove December 2023 average natural gas prices spot prices at SoCal-Citygate to the lowest levels since 2015.[19]

In New England, natural gas prices are expected to be higher relative to the rest of the country. As of November 14, 2024, futures trading at the Algonquin Citygate hub, located outside of Boston, averaged $8.86/MMBtu, an increase of $1.25/MMBtu, or 16%, from last winter's average settled price of $7.61/MMBtu. High global LNG prices continue to contribute to elevated winter natural gas futures prices in New England. Because New England relies on imported LNG in the winter to meet some of its natural gas needs, particularly in winter during periods with pipeline capacity constraints, New England natural gas prices are subject to competition for LNG volumes with Europe and Asia.[20] Most of the year, the price at the Algonquin Citygate hub is below the Henry Hub price. However, during winter months when natural gas demand in New England peaks above the region's natural gas pipeline import capacity, prices at the Algonquin Citygate hub routinely increase far above Henry Hub prices. The continued operation of the Everett LNG facility, coupled with the development of the new Northeast Energy Center LNG Terminal discussed above, is expected to bolster regional LNG supply to better meet peak demand. This expanded supply capacity could help stabilize prices during periods of high demand.

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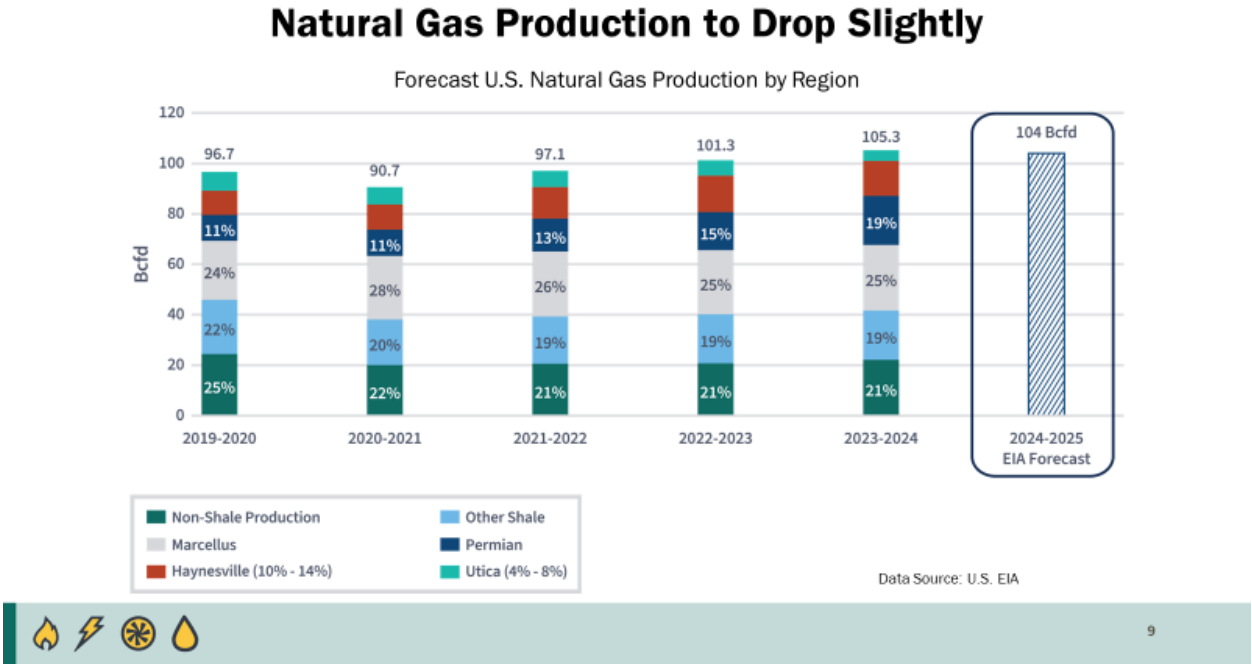
[18] EIA, *Mild winter weather may lead to persistently high natural gas inventories through 2025,* Today in Energy (Apr. 11, 2024), https://www.eia.gov/todayinenergy/detail.php?id=61803.

[19] EIA, *December natural gas price in Southern California was the lowest since 2015*, Today in Energy (Mar. 24, 2024), https://www.eia.gov/todayinenergy/detail.php?id=61644.

[20] EIA, *New England natural gas and electricity prices increase on supply constraints, high demand,* Today in Energy (Feb. 3, 2022), https://www.eia.gov/todayinenergy/detail.php?id=51158.

Slide 9




## Natural Gas Production

As of October 8, 2024, EIA forecasted winter 2024-2025 natural gas production to average 104 Bcfd, down 1% from the winter 2023-2024 average of 105.3 Bcfd but 6% above the previous five-year average. This slide illustrates that winter 2024-2025 is expected to see the first decrease in production in the last five years except for winter 2020-21 when natural gas production decreased due to the impacts of the COVID-19 pandemic. Natural gas production is expected to decrease as some producers, particularly in the Marcellus (Appalachia) and Haynesville (East Texas and Western Louisiana) regions, continue to curtail production, as reflected by slower drilling activity as measured by rig count, amid lower natural gas prices this year.[21] As of October 8, 2024, total active U.S. rigs were at 585, about 7% below the same time last year.

Regional natural gas production patterns from last winter provide some insight as to where natural gas will come from this upcoming winter, as much of the overall growth in recent natural gas production has come from four major shale formations: Marcellus and Utica Basins (located in Pennsylvania, West Virginia, Ohio, and New York), Permian Basin (located in Texas and New Mexico), and Haynesville Basin (located in Louisiana and Texas). These major shale formations accounted for 63.6 Bcfd, or 60%, of the total natural gas

[21] EIA, *Decline in natural gas price drove decrease in U.S. oil producer revenue in early 2024*, Today in Energy (Sept. 23, 2024), https://www.eia.gov/todayinenergy/detail.php?id=63204.

production in winter 2023-2024. **Slide 9** shows the share of production by basin in the past five winters, from winter 2019-2020 to winter 2023-2024, during which total U.S. natural gas production increased 8.6 Bcfd while natural gas production from shale formations increased by 10.9 Bcfd.

Natural gas production can encounter challenges in extreme cold conditions, which can reduce well output and potentially cause supply shortages for downstream markets.[22] The 2023 FERC, NERC and Regional Entity staff report on Winter Storm Elliott highlighted that winterization standards could reduce the impact of major winter storms on natural gas production.[23] Producers say they have taken proactive measures to prepare for cold weather ahead of this winter to mitigate and prevent performance issues.[24]

Crude oil prices drive drilling activities in crude oil-rich basins, which impacts associated natural gas production, such as in the Permian Basin.[25] Crude oil prices are forecast to be higher during winter 2024-2025 as compared to last winter. However, incremental production activity typically lags price changes, thus limiting the potential for new associated natural gas supplies this winter. Crude oil prices for West Texas Intermediate at the Cushing Interchange in Oklahoma, the U.S. crude oil benchmark, are expected to average $73.16 per barrel, 7% more than the previous five-year average of $68.39 per barrel and 1.6% below the average winter 2023-2024 price of $74.37 per barrel.

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[22] EIA, *Winter storms have disrupted U.S. natural gas production*, Today in Energy (Mar. 13, 2024), https://www.eia.gov/todayinenergy/detail.php?id=61563.

[23] FERC, NERC and Regional Entity Staff Report, *Inquiry into Bulk-Power System Operations During December 2022 Winter Storm Elliott* (November 7, 2023), https://www.ferc.gov/media/winter-storm-elliott-report-inquiry-bulk-power-system-operations-during-december-2022/.

[24] Natural Gas Supply Association, *NGSA Members Prepare To Withstand Extreme Winter Weather* (Jun. 2024), https://www.ngsa.org/wp-content/uploads/sites/3/2024/09/Natural-Gas-Winter-Preparedness-Fact-Sheet.pdf

[25] Associated natural gas is gas that is produced along with crude oil extraction. The Permian Basin is the top crude-producing region in the United States, accounting for more than 40% of total U.S. crude oil production; the Permian Basin is also the second-largest natural gas producing region. EIA, *Associated natural gas production has tripled since 2018 in top three Permian oil plays,* Today in Energy (Dec. 6, 2023), https://www.eia.gov/todayinenergy/detail.php?id=61043.