

The Evolution of Midstream Energy
Infrastructure: Poised for the Transition

EPISODE 4

U.S. Natural Gas Market Overview

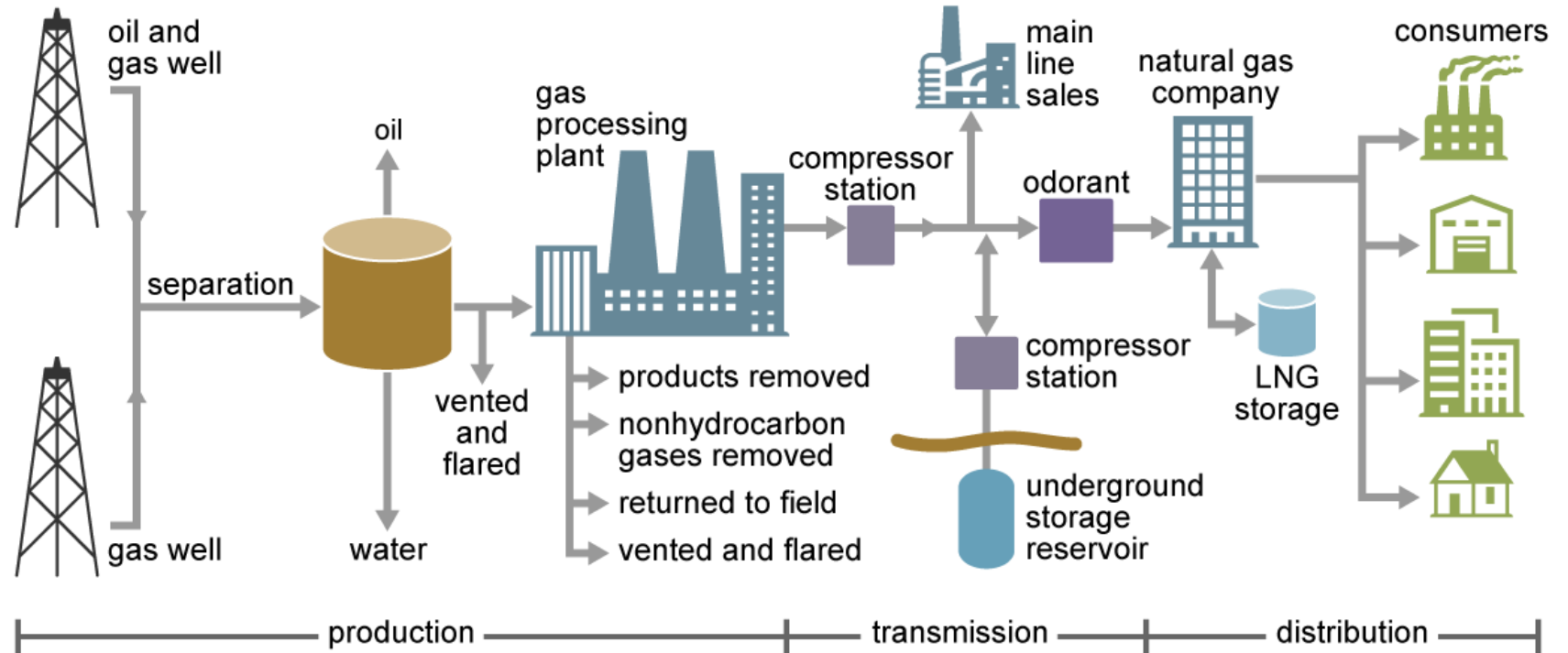
FEBRUARY 2023

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Natural Gas has played an important role in U.S. energy consumption, providing clean-burning, reliable, and cost competitive solutions for a variety of demand sources.

Natural gas production and delivery



Source: U.S. Energy Information Administration

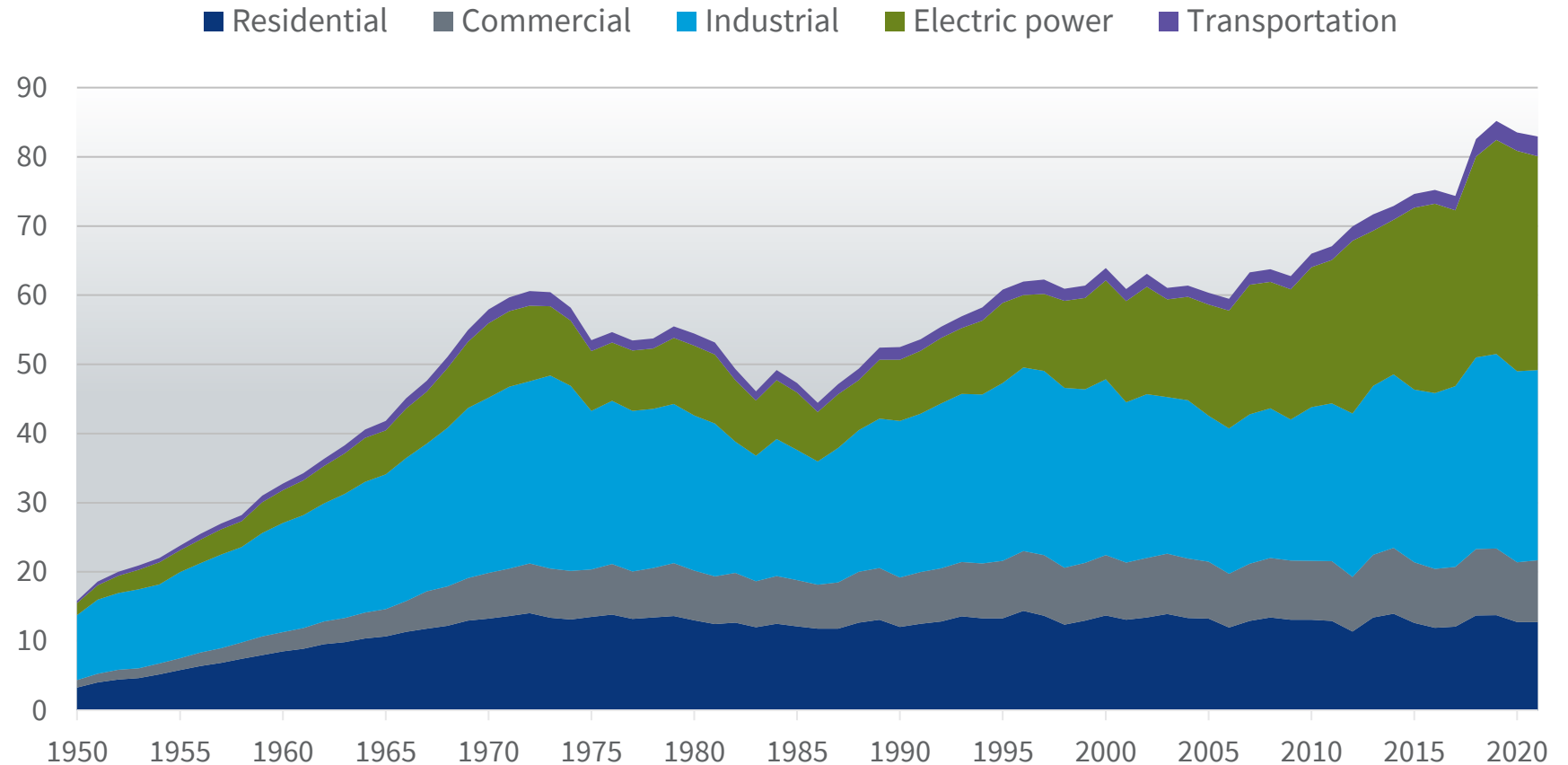
Source: U.S. Energy Information Administration (EIA)



Natural gas demand in the U.S. can be broken out into 5 main sectors: Residential, Commercial, Industrial, Electric, and Transportation.

As shown in the chart, U.S. consumption of natural gas has increased significantly over the last 50 plus years given its usefulness across a wide range of applications as well as its low-cost and readily-available characteristics.

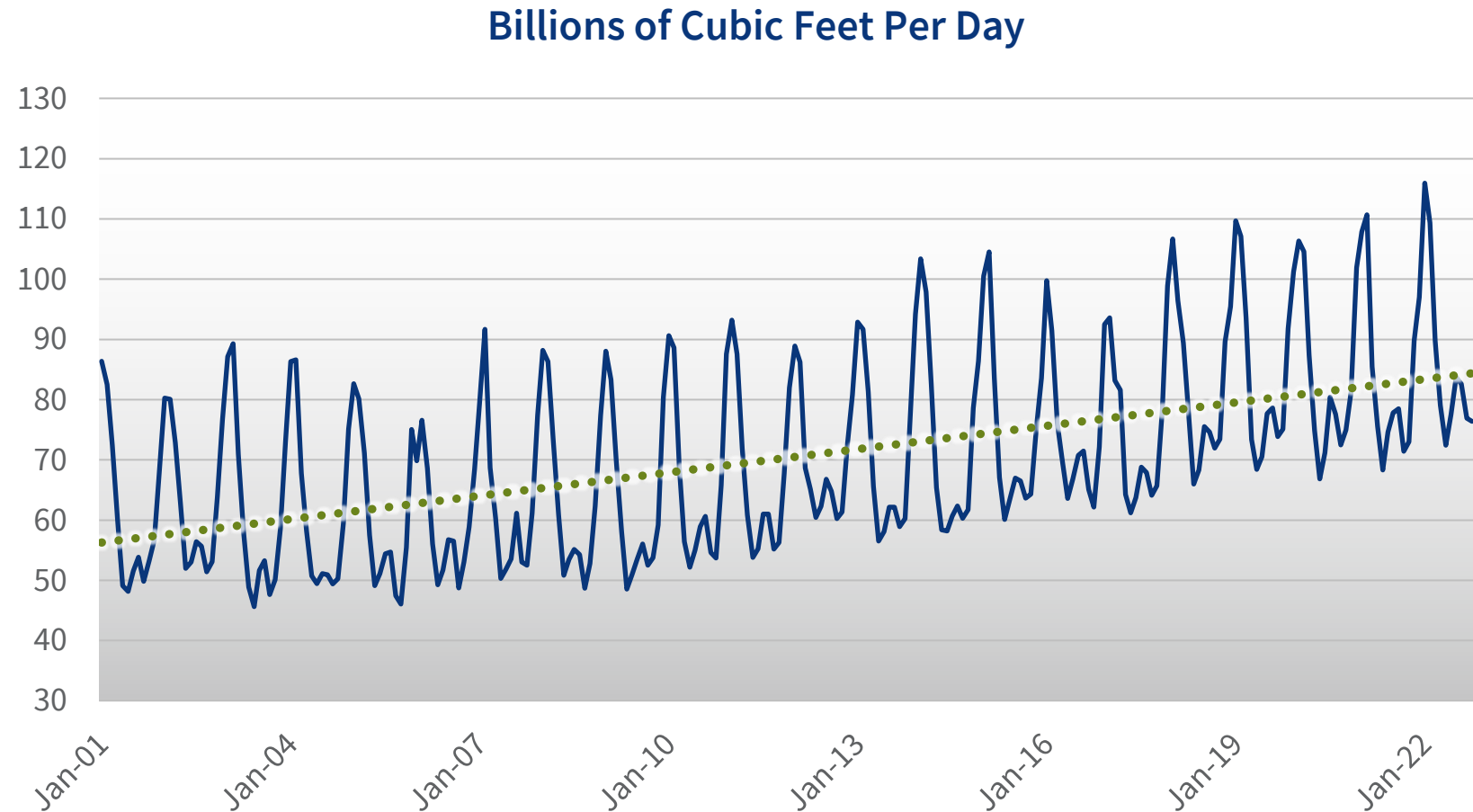
U.S. Natural Gas Consumption by Sector (Billion Cubic Feet per Day)



Source: EIA Natural Gas Consumption by End Use data

Natural Gas demand has shown relative inelasticity over the previous 20 years.

Total demand is ~98 billion cubic feet per day (Bcf/d) comprised of ~86 Bcf/d of U.S. customer demand and ~12 Bcf/d of liquefied natural gas (LNG) exports.



Source: EIA STEO, September 7, 2022

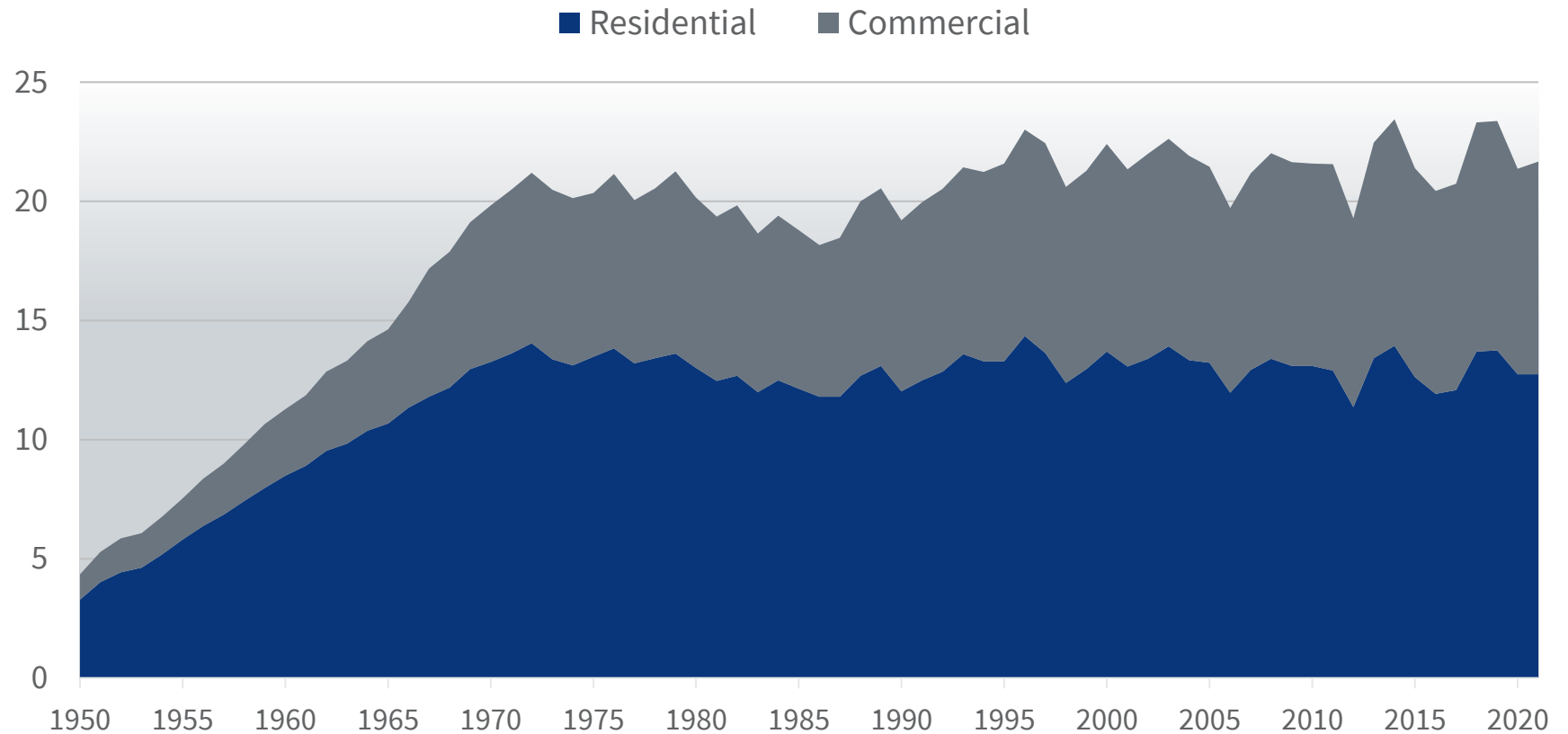


Natural gas consumption in the Residential and Commercial sectors is primarily used for heating buildings and homes.

This demand is very seasonal and is strongest during the winter months when heating degree days are at their highest.

Other uses of natural gas in these sectors include cooking, water heaters, and other appliances that run on natural gas.

Residential Commercial Consumption (Billion Cubic Feet per Day)



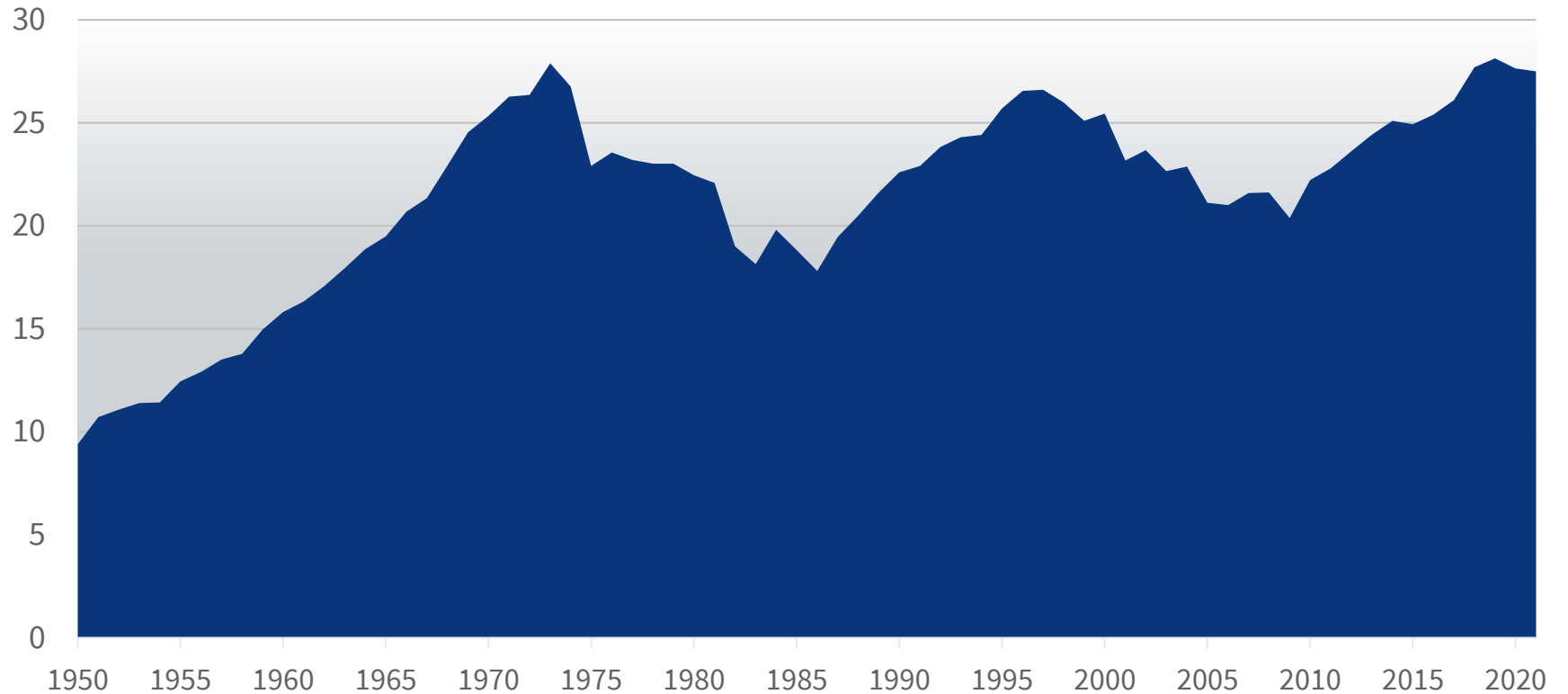
Source: EIA Natural Gas Consumption by End Use data



According to the EIA's classification, natural gas consumption in the Industrial sector is used for manufacturing, mining, mineral extraction, and other smaller industries.

This consumption can come in the form of heat, power, or chemical feedstock.

Industrial Consumption
(Billion Cubic Feet per Day)

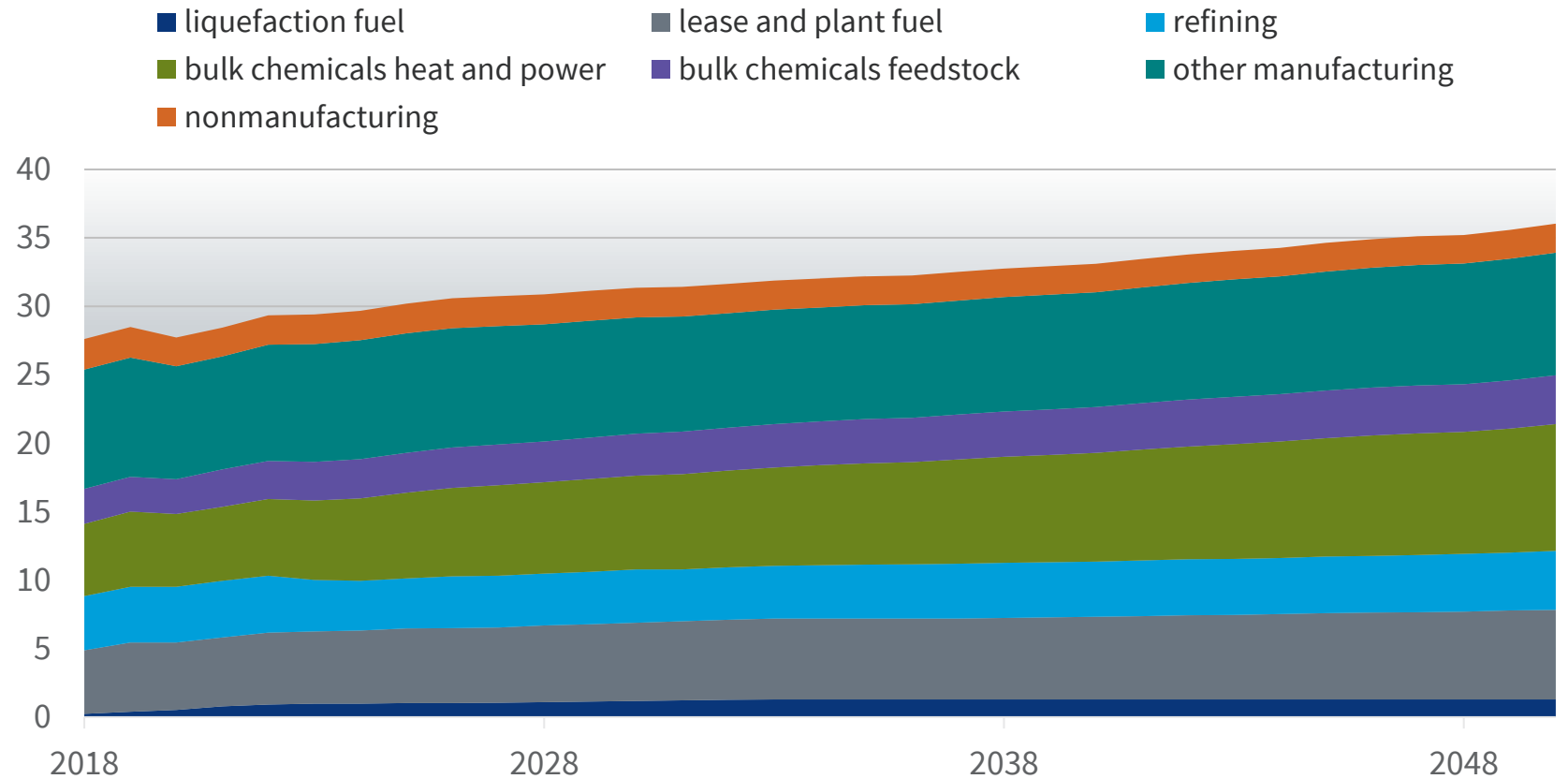


Source: EIA Natural Gas Consumption by End Use data



Going forward, the EIA expects Industrial demand growth to be driven by the Bulk Chemicals sector given the recent build out of large petrochemical plants over the last several years.

Industrial Natural Gas Consumption (Billion Cubic Feet per Day)



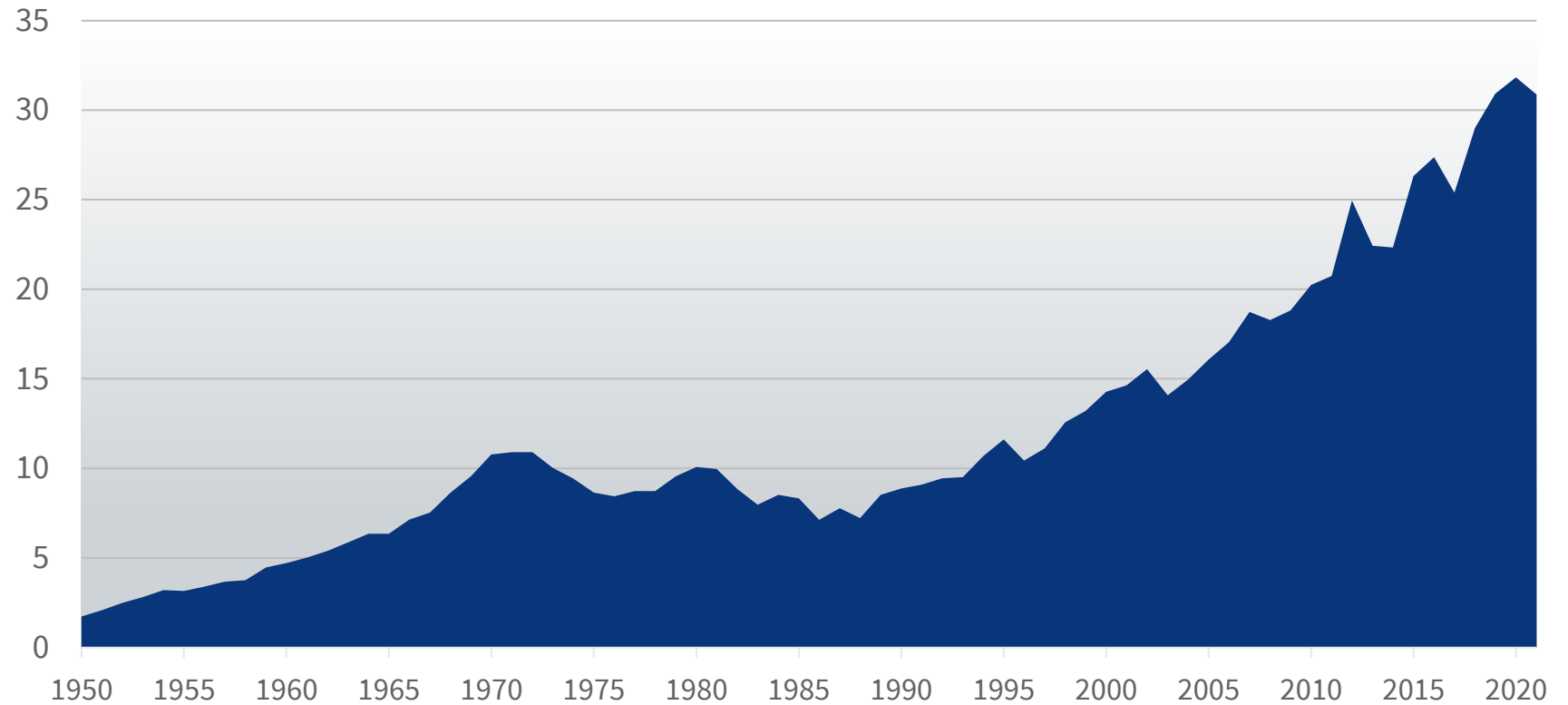
Source: U.S. Energy Information Administration (EIA), Annual Energy Outlook 2022



Natural gas consumption in the Electric sector is used for power generation.

We have seen a significant increase in demand from the Electric sector due to the build out of natural gas fired power plants.

Electric Consumption
(Billion Cubic Feet per Day)



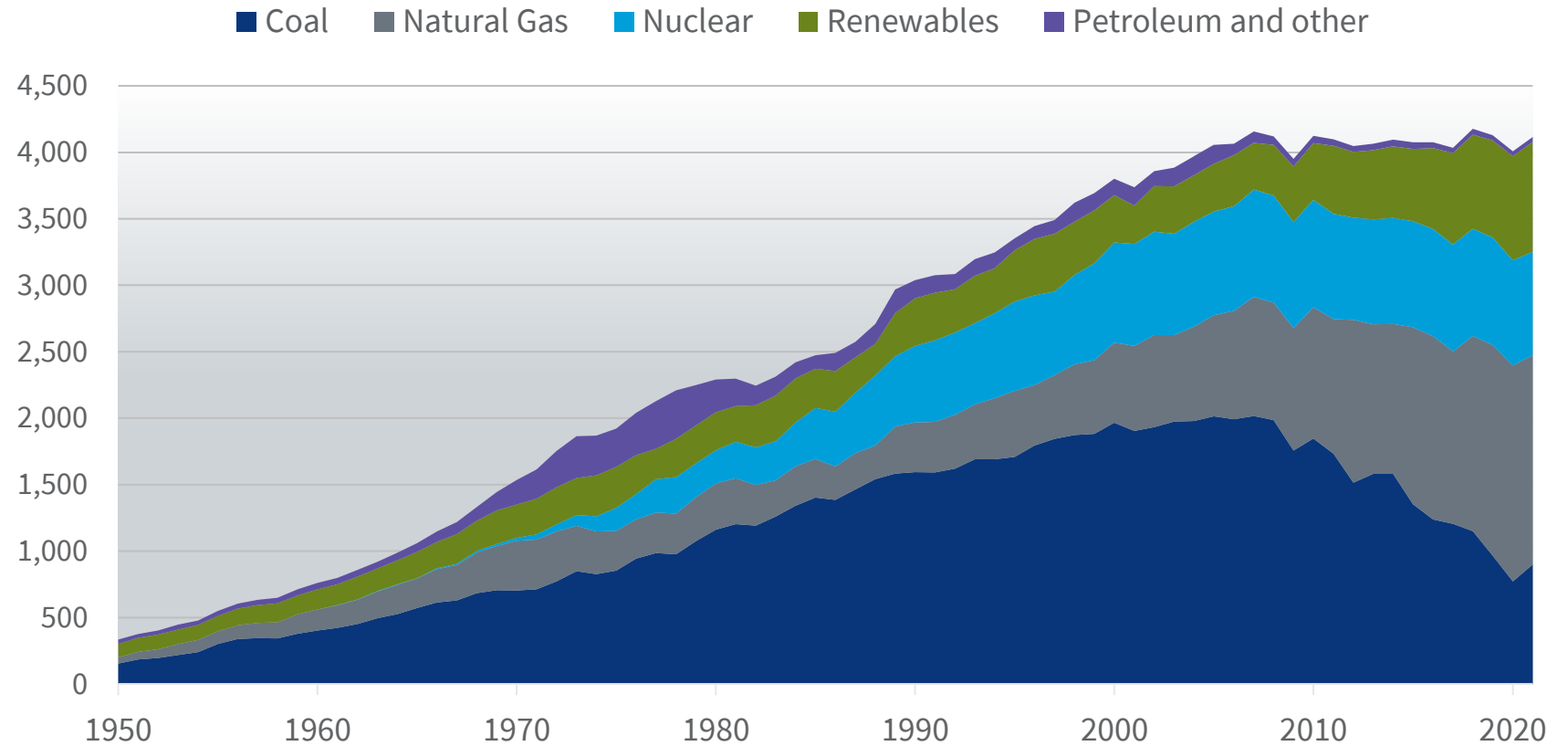
Source: EIA Natural Gas Consumption by End Use data



Since 2016, natural gas has been the largest source of electricity generation in the U.S., representing 38% of power generation in 2021.

Natural gas plants are estimated to have 50% less CO2 emissions than coal plants.

U.S. Electricity Generation by Source (billion kilowatt hours)



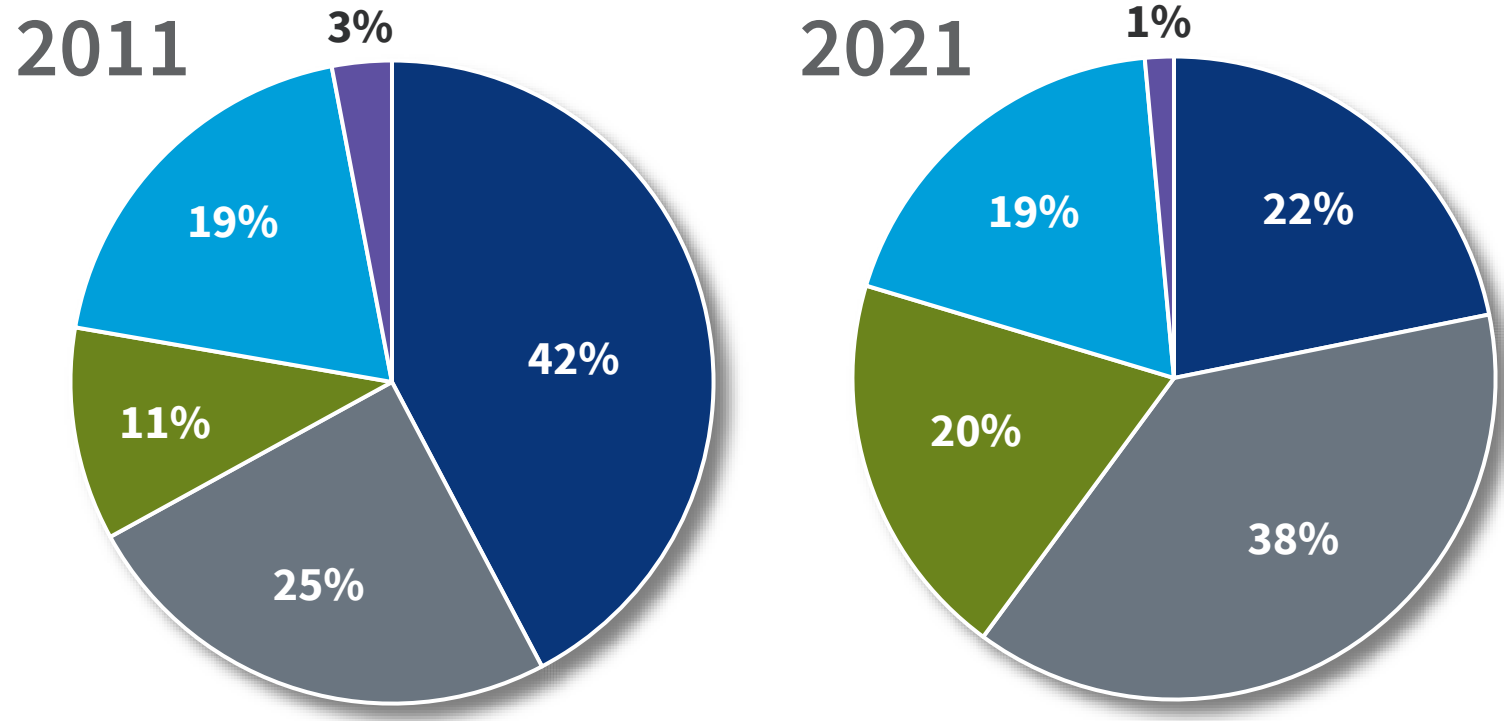
Source: EIA, U.S. electricity generation by major energy source, 1950-2021



Over the last decade, natural gas and renewables have gained market share for power generation while coal-fired power generation's market share has been reduced significantly.

Power Generation by Source

■ Coal ■ Gas ■ Renewables ■ Nuclear ■ Petroleum/Other

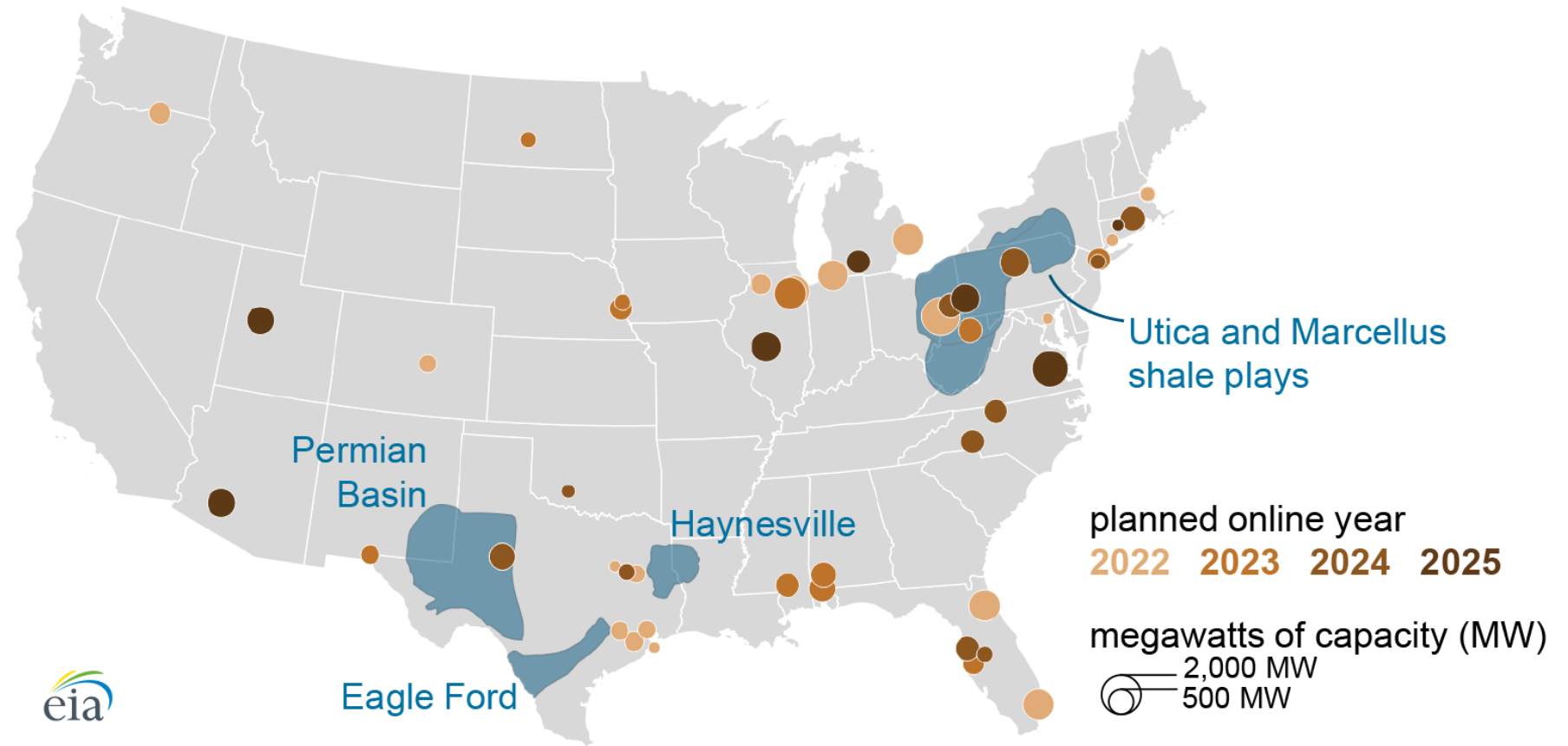


Source: EIA, U.S. electricity generation by major energy source, 1950-2021



The U.S. continues to see the build out of natural gas-fired power plants, particularly in regions with close proximity to major shale basins or regions with ample pipeline connectivity.

Planned U.S. Natural-Gas Fired Capacity Additions and Select Shale Plays (2022-2025)

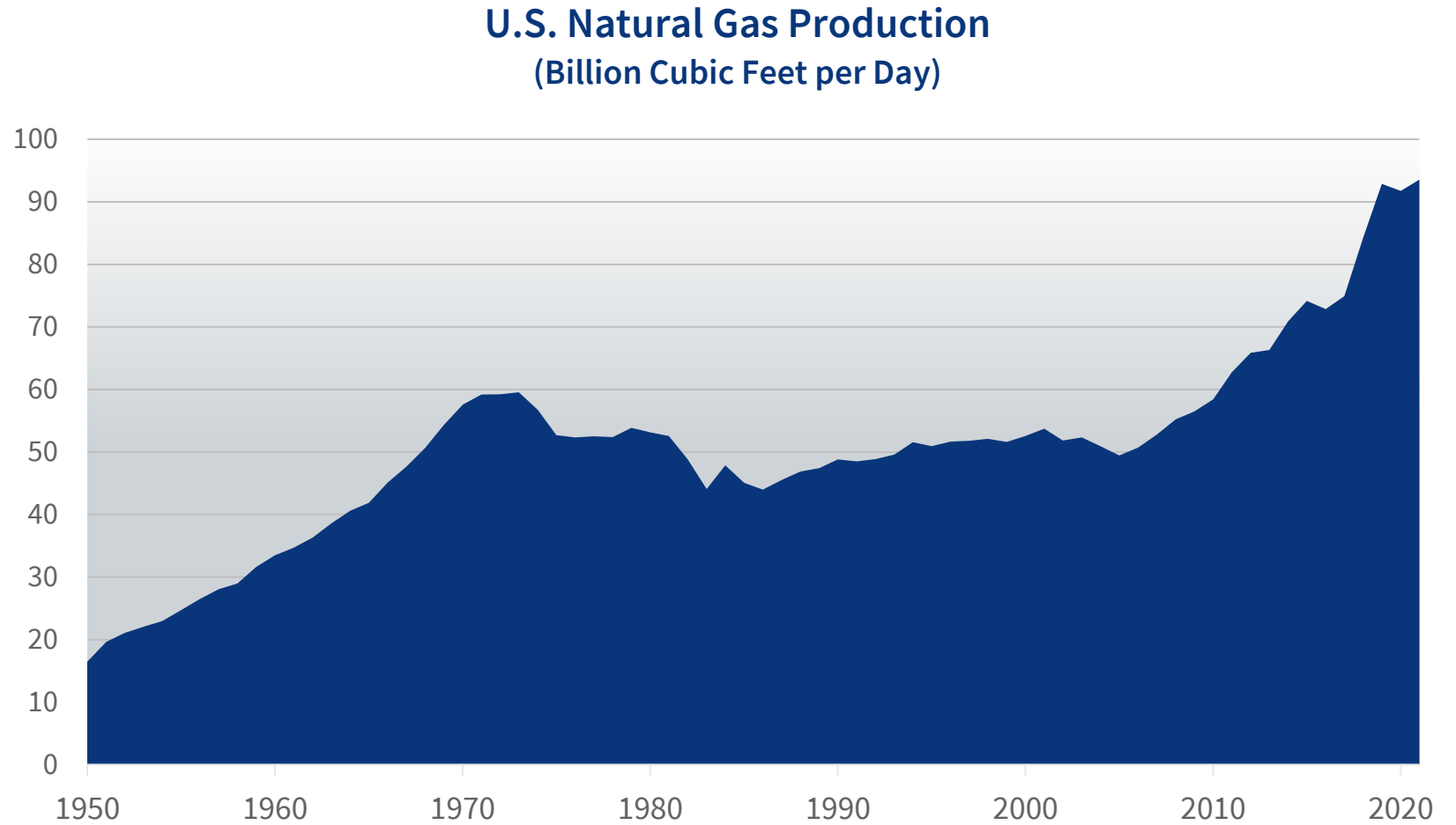


Source: U.S. Energy Information Administration (EIA), *Most planned U.S. natural gas-fired plants are near Appalachia and in Florida and Texas*, November 22, 2021



Natural gas production in the U.S. has seen exponential growth since the early 2000s as a result of the shale revolution.

This production increase has come from both crude oil and natural gas reservoirs.

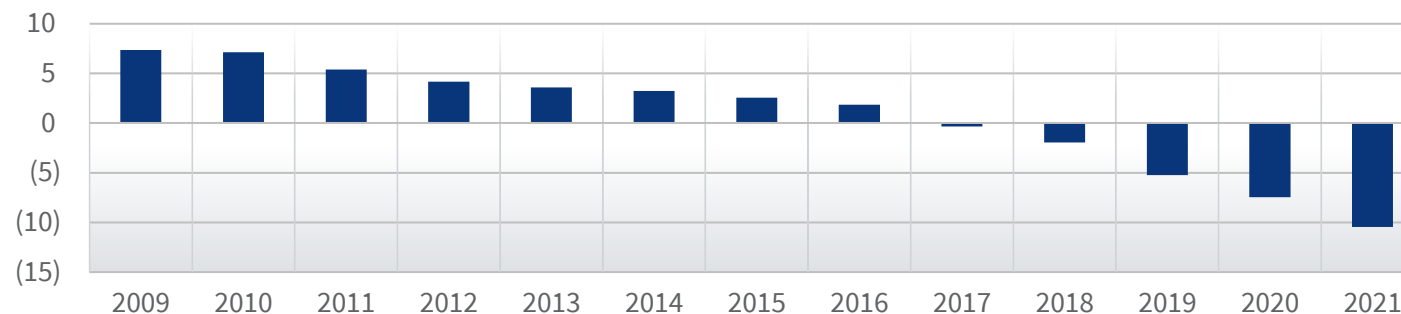


Source: EIA Natural Gas Gross Withdrawals and Production data

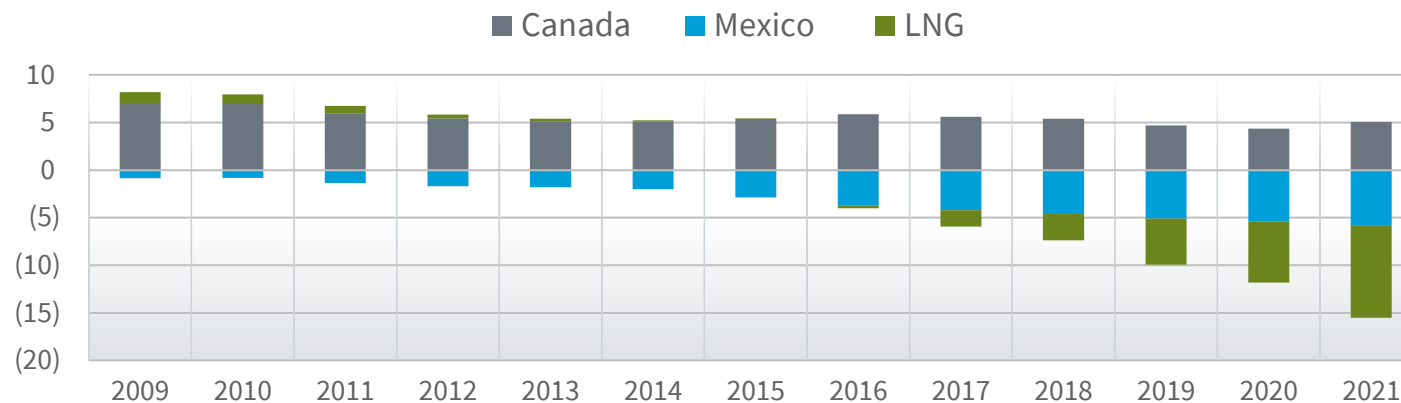


The U.S. has historically been a net importer of natural gas, but starting in 2017, the U.S. switched to a net exporter of natural gas as a result of increased exports to Mexico and increased liquefied natural gas (LNG) exports.

U.S. Natural Gas Net Imports/(Exports)
(Billion Cubic Feet per Day)



Imports/(Exports) by Type
(Billion Cubic Feet per Day)



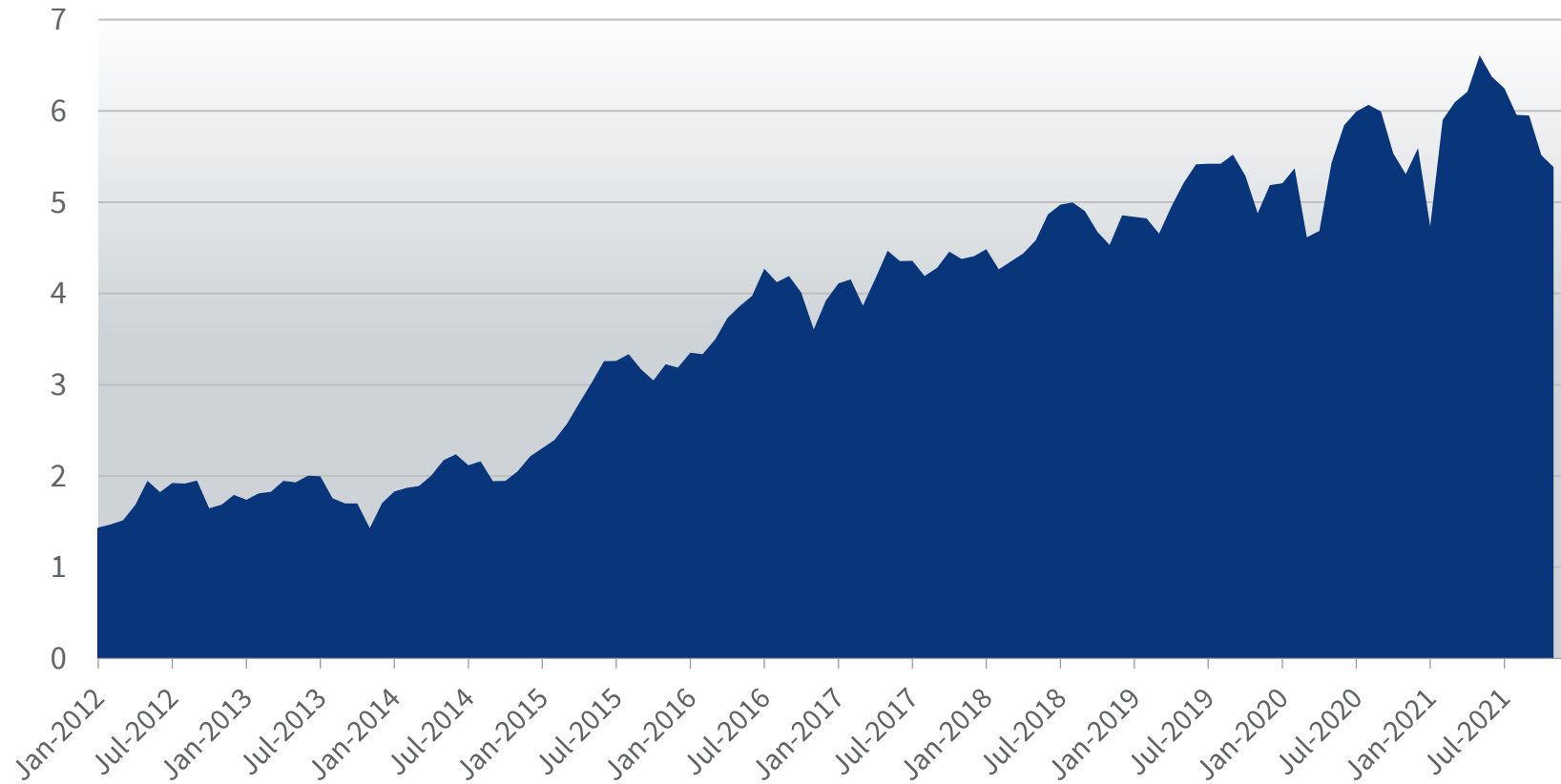
Source: EIA U.S. Natural Gas Imports and Exports by Country data



Legislation passed in 2013 opened up the Mexican natural gas market to the private sector.

This legislation has resulted in a significant increase of natural gas exports to Mexico as U.S. energy companies look to fill the supply gap needed to support Mexico's increasing need for natural gas.

Mexican Natural Gas Exports
(Billion Cubic Feet per Day)



Source: EIA U.S. Natural Gas Imports and Exports by Country data

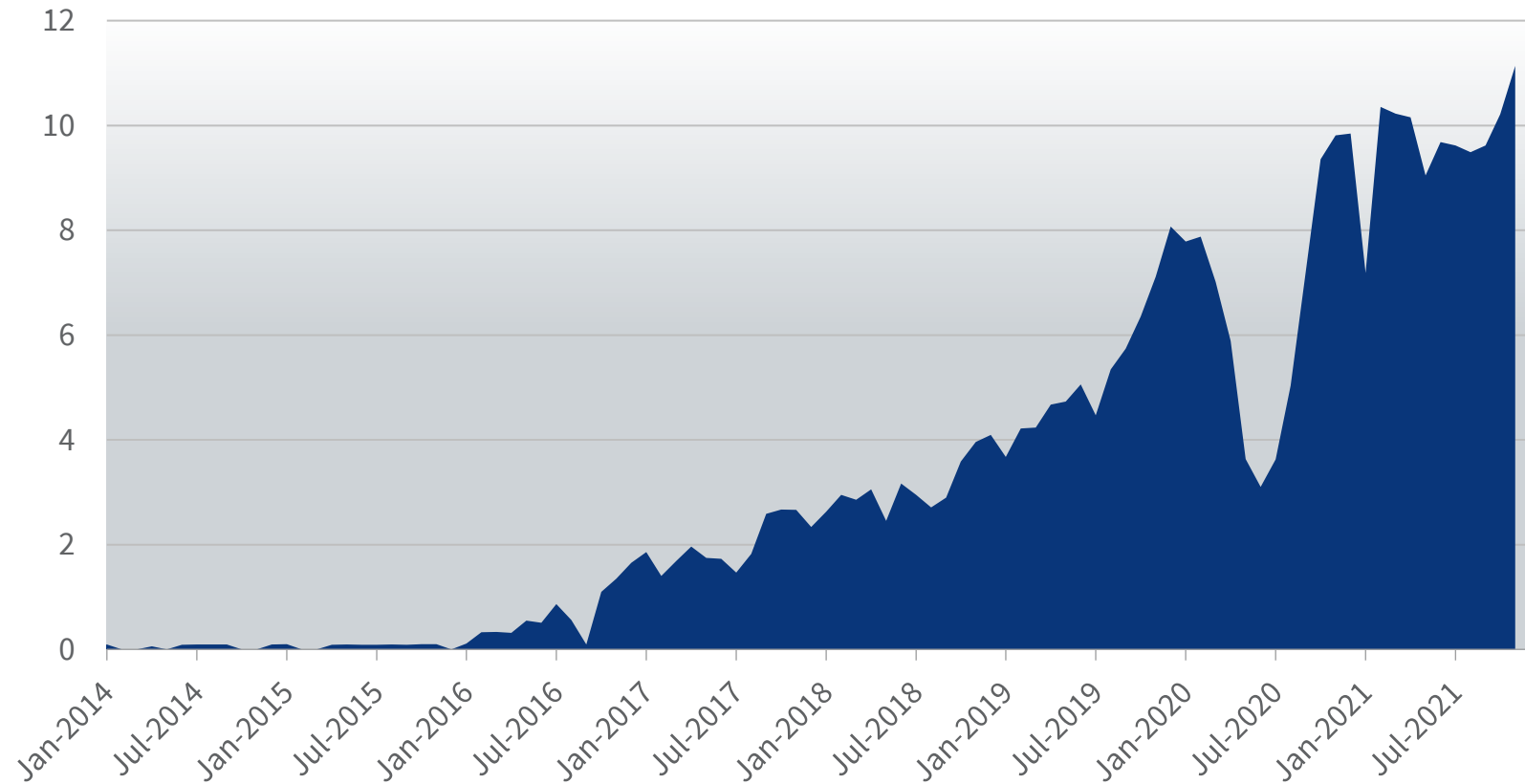


The shale revolution has turned the U.S. into a low-cost and reliable producer of natural gas.

As a result, the U.S. has significantly ramped its export capacity to supply incremental volumes to the global natural gas market.

The U.S. is now one of the top 3 largest suppliers of LNG along with Qatar and Australia.

Liquefied U.S. Natural Gas Exports
(Billion Cubic Feet per Day)

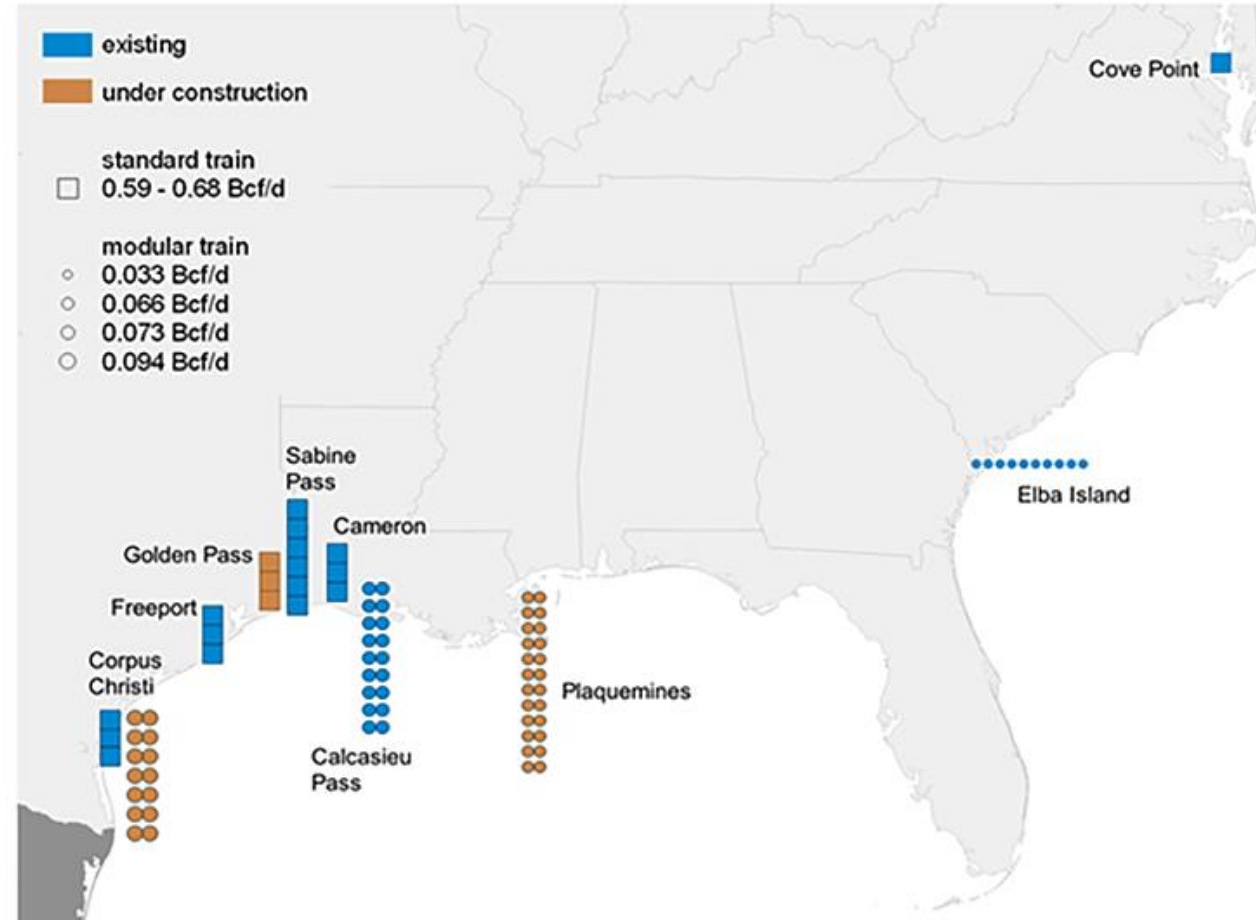


Source: EIA U.S. Natural Gas Imports and Exports by Country data



The majority of U.S. LNG is exported out of the Gulf Coast region given the proximity and pipeline interconnectivity to the major producing basins.

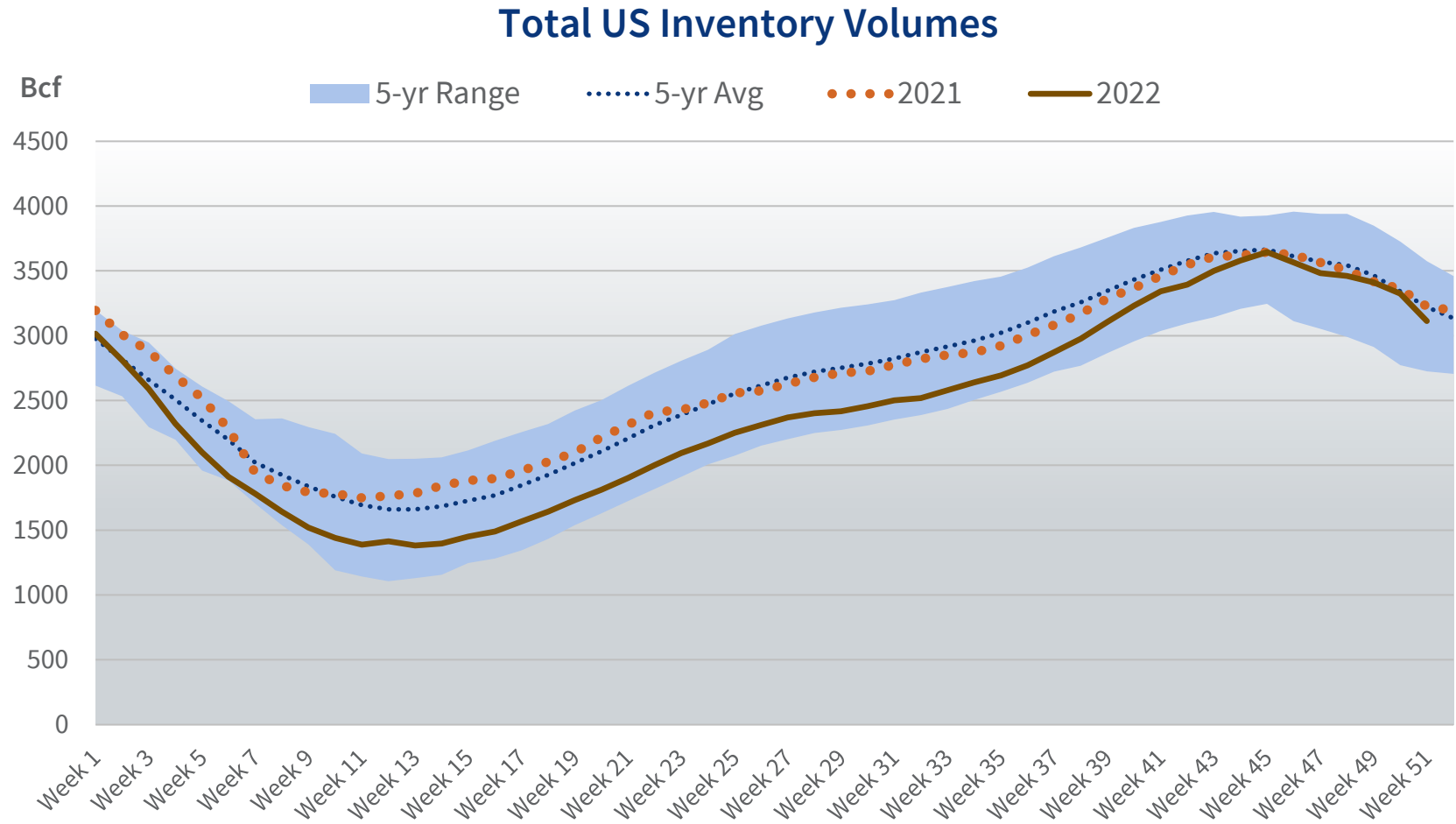
U.S. liquefied natural gas export projects—existing and under construction (2016–2025)



Source: EIA Natural Gas Weekly Update, August 25, 2022



Stable U.S. consumption and increasing LNG export volumes have resulted in inventories trending below the 5-year historical average.



Source: EIA Weekly Natural Gas Storage Report

Source: EIA, Chickasaw Capital

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Bcf is billion cubic feet.

Bcf/d is billion cubic feet per day.

LNG is liquefied natural gas.

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