



مركز الملك عبدالله للدراسات والبحوث البترولية  
King Abdullah Petroleum Studies and Research Center

***EPRINC Workshop***

***Fueling the AI Boom and Manufacturing Renaissance:  
US Power Sector Constraints & Solution***

***Power Demand Outlook***

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***Senior Advisor to the KAPSARC Board of Trustees***

***January 2025 Washington DC***

## Prediction is very difficult, especially if it's about the future



Image Source: Jeffrey Hammel - Looking Into the Crystal Ball: Forecasting for the Financial Sorcerer <https://jeffreyyhammel.com/looking-into-the-crystal-ball-forecasting-for-the-financial-sorcerer/>

**Niels Bohr: Nobel laureate in physics**

**Yogi Berra: Legendary baseball player and philosopher**

**Samuel Goldwyn: Pioneer in the American film industry**

**Nostradamus: Astrologer, apothecary, and reputed seer**

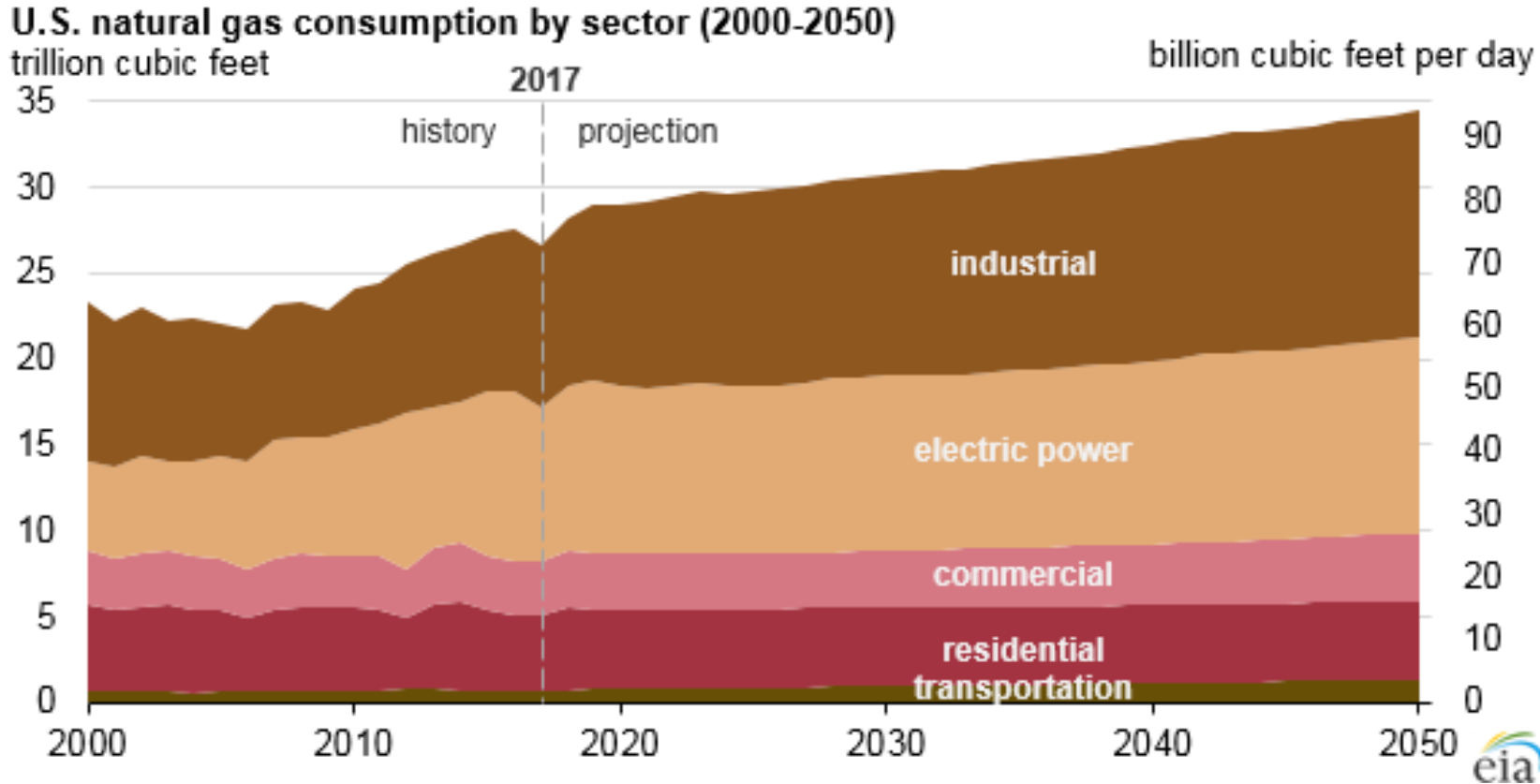
**Adam Sieminski: Public policy pundit**

One of my favorite quotes “**There are no facts about the future**” is widely attributed to Lincoln Moses, the first administrator of the Energy Information Administration (EIA). He reportedly said it at an energy hearing in 1978 or 1979 to a Senator complaining about EIA’s forecasts. Despite with AI says, Alvin Toffler did not say it Future Shock (1970). Bell (1997) says that de Jouvenel (1967) implied it.

“**Since there are no facts about the future – only about the past and present...**”

Leagans, J. Paul, “Rural Development: An Emerging Social, Economic, and Demographic Imperative”, New York’s Food and Life Sciences Bulletin, June 1974. <https://ecommons.cornell.edu/items/d00f5e8e-4229-4604-ae8d-9181b557ab28>

## Natural gas demand forecast for the U.S. from the EIA in 2018



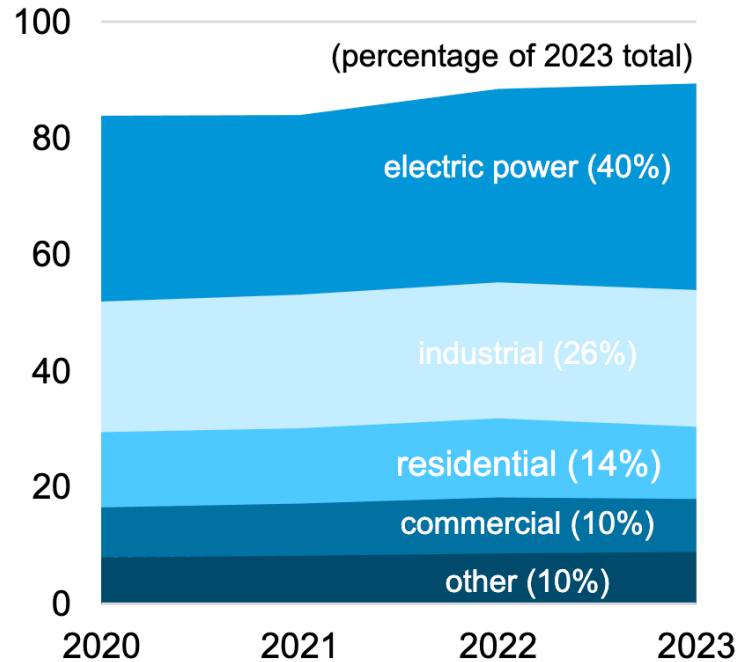
Source: EIA Annual Energy Outlook 2018

In 2018, U.S. natural gas consumption was projected to reach about 90 bcf/d by 2050

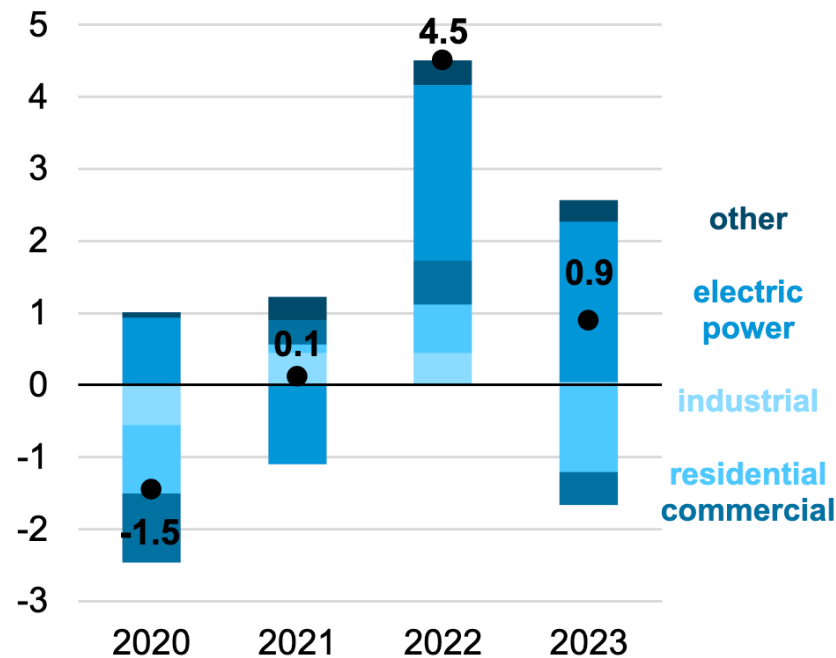
# Natural gas demand forecast for the U.S. from the EIA in 2024

## Annual U.S. natural gas consumption by sector (2020–2023)

billion cubic feet per day (Bcf/d)



## annual net change (Bcf/d)



In 2023, U.S. natural gas consumption was about 89 bcf/d and is estimated by EIA have surpassed 90 bcf/d in 2024.

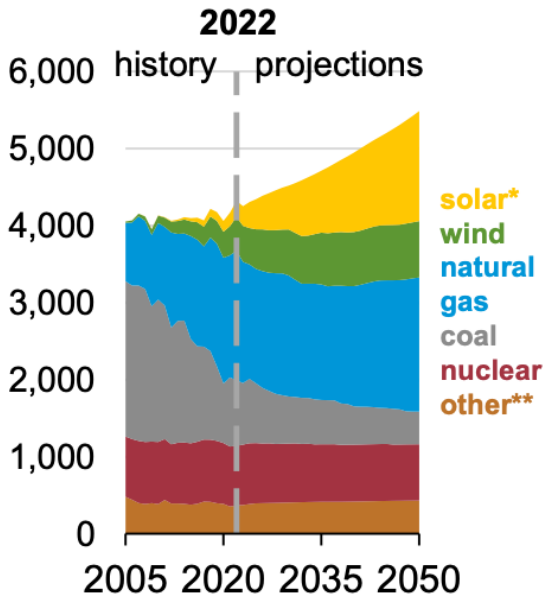
Source: EIA Today in Energy, December 13, 2024

# Solar and wind are projected to generate a majority of U.S. electricity by 2050 in the reference case of EIA's 2023 Annual Energy Outlook

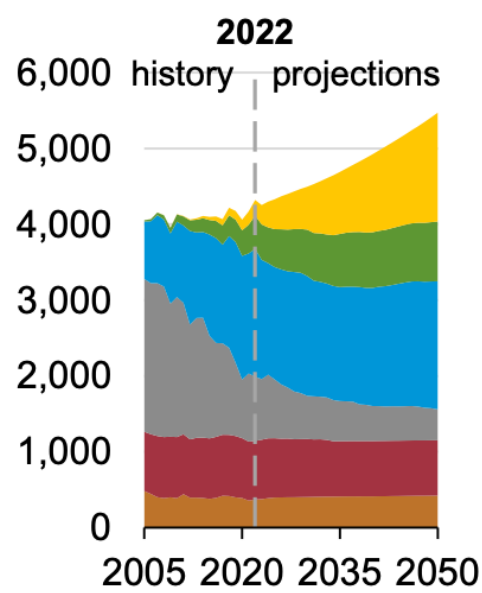


## U.S. net electricity generation by fuel billion kilowatthours

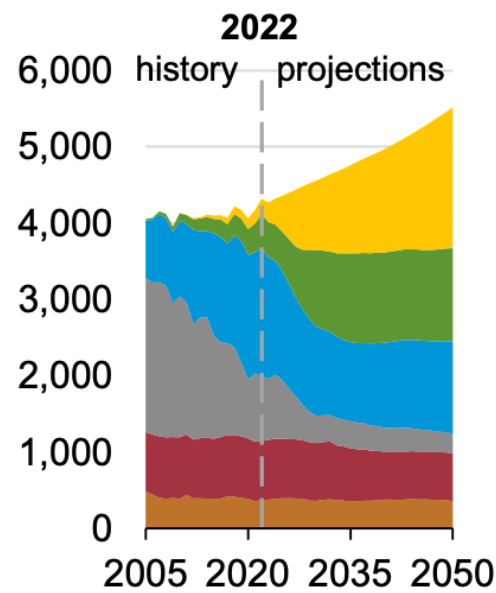
### No IRA



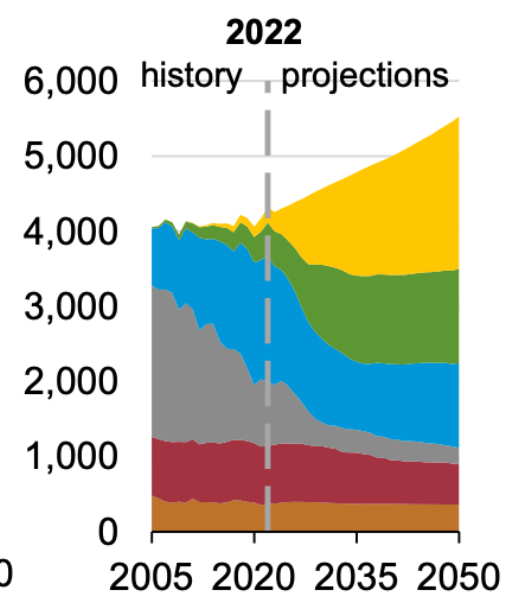
### Low Uptake



### Reference



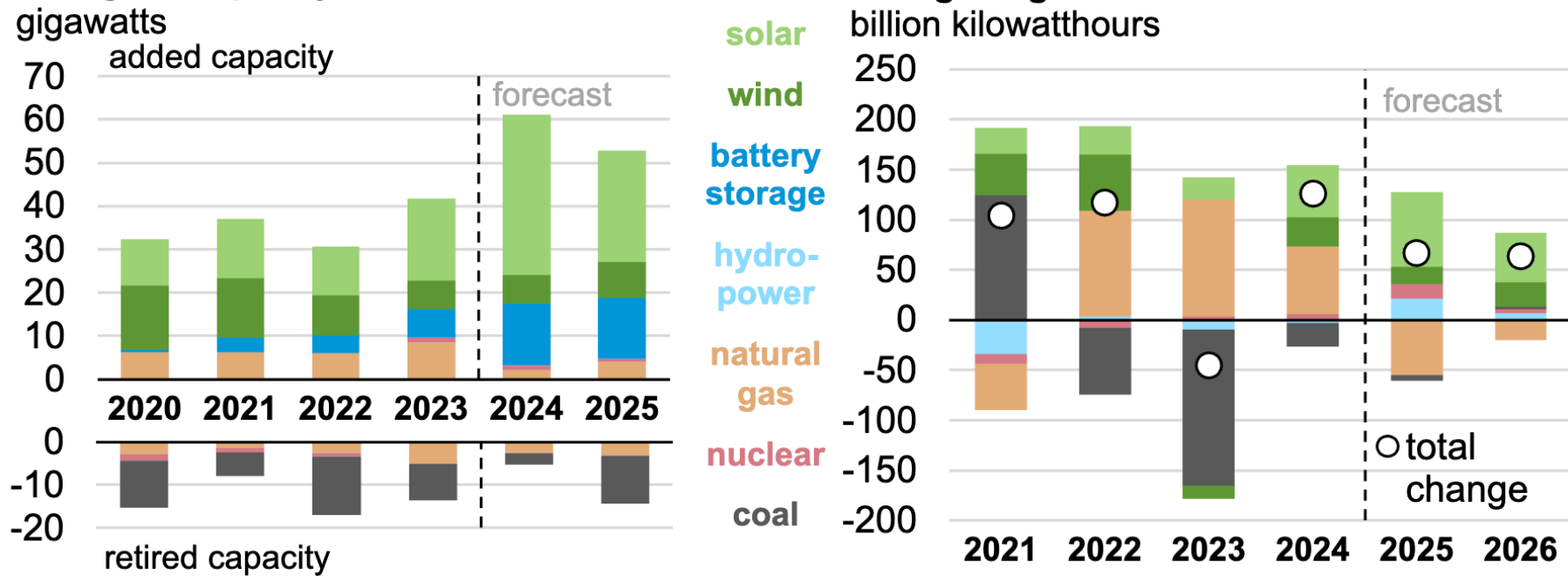
### High Uptake



Source: EIA Annual Energy Outlook 2023 (March 16, 2023)

# Electricity consumption will start growing, driven by new demand sources... ...semiconductor and battery manufacturing factories, and from data centers

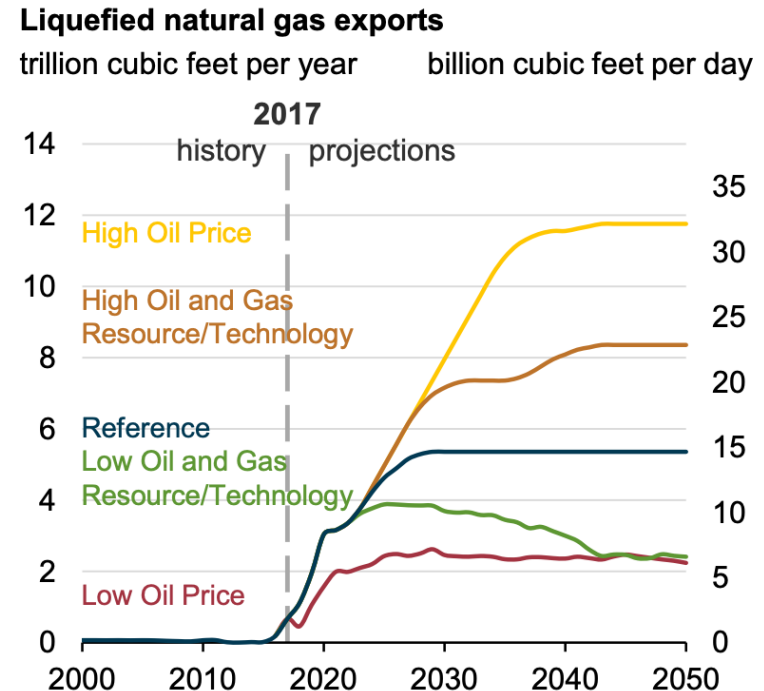
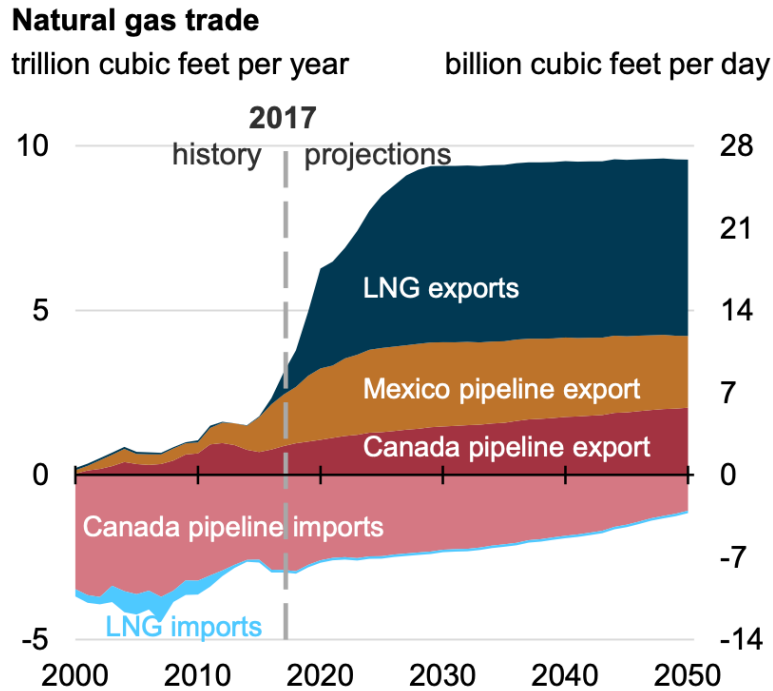
**Annual change in U.S. electric power sector capacity and generation by source**



Source: EIA Today in Energy, January 15, 2025



# United States becomes a net exporter of natural gas before 2020, ...although the level of LNG exports is uncertain in the 2018 AEO

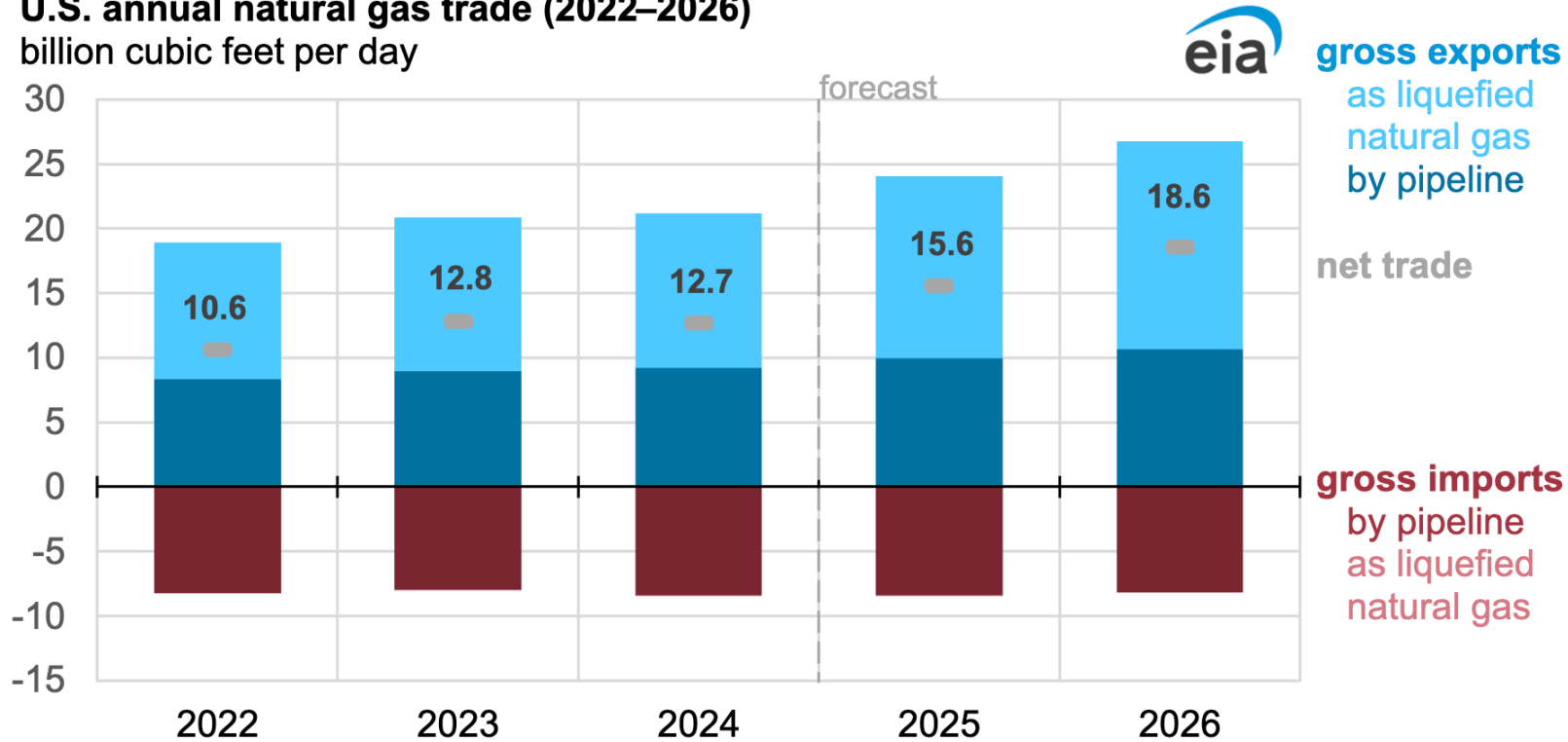


Source: EIA Annual Energy Outlook 2018

# United States will continue to export more liquefied natural gas (LNG) in 2025 and 2026

## U.S. annual natural gas trade (2022–2026)

billion cubic feet per day



In 2024 LNG exports are already beating EIA's 2018 'High Resource and Technology Case' for 2030

Closing in on the 2018 'High Oil Price Case' ?

Source: EIA Today in Energy, January 15, 2025





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# Thank You!



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