

**March 18, 2024**



# Key Points

## Global, U.S. and Texas Economies

- ▶ Global, U.S., and Texas GDP projections for 2024 and 2025 have officially been revised upward to 2.7% annually, indicative of strong business conditions, despite potential challenges from doubled interest rate obligations for firms refinancing debts

## Global Oil Market

- ▶ The global economy and oil demand are set to achieve consecutive record highs in 2024 and 2025, alongside record lows in oil intensity and consecutive global oil supply records, per U.S. Energy Information Administration (EIA) projections
- ▶ Texas is significantly contributing to U.S. energy by strong oil production that drove over 44% of 2023 national supply growth and has helped return U.S. crude oil inventories to typical levels
- ▶ Broad expectations for U.S. interest rate cuts and the dollar's exchange value in 2024 could inversely affect oil prices, consistent with historical relationships

## Natural Gas Markets

- ▶ Natural gas experienced record-breaking global demand, production, and consumption levels in 2023 – and these records are expected to be broken again this year and in 2025 per the International Energy Agency (IEA)
- ▶ Texas has remained a leader in U.S. natural gas production, supporting robust in-state consumption and exports, despite record low real natural gas prices in Feb. 2024

## Texas oil and natural gas industry

- ▶ Employment and wages in Texas' oil and natural gas industry delivered solid growth through the latter half of 2023, highlighting the sector's significant economic impact

## [Global, U.S., and Texas Economies](#)

- [Upward revision to official GDP projections have lifted 2024 and 2025 growth to 2.7% y/y, on par with long-term average levels](#)
- [Business conditions have remained conducive to U.S. GDP growth](#)
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- [As U.S. interest rates and the dollar's exchange value are expected to fall in 2024, historically there has been an inverse correlation with oil prices](#)

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- [Texas drove its highest share of U.S. natural gas drilling in a decade, but has decreased so far in Q1 2024](#)
- [Texas set new natural gas production records in December 2023](#)
- [Texas' natural gas flows: Record production provided for strong in-state consumption and exports](#)
- [Natural gas price historical mean reversion analysis: futures prices through Q1 2024 have fallen below their historical mean](#)
- [Texas' oil and natural gas industry's jobs and wages have continued to grow](#)

# Global, U.S. and Texas Economies

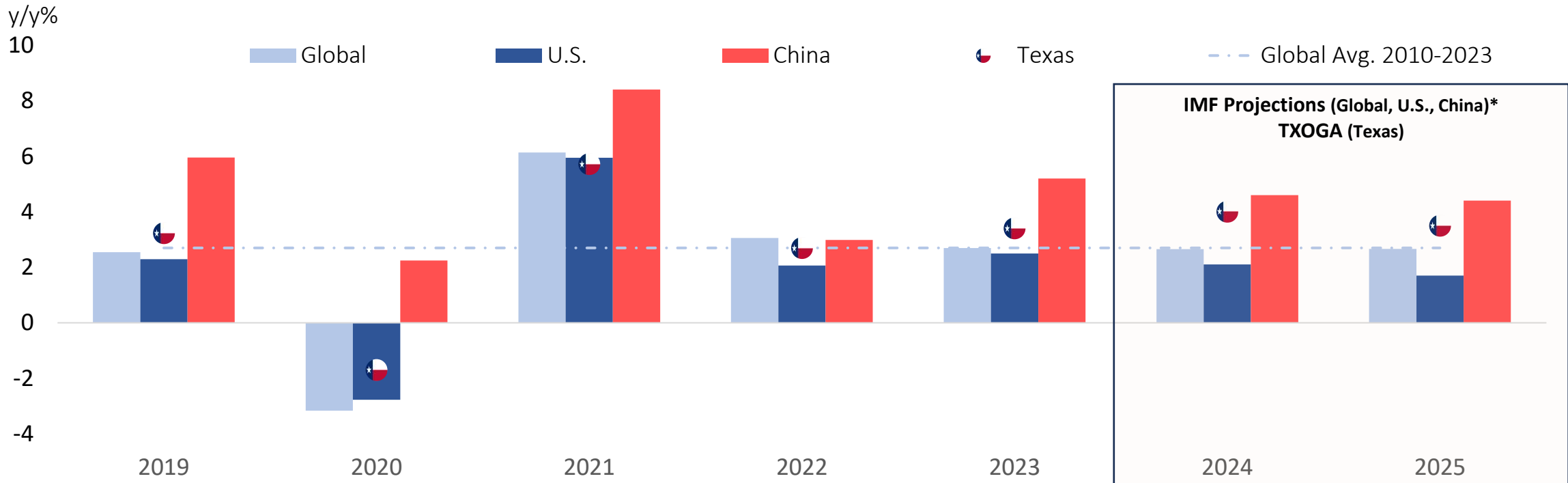


# Upward revisions to official GDP projections have lifted 2024 and 2025 growth to 2.7% y/y, on par with long-term average levels



- As we highlighted last quarter, economic expectations entering 2024 were historically low. In February, the International Monetary Fund's (IMF) and broader consensus' revised their projections upwards, notably for the U.S. (+0.6% to 2.1% y/y in 2024) and China (+0.4% to 4.6% y/y in 2024)
- TXOGA estimates Texas' GDP growth remain unchanged from last quarter at 4.3% y/y in 2024 and 3.5% y/y in 2025

## Historical real GDP growth\*

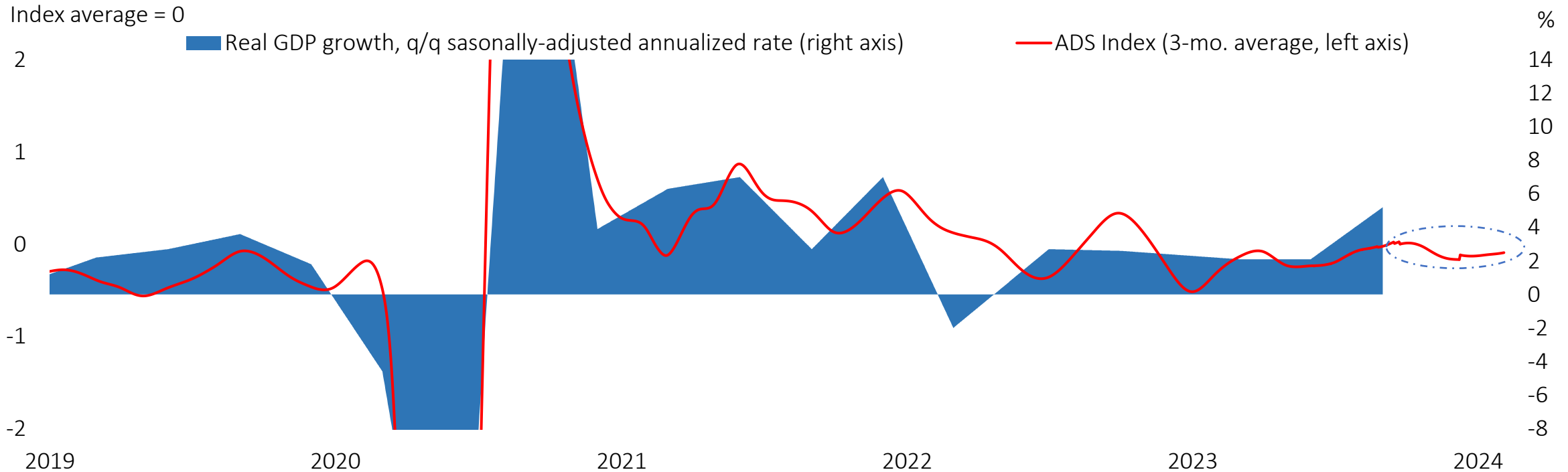


# Business conditions have remained conducive to U.S. GDP growth



- ▶ The ADS business conditions index, published by the Philadelphia Federal Reserve Bank, is a leading indicator of GDP growth
- ▶ A rolling 3-month average of the ADS index accurately reflected the acceleration in Q4 2023 real GDP and has remained consistent with continued GDP growth in Q1 2024

## Aruoba-Diebold-Scotti Business Conditions Index and U.S. real GDP growth



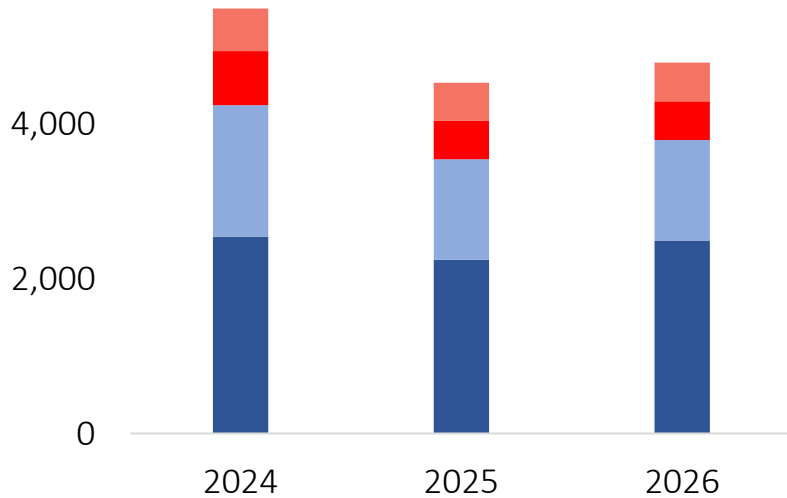
# Interest rate obligations in 2024 could double for firms that must refinance their debts



- As highlighted last quarter, the delayed effects of high interest rates are a prime economic risk
- Debt rollover needs are the highest among small firms, and for U.S. companies interest rate obligations at current rates could more than double compared with those at year-end 2021 rates – to more than one quarter of pre-tax earnings at wide rate spreads

Global corporate bond and loan maturities

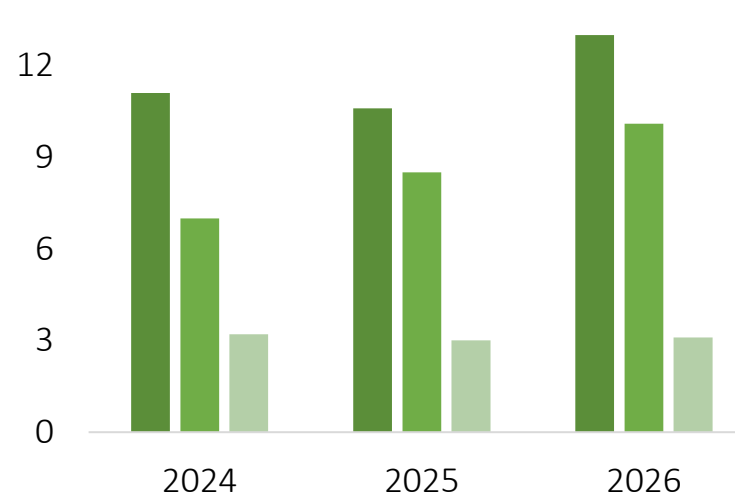
Billion dollars  
6,000



Other Emerging economies    China  
Other Advanced economies    U.S.

Debt rollover needs are highest among small firms

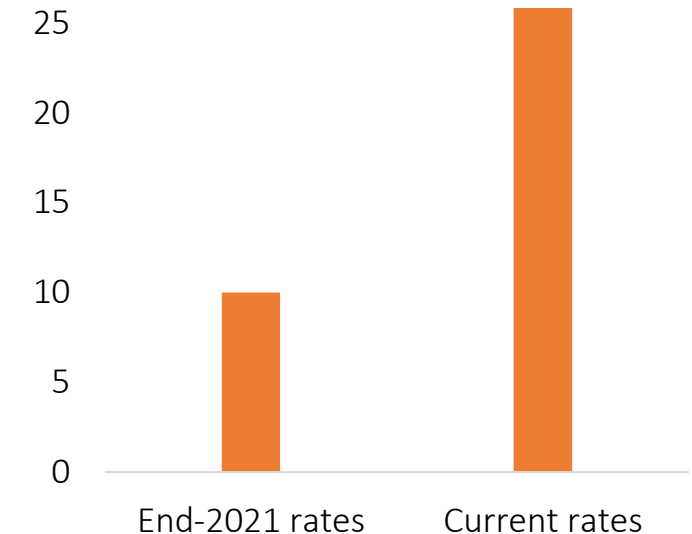
Percent of revenues  
15



Small    Medium    Large

U.S. non-financial company interest payments under alternative interest rate scenarios

Percent of pre-tax earnings\*

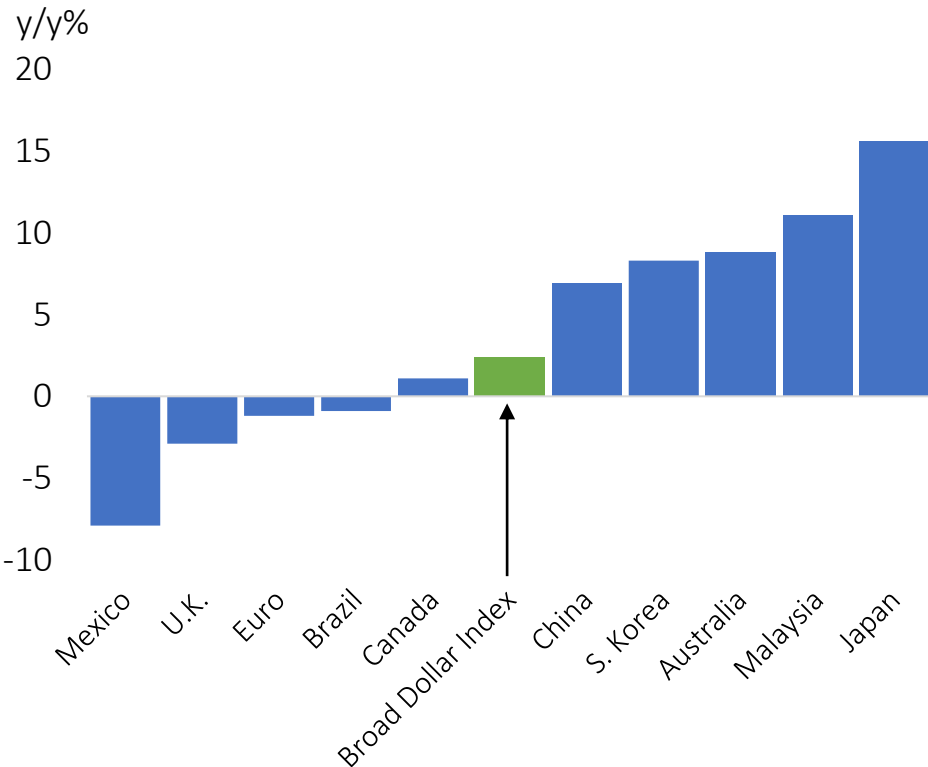


# As U.S. interest rates and the dollar's exchange value are expected to fall in 2024, historically there has been an inverse correlation with oil prices



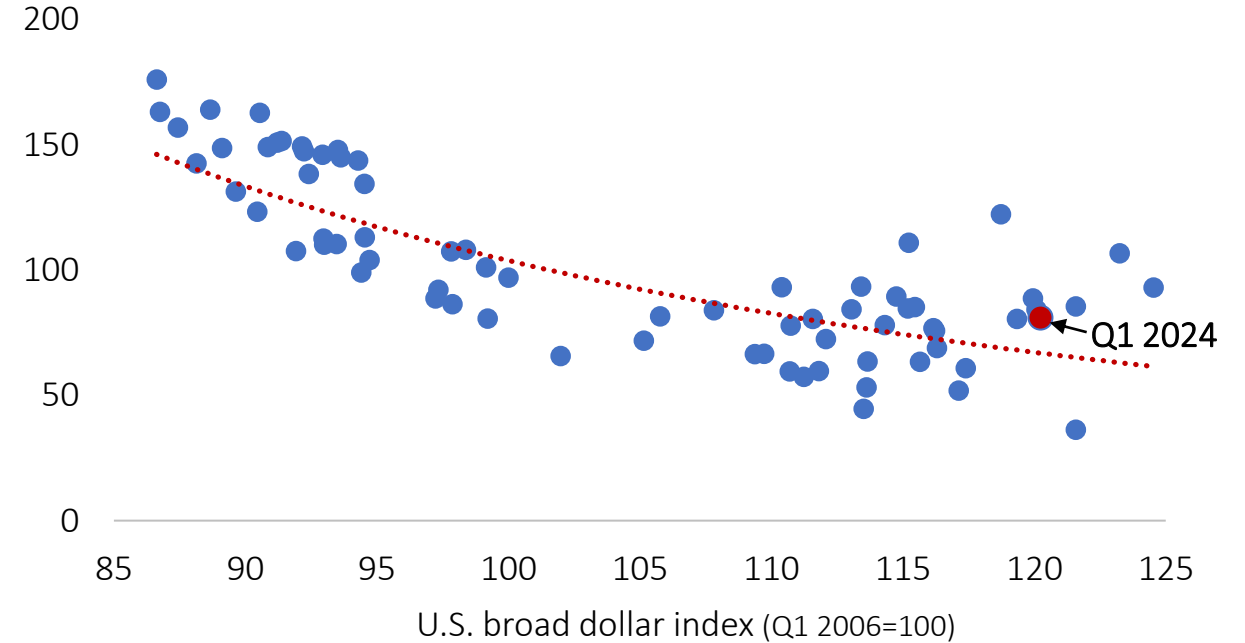
- In Feb. 2024, the U.S. dollar appreciated 2.4% y/y and to the top 5% of its values since 2006, but was marked by regional divergences
- Although myriad factors influence global oil prices, the U.S. dollar's strength versus its trading partners' currencies has historically been inversely correlated with oil prices, due to oil being priced in U.S. dollars, commodity trading dynamics, terms of trade, and indirect effects of monetary policy

## U.S. dollar appreciation (depreciation) versus main trading partners' currencies, Feb. 2024



## U.S. broad dollar index and Brent crude oil prices, Q1 2006-Q1 2024

Brent crude oil (2024 constant dollars per barrel)





# Oil Markets



# The sizes of the global economy and oil demand appear poised to reach consecutive record highs in 2024 and 2025

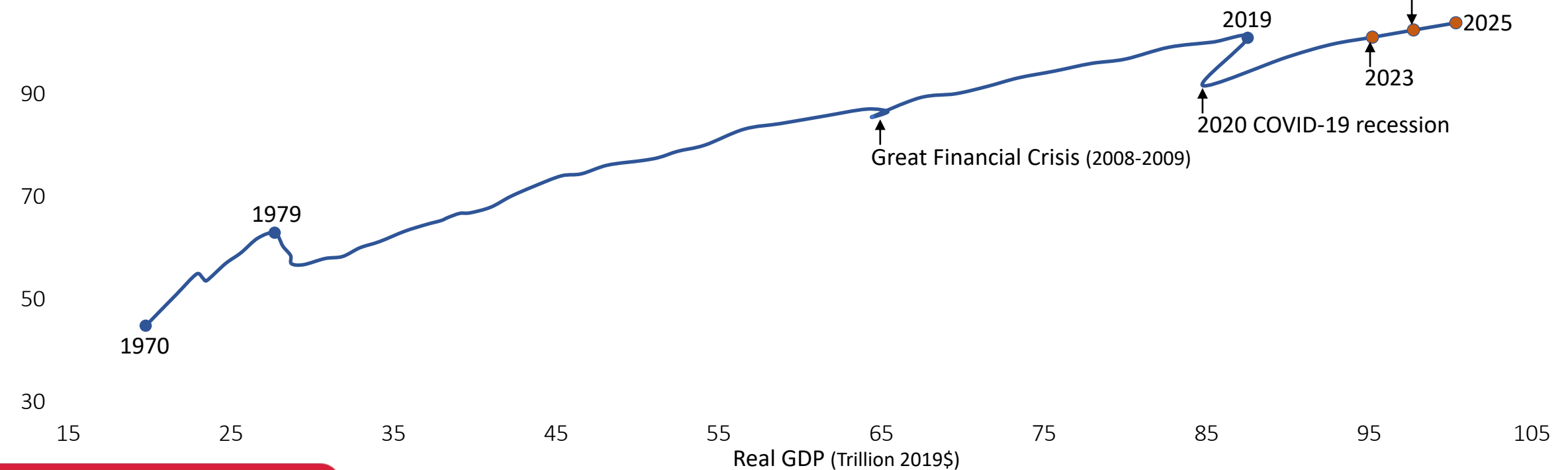


- ▶ Back on trend: In reaching new highs, 2023 reaffirmed the historical correlation between economic and oil demand growth
  - 2023 global GDP growth\* of 2.5% and oil demand growth of 1.4 mb/d implied an income elasticity of +0.55
- ▶ Implication: Even as the energy transition progresses, oil remains increasingly important for industry and materials' production

## Global oil demand and GDP\*

Million barrels per day (mb/d)

110

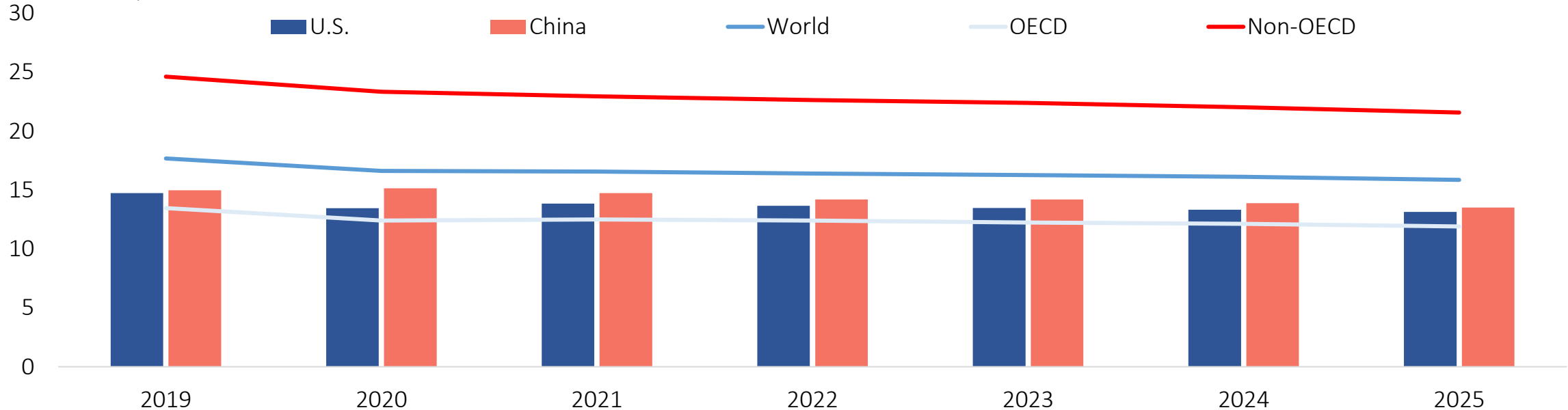


# 2024 could deliver record lows for oil intensity of the global economy

- ▶ To generate \$1,000 of GDP in 2023, the U.S. economy required about 13 gallons of oil, compared with 14 gallons in China, and 22 gallons for emerging markets (non-OECD economies) overall
- ▶ Importantly, despite the lower and then higher oil intensities seen during the 2020 pandemic and 2021 recovery, respectively, the broad trend of declining oil intensity continued across every major economy group

## Oil intensity of GDP

U.S. Gallons per \$1,000 GDP\*



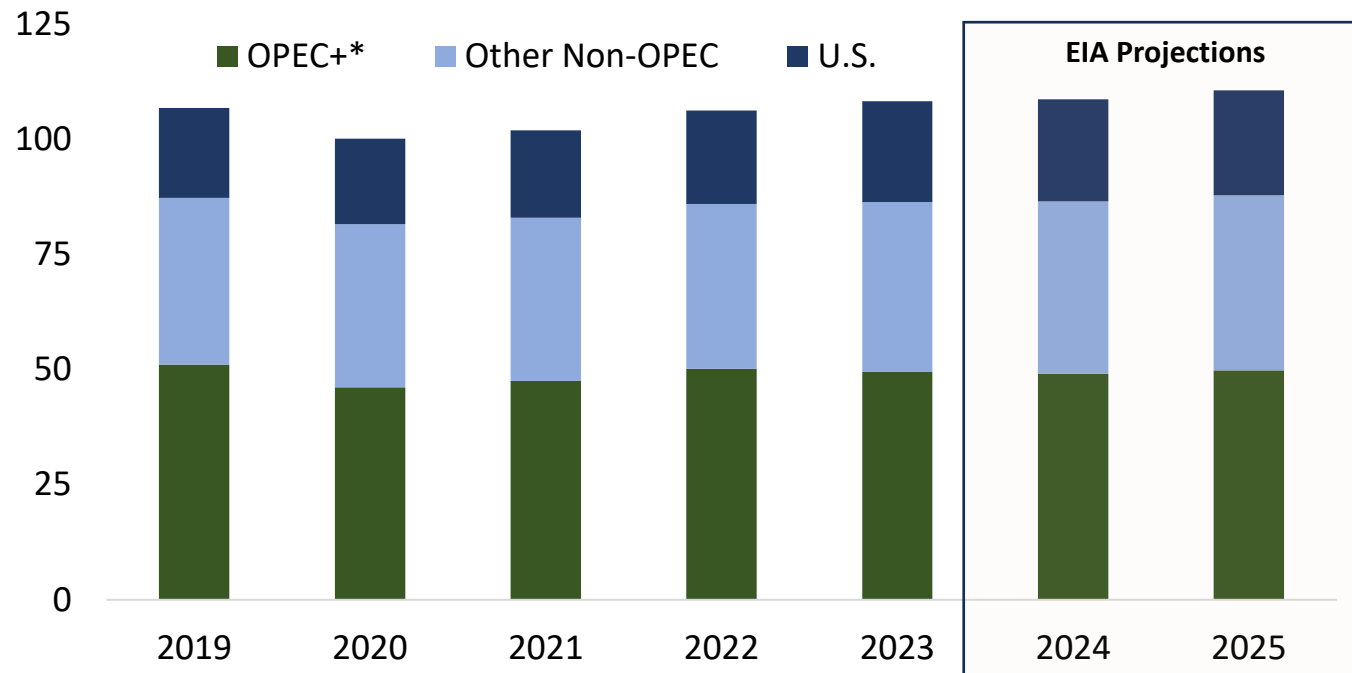
# Consecutive global oil supply records projected in 2024 and 2025 per EIA



- ▶ EIA expects consecutive global oil supply records of record 102.4 mb/d in 2024 and 104.2 mb/d in 2025
- ▶ Supplies are projected to grow the most among non-OPEC producers, predicated on supply discipline by OPEC+ per EIA

## Global oil supply

Million barrels per day (mb/d)



\* OPEC+ includes OPEC nations plus Russia, Mexico, Kazakhstan, Oman, Azerbaijan, Malaysia, Bahrain, S. Sudan, Brunei, and Sudan

## 2024 Potential shift of global oil supplies



Growth in US crude production to slow sharply in 2024, EIA says

Reuters, Feb. 6, 2024

Non-OPEC+ to lead 2024 oil production growth, offsetting output cuts - EIA

Reuters, March 14, 2024

Oil Markets Face Supply Deficit All Year on OPEC+ Cuts, IEA Says

Bloomberg, Mar. 15, 2024

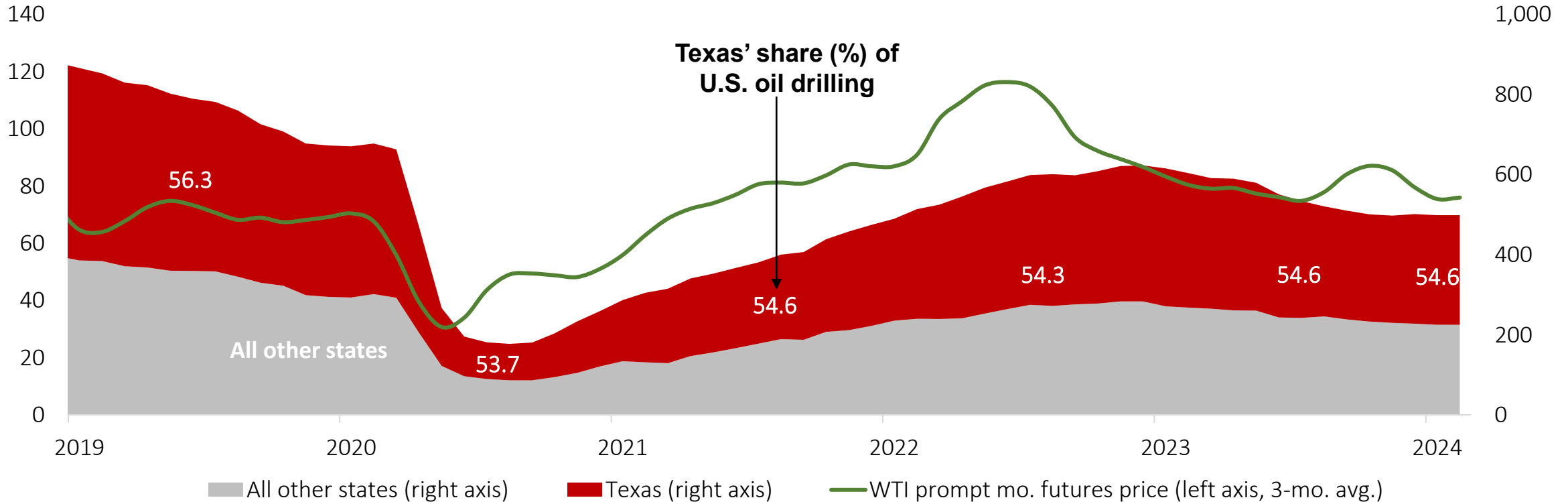
# Texas' share of U.S. oil drilling has held steady so far in 2024



- ▶ Crude oil prices have historically driven drilling activity
- ▶ Texas accounted for 54.6% of U.S. oil drilling in 2023 – and the same percentage so far in in Q1 2024

## Crude oil prices and drilling activity

Dollars per barrel (2024\$)



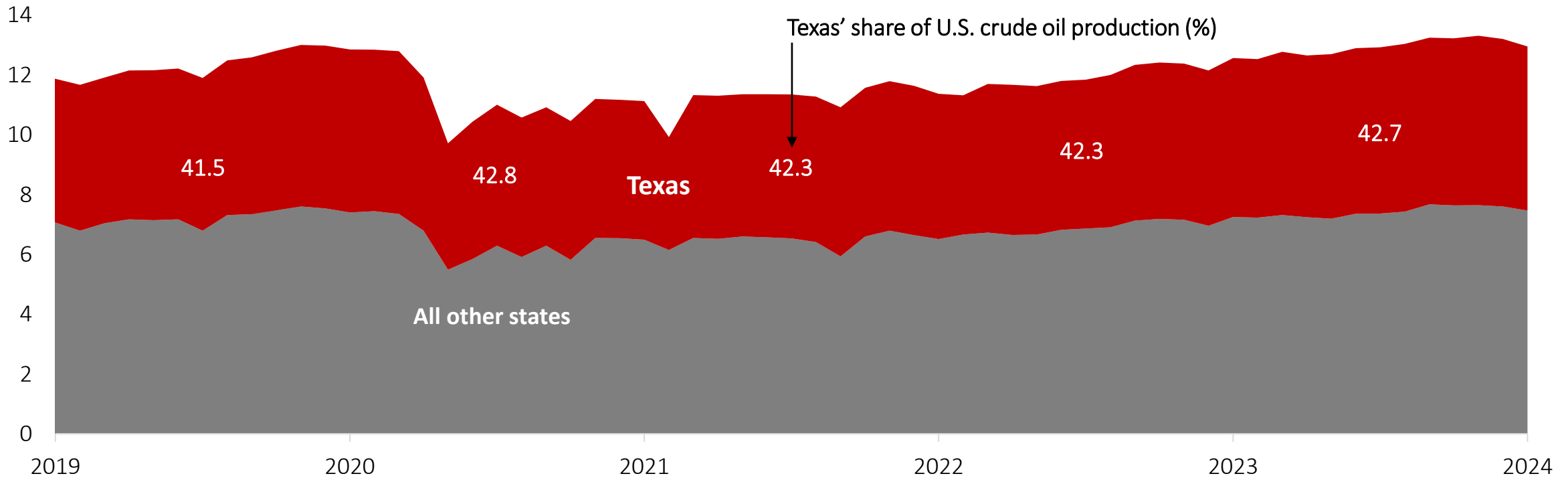
# Texas has set new production records and increasingly driven U.S. supply



- ▶ In 2023, Texas accounted for 42.7% for oil production – its highest since 2020 – and 44.3% of U.S. oil production growth
- ▶ TXOGA’s projections for February 2024 showed Texas’ production remained near record levels at 5.6 mb/d of crude oil

## U.S. and Texas crude oil production

Million barrels per day (mb/d)



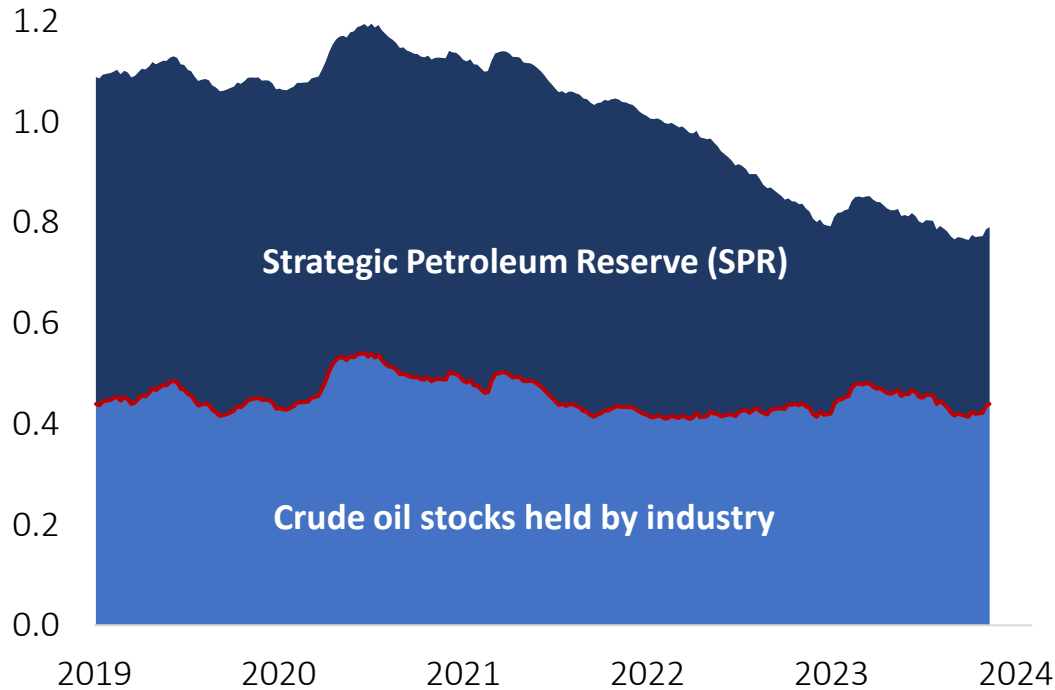
# U.S. crude oil inventories rose in Q1 2024 towards typical historic levels



- ▶ At the beginning of 2024, U.S. crude oil stocks stood at the bottom of their five-year range, compounded by historically low Strategic Petroleum Reserves
- ▶ Despite strong exports and domestic consumption, production averaging nearly 13 mb/d in Q1 2024 has sufficed to augment both strategic and industry-held stocks

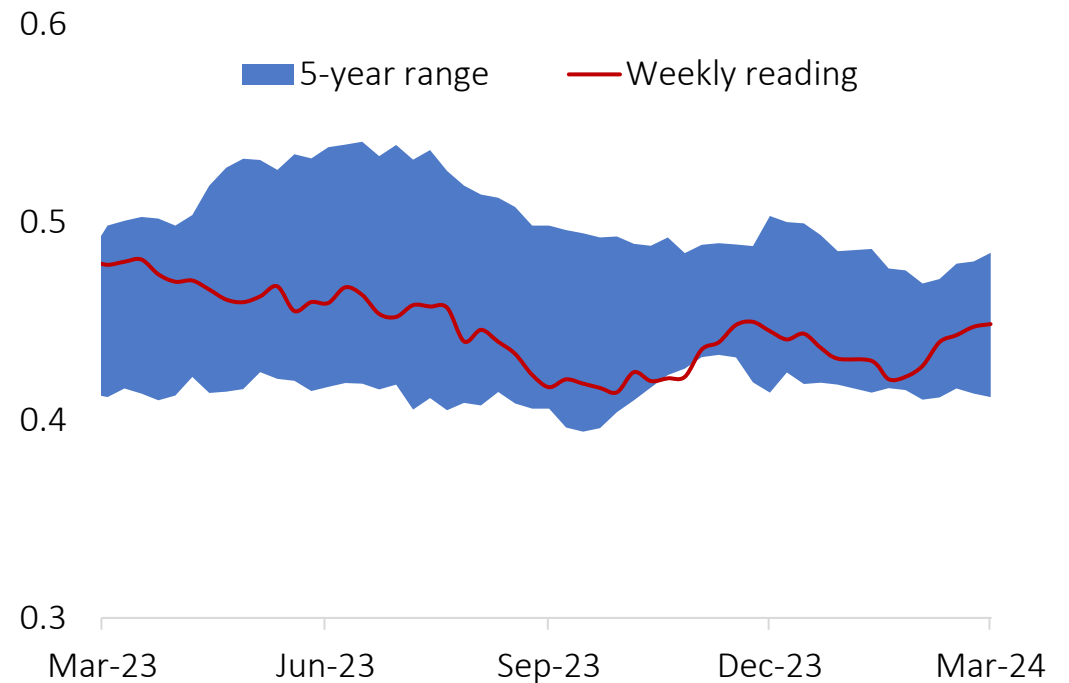
## U.S. crude oil stocks

Billion barrels



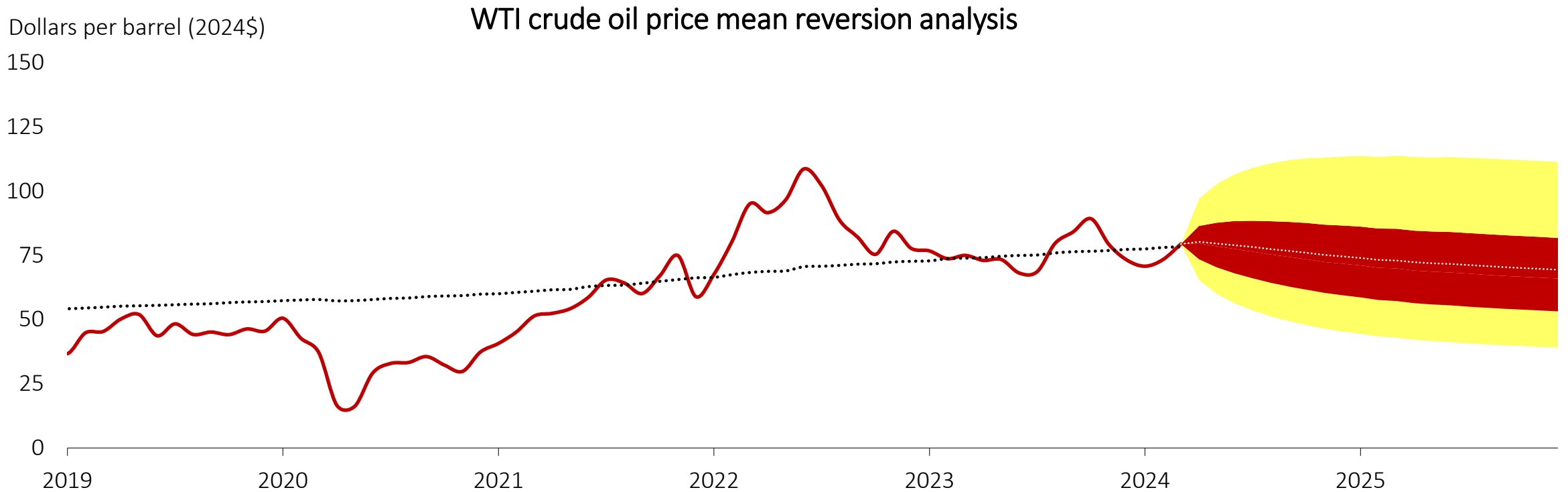
## U.S. crude oil stocks held by industry

Billion barrels



# Crude oil prices historical mean reversion analysis: futures prices have aligned with their historical mean

- ▶ Near-term futures prices have aligned with their historical mean, and the futures strip has remained backwardated (that is, futures prices currently are lower than spot prices)
- ▶ Confidence intervals based on past prices show the potential for greater upside than downside





# Natural Gas Markets

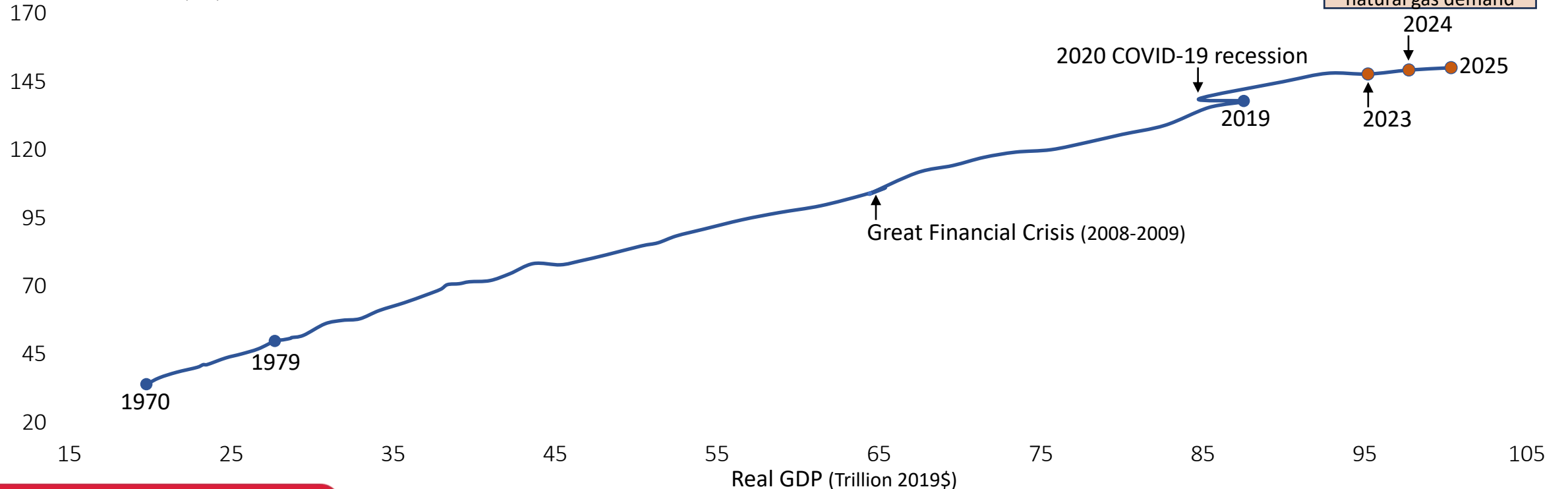


# Global natural gas demand could reach record highs in 2024 and 2025

- ▶ Global natural gas demand increased to a record high in 2020, even as the economy dealt with setbacks through the pandemic
- ▶ Demand growth paralleled its historical trend with the recovery in 2021, but supply disruptions and price volatility in the wake of Russia's war in Ukraine since Feb. 2022 have flattened the curve with growth at about half the pace over the past decade
- ▶ A key implication is that natural gas remains integral and competitive in global electricity generation, heating, cooking, and industrial demands – as well as environmental progress – despite myriad uncertainties

## Global natural gas demand and GDP\*

Trillion cubic feet (tcf)

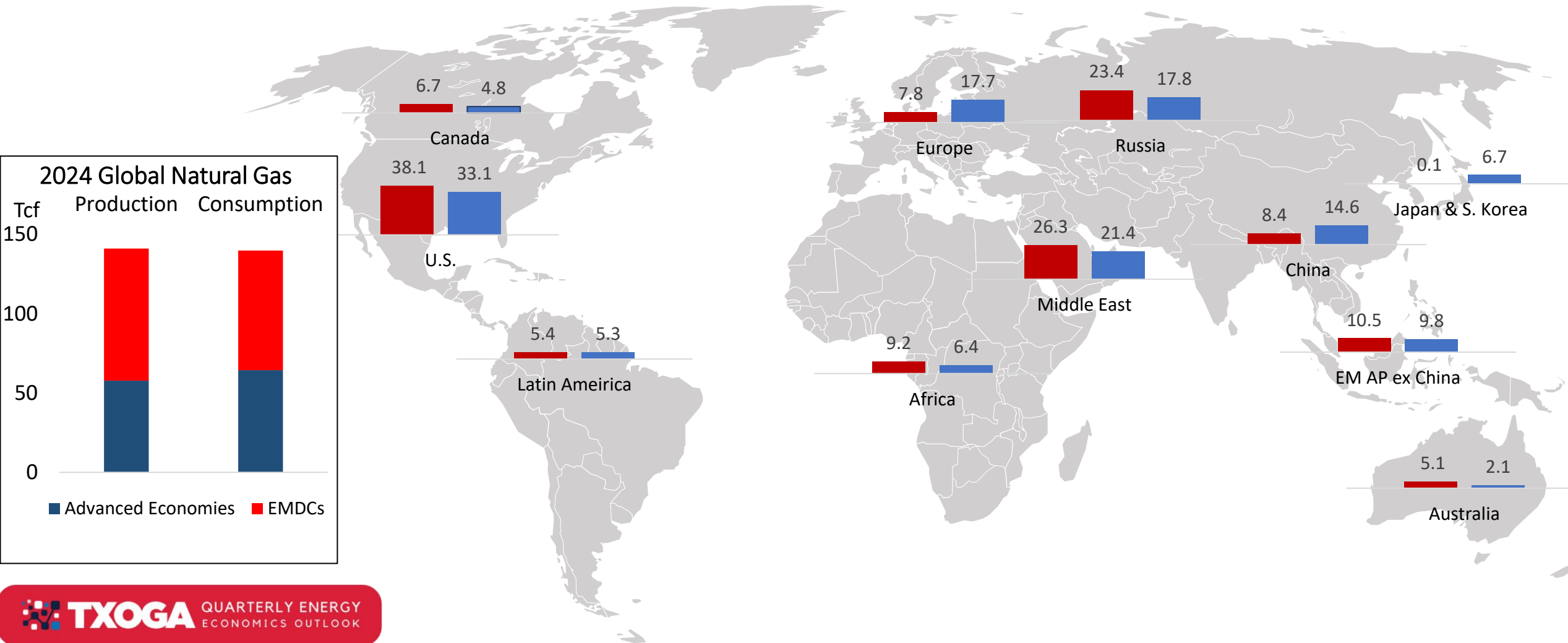




# Global natural gas production and consumption have continued to grow despite geopolitical uncertainties

▶ The U.S. is projected to continue leading the world in natural gas production, consumption, and exports

2024 Global natural gas **production** and **consumption** – Trillion cubic feet (Tcf)

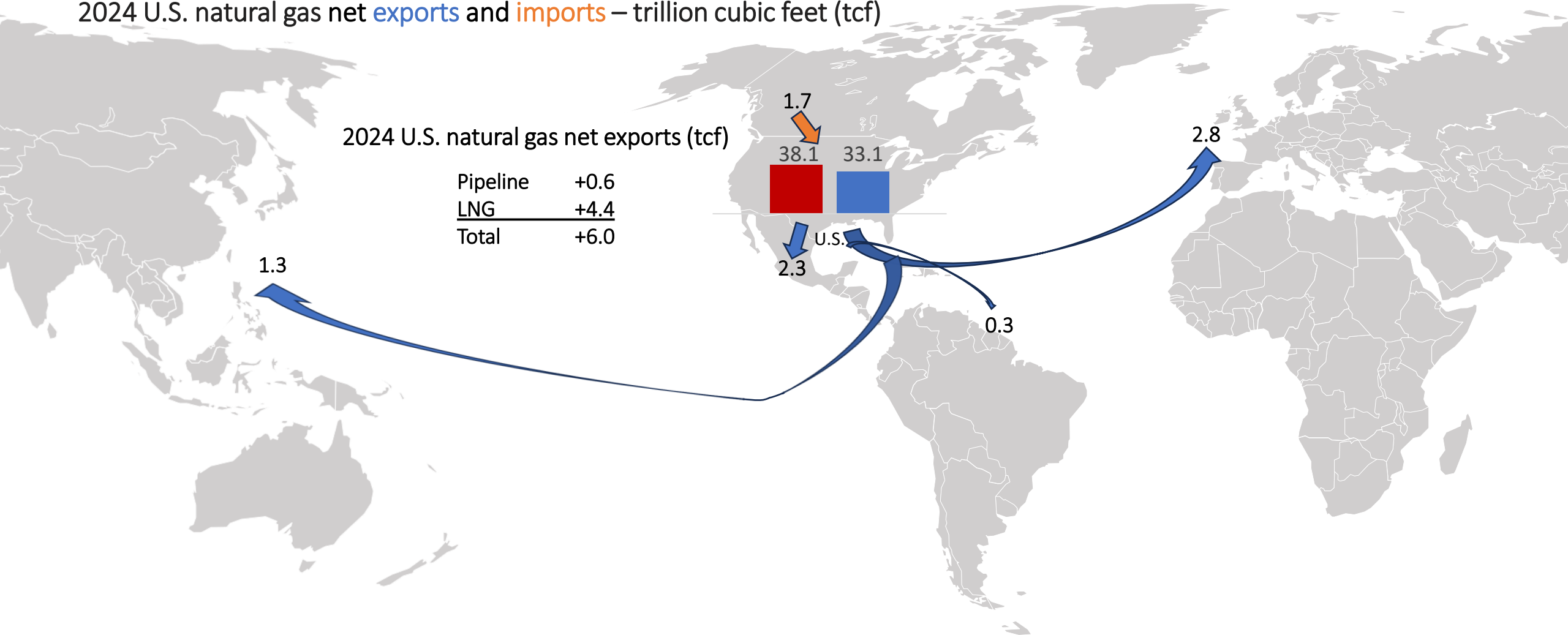


# 2024 U.S. natural gas trade has sustained record high levels with an increased share to Europe



- ▶ The U.S. is projected to continue leading the world in natural gas production, consumption, and exports
- ▶ Over 60% of U.S. LNG exports have gone to Europe and continue to provide critical supplies

2024 U.S. natural gas net exports and imports – trillion cubic feet (tcf)



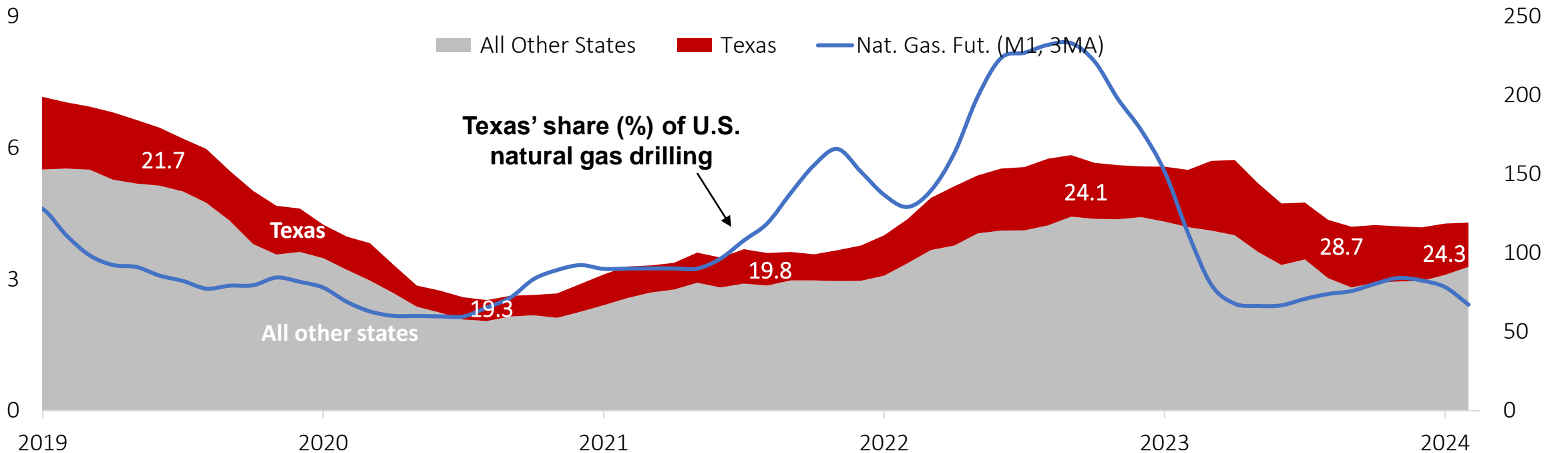
# In 2023, Texas drove its highest share of U.S. natural gas drilling in a decade, but has decreased so far in Q1 2024



- Natural gas drilling and production in Texas has historically responded to the prices of natural gas and natural gas liquids
- Texas contributed 28.7% of U.S. natural gas drilling in 2023

## Natural gas prices and drilling activity

Dollars per million Btu (2023\$)



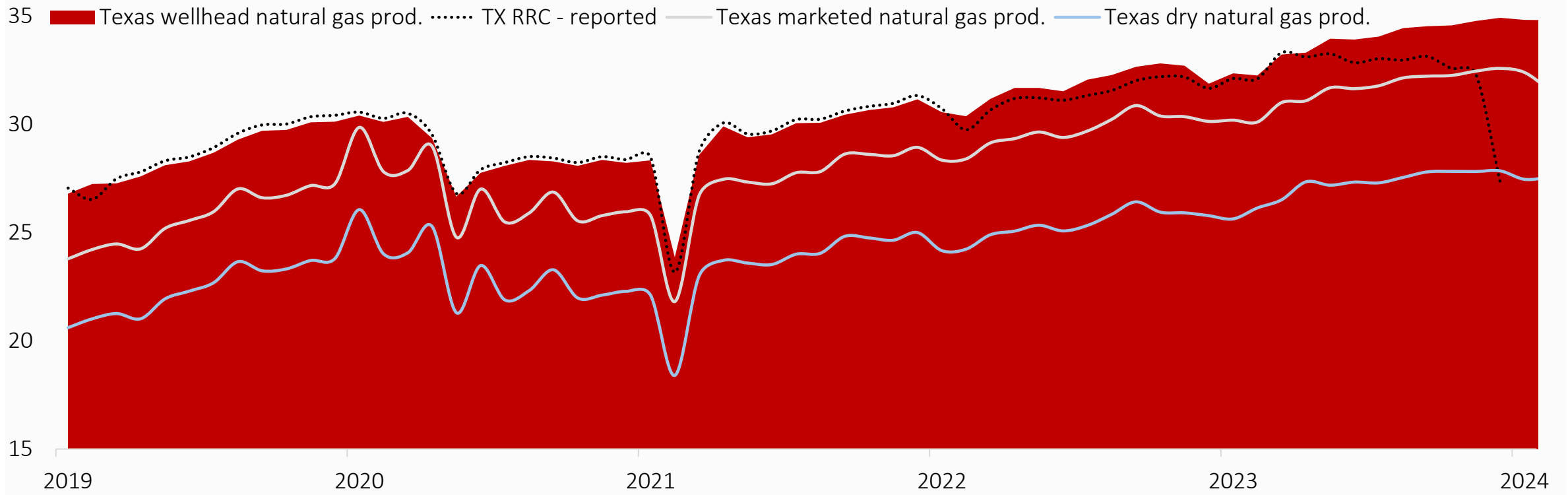
# Texas set new natural gas production records in December 2023



- ▶ Texas' natural gas production of 34.9 bcf/d of gross withdrawals and 32.6 bcf/d of marketed production in December were record highs per EIA
- ▶ TXOGA estimates that production decreased in February to 34.8 bcf/d of gross withdrawals, 32.4 bcf/d of marketed production, and 27.5 bcf/d of dry gas production

## Texas natural gas production, January 2019 – February 2024

Billion cubic feet per day (bcf/d)

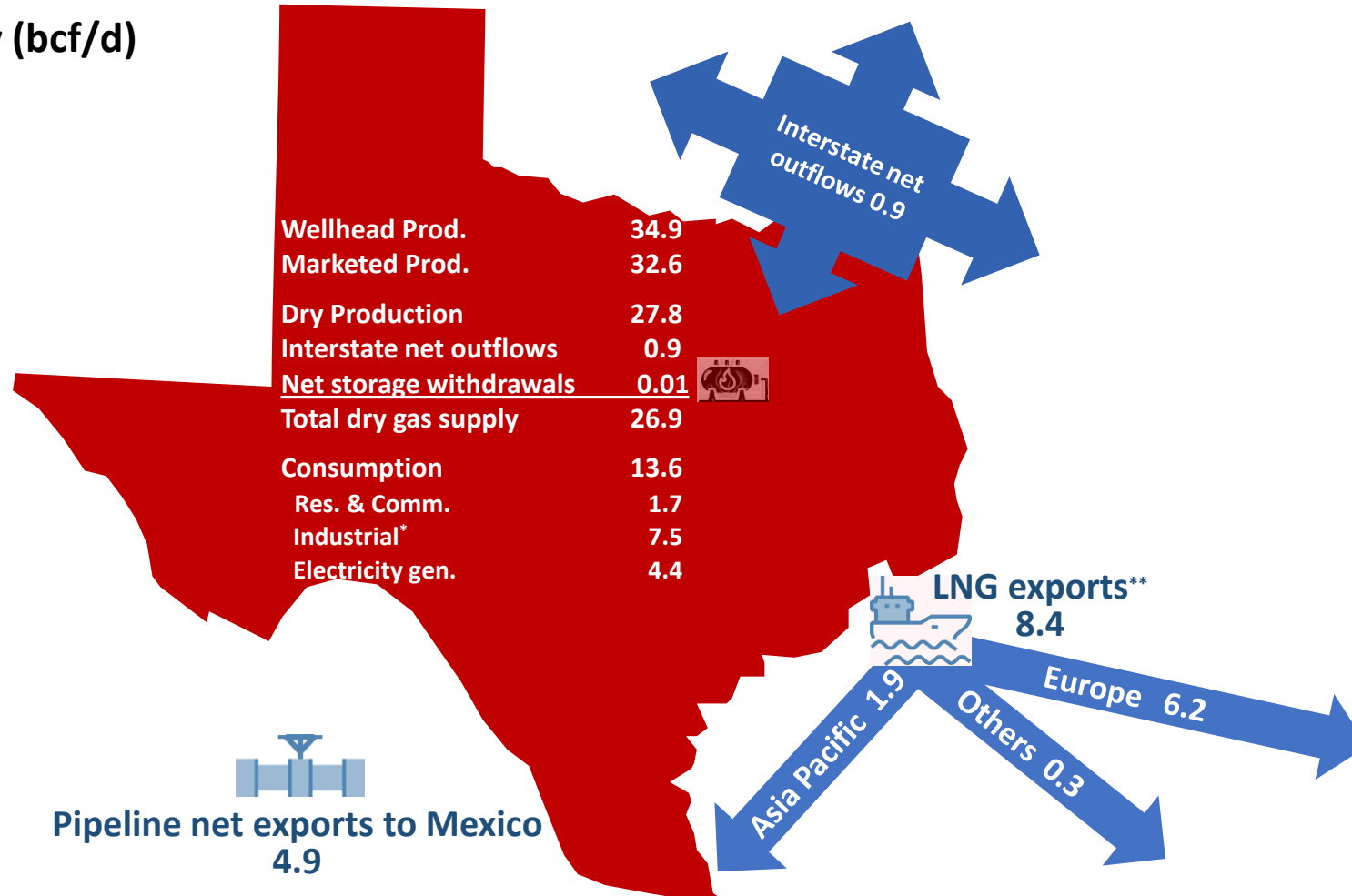


# Texas' natural gas flows in December 2023: Record-high production enabled solid consumption and exports



- ▶ Texas produced 27.8 bcf/d of dry natural gas in December 2023 by TXOGA's estimates
- ▶ Texas consumers required 13.6 bcf/d, mainly for industry and electricity generation, while 13.3 bcf/d was exported, including 8.4 bcf/d of LNG and 4.9 bcf/d via pipelines to Mexico, per EIA and USITC data

**Billion cubic feet per day (bcf/d)**



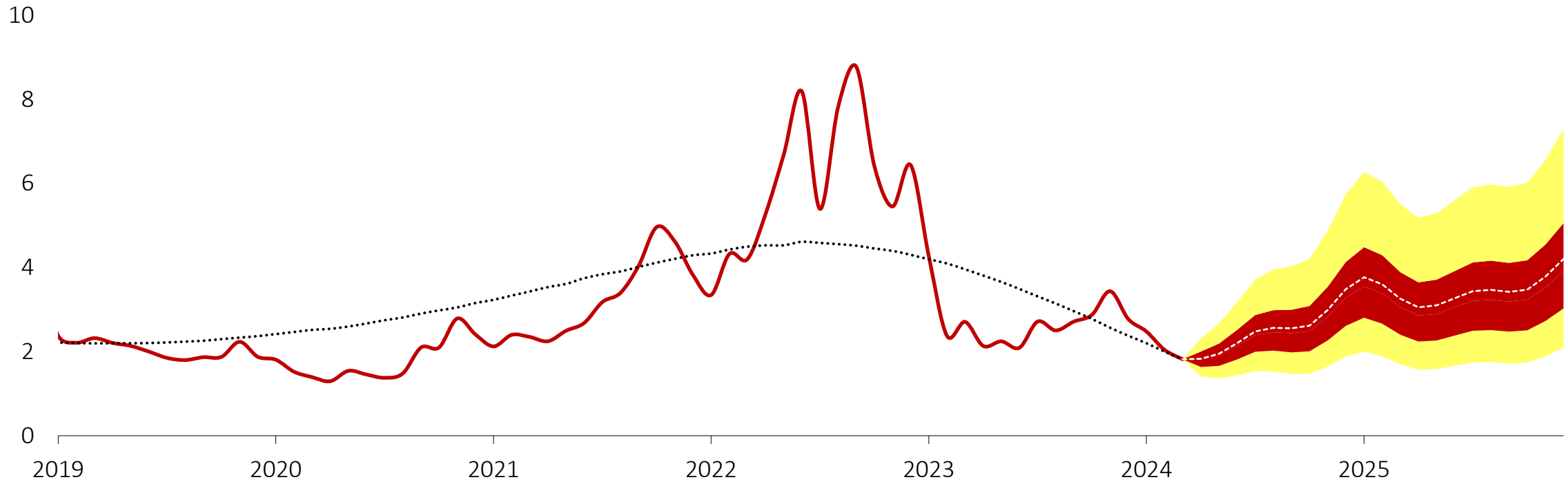
\*Includes industrial end-use consumption plus lease, plant, pipeline and distribution fuel \*\*USITC Texas export districts

# Natural gas price historical mean reversion analysis: futures prices through Q1 2024 have fallen below their historical mean

- ▶ Natural gas futures prices through May 2024 are below the historical mean reversion target, and futures prices rise progressively beginning in April 2024
- ▶ Confidence intervals based on past prices show the potential for greater upside than downside

## Natural gas price mean reversion analysis

Dollars per million Btu (2024\$)





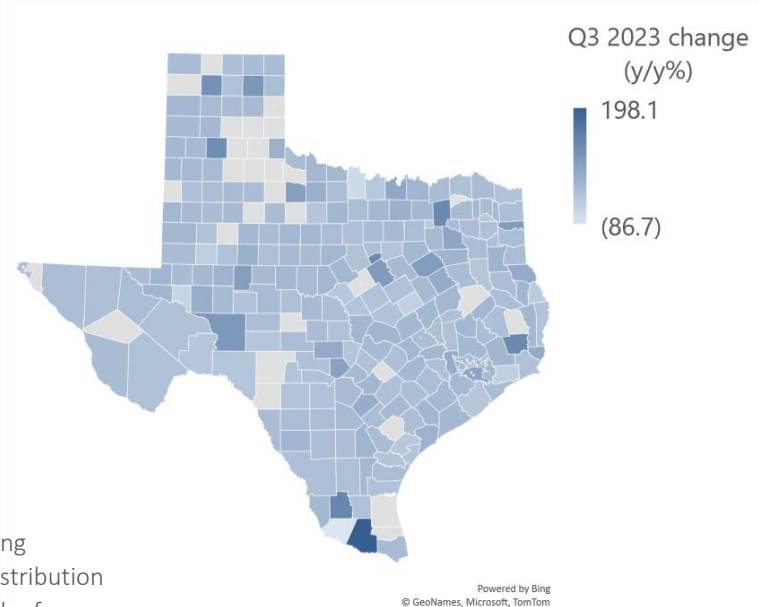
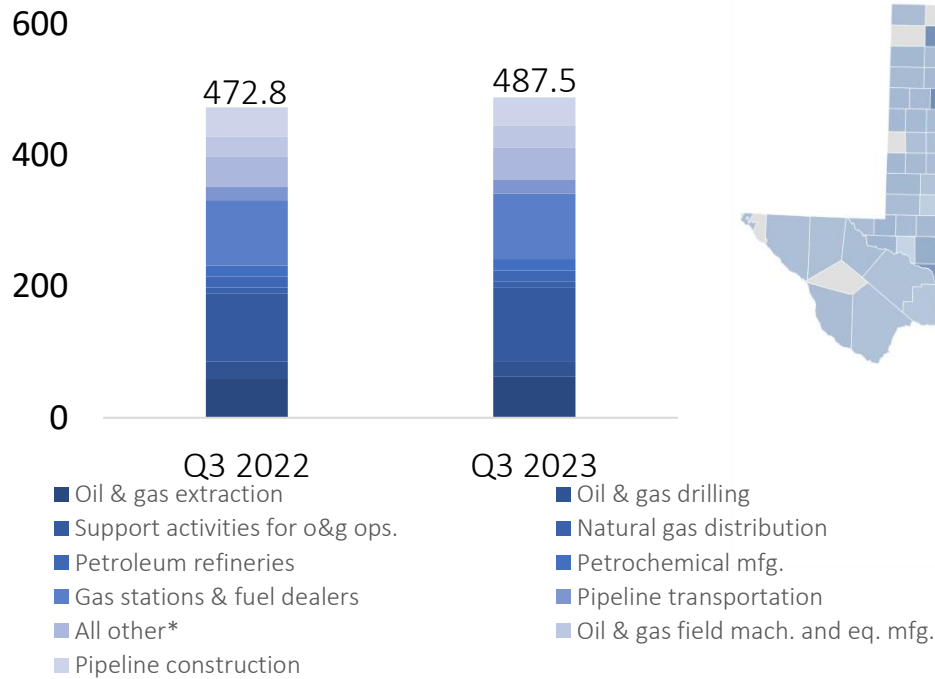
# Texas' oil and natural gas industry's jobs and wages have continued to grow



- ▶ Texas' oil and natural gas industry employment rose by 3.1% y/y in Q3 2023 with half of the job growth in upstream support services and another nearly 20% in oil & gas field machinery and equipment manufacturing, per data from the U.S. Census Bureau and Texas Workforce Commission
- ▶ Q3 2023 industry wage growth of 3.6% y/y was nearly on par with job growth of 3.1% y/y, which reflected an easing of inflationary pressures

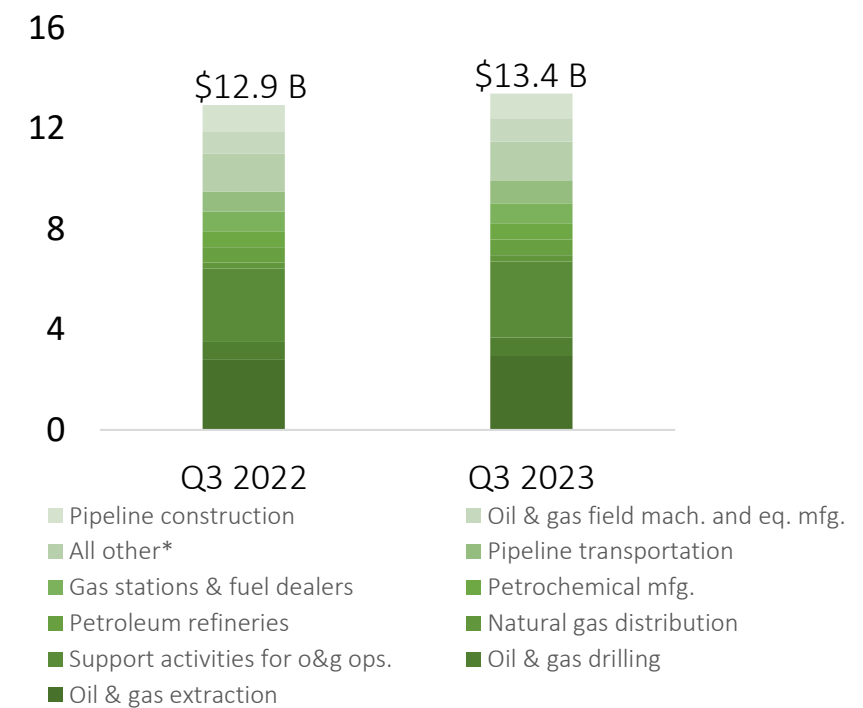
## Texas oil and natural gas industry direct employment rose by +3.1% y/y in Q3 2023

Thousand Jobs



## Texas oil and natural gas industry direct wages rose by +3.6% y/y in Q3 2023

Billion dollars



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