



**January 22, 2024**



# TXOGA's chartbook provides a vital reference for our members as well as those who are interested in understanding data which tell the story of what's happening with the economy, oil and gas markets at the global, U.S. and Texas levels.

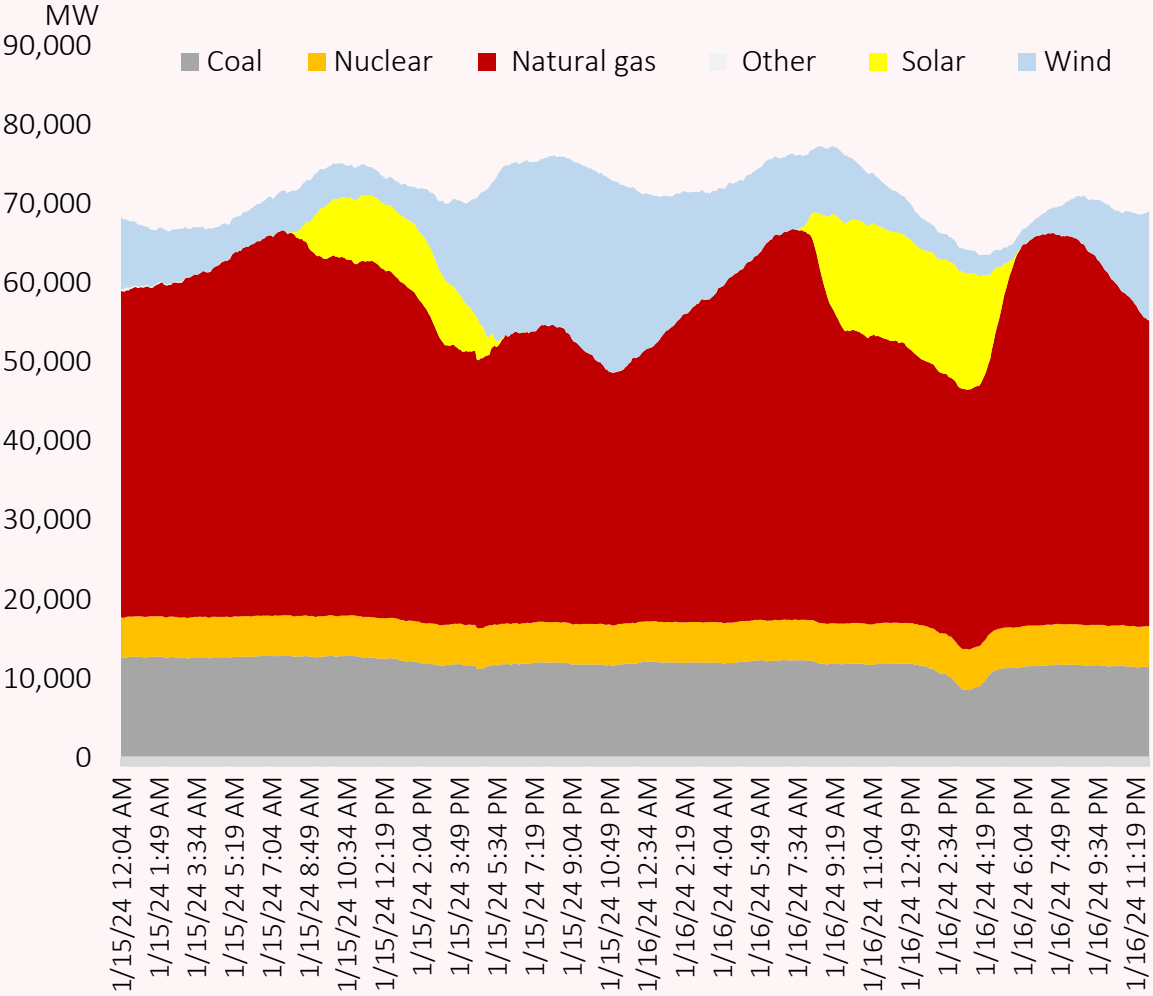
## Key points for the week of January 22, 2024

- **U.S. Economic Indicators Strengthened.** The University of Michigan's consumer sentiment index, a leading indicator of consumer spending, rose for a second straight month to its highest since February 2021. The index saw a 13% increase from December, fueled by optimism for business conditions and personal financial prospects. Additionally, the ADS Index from the Philadelphia Federal Reserve indicates stable GDP growth in Q1 2024.
- **Mixed Signals for Oil Market Dynamics.** The global and domestic oil markets present a complex picture. U.S. petroleum exports remain strong, and reports of increased Russian oil supplies helped temper prices despite reductions in inventories and ongoing geopolitical tensions in the Middle East. According to the latest U.S. Energy Information Administration (EIA) data (as of January 12), U.S. net exports of crude and petroleum products rose by 0.6 million barrels per day (mb/d) week-over-week (w/w) to 2.0 mb/d. Concurrently, crude oil stocks, excluding the Strategic Petroleum Reserve (SPR), dropped by 2.5 million barrels w/w to the lowest 20% of the five-year range.
- **U.S. Natural Gas Prices Fell Post-Winter Storm Heather.** In the aftermath of Winter Storm Heather, U.S. natural gas prices fell by nearly 24% w/w as of January 19. This drop occurred despite a 4.6% w/w decrease in storage levels, which stand in the bottom third of the five-year range. Current prices of natural gas are below their historical mean.
- **Resilience of ERCOT Region During Winter Storm Heather.** The Electricity Council of Texas (ERCOT) region effectively managed the challenges posed by Winter Storm Heather. As detailed in the [Chart of the Week](#), thermal and dispatchable energy sources were pivotal, contributing up to 95.4% of the region's electricity supply. Notably, on the evening of January 16, natural gas-based generation provided as much as 71.0% of the region's electricity generation.

# TXOGA Chart of the Week: ERCOT Weathered Winter Storm Heather Thanks to Natural Gas

- On January 13-16, Winter Storm Heather brought ice, snow, rain and strong winter energy demands to Texas. The Electricity Reliability Council of Texas (ERCOT) region, which represents about 90% of Texas’ electricity load, showcased the criticality of thermal and dispatchable generation sources – natural gas, nuclear and coal – to the grid’s reliability.
- At 6 pm CT on January 16, thermal energy sources generated **95.4%** of the region’s electricity, including **71.0%** from natural gas, based on ERCOT’s real-time generation data. At the same time, 3.1% came from intermittent sources, 1.3% from battery storage, and 0.2% from hydro.
- Natural gas’ flexibility keyed the grid’s reliability. Natural gas-based generation ramped up by over 15,000 MW within about two hours, when intermittent sources dropped off after 3 pm CT on January 16.
- Importantly, ERCOT’s Monthly Outlook for Resource Adequacy ([MORA](#)) assumed that about **40%** of the installed capacity of intermittent sources would be available at the peak times this winter. However, at 6 pm CT on January 16, intermittent sources produced only **3.3%** of their installed capacity rating.
- Thankfully, natural gas-based generation was both available and flexible to respond quickly to Texas’ electricity needs during this critical period.

**ERCOT Electricity Generation by Source on January 15-16, 2024**



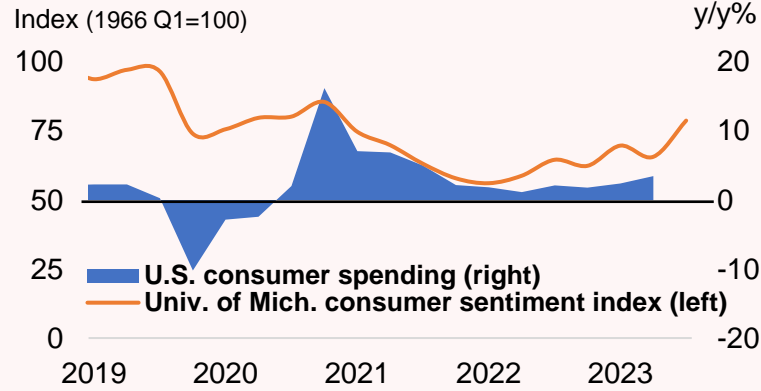
source: ERCOT

sources: Electricity Reliability Council of Texas (ERCOT); TXOGA analysis



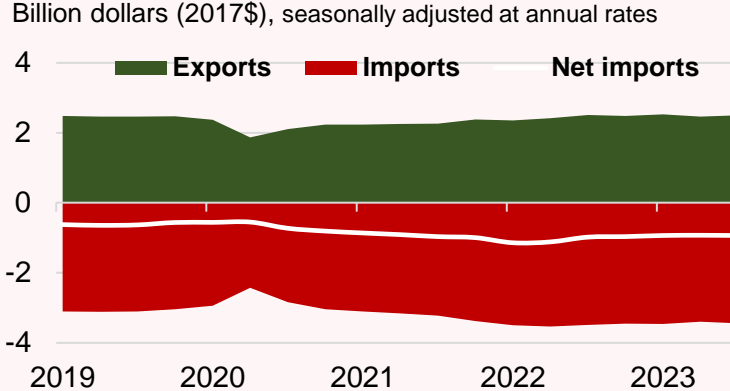
# U.S. economic indicators

## Consumer sentiment vs. spending



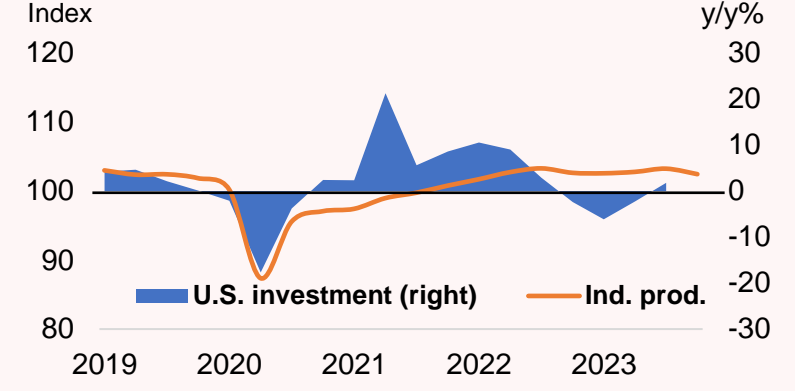
**Resounding U.S. consumer sentiment so far in January.** In its initial reading for January, the Univ. of Michigan consumer sentiment index rose to 78.8 in early January from 69.7 in December. This is the index's highest reading since Jul. 2021 and is consistent with improved consumer spending growth.

## Real net exports of goods and services



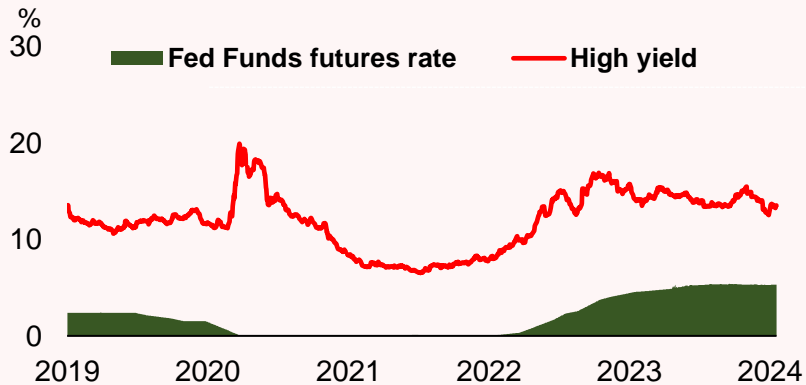
**The U.S. trade deficit revised down for Q3 2023.** The U.S. real trade deficit ran at an annualized rate of \$931 billion in Q3 2023, down from an initial estimate of \$935 billion per the U.S. Bureau of Economic Analysis. On a nominal basis, the trade surplus for petroleum and products ran at annualized rate of \$29 billion in Q3 2023.

## Industrial production and investment growth



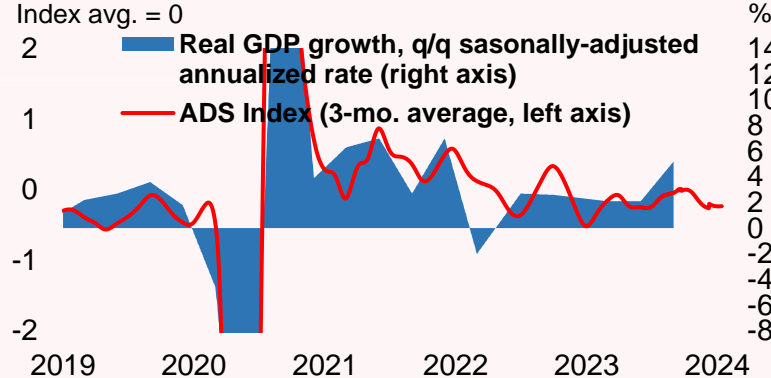
**Industrial production has remained consistent with investment growth** of 2.25% y/y in Q3 2023, as revised up from an initial reading of 1.8% y/y by the Bureau of Economic Analysis. Industrial production has remained flat in recent months, and in December 2023 rose by 0.1% m/m and 1.0% y/y.

## Fed Funds rate and CCC and lower corporate bond yields



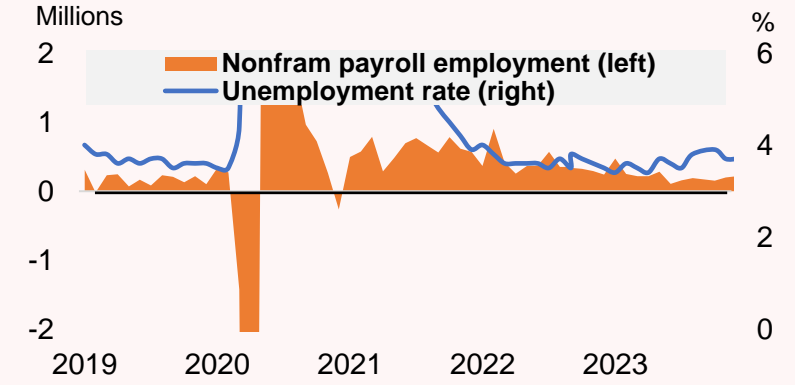
**Stable bond premium for low credit quality.** High yield (HY) rates reflect debt costs for firms with below-investment grade credit quality. For the week ended Jan. 19, HY rates remained steady at 13.5%, while the Fed Funds futures held at 5.3%.

## Aruoba-Diebold-Scotti Business Conditions Index (qtr. avg.) vs. U.S. real GDP growth



**Business conditions consistent with Q1 2024 real GDP growth.** The ADS business conditions index, published by the Philadelphia Fed. Res. Bank, is a leading indicator of GDP growth. A rolling 3-month average of the ADS index accurately reflected the increase in Q3 2023 real GDP and has remained consistent with continued GDP growth through Q1 2024.

## Nonfarm payroll employment & unemployment rate

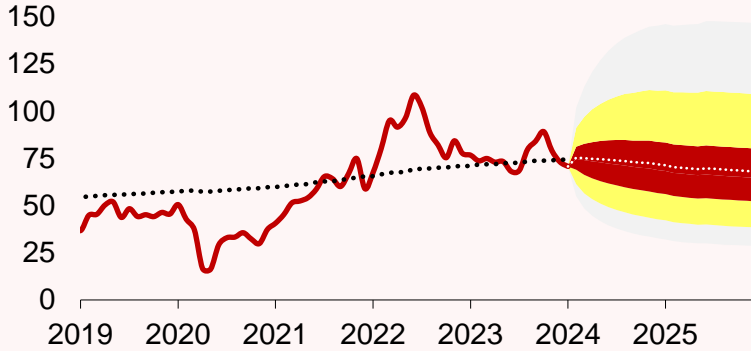


**With a rebound in payroll increases, the unemployment rate fell in November.** The employment situation is a lagging indicator of GDP growth. The U.S. unemployment rate held steady at 3.7% in December per BLS, while non-farm payrolls rose by 216,000.

# U.S. oil market indicators

## WTI crude oil price mean reversion analysis

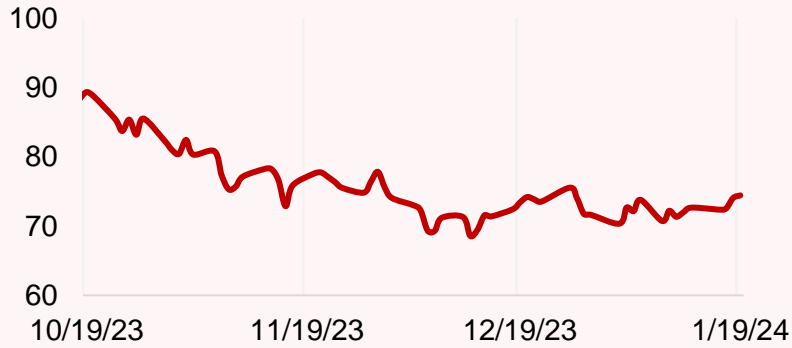
Dollars per barrel (2024\$)



**Futures prices remained below the historical mean reversion target.** A best-fit curve through historical prices (MR target) exceeded futures prices. The futures strip also shifted to backwardation (that is, futures prices currently are lower than spot prices) from contango (futures prices above spot prices).

## WTI crude prompt month futures prices

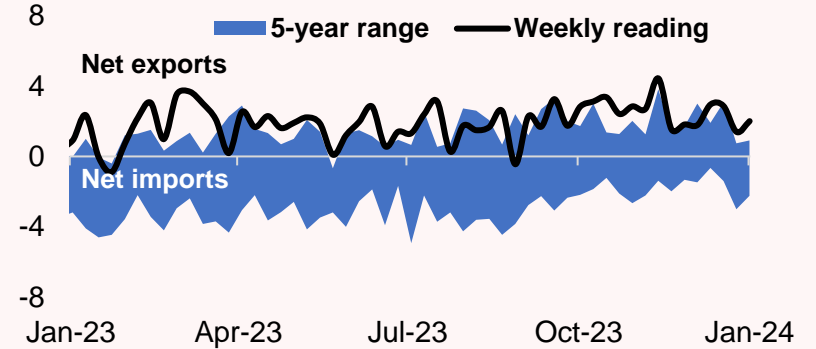
Dollars per barrel



WTI crude oil prices varied rose above \$74 per barrel per barrel for the week ended Jan. 19 as market fundamentals tightened and Middle East geopolitics added uncertainties.

## U.S. petroleum net exports (imports)

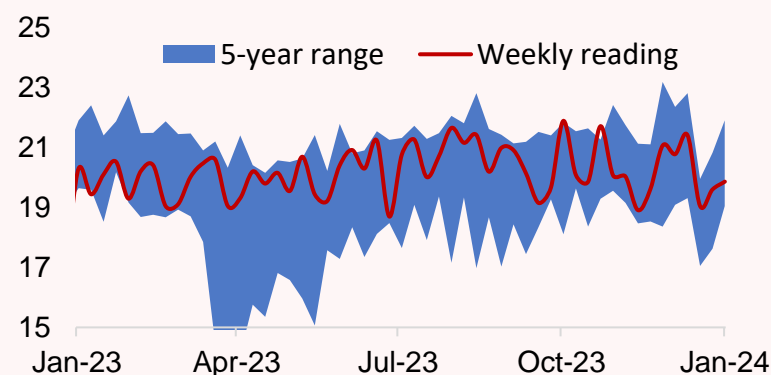
Million barrels per day, mb/d



**Petroleum net exports increased.** The U.S. was a petroleum net exporter of 2.0 mb/d for the week ended Jan. 12, up by 0.6 mb/d w/w and above the top of the 5-year range.

## U.S. petroleum demand

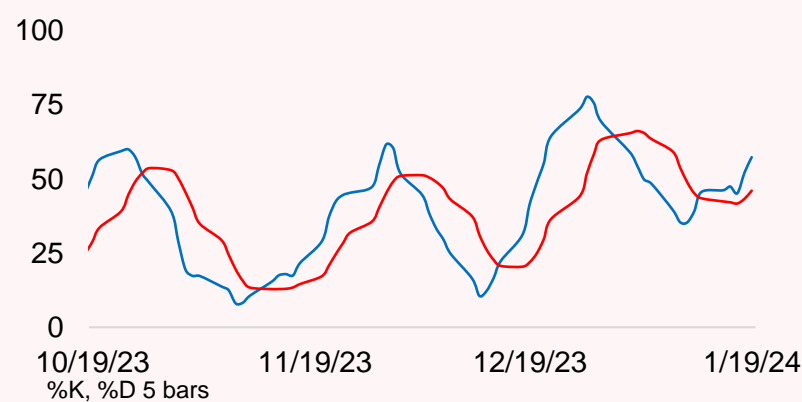
Million barrels per day (mb/d)



**Petroleum demand increased.** U.S. petroleum demand, as measured by deliveries, rose by 0.3 mb/d w/w to 19.9 mb/d for the week ended Jan. 12.

## WTI crude prompt month futures slow stochastic

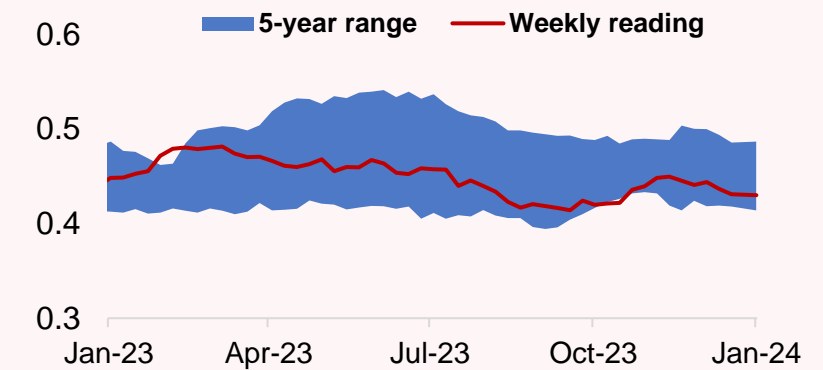
Index level



Price momentum strengthened for the week ended Jan. 19.

## U.S. ending stocks of crude oil (excluding the SPR)

Million barrels (mb)

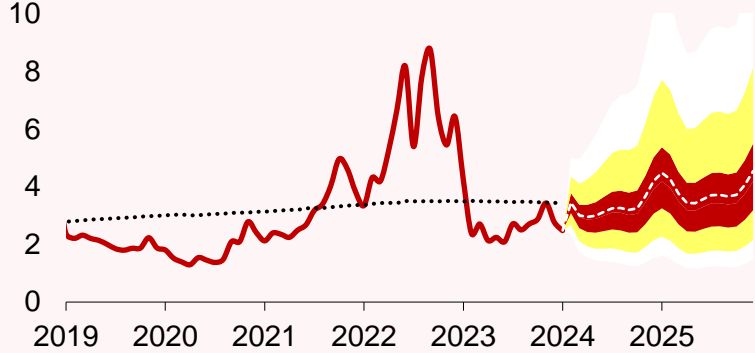


**Inventories dropped.** U.S. ending stocks of crude oil excluding the Strategic Petroleum Reserve (SPR) fell by 2.5 million barrels (mb) for the week ended Jan. 12 and to the lowest 20% within the 5-year range.

# U.S. natural gas market indicators

## Natural gas price mean reversion analysis

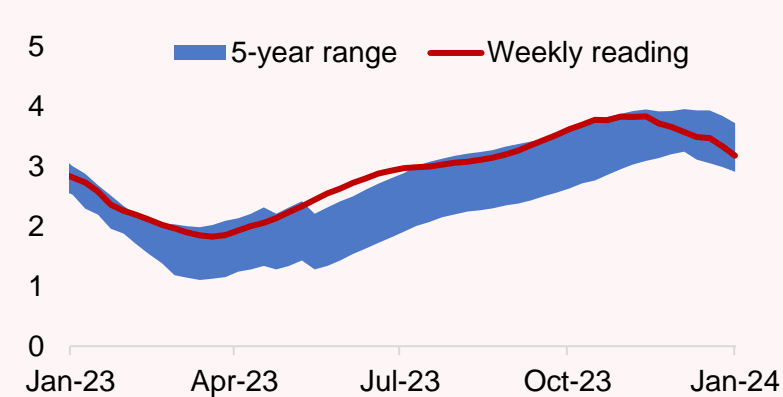
Dollars per mmBtu (2024\$)



Near-term natural gas futures prices remained below the historical mean reversion target. As natural gas prices fell to \$2.54 per million Btu, futures prices through June were below their historical mean. Historical variation continued to show more potential upside than downside.

## U.S. weekly working gas storage

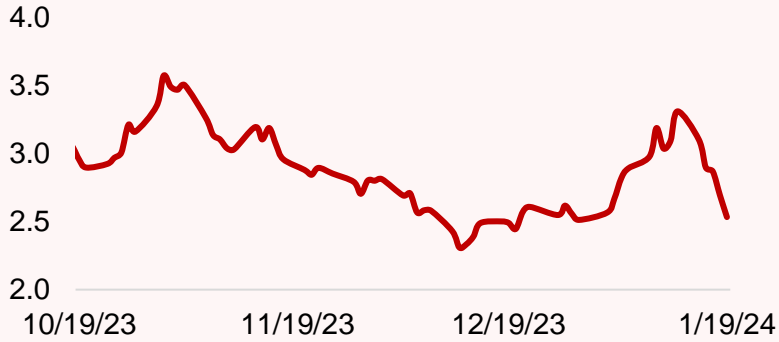
Trillion cubic feet (tcf)



**Storage dropped with winter demands.** Working gas in underground storage (3.2 tcf as of Jan. 12) fell by 4.6% w/w to the bottom third of its 5-year range. This was the largest percentage weekly drawdown since Feb. 2023.

## Natural gas prompt month futures prices

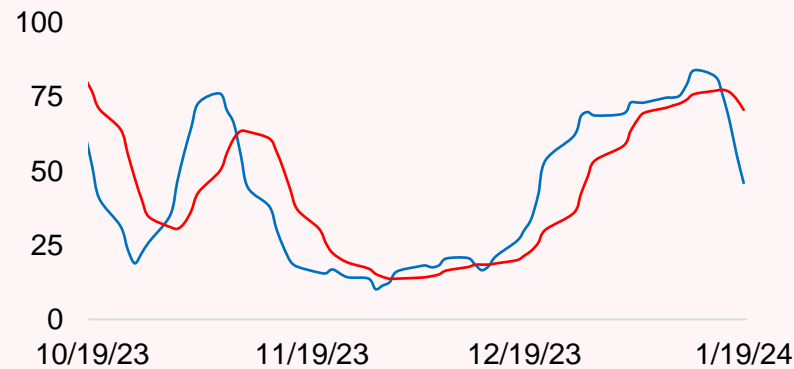
Dollars per million Btu



Natural gas prices at Henry Hub dropped by more than 23% w/w to \$2.54 per million Btu for the week ended Jan. 19 as winter weather and large storage withdrawals eased and supply appeared to be robust.

## Natural gas futures slow stochastic

Index level

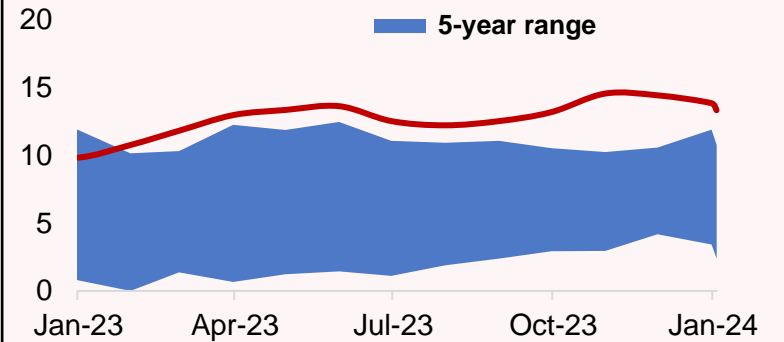


%K, %D 5 bars

Natural gas price momentum peaked and began to fall during the week ended Jan. 19.

## U.S. natural gas net exports

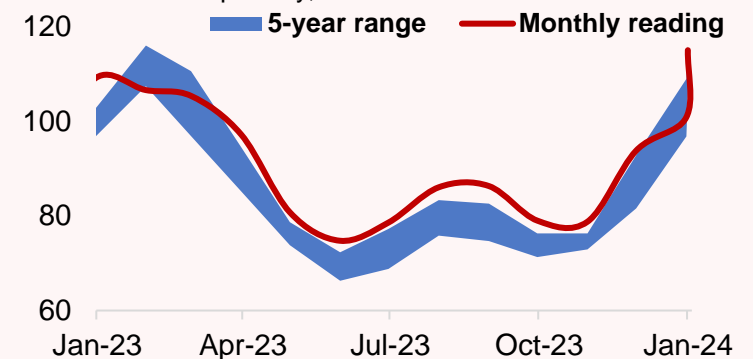
Billion cubic feet per day, bcf/d



**Strong net exports have continued.** U.S. natural gas net exports in January are estimated at 13.3 bcf/d, above the 5-year range, per the EIA.

## U.S. natural gas consumption

Billion cubic feet per day, bcf/d

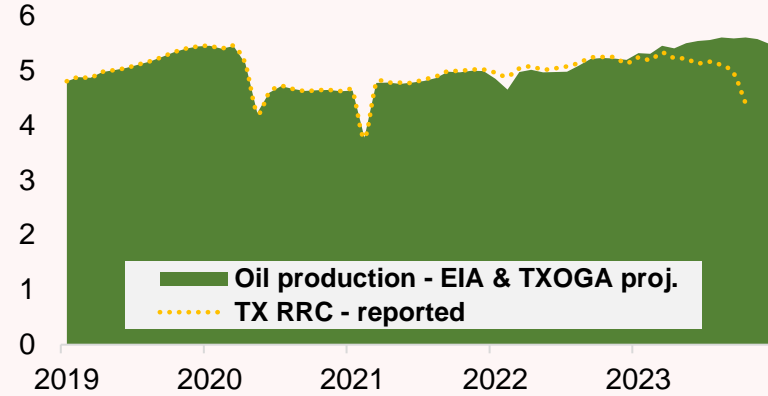


**January consumption estimated by EIA to exceed its 5-yr. range.** In its January projections, EIA estimated that natural gas consumption rose from the top third of its 5-year range in December to exceeding it so far in January.

# Texas' oil and natural gas production

## Texas crude oil production, Jan. 2019 – Dec. 2023

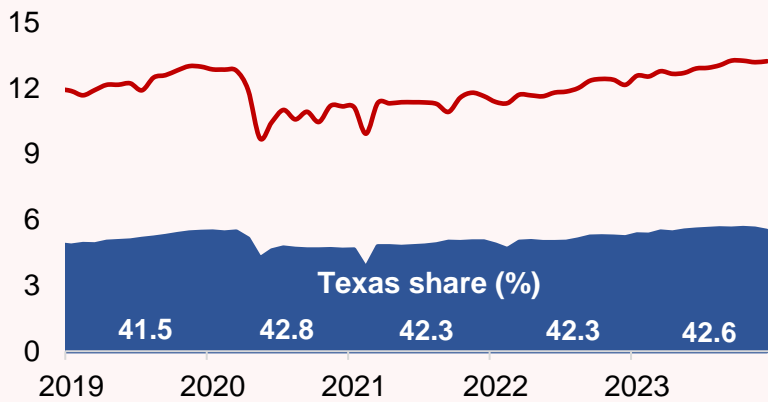
Million barrels per day (mb/d)



**Strong production.** Texas' oil production of 5.6 mb/d held steady in October per the EIA. TXOGA estimates that Texas crude oil production held at 5.6 mb/d in November and edged down to 5.5 mb/d in December.

## U.S. and Texas crude oil production, Jan. 2019 – Dec. 2023

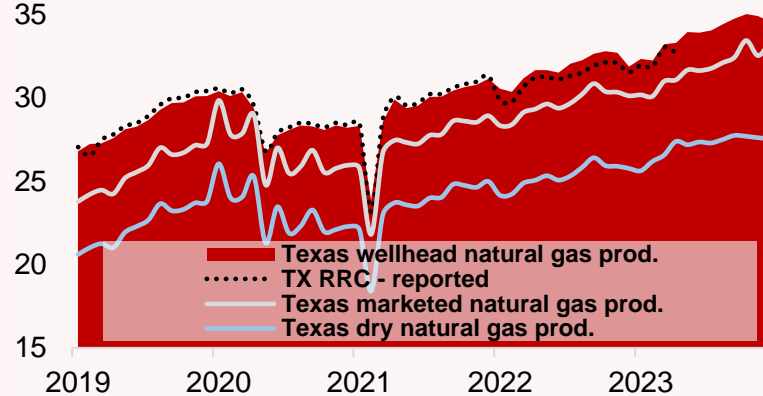
Million barrels per day (mb/d)



**Texas' share rose.** In 2023, Texas accounted for 42.6% of U.S. crude oil production by EIA and TXOGA's estimates, the highest share since 2020.

## Texas natural gas production, Jan. 2019 – Dec. 2023

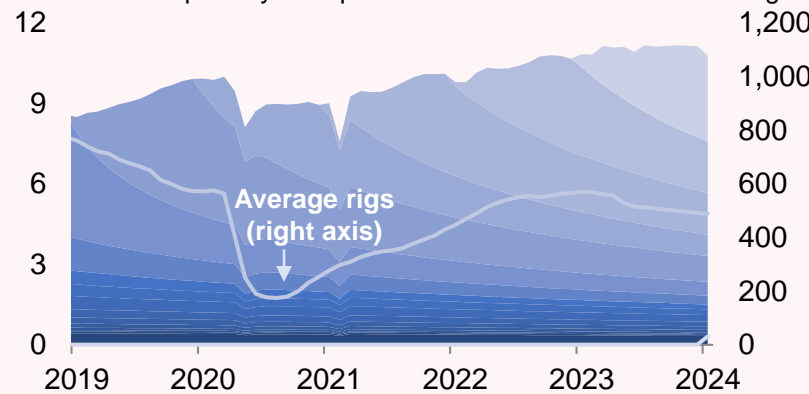
Billion cubic feet per day (bcf/d)



**Record production in October.** Texas' natural gas production set records for 35.0 bcf/d of gross withdrawals and 33.5 bcf/d of marketed production in October per EIA. TXOGA estimates that natural gas production eased through December to 34.6 bcf/d of gross withdrawals, 33.3 bcf/d of marketed production, and 27 bcf/d of dry gas production.

## Texas shale basin wellhead oil & natural gas production

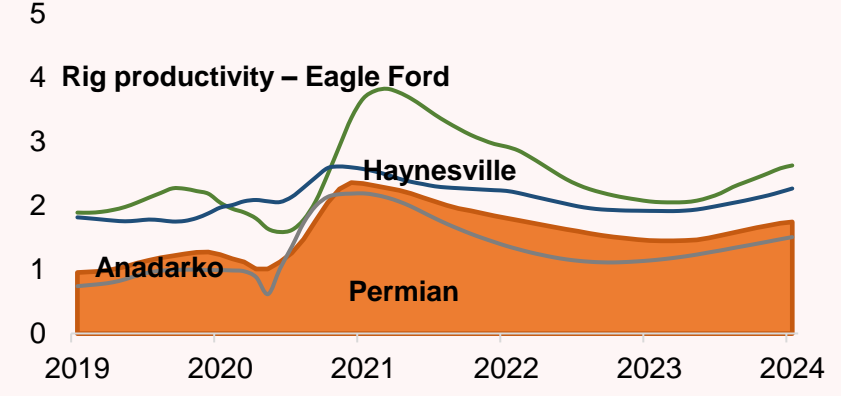
Million barrels per day oil-equivalent



EIA estimates Jan 2024 production growth across Texas shale basins has been mixed, with increases year-over-year in the Permian (+6.3% y/y) and Eagle Ford (+3.6% y/y) but decreases in the Haynesville (-0.2% y/y) and Anadarko (-1.2% y/y) regions.

## Texas rig productivity by basin – new monthly prod. per rig

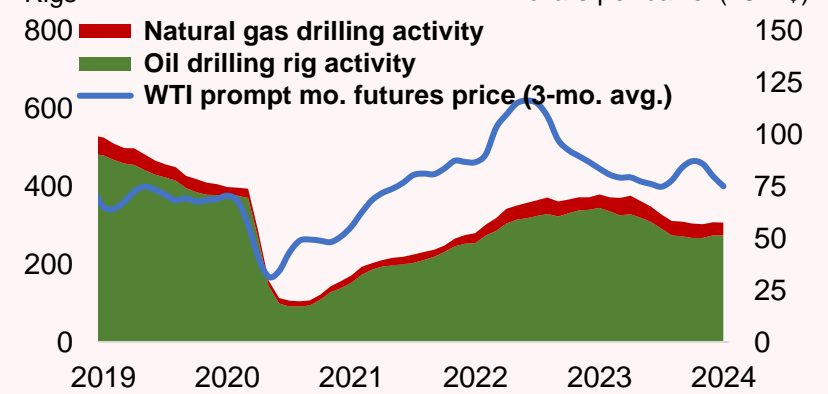
Thousand barrels per day oil-equivalent, kb/doe



**Strong productivity to start the year.** EIA estimates of rig productivity for January 2024 show continued increases year-over-year across the major Texas basins, including the Anadarko (+32.0% y/y), Eagle Ford (+27.2% y/y), Haynesville (+18.3% y/y), and Permian (+20.0% y/y).

## Texas drilling activity and WTI crude oil futures prices

Rigs (left axis), Dollars per barrel (2024\$) (right axis)



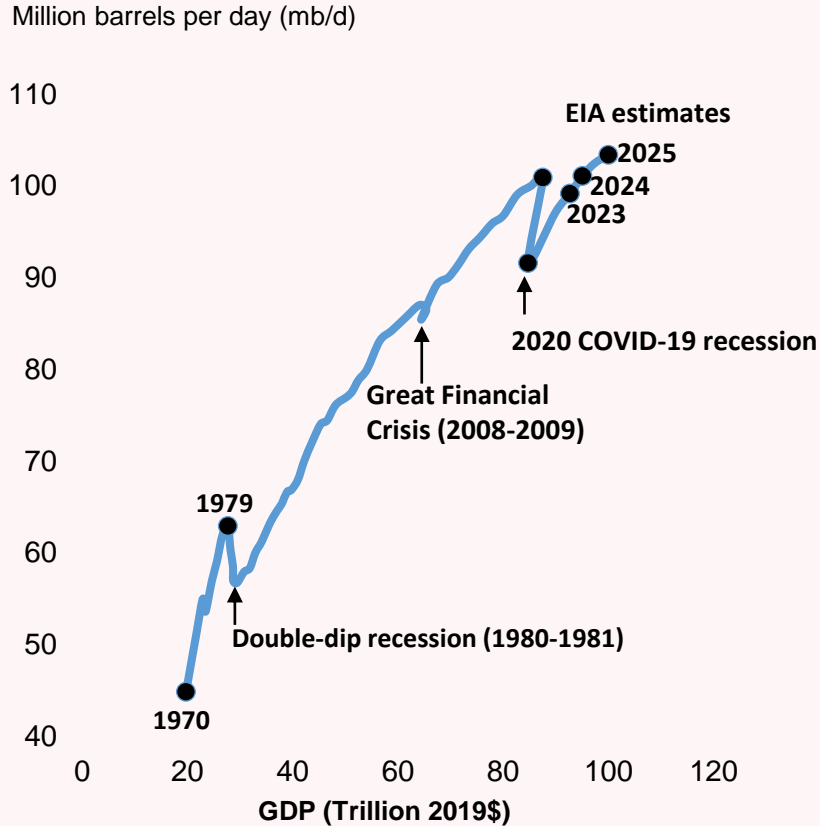
Texas' drilling rig activity decreased on net for the week ended Jan. 19 per Baker Hughes. Texas had 272 oil-directed rigs (down by 4 rigs w/w) and 33 natural gas-directed rigs (up by 1 rig w/w).



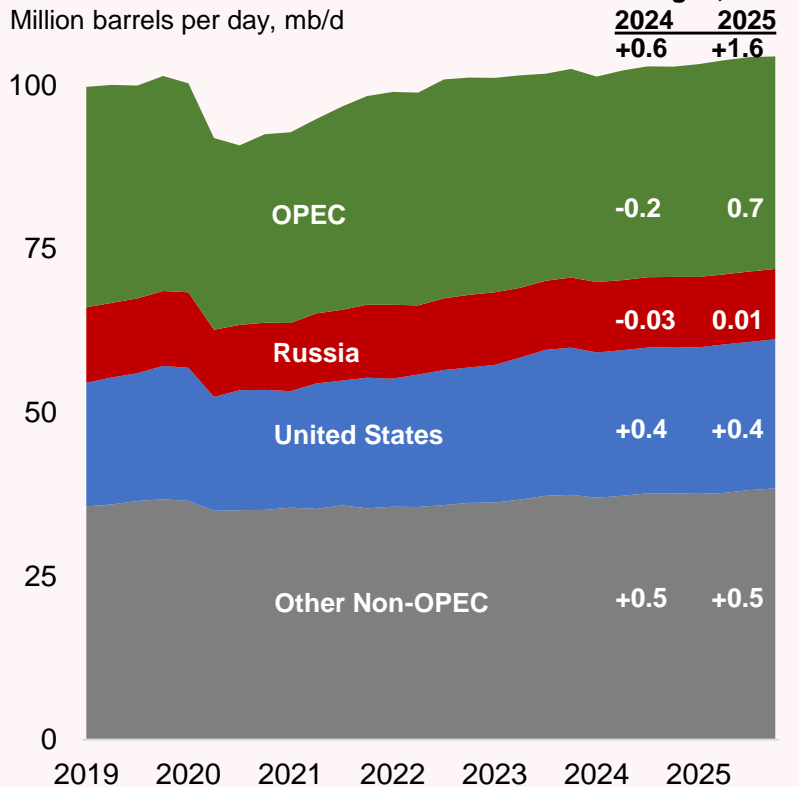
# Global Oil Market Balance Projections to 2025 by EIA

- ▶ **Record-high demand.** Global oil demand is expected by the EIA rise from a record 101.1 mb/d in 2023 to 102.5 mb/d in 2024 and 103.7 mb/d in 2025.
- ▶ **Supply shift.** As global oil supply is projected to rise 2.2 mb/d by 2025, EIA expects the U.S. to supply about one-third of global production growth over the next two years, compared with over 60% in 2023.
- ▶ **For oil inventories, the EIA projects global stock withdrawals with a deficit of 0.8 mb/d in Q1 2024**, corresponding with Brent crude oil prices of \$82.50 in 2024, compared with \$78.20 per barrel currently.

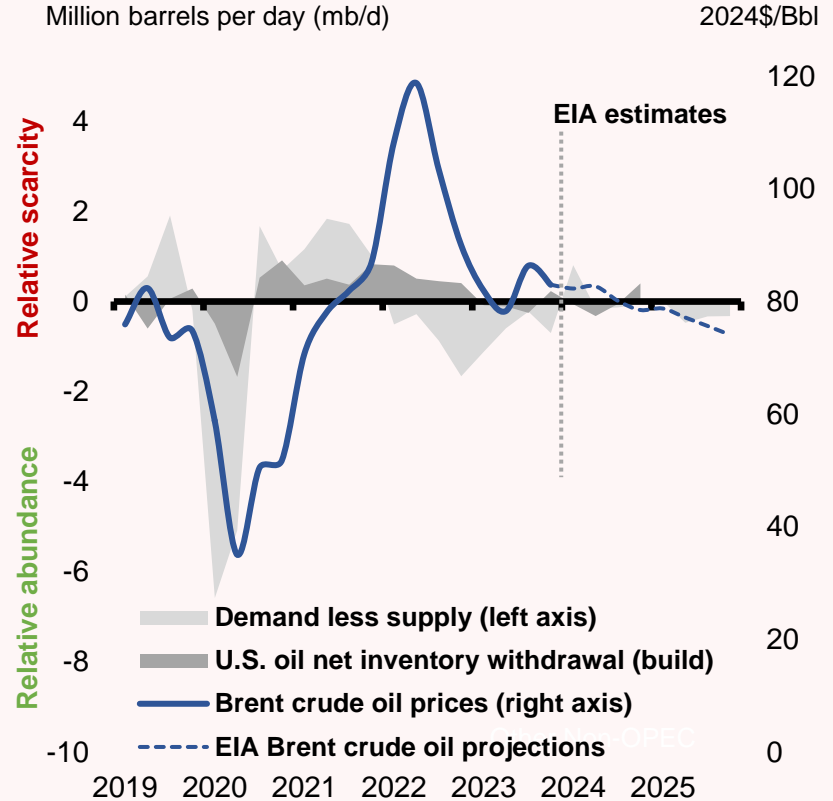
**Global oil demand and GDP**



**Oil production by country/region**



**Global demand/supply & Brent prices**



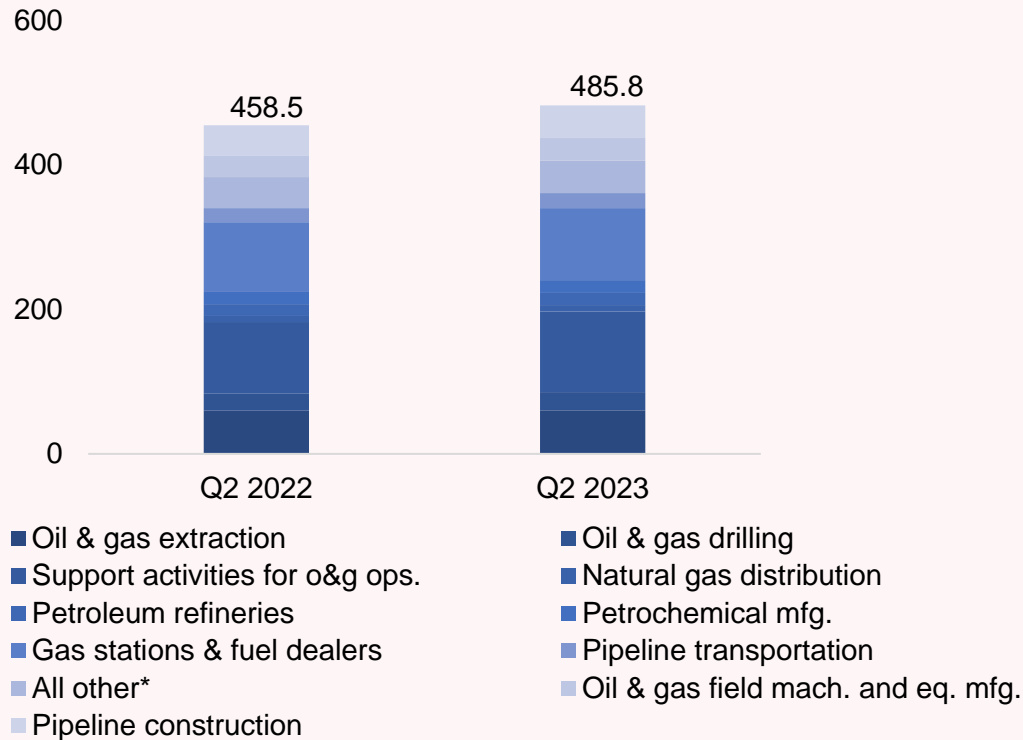


# Texas' oil and natural gas industry's jobs and wages rose solidly

- ▶ Texas' oil and natural gas industry employment rose by 6.0% y/y in Q2 2023 with over half of the job growth in upstream drilling, extraction and support services, per data from the U.S. Census Bureau and Texas Workforce Commission
- ▶ Industry wage growth of 9.3% y/y outpaced job growth of 6.0% y/y, which reflected wage escalation

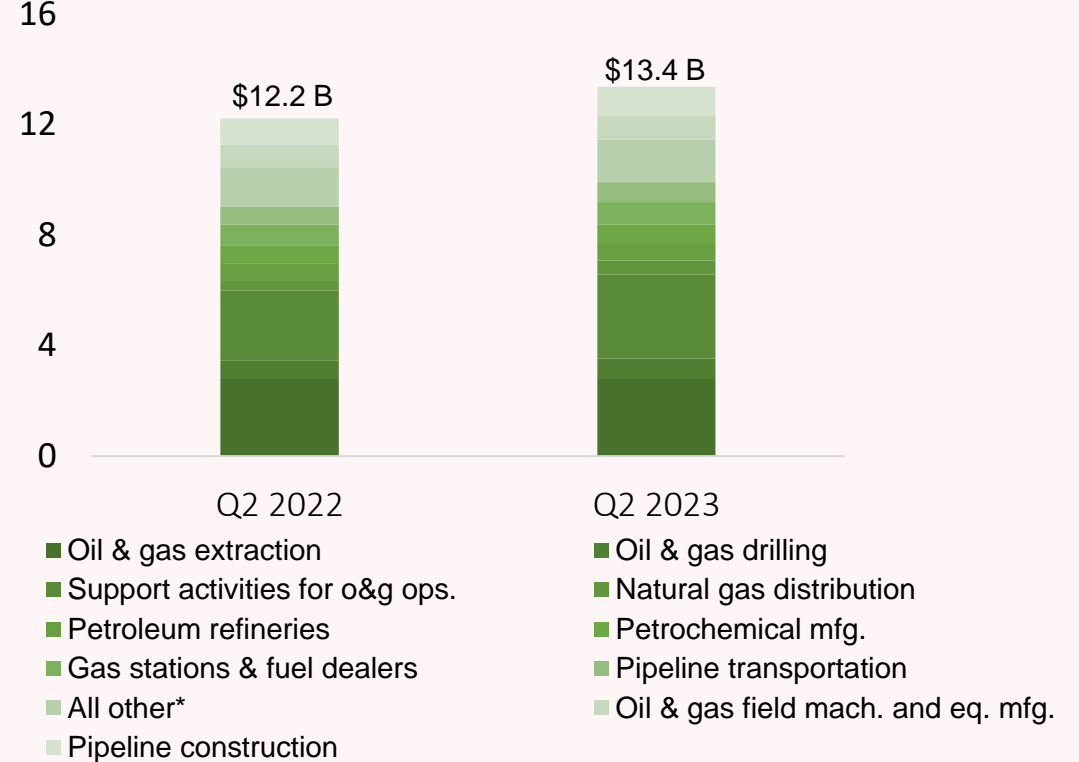
**Texas Oil & Gas Industry Employment Rose by +6.0% y/y in Q2 2023**

Thousand Jobs



**Texas Oil & Gas Industry Quarterly Wages Rose by +9.3% y/y in Q2 2023**

Billion dollars



\* Other industry segments include petroleum and pet. product wholesalers, fuel dealers, lubricant mfg., asphalt mfg., industrial sand mining, nitrogenous fertilizer mfg., basic organic chem. mfg., plastics and resin mfg.

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