



March 4, 2024



The TXOGA chartbook serves as an essential resource for our members and those keen on comprehending the data that narrate ongoing developments within the economy and the oil and gas sectors, both internationally and domestically, including specific trends in Texas.

Key points for the week of March 4, 2024

- ▶ **U.S. economic indicators solidified.** The U.S. economy demonstrated robustness with upward revisions in consumer spending for Q4 2023, consistent with the improved consumer sentiment we've been tracking. This positive adjustment indicates sustained growth momentum into Q1 2024. Moreover, the Aruoba-Diebold-Scotti (ADS) Index from the Philadelphia Federal Reserve reflects upward revisions as well, suggesting that favorable business conditions are bolstering economic expansion in Q1 2024. Additionally, yields on high-yield (below-investment-grade) corporate bonds fell by 0.5% week-over-week (w/w) as of March 1.
- ▶ **Oil market dynamics presented a mixed picture.** Persistent geopolitical tensions in the Middle East, impacting maritime transit in the Red Sea, have continued to support oil prices with levels near \$80 per barrel for the week ended March 1. According to the latest data from the Energy Information Administration (EIA) for the week ended Feb. 23, U.S. petroleum consumption increased to 19.5 million barrels per day (mb/d), up by 0.6 mb/d w/w. Concurrently, petroleum net exports remained steady at 3.0 mb/d, marking a record for this period. However, crude oil inventories rose for a 5th straight week above the middle of their 5-year range.
- ▶ **Natural gas: record global demand, but ample supplies.** Despite projections of record-high global natural gas demand, as discussed in the [Chart of the Week](#), prices around the world have remained historically low due to a confluence of factors: a comparatively mild winter in Europe and Northern Asia, robust production, and substantial U.S. exports. In the U.S., natural gas storage levels decreased by 3.9% w/w yet continued to exceed their 5-year range, suggesting that markets remain well supplied in the final stretch of winter.

TXOGA Chart of the Week: 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 recover 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)

170

145

120

95

70

45

20

15

25

35

45

55

65

75

85

95

105

Real GDP (Trillion 2019\$)

EIA estimates (2023-2025)

Record GDP and natural gas demand

2024

2023

2025

2020 COVID-19 recession

2019

Great Financial Crisis (2008-2009)

1970

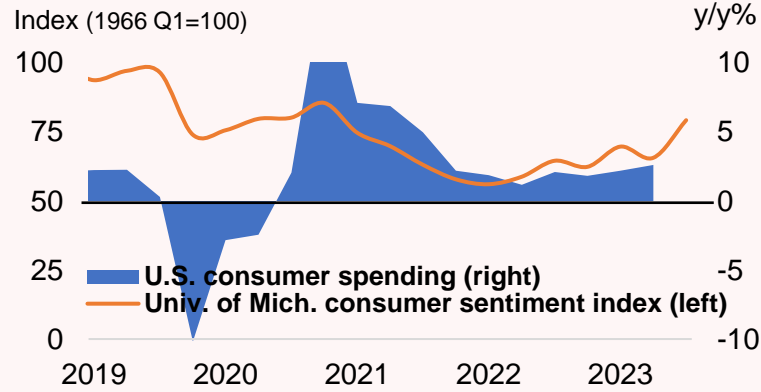
1979

*Market exchange rate basis. sources: U.S. Energy Information Admin.; IMF; Intl. Energy Agency; TXOGA analysis



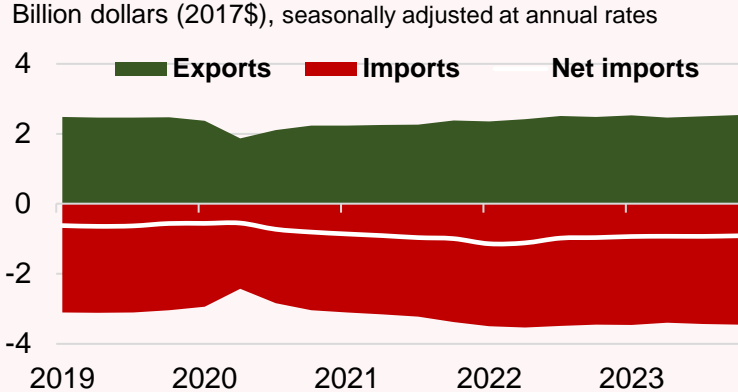
U.S. economic indicators

Consumer sentiment vs. spending



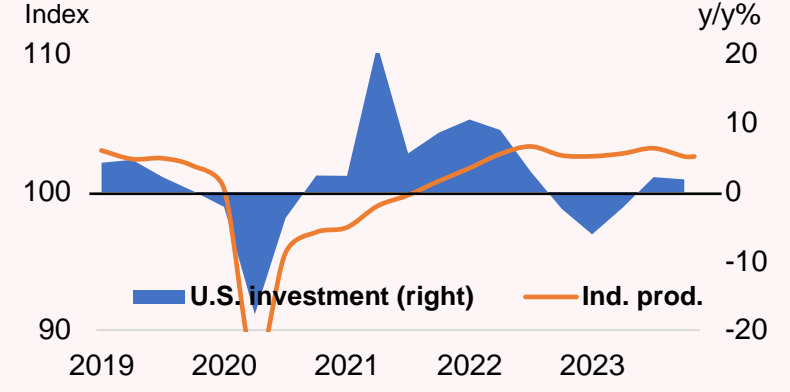
Consumer spending was revised upwards by 0.1% y/y to 2.7% y/y for Q4 2023 in the Feb. revision by BEA. The increased spending was consistent with improvement in the Univ. of Michigan's consumer sentiment index rose, which has since risen to 79.6, or 30% higher than it was in Nov. 2023 and suggests further spending growth.

Real net exports of goods and services



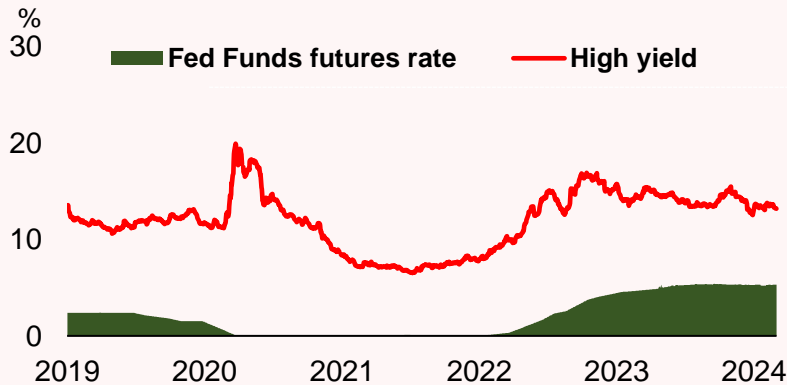
The U.S. trade deficit narrowed in Q4 2023. The U.S. real trade deficit ran at an annualized rate of \$908 billion in Q4 2023, down from \$931 billion in Q3 per the U.S. Bureau of Economic Analysis. On a nominal basis, the trade surplus for petroleum and products ran at annualized rate of \$16 billion in Q4 2023, down from \$29.1 billion in Q3.

Industrial production and investment growth



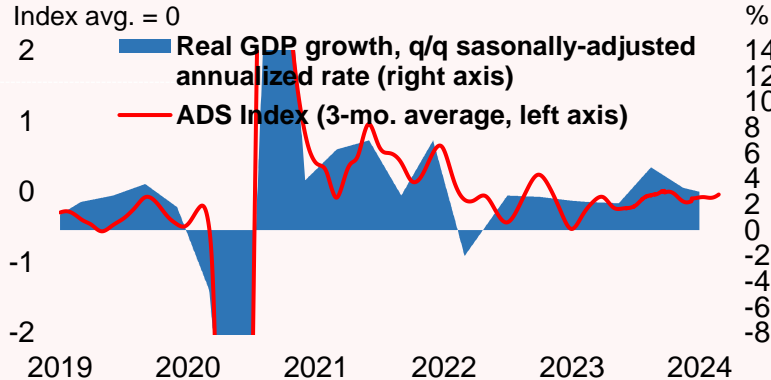
Industrial production remained flat in Jan. 2024 and consistent with slow economy-side investment growth in Q1. Investment rose by 1.5% y/y in Q4, which was revised downwards by 0.3% y/y, in the Bureau of Economic Analysis' February revision.

Fed Funds rate and CCC and lower corporate bond yields



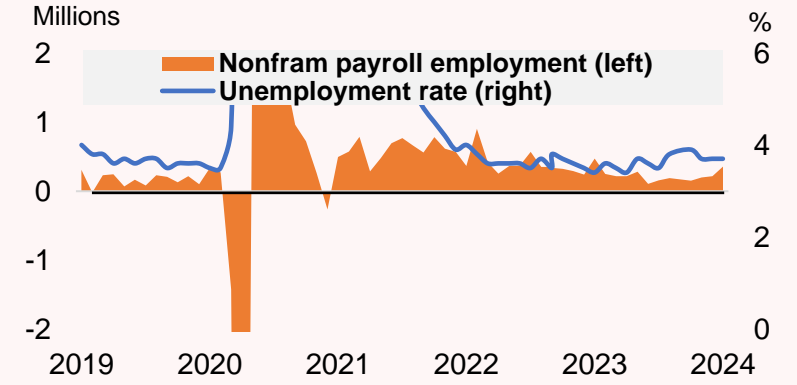
Decreased bond premium for low credit quality. High yield (HY) rates reflect debt costs for firms with below-investment grade credit quality. For the week ended Mar. 1, HY rates fell to 13.2% (from a high of 13.7% on Feb. 21) while the Fed Funds futures held steady at 5.3%, yielding a lower risk spread.

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



Business conditions show 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 Q4 2023 real GDP and remains consistent with continued GDP growth so far in Q1 2024.

Nonfarm payroll employment & unemployment rate

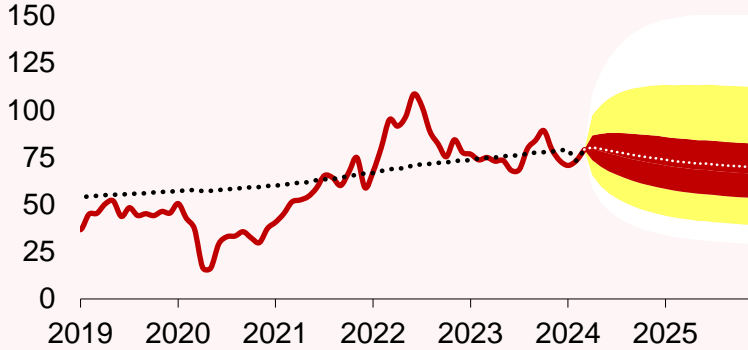


Steady unemployment rate, increased payrolls. The employment situation is a lagging indicator of GDP growth. The U.S. unemployment rate held steady at 3.7% in January per BLS, while non-farm payrolls rose by 353,000.

U.S. oil market indicators

WTI crude oil price mean reversion analysis

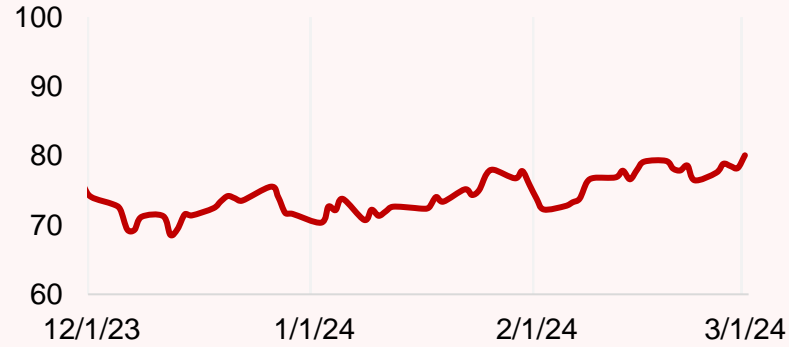
Dollars per barrel (2024\$)



Futures prices have aligned with their historical mean. The futures strip 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.

WTI crude prompt month futures prices

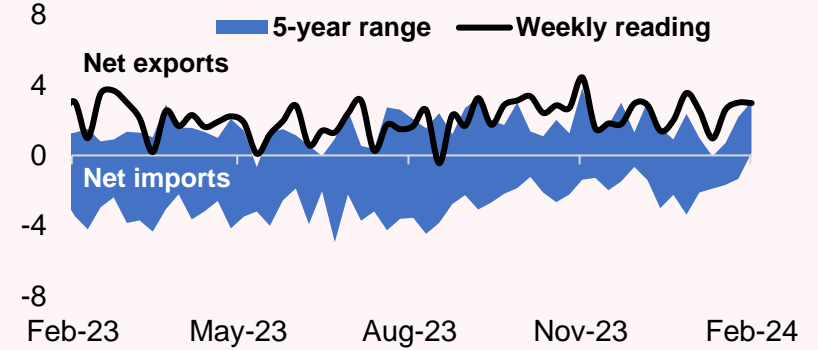
Dollars per barrel



WTI crude oil prices rose to nearly \$80 per barrel for the week ended Mar. 1, continuing to reflect a geopolitical premium despite weaker fundamentals.

U.S. petroleum net exports (imports)

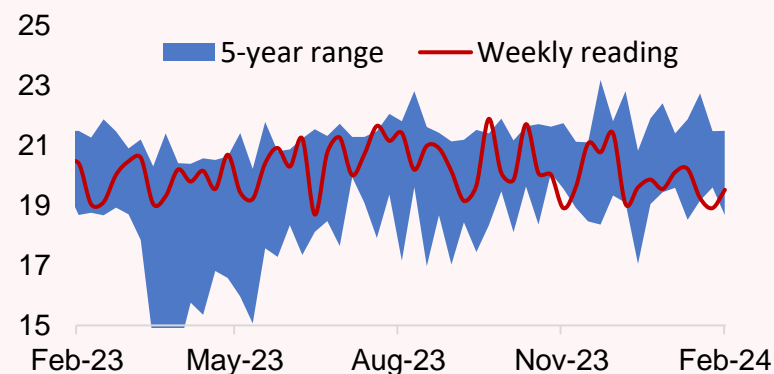
Million barrels per day, mb/d



Petroleum net exports rose. The U.S. was a petroleum net exporter of 3.0 mb/d for the week ended Feb. 23, steady from the prior week and at a record level for this time of the year.

U.S. petroleum demand

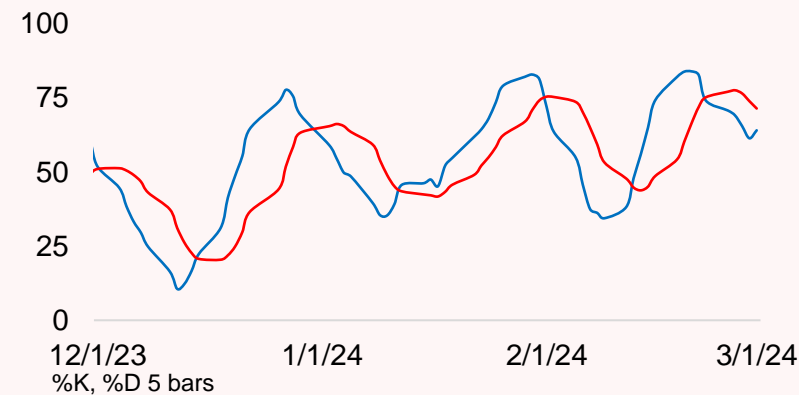
Million barrels per day (mb/d)



Petroleum demand decreased. U.S. petroleum demand, as measured by deliveries, rose by 0.6 mb/d w/w to 19.5 mb/d for the week ended Feb. 23.

WTI crude prompt month futures slow stochastic

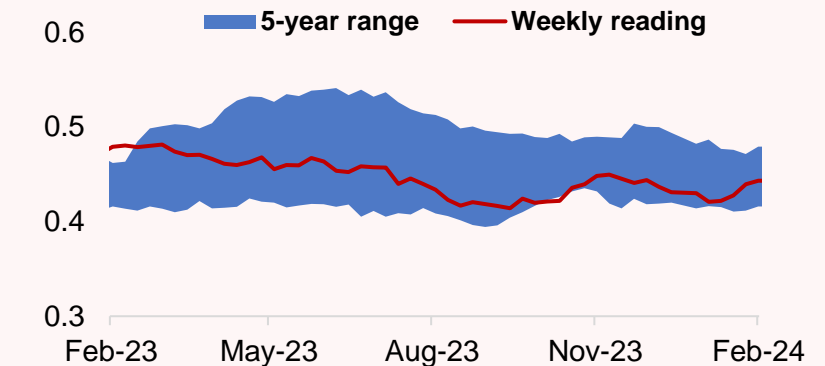
Index level



Price momentum rose slowed for the week ended Mar. 1.

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

Billion barrels (mb)

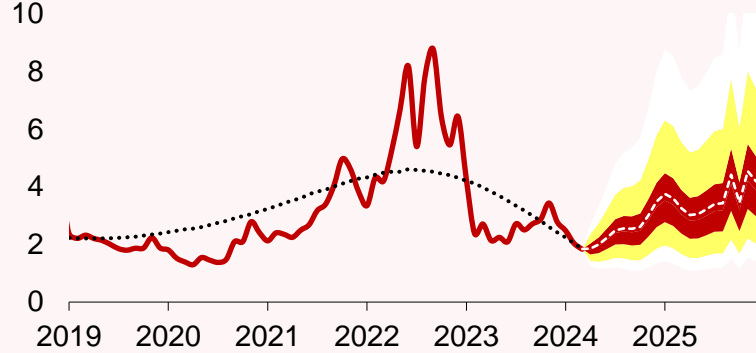


Inventories increased. U.S. ending stocks of crude oil excluding the Strategic Petroleum Reserve (SPR) increased by 4.2 million barrels (mb) for the week ended Feb. 23.

U.S. natural gas market indicators

Natural gas price mean reversion analysis

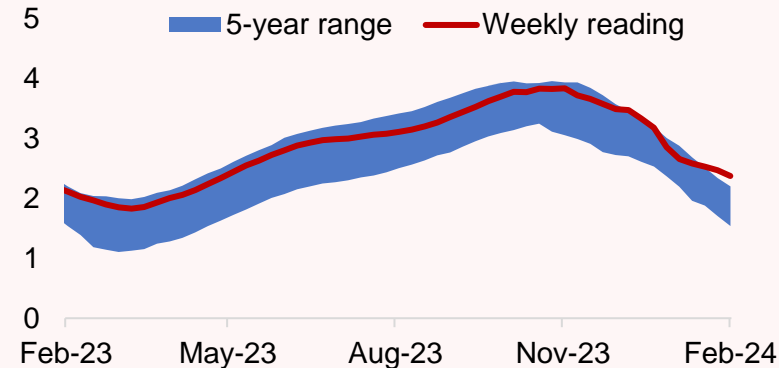
Dollars per mmBtu (2024\$)



Natural gas futures prices fell 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.

U.S. weekly working gas storage

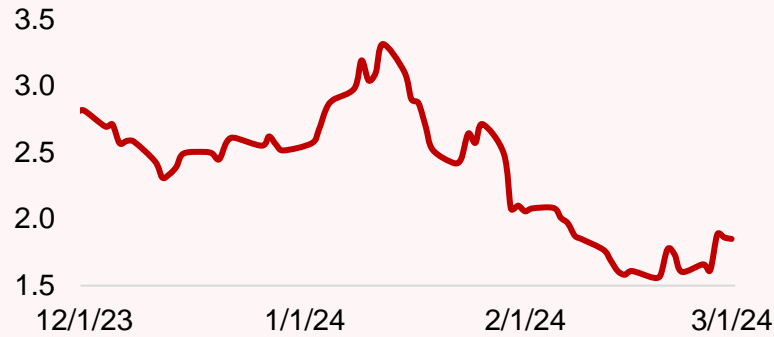
Trillion cubic feet (tcf)



Working gas in underground storage fell by 3.9% w/w to 2.37 tcf as of Feb. 23 but remained above the 5-year range.

Natural gas prompt month futures prices

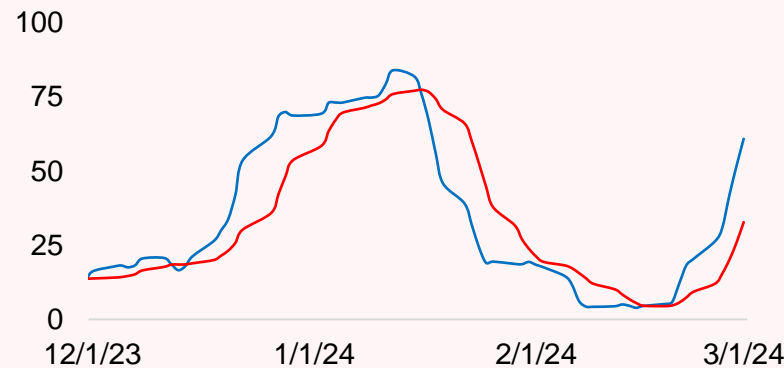
Dollars per million Btu



Natural gas prices at Henry Hub rose to over \$1.80 per million Btu for the week ended Mar. 1 despite storage levels that exceeded the 5-year range.

Natural gas futures slow stochastic

Index level

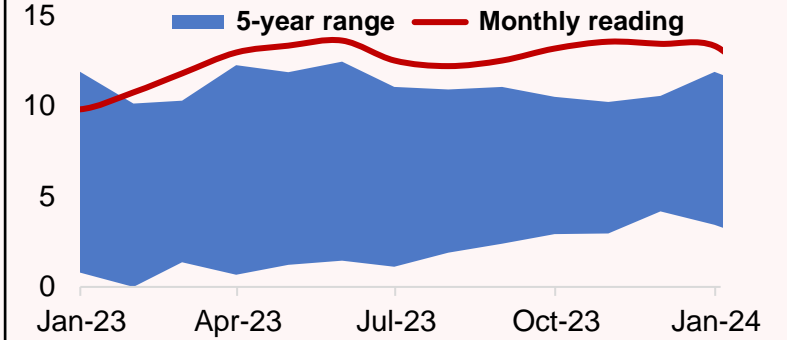


%K, %D 5 bars

Natural gas price momentum turned positive and rose during the week ended Mar 1.

U.S. natural gas net exports

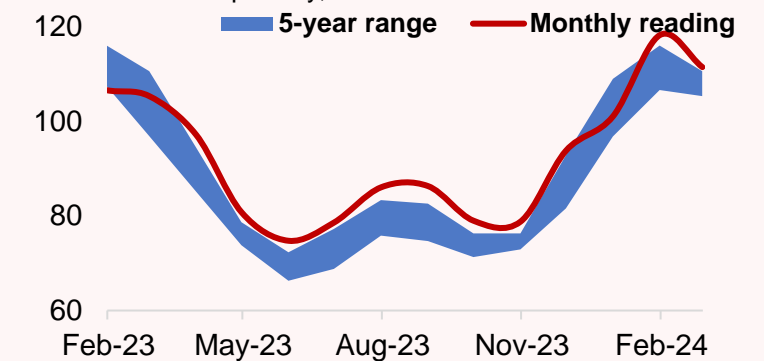
Billion cubic feet per day, bcf/d



Strong net exports have continued. U.S. natural gas net exports in February are estimated at 12.4 bcf/d, up from 11.8 bcf/d a year ago and above the 5-year range, per the EIA.

U.S. natural gas consumption

Billion cubic feet per day, bcf/d

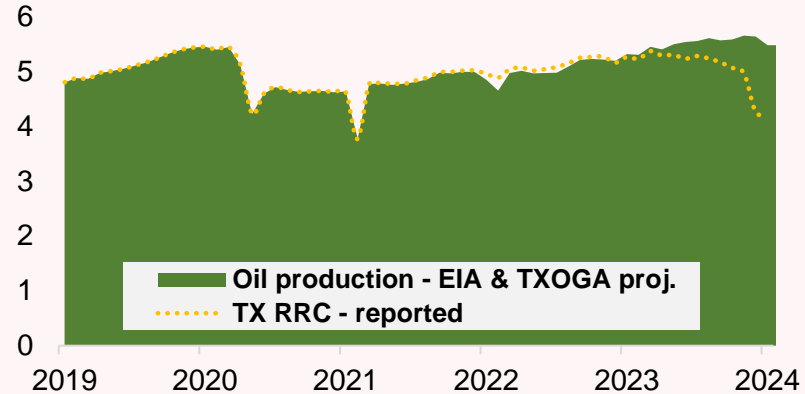


Record high consumption has continued. EIA estimates that natural gas consumption has eased from a record monthly high of 118 bcf/d in January to 111 bcf/d in February -- the highest U.S. consumption on record for the month of February.

Texas' oil and natural gas production

Texas crude oil production, Jan. 2019 – Feb. 2024

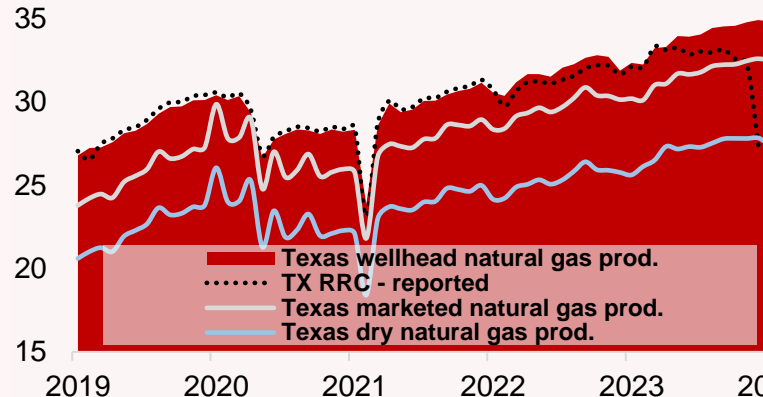
Million barrels per day (mb/d)



Oil production slipped from record highs. Texas' oil production of 5.6 mb/d in December was just below the record high set in Nov. per EIA. TXOGA estimates that Texas crude oil production eased further to 5.5 mb/d in January and February.

Texas natural gas production, Jan. 2019 – Feb. 2024

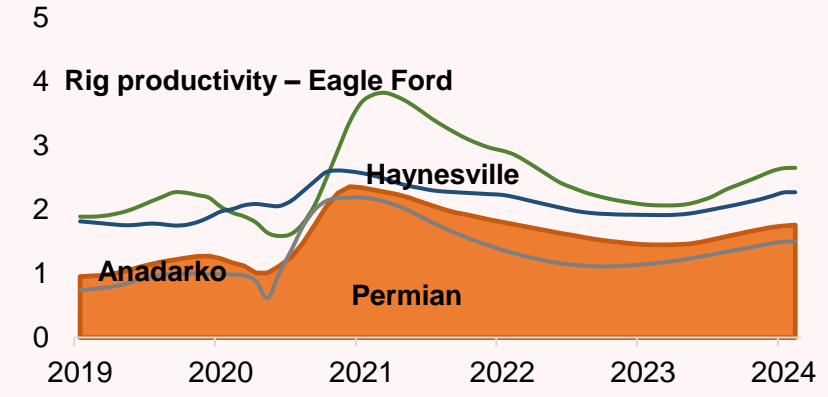
Billion cubic feet per day (bcf/d)



December production records. 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 rig productivity by basin – new monthly prod. per rig

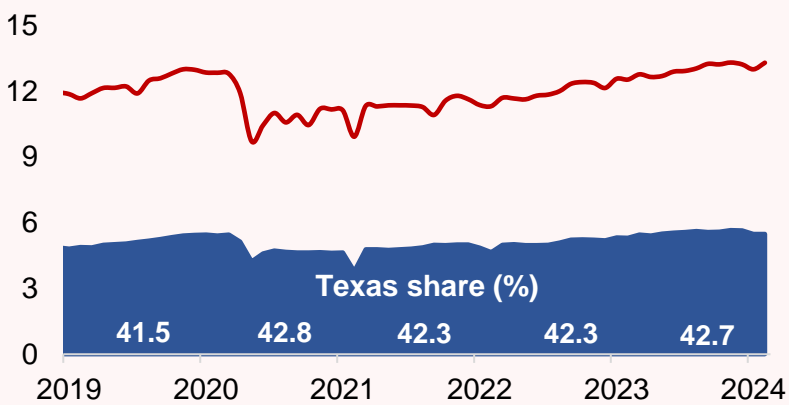
Thousand barrels per day oil-equivalent, kb/dae



Strong productivity to start the year. EIA estimates of rig productivity for February 2024 show continued increases year-over-year across the major Texas basins, including the Anadarko (+29.6% y/y), Eagle Ford (+28.2% y/y), Permian (+21.4% y/y), and Haynesville (+18.6% y/y).

U.S. and Texas crude oil production, Jan. 2019 – Feb. 2024

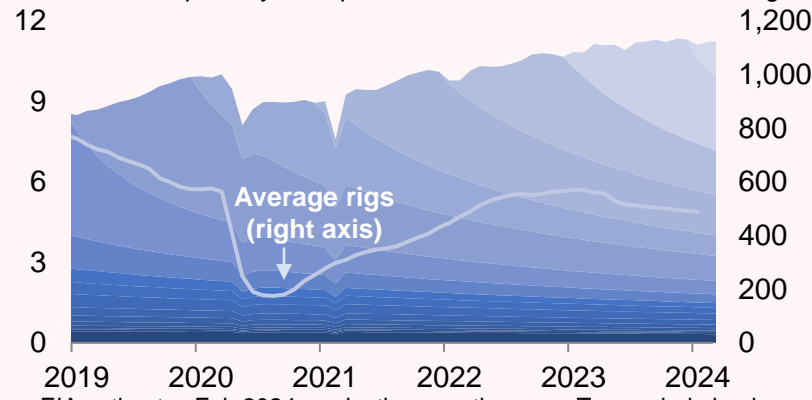
Million barrels per day (mb/d)



Texas' share rose. In 2023, Texas accounted for 42.7% of U.S. crude oil production, the highest share since 2020.

Texas shale basin wellhead oil & natural gas production

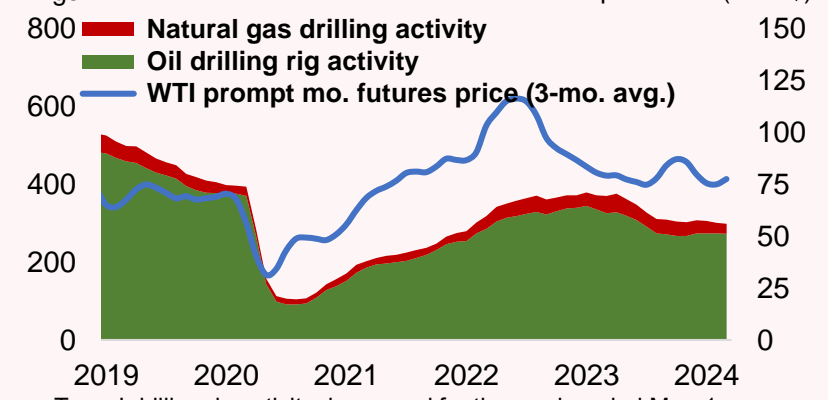
Million barrels per day oil-equivalent



EIA estimates Feb 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 drilling activity and WTI crude oil futures prices

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



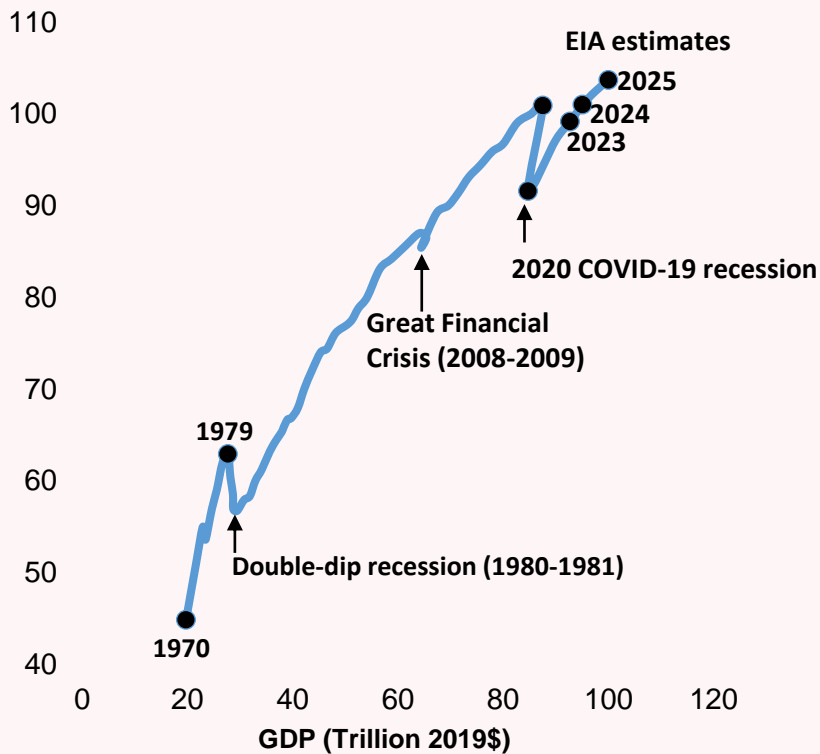
Texas' drilling rig activity decreased for the week ended Mar. 1 per Baker Hughes. Texas had 273 oil-directed rigs (down by 2 rigs w/w) and 26 natural gas-directed rigs (unchanged w/w).

Global Oil Market Balance Projections to 2025 by EIA

- Record-high demand. Global oil demand is expected by the EIA rise from a record 101.0 mb/d in 2023 to 102.4 mb/d in 2024 and 103.7 mb/d in 2025.
- Supply shift. As global oil supply is projected to rise 2.4 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 \$82.42 in 2024, compared with \$81.62 per barrel currently.

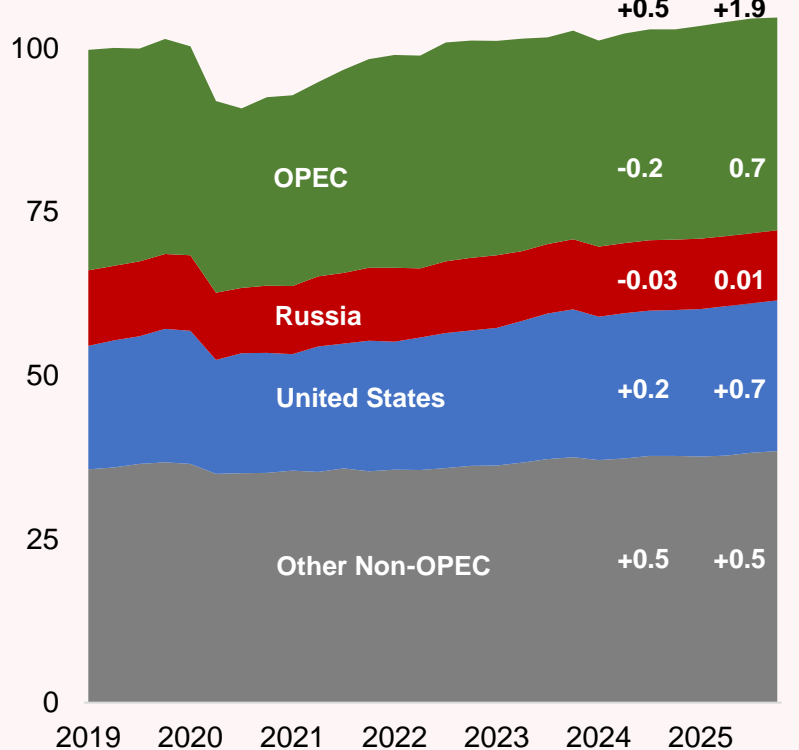
Global oil demand and GDP

Million barrels per day (mb/d)



Oil production by country/region

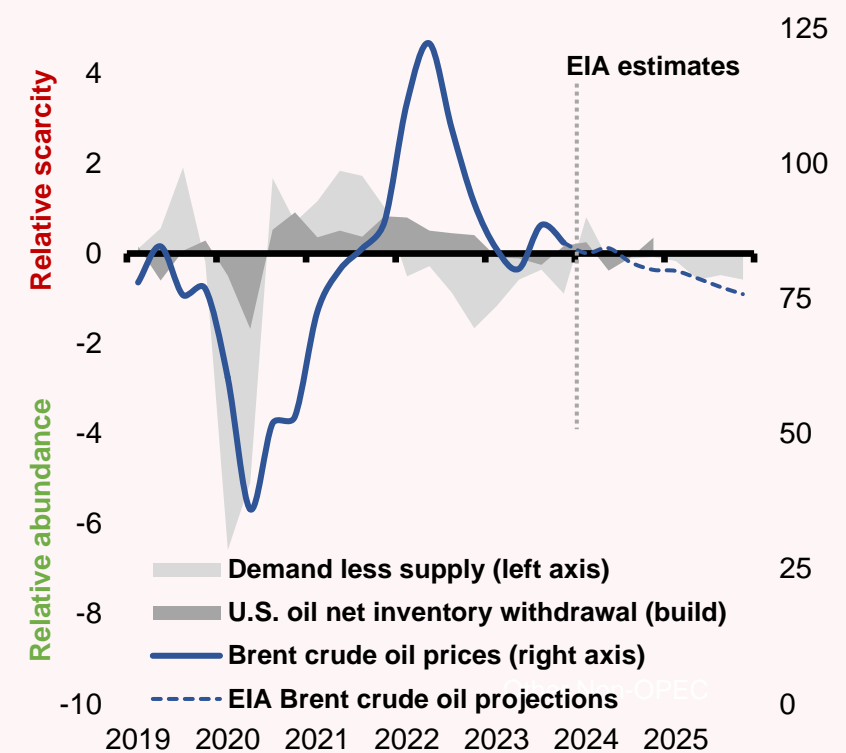
Million barrels per day, mb/d



Global demand/supply & Brent prices

Million barrels per day (mb/d)

2024\$/Bbl



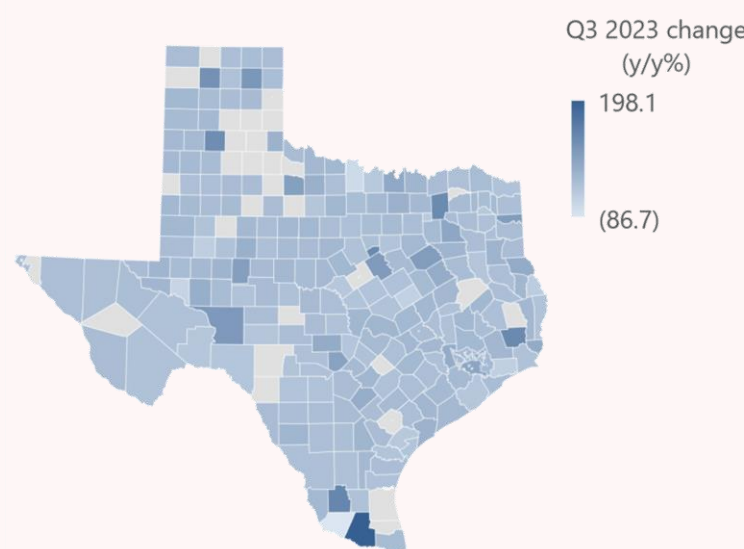
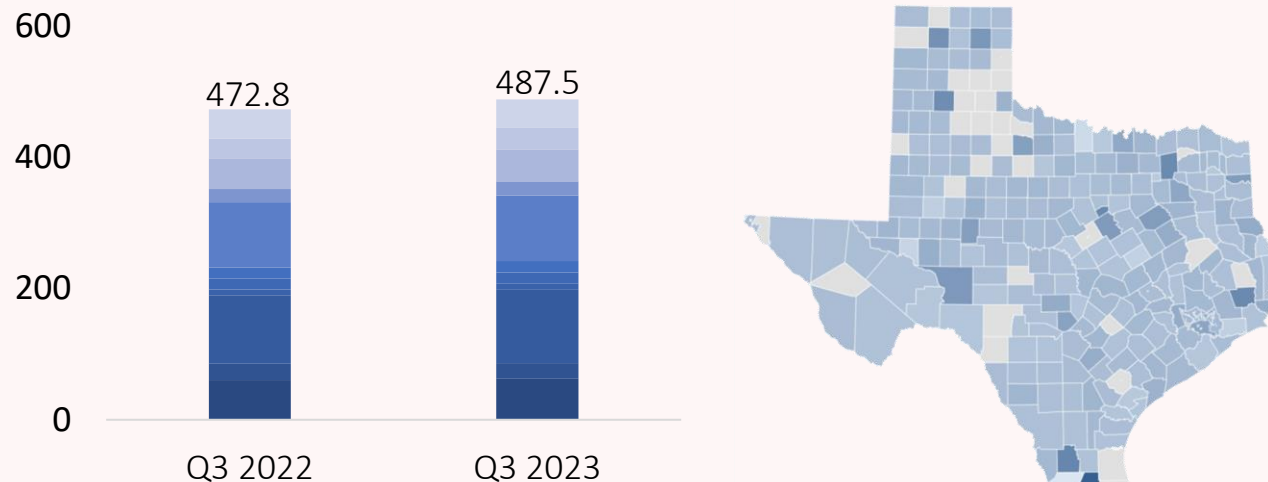
Texas' oil and natural gas industry's jobs and wages have continued to grow



- 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 the latest data (released on Feb. 21, 2024) 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

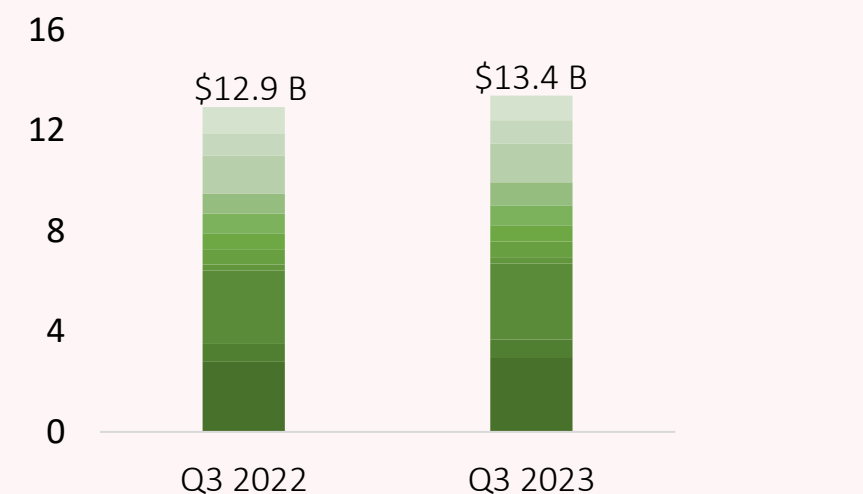
Texas oil and natural gas industry direct employment rose by +3.1% y/y in Q3 2023

Thousand Jobs



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

Billion dollars



- Pipeline construction
- All other*
- Gas stations & fuel dealers
- Petroleum refineries
- Support activities for o&g ops.
- Oil & gas extraction
- Oil & gas field mach. and eq. mfg.
- Pipeline transportation
- Petrochemical mfg.
- Natural gas distribution
- Oil & gas drilling

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

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