



**December 4, 2023**



**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 December 4, 2023**

- ▶ **Improved economic indicators.** Upward revisions in consumer sentiment, industrial production, and real GDP – coupled with the bond yield premium for lower-grade corporate bonds falling to its lowest level since September – made for a solid week of economic data, which remain consistent with continued GDP growth in Q4 2023.
- ▶ **Stable oil market dynamics.** As highlighted in the [Chart of the Week](#), Texas' crude oil and natural gas production continued to reach record highs in September through November. Recent increases in U.S. crude oil ending stocks slowed during the week ended Dec. 1 at the same time as strong exports juxtaposed with weaker domestic demand. Oil prices consequently remained flat.
- ▶ **U.S. natural gas markets tightened, but prices responded weakly.** U.S. natural gas prices remained steady and below \$3 per million Btu for the week ended Dec. 1, despite strong domestic consumption and exports as well as slower injections into storage.

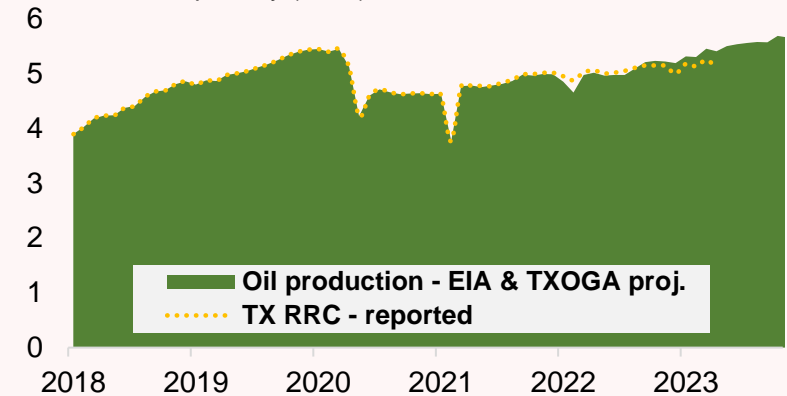
# TXOGA Chart of the Week: Texas oil and natural gas production through November 2023

## Texas has established new production records

- ▶ For September 2023, the U.S. Energy Information Administration (EIA) reported this week that Texas sustained near-record high crude oil production of 5.6 million barrels per day (mb/d).
- ▶ TXOGA estimates that Texas' crude oil production rose to 5.7 mb/d in October and remained steady in November.
- ▶ For Texas' natural gas production, EIA also reported record highs with 34.8 bcf/d of gross withdrawals and 32.4 bcf/d of marketed production.
- ▶ By TXOGA's estimates through November 2023, natural gas gross withdrawals exceeded 35.0 bcf/d in both October and November, while marketed production also reached another record high of 33.6 bcf/d in October.

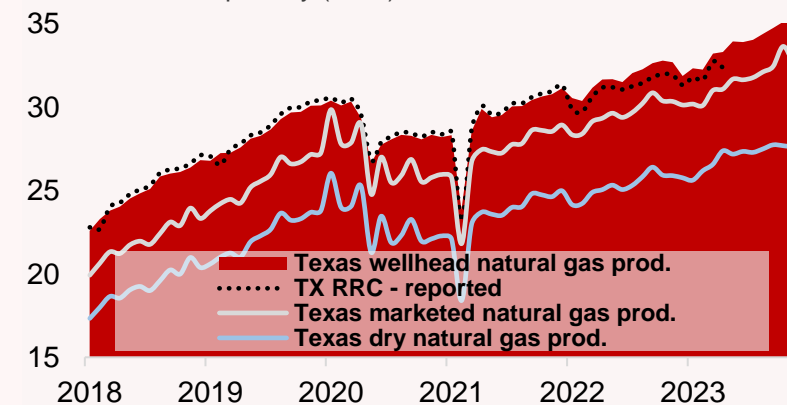
Texas crude oil production, Jan. 2018 – Nov. 2023

Million barrels per day (mb/d)



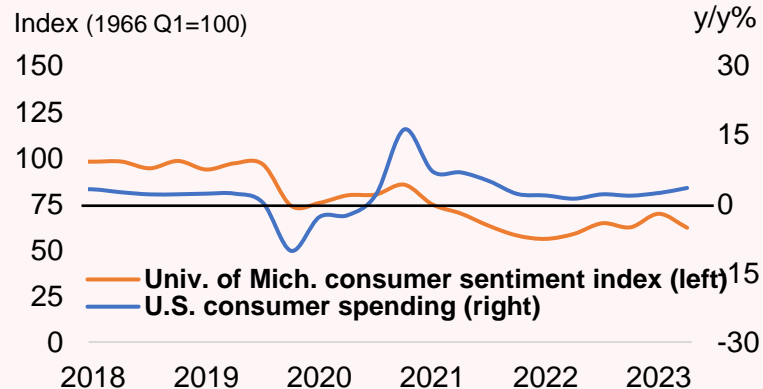
Texas natural gas production, Jan. 2018 – Nov. 2023

Billion cubic feet per day (bcf/d)



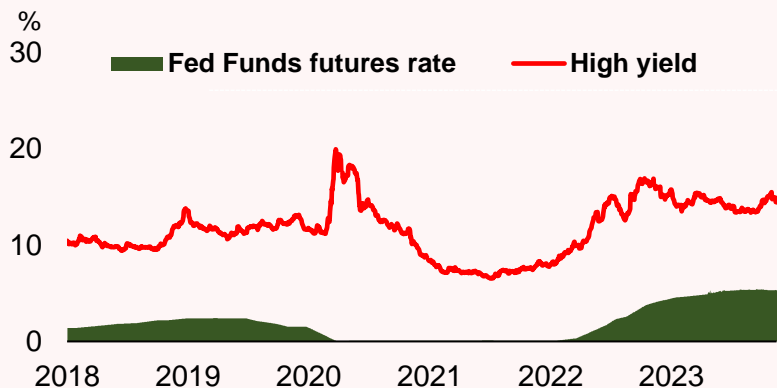
# U.S. economic indicators

## Consumer sentiment vs. spending



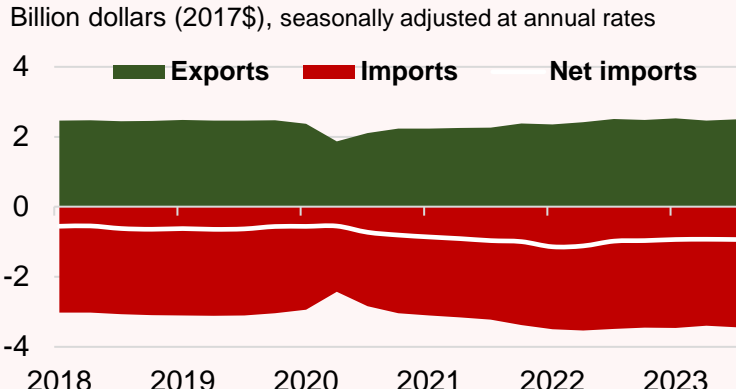
**Consumer sentiment revised upwards for November.** In its final reading for November, the Univ. of Michigan consumer sentiment index was revised upwards from the initial reading but still fell for a 4<sup>th</sup> straight month with reported deterioration in business conditions. The index has nevertheless remained consistent with slow consumer spending growth.

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



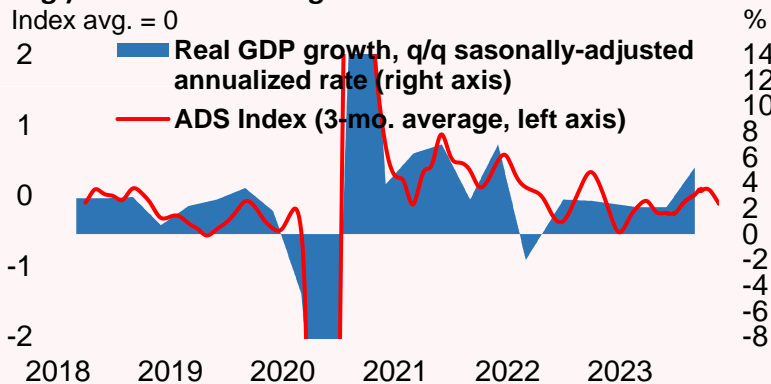
**Bond premium for low credit quality at its lowest since Sept.** High yield (HY) rates reflect debt costs for firms with below-investment grade credit quality. For the week ended Dec. 1, HY rates fell to 14.0%, while the Fed Funds futures held steady at 5.3%, resulting in a 40 basis-point (0.4%) w/w drop in the premium for low credit quality.

## Real net exports of goods and services



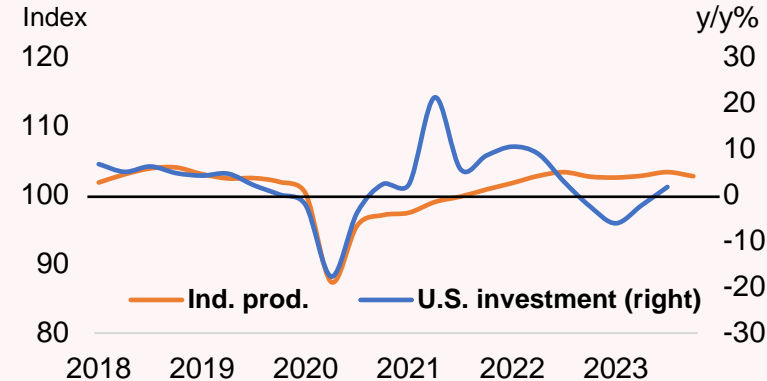
**The U.S. trade deficit widened in Q3 2023.** The U.S. real trade deficit ran at an annualized rate of \$935 billion in Q3 2023, up from \$927 billion in Q2 per the U.S. Bureau of Economic Analysis. On a nominal basis, the trade surplus for petroleum and products ran at annualized rate of \$29 billion in Q3 2023, down from \$29.5 billion in Q2 2023.

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



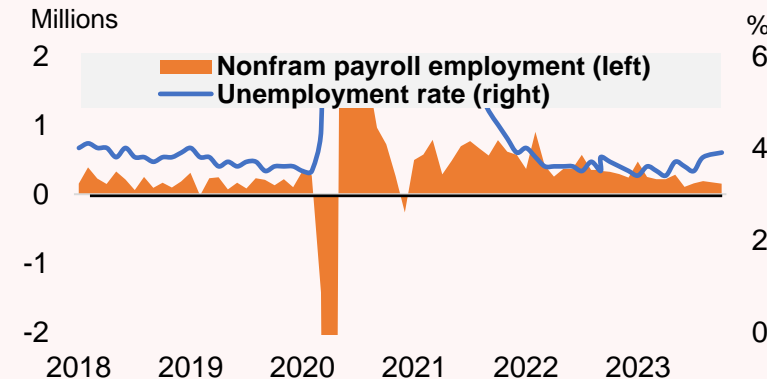
**Business conditions consistent with Q4 2023 real GDP growth.** The ADS business conditions index, published by the Philadelphia Fed. Res. Bank, is a leading indicator of GDP growth. A rolling 3-month average of the ADS index accurately reflected the increase in Q3 2023 real GDP and has remained consistent with continued GDP growth in Q4.

## 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. Although industrial production has remained flat in recent months, in October 2023 it remained up by 1.2% year-to-date.

## Nonfarm payroll employment & unemployment rate

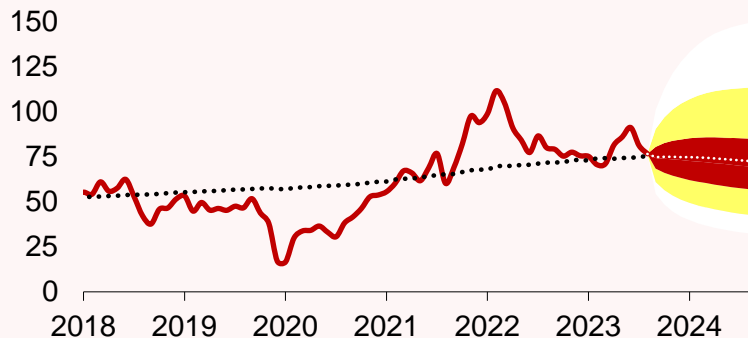


**With tepid payroll increases, the unemployment rate edged up in October.** The employment situation is a lagging indicator of GDP growth. The U.S. unemployment rate rose by 0.1% to 3.9% in October per BLS, while non-farm payrolls rose by 150,000, their lowest for the month of October.

# U.S. oil market indicators

## WTI crude oil price mean reversion analysis

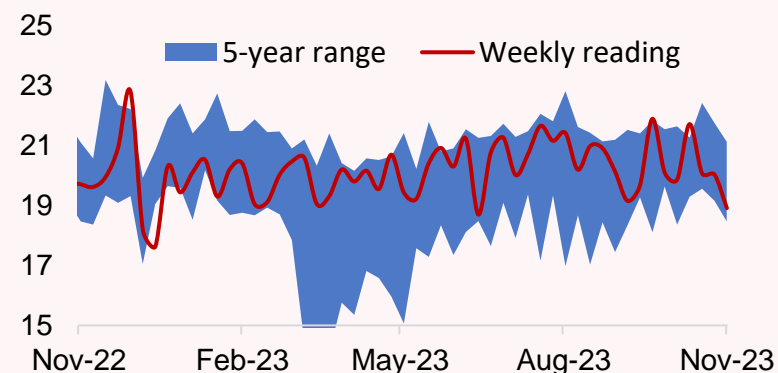
Dollars per barrel (2023\$)



**The historical mean reversion target fell aligned with future prices.** Mean reversion analysis can be useful in to assess short-term market actions. As prices remained stable for the week ended Dec. 1, the best-fit curve through historical prices (MR target) aligned with the futures price strip. Confidence intervals based on past prices show the potential for greater upside than downside.

## U.S. petroleum demand

Million barrels per day (mb/d)



**Petroleum demand solid.** U.S. petroleum demand, as measured by deliveries, was 18.9 mb/d for the week ended Nov. 24 and fell into the bottom fifth of the five-year range.

## WTI crude prompt month futures prices

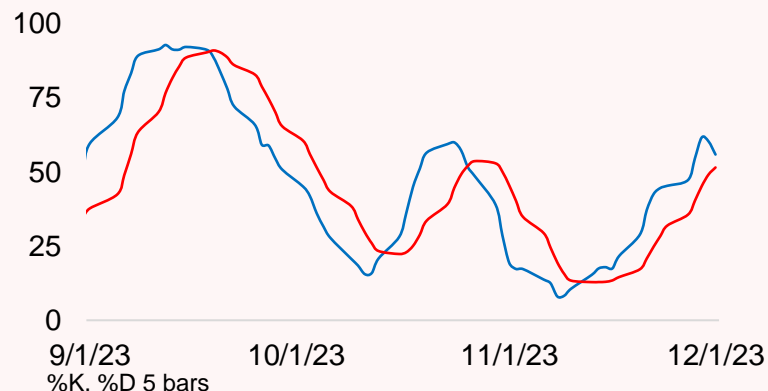
Dollars per barrel



WTI crude oil prices remained flat around \$75 per barrel per barrel for the week ended Dec. 1 with mixed market fundamentals, including lower weekly demand versus strong exports and weaker storage growth.

## WTI crude prompt month futures slow stochastic

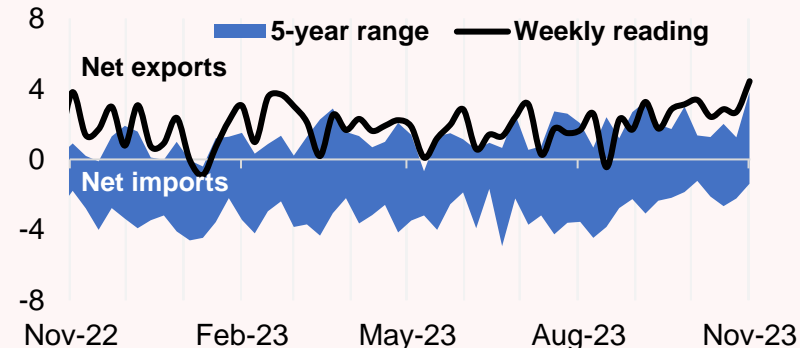
Index level



Price momentum remained positive during the week ended Dec. 1.

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

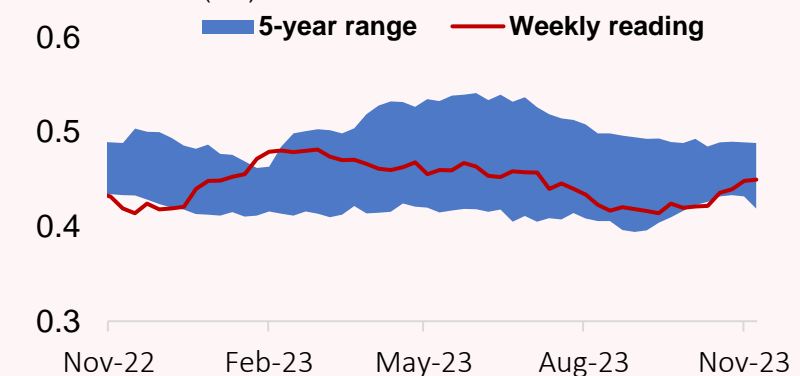
Million barrels per day, mb/d



**Strong petroleum net exports continued.** The U.S. was a petroleum net exporter of 4.4 mb/d for the week ended Nov. 24 and continued at a record pace for this time of the year.

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

Million barrels (mb)



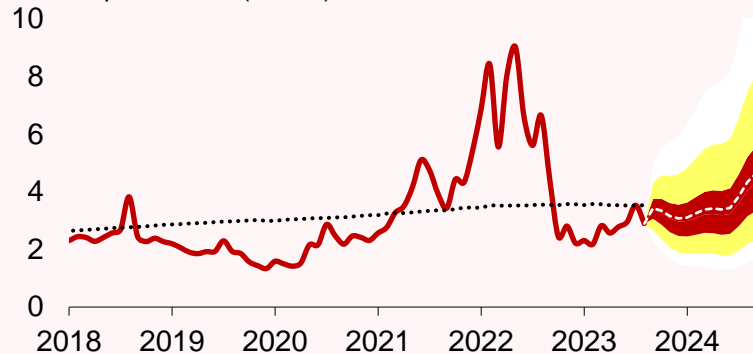
**Inventories rose for a 6<sup>th</sup> straight week.** U.S. ending stocks of crude oil excluding the Strategic Petroleum Reserve (SPR) rose by 1.6 million barrels (mb) for the week ended Nov. 24 and were below-average in the five-year range.



# U.S. natural gas market indicators

## Natural gas price mean reversion analysis

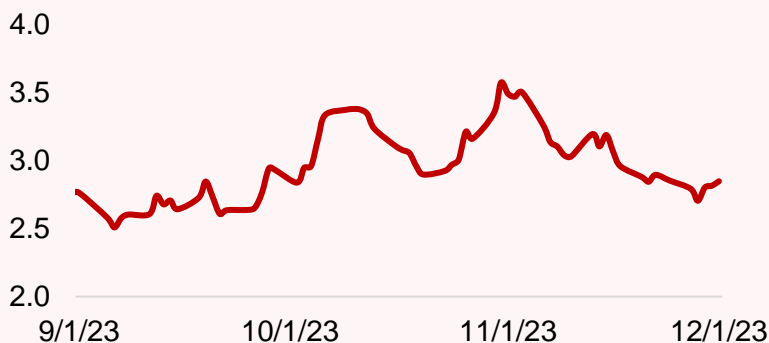
Dollars per mmBtu (2023\$)



Natural gas futures prices of \$2.85 per mmBtu for January 2024 delivery fell below their historical mean. Historical variation continued to show more potential upside than downside.

## Natural gas prompt month futures prices

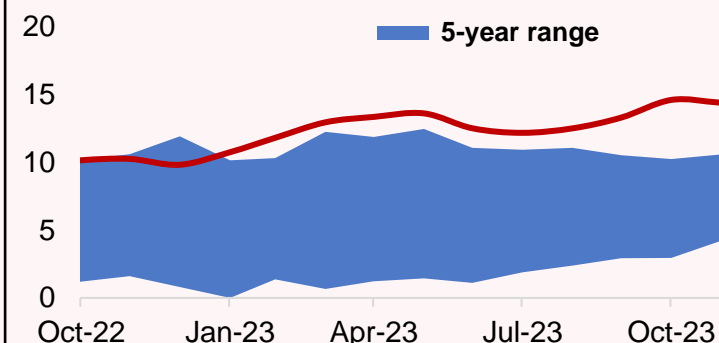
Dollars per million Btu



Natural gas prices at Henry Hub dipped during the week ended Dec. 1 but recovered to remain flat following EIA's report that injections into storage slowed.

## U.S. natural gas net exports

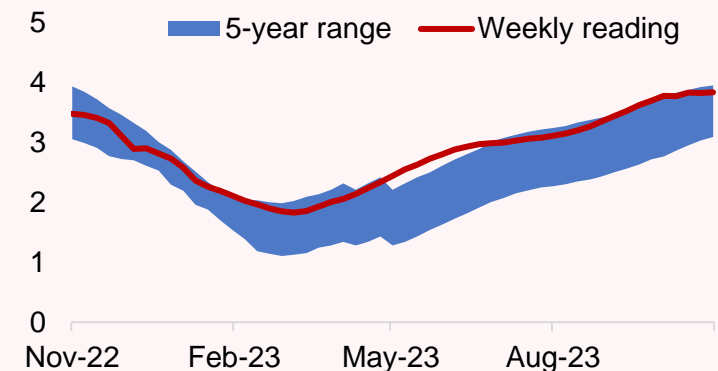
Billion cubic feet per day, bcf/d



**Record high net exports.** U.S. natural gas net exports are estimated to have reached 14.6 bcf/d in October and 14.4 bcf/d in November per EIA.

## U.S. weekly working gas storage

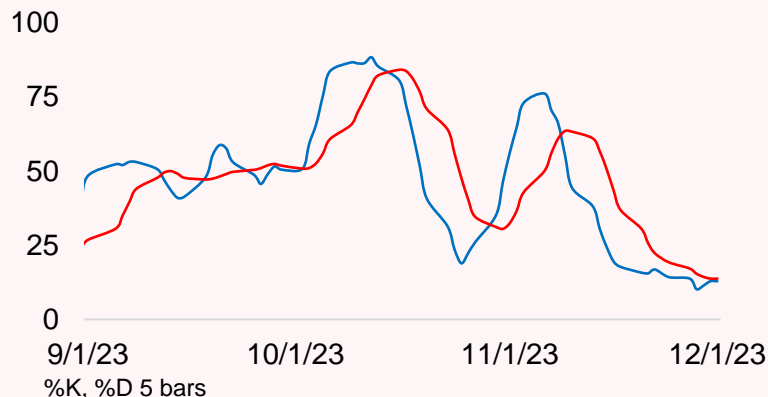
Trillion cubic feet (tcf)



**Storage remained near the top of its 5-year range.** Working gas in underground storage (3.84 tcf as of Nov. 24) rose by 0.3% week-over-week, and November has historically been a turning point toward storage withdrawals.

## Natural gas futures slow stochastic

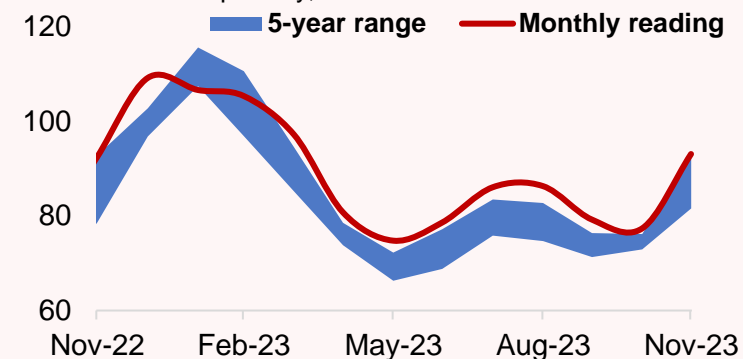
Index level



Natural gas price momentum slowed during the week ended Dec. 1.

## U.S. natural gas consumption

Billion cubic feet per day, bcf/d

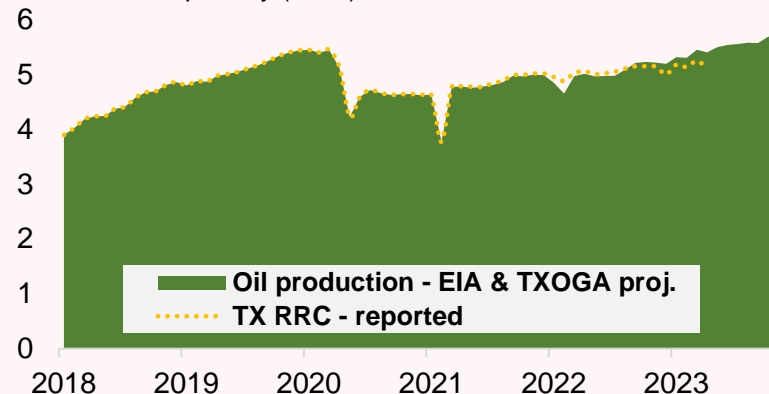


**Strong consumption continued.** Natural gas total consumption through November 2023 remained at the top of its five-year historical range.

# Texas' oil and natural gas production

Texas crude oil production, Jan. 2018 – Nov. 2023

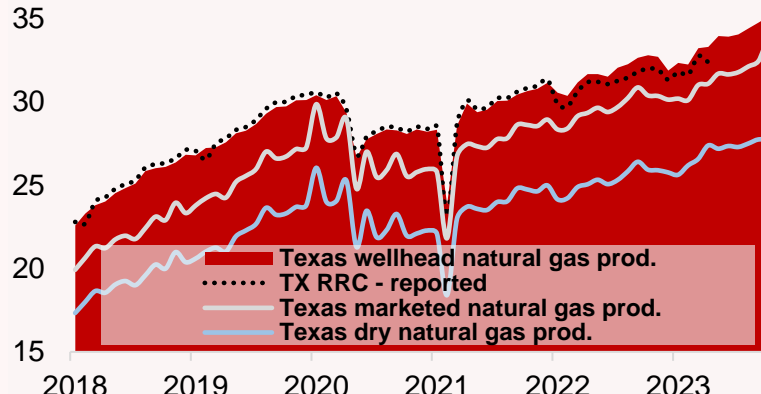
Million barrels per day (mb/d)



Texas' oil production of 5.6 mb/d held steady in September per EIA. TXOGA estimates that Texas crude oil production rose to 5.7 mb/d in October and remained steady in November.

Texas natural gas production, Jan. 2018 – Nov. 2023

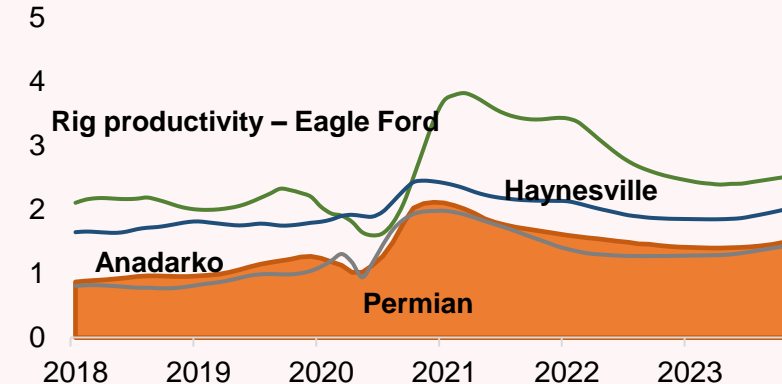
Billion cubic feet per day (bcf/d)



Texas' natural gas production set records in September with 34.8 bcf/d of gross withdrawals and 32.4 bcf/d of marketed production in Sep. per EIA. TXOGA estimates further records that gross withdrawals eclipsed 35 bcf/d in both October and November, and marketed production hit 33.6 bcf/d in October

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

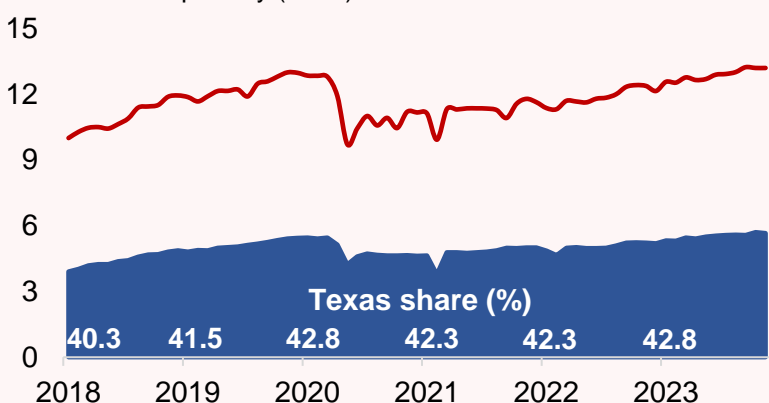
Thousand barrels per day oil-equivalent, kb/doe



EIA estimates of rig productivity for November 2023 show increases year-over-year across all of the major Texas basins, but the strongest productivity gains in the Anadarko (+13.5% y/y), Haynesville (+9.2% y/y), and Permian Basin (+6.2% y/y).

U.S. and Texas crude oil production, Jan. 2018 – Nov. 2023

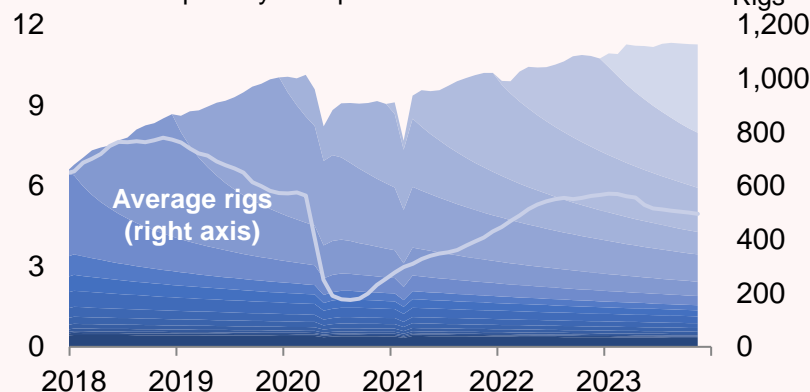
Million barrels per day (mb/d)



Through the first 11 months of the year, Texas accounted for 42.8% of U.S. crude oil production by EIA and TXOGA's estimates.

Texas shale basin wellhead oil & natural gas production

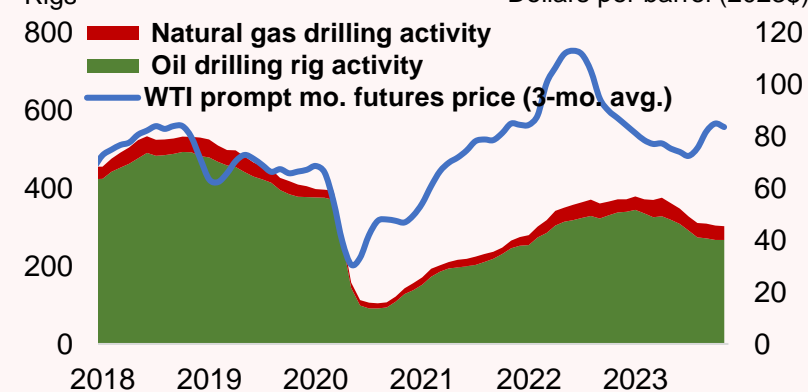
Million barrels per day oil-equivalent



EIA estimates Nov. 2023 production growth across Texas shale basins has been mixed, with strong increases year-over-year in the Permian and Eagle Ford, flat Haynesville production, and decreases in the Anadarko.

Texas drilling activity and WTI crude oil futures prices

Rigs (left axis), Dollars per barrel (2023\$) (right axis)



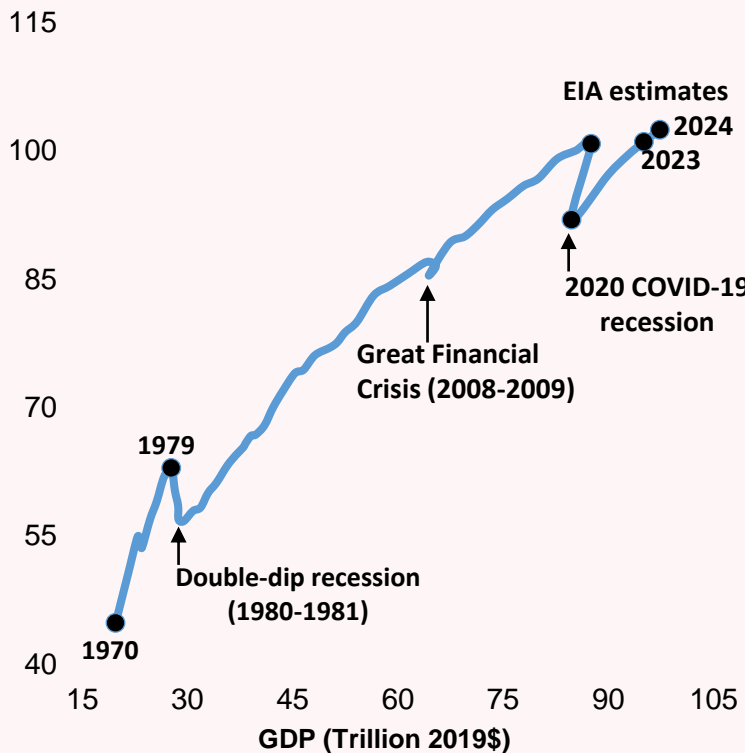
Texas' drilling rig activity rose for the week ended Dec. 1 per Baker Hughes. Texas had 272 oil-directed rigs (up by 3 rigs w/w) and 34 natural gas-directed rigs (unchanged w/w).

# Global oil market balance at-a-glance: EIA estimates for November 2023 show a tight oil market and project Brent at \$93 per barrel in 2024

- **October demand projections for 2023 and 2024 slipped but remain at record levels.** Global oil demand is expected by EIA to reach a record 101.0 mb/d in 2023 and 102.4 mb/d in 2024.
- **EIA raised its 2024 oil production growth** projections by 0.2 mb/d in November. These are volumes needed to balance global markets in their view. The U.S. is assumed to be largest single contributor this year
- **For oil inventories, EIA shows U.S. stock withdrawals through year-end 2023,** corresponding with Brent crude oil prices of \$87 per barrel in Q4 and averaging \$93 per barrel in 2024

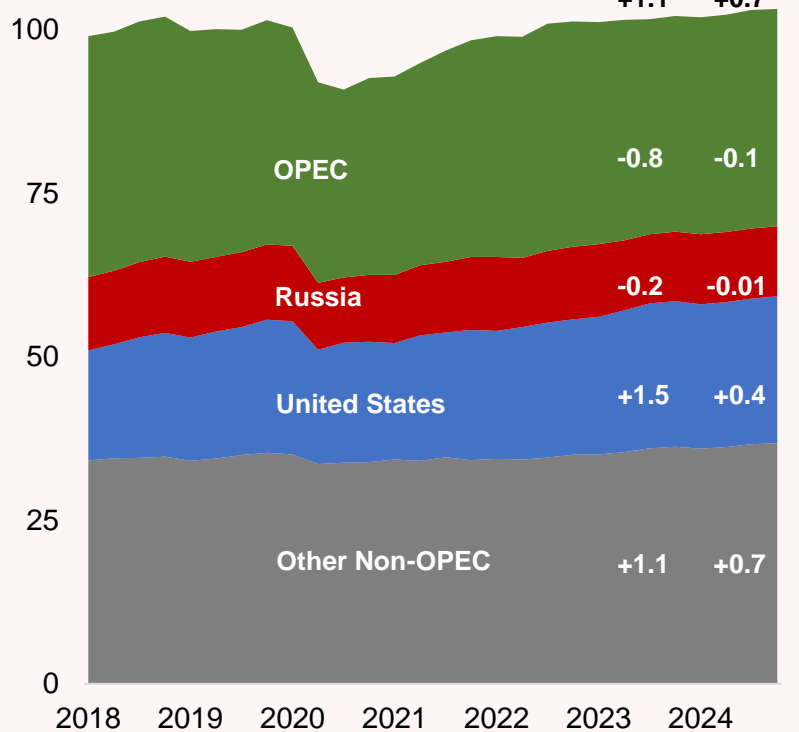
## Global oil demand and GDP

Million barrels per day (mb/d)



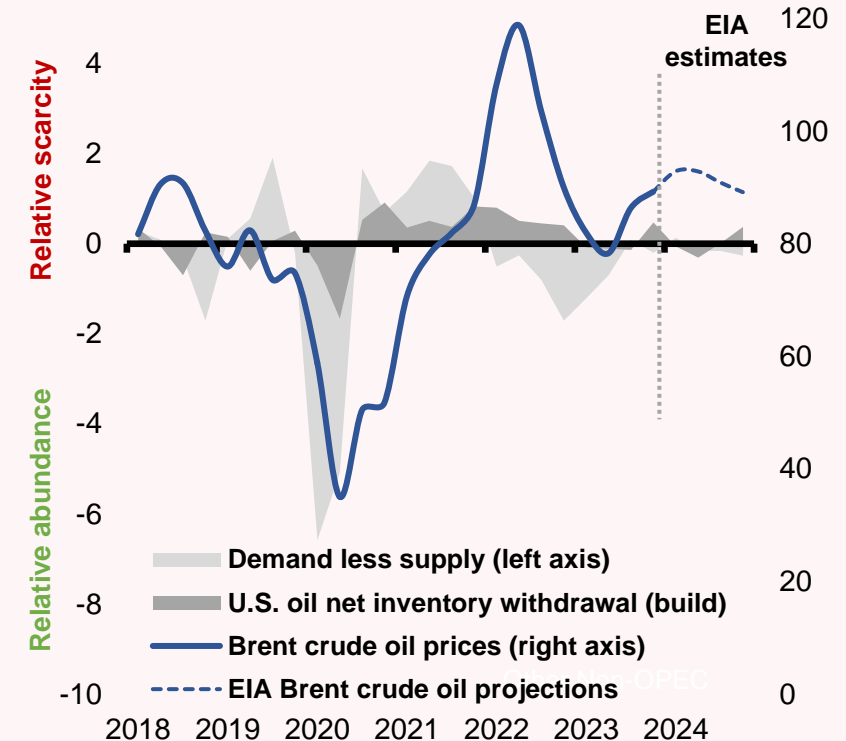
## Oil production by country/region

Million barrels per day, mb/d



## Global demand/supply & Brent prices

Million barrels per day (mb/d)

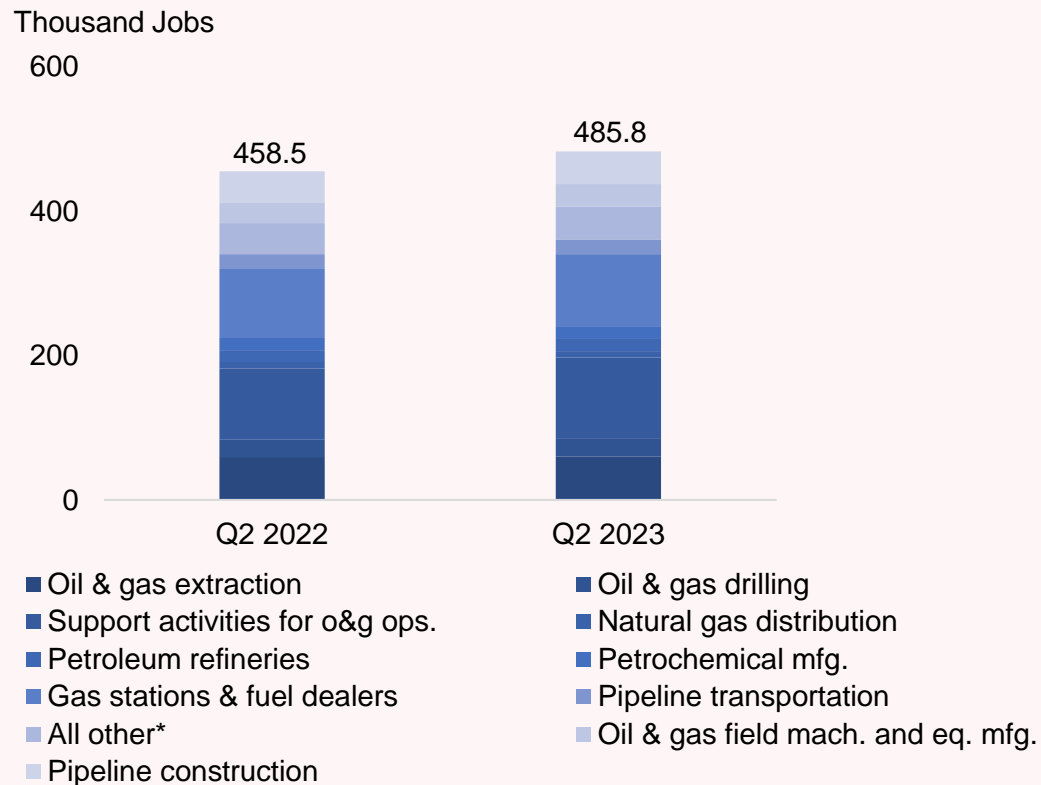




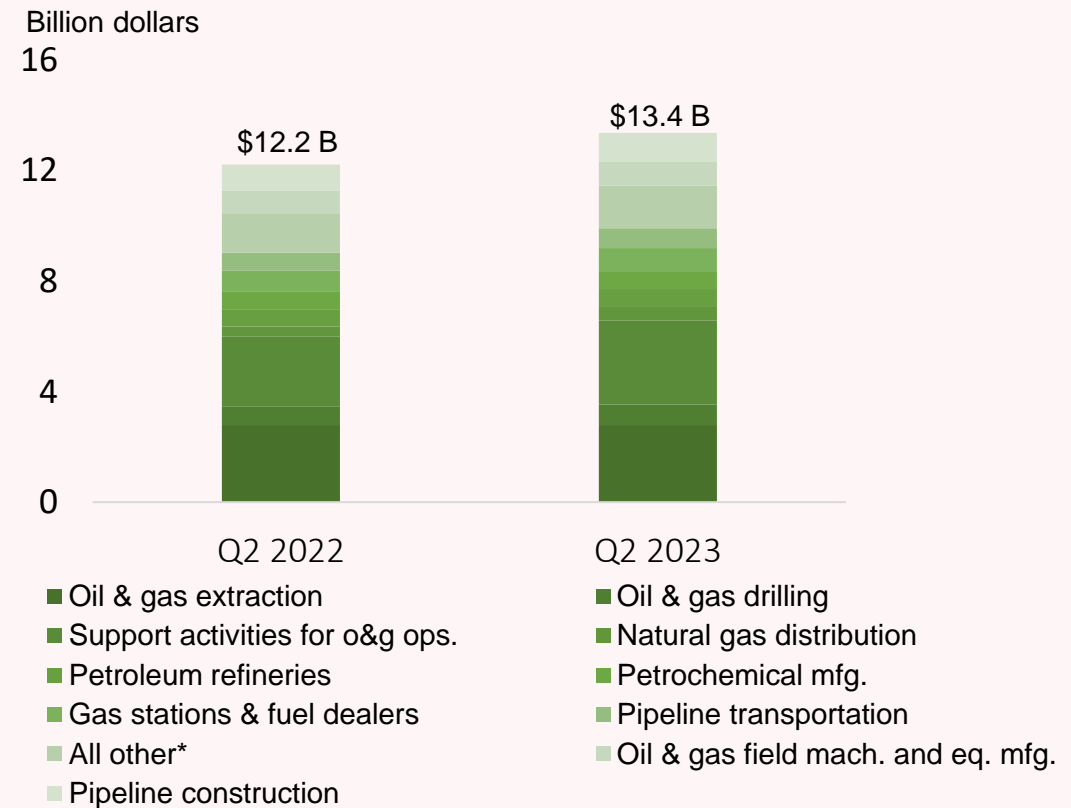
# Texas' oil and natural gas industry's jobs and wages rose solidly

- › 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**



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



\* 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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