



**July 1, 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 July 1, 2024**

- **U.S. economic indicators continue to affirm industrial strength but show ongoing consumer pressures.** The Bureau of Economic Analysis' final GDP estimates for Q1 reported real GDP growth of 2.9% year-over-year (y/y), including an upward revision to domestic private investment but a downward revision to consumer spending. Consumer sentiment, as measured by the Univ. of Michigan's survey, fell by 10% between Q1 and Q2 2024, largely due to concerns over price inflation, which fell to 3.3% y/y in May. Historically, such a decline in consumer sentiment has corresponded with slower consumer spending, which has driven more than half of overall growth so far this year.
- **Oil market fundamentals remained solid.** With U.S. crude oil production at 13.2 million barrels per day (mb/d) and another 6.9 mb/d of natural gas liquids (NGLs), domestic crude oil inventories increased by 3.6 million barrels week-over-week (w/w) despite historically strong domestic petroleum demand and net exports, according to Energy Information Administration (EIA) data for the week ended June 21. Strong global demand sustained oil prices above \$80 per barrel, and the historical mean reversion target has risen above near-term futures prices.
- **Natural gas storage growth has slowed.** U.S. natural gas marketed production has remained strong and steady at around 112 billion cubic feet per day (bcf/d) over the past two weeks. Although this has sufficed to supply the summer increases in natural gas consumption for electricity generation as well as exports, the volumes being injected into storage have slowed. Natural gas storage has gone from being 37% above its 5-year range as of early May to 11% above it as of June 21, which has in turn supported prices near \$2.70 per million Btu.
- The [Chart of the Week](#) compares Texas (ERCOT) and California (CAISO) electricity generation, demonstrating why Texas stands alone in terms of its size, variability, and reliance on the flexibility of natural gas-based generation to compensate for intermittency.

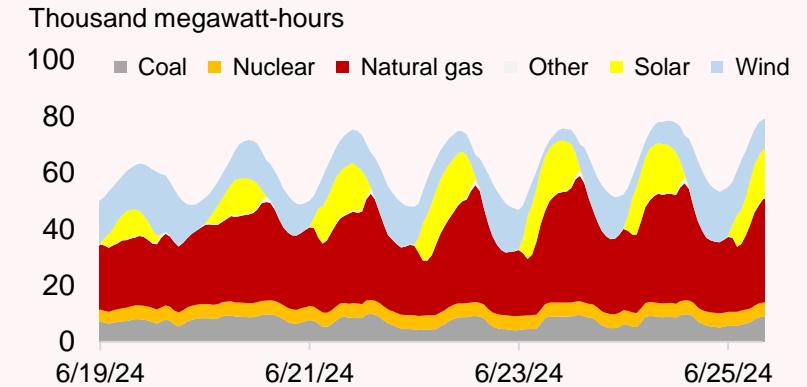
# TXOGA Chart of the Week: Texas (ERCOT) and California (CAISO) Generation Comparisons



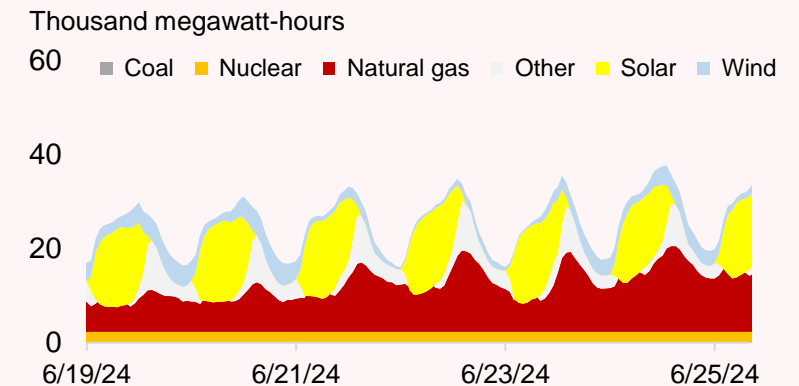
## Texas' grid stands out for its size, variability and flexibility from natural gas-based generation

- ▶ With U.S.-leading electricity generation from renewables, the grids in Texas (ERCOT) and California (CAISO) are often mentioned in the same breath. Comparing their respective generation mixes, however, demonstrates why Texas stands alone in terms of its size, variability, and reliance on the flexibility of natural gas-based generation to compensate for intermittency.
- ▶ Between June 19 and 25, ERCOT's hourly electricity generation ranged between 47 and 79 thousand megawatt-hours (kMWh) with a standard deviation of 9.6 kMWh. By comparison, CAISO's generation ranged between 16 and 30 kMWh with standard deviation of 6.1 kMWh. ERCOT's total generation is therefore up to 3X that of CAISO with nearly 60% greater variability.
- ▶ For wind-based generation, ERCOT's hourly variability was more than three times that of CAISO over the period, which in turn required relatively greater flexibility from natural gas-based generation to stabilize the grid.
- ▶ ERCOT's natural gas generation varied with an hourly standard deviation of 6.3 kMWh over the period, compared with 3.3 kMWh in CAISO, and this is visually apparent in the regularity with which ERCOT's natural gas-based generation flexes up and down.

ERCOT hourly electricity generation by source

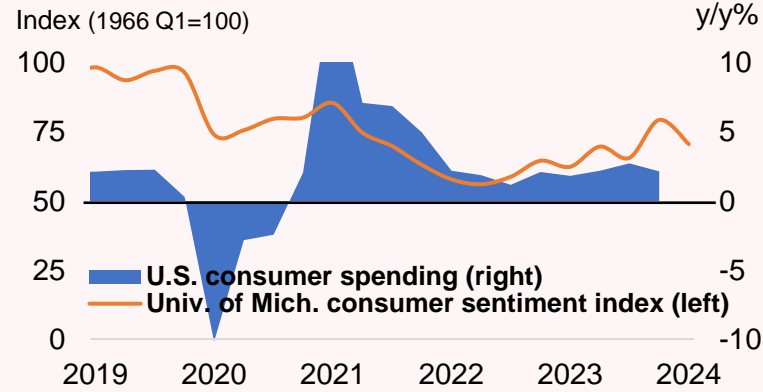


CAISO hourly electricity generation by source



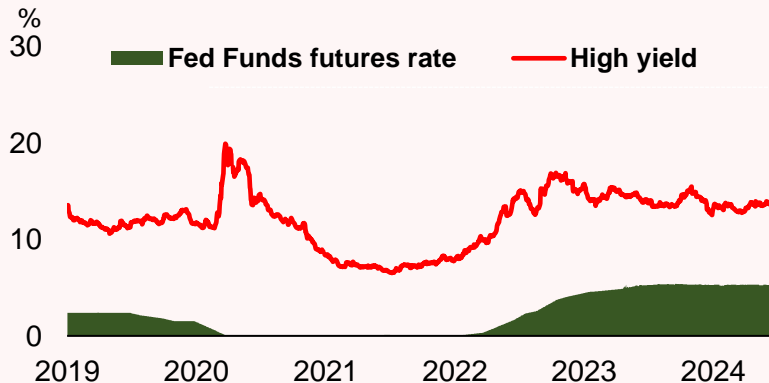
# U.S. economic indicators

## Consumer sentiment vs. spending



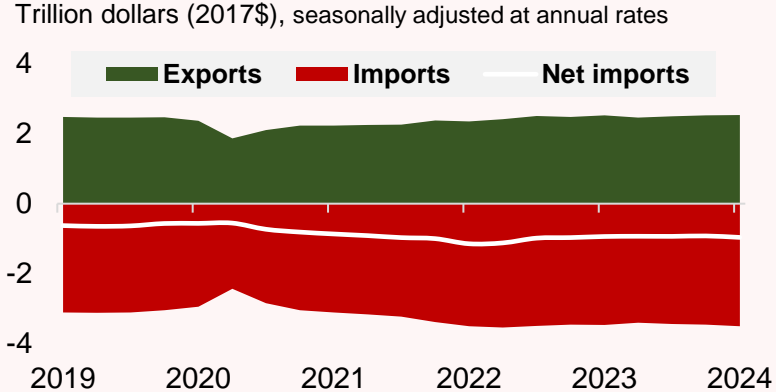
**Consumer spending was revised downwards** by 0.1% to a rate of 2.16% y/y in the final GDP readings for Q1 2024, per the Bureau of Economic Analysis. Consumer sentiment, according to the University of Michigan's survey, decreased by 10% between Q1 and Q2 2024. Historically this implies slower spending growth for Q2 2024.

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



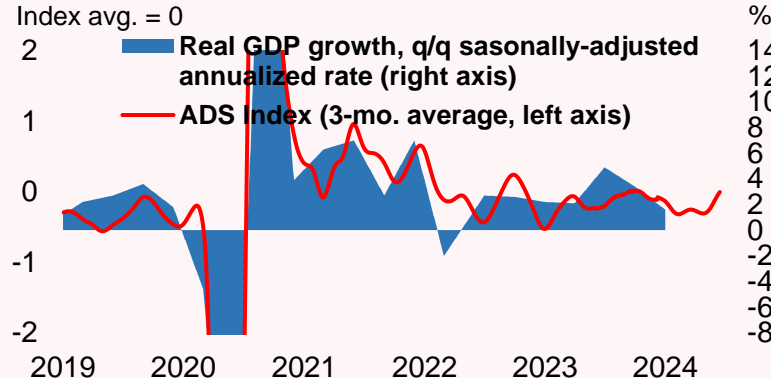
**Bond premium for low credit rose.** High yield (HY) rates reflect debt costs for firms with below-investment grade credit quality. For the week ended June 28, HY rates rose by 0.2% w/w to 13.9%, while Fed Funds futures rates remained at 5.3%, resulting in a premium for low credit quality of 8.6%.

## Real net exports of goods and services



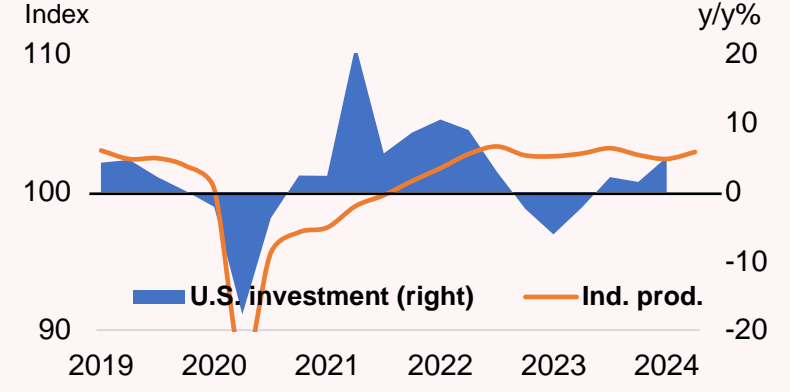
**U.S. trade deficit revised to be narrower.** The U.S. real trade deficit ran at an annualized rate of \$960B in Q1 2024 per BEA final estimates, down from a prior estimate of \$975B. On a nominal basis, the trade surplus for petroleum and products was revised downwards to an annualized rate of \$52 billion in Q1 2024 (vs. \$36.7 billion a year ago), the highest quarterly petroleum trade surplus on record.

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



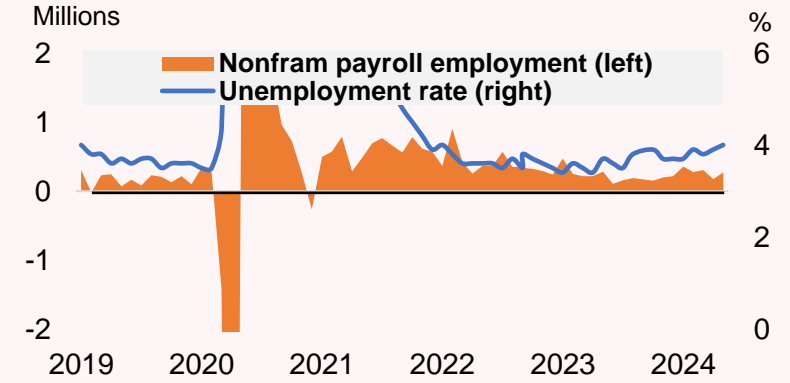
**The ADS index has strengthened, suggesting solid Q2 GDP growth.** The ADS business conditions index, published by the Philadelphia Fed. Res. Bank, is a leading indicator of GDP growth. A rolling 3-month average of the ADS index accurately reflected growth in Q1 2024 real GDP and with recent increases remains consistent with GDP growth in Q2.

## Industrial production and investment growth



**U.S. private domestic investment growth was revised upwards to 5.0% y/y** (vs. an initial estimate of 4.5% y/y). Industrial production rose by 0.4% y/y in May and remained consistent with further economy-side investment growth.

## Nonfarm payroll employment & unemployment rate



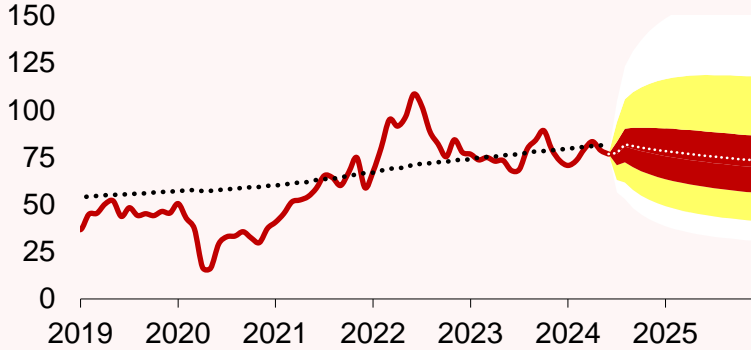
**Solid labor market growth.** The employment situation is a lagging indicator of GDP growth. The U.S. unemployment rate rose by 0.1% m/m to 4.0% in May per BLS, while non-farm payrolls increased by 272,000.



# U.S. oil market indicators

## WTI crude oil price mean reversion analysis

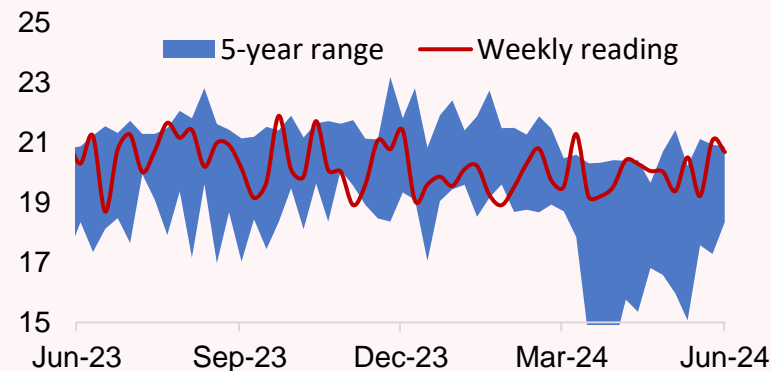
Dollars per barrel (2024\$)



**The historical mean reversion target has risen above near-term futures prices.** The futures strip remains 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.

## U.S. petroleum demand

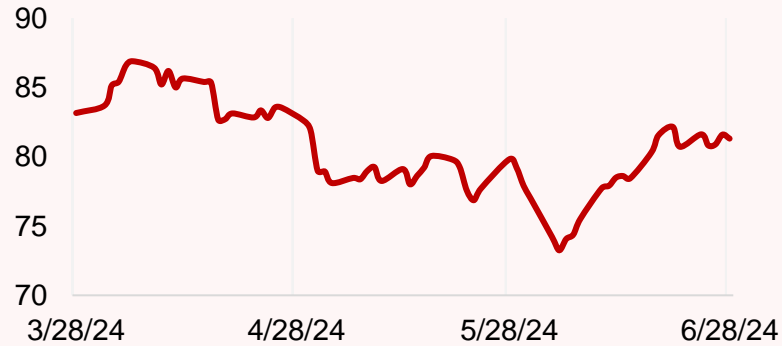
Million barrels per day (mb/d)



**Petroleum demand decreased.** U.S. petroleum demand, as measured by deliveries, decreased by 0.4 mb/d w/w to 20.7 mb/d for the week ended June 21 but remained at the top of the 5-year range.

## WTI crude prompt month futures prices

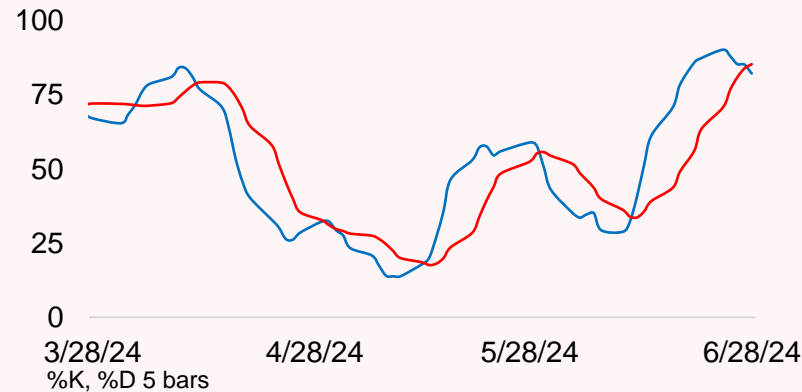
Dollars per barrel



WTI crude oil prices held steady above \$80 per barrel for the week ended June 28, reflecting historically solid production and inventories despite strong demand, exports, and Middle East geopolitical uncertainties.

## WTI crude prompt month futures slow stochastic

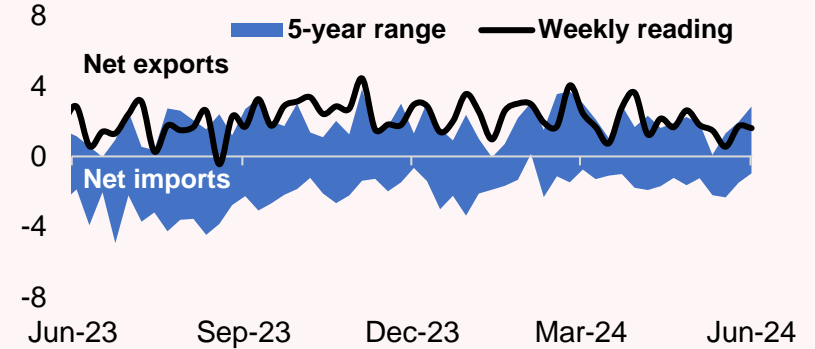
Index level



Price momentum increased but appeared to pause during the the week ended June 28.

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

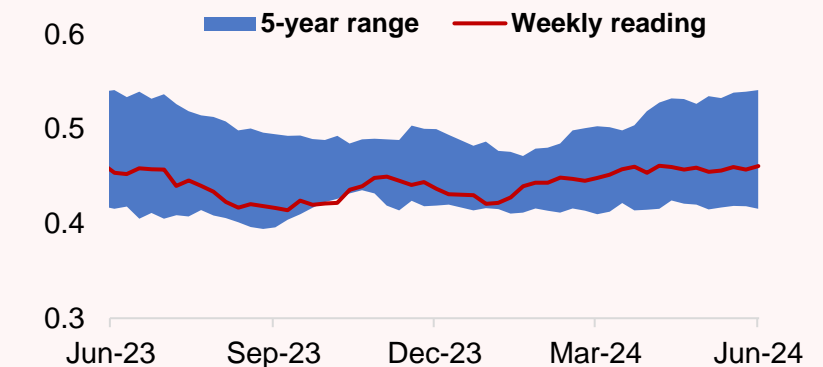
Million barrels per day, mb/d



**Petroleum net exports fell.** The U.S. was a petroleum net exporter of 1.6 mb/d for the week ended June 21, down by 0.1 mb/d from the prior week.

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

Billion barrels

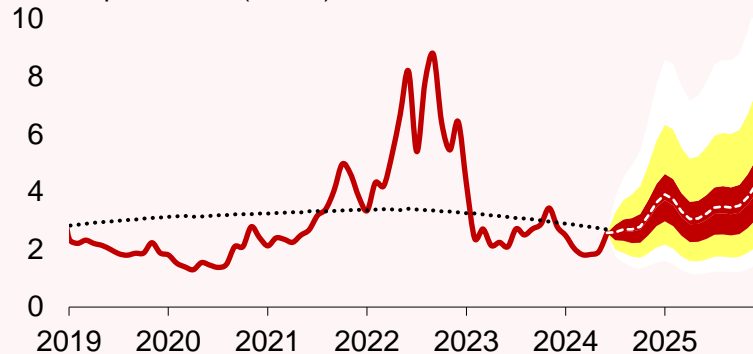


**Inventories increased.** U.S. ending stocks of crude oil excluding the Strategic Petroleum Reserve (SPR) increased by 3.6 million barrels (mb) for the week ended June 21.

# U.S. natural gas market indicators

## Natural gas price mean reversion analysis

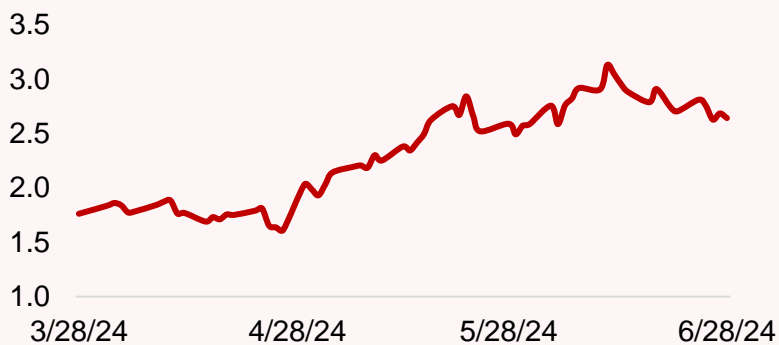
Dollars per mMBtu (2024\$)



Near-term natural gas futures prices have aligned the historical mean reversion target but rise by 35% between the August and December contracts. Confidence intervals based on past prices show the potential for greater upside than downside.

## Natural gas prompt month futures prices

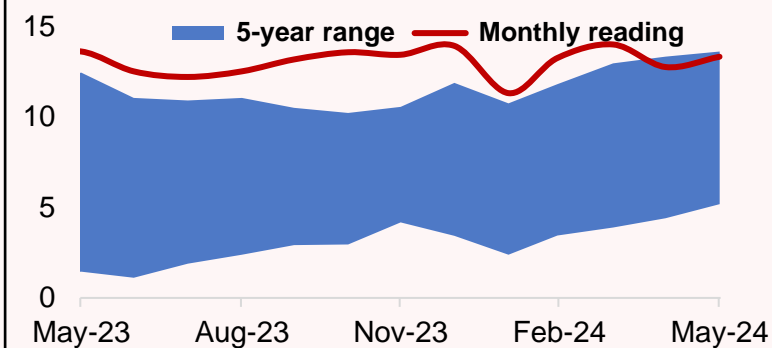
Dollars per million Btu



Natural gas prices at Henry Hub head steady near \$2.70 per million Btu for the week ended June 28 with historically strong inventory levels.

## U.S. natural gas net exports

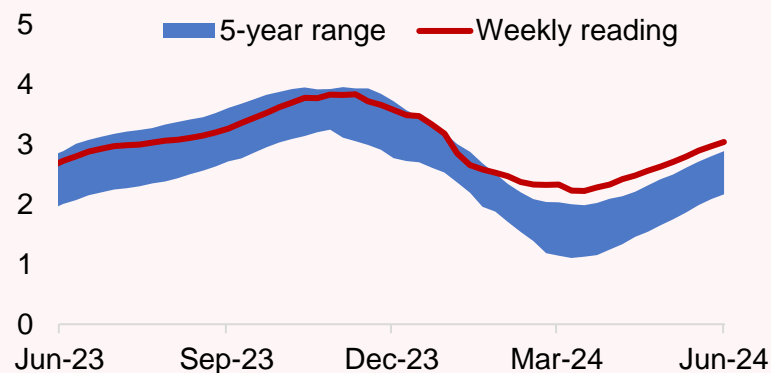
Billion cubic feet per day, bcf/d



Natural gas exports rose. U.S. natural gas net exports in May of 13.3 bcf/d rose from 12.8 bcf/d in April as estimated by EIA.

## U.S. weekly working gas storage

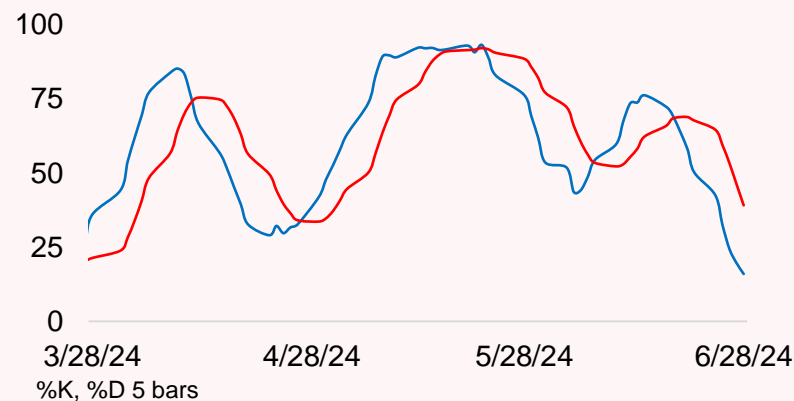
Trillion cubic feet (tcf)



Slower storage injections. Working gas in underground storage rose by 2.4% w/w to 3.1 tcf as of June 21 but with slower injections was 11% above the 5-year range, down from as much as 37% above the 5-year range as of early May.

## Natural gas futures slow stochastic

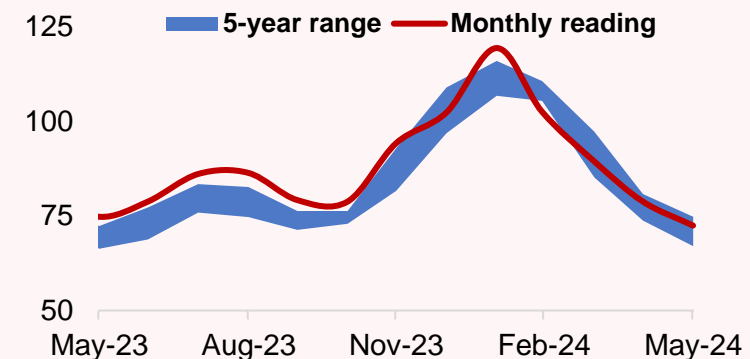
Index level



Natural gas price momentum decreased for the week ended June 28.

## U.S. natural gas consumption

Billion cubic feet per day, bcf/d

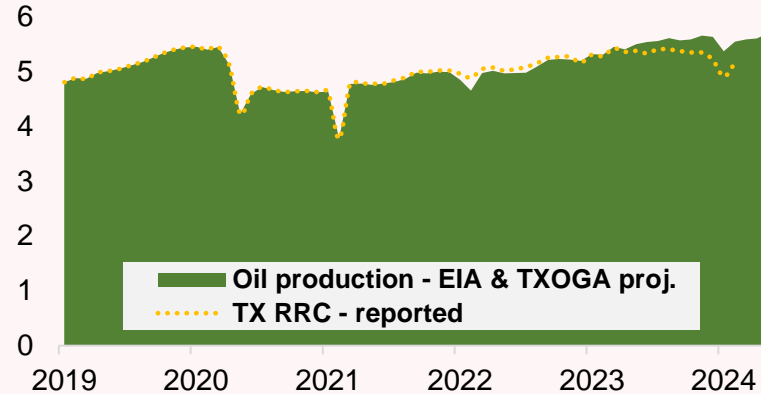


Consumption decreased. U.S. natural gas consumption fell by 2.3 bcf/d y/y to 72.4 bcf/d in May as estimated by EIA.

# Texas' oil and natural gas production

**Texas crude oil production, Jan. 2019 – May 2024**

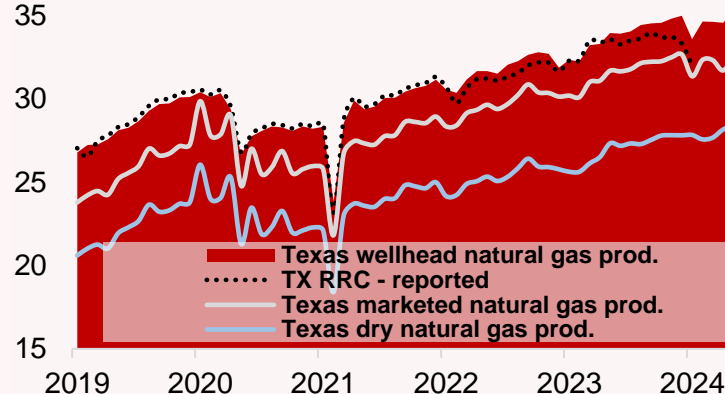
Million barrels per day (mb/d)



**Oil production increased.** Texas' oil production reached 5.6 mb/d in March per EIA. TXOGA estimates that Texas crude oil production rose to a record high 5.7 mb/d May.

**Texas natural gas production, Jan. 2019 – May 2024**

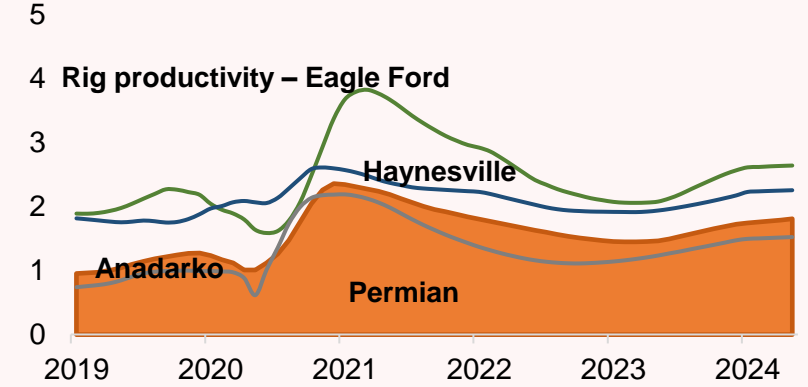
Billion cubic feet per day (bcf/d)



**Natural gas production remained strong.** Texas produced 34.6 bcf/d of natural gas gross withdrawals and 32.3 bcf/d of marketed production in March per EIA. TXOGA estimates that Texas' marketed production rose to 32.5 bcf/d in May, with 28.2 bcf/d of dry gas production.

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

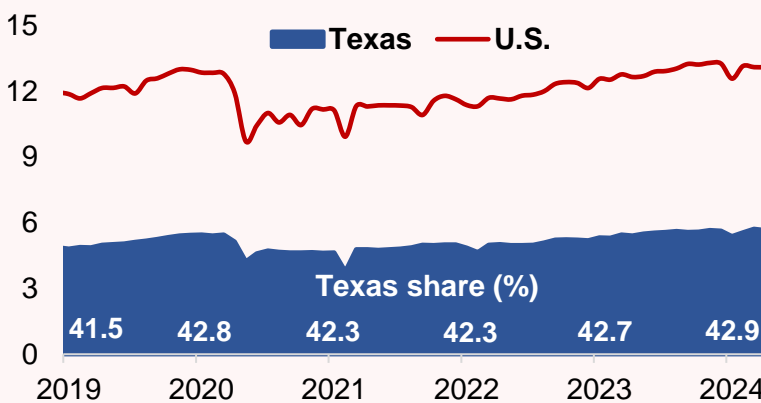
Thousand barrels per day oil-equivalent, kb/dae



**Strong productivity to start the year.** EIA estimates of rig productivity for May 2024 show continued increases year-over-year across the major Texas basins, including the Anadarko (+23.4% y/y), Eagle Ford (+27.1% y/y), Permian (+23.2% y/y), and Haynesville (+16.4% y/y).

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

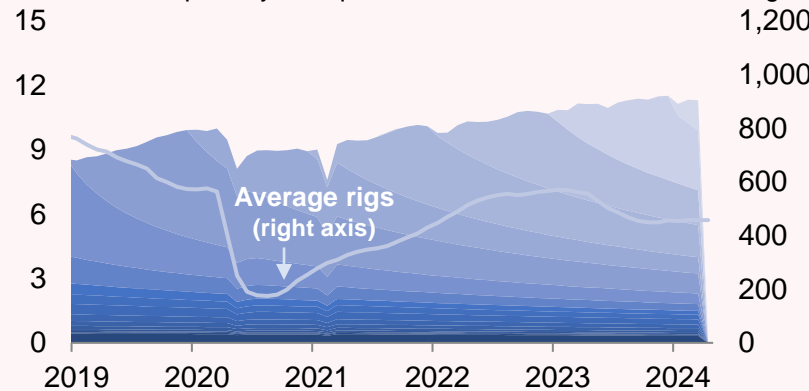
Million barrels per day (mb/d)



**Texas' share increased.** Texas accounted for an estimated 42.9% of U.S. crude oil production year-to-date through May by TXOGA's estimates.

**Texas shale basin wellhead oil & natural gas production**

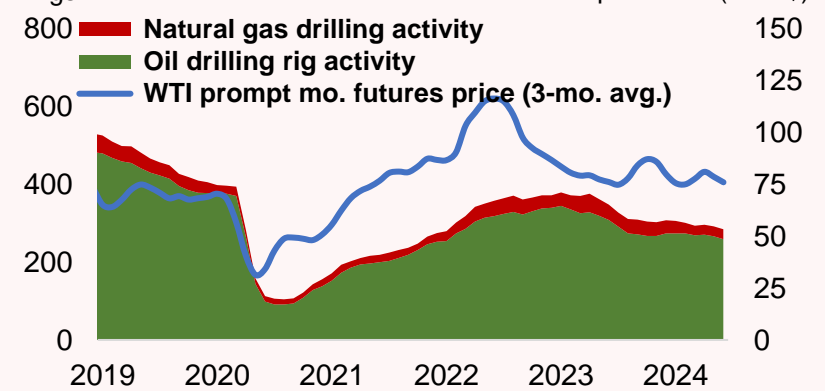
Million barrels per day oil-equivalent



**EIA estimates May 2024 production growth across Texas shale basins has continued to grow year-over-year in the Permian (+7.2% y/y) but fallen in the Eagle Ford (-4.3% y/y), Haynesville (-9.4% y/y), and Anadarko (-2.9% y/y) regions.**

**Texas drilling activity and WTI crude oil futures prices**

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

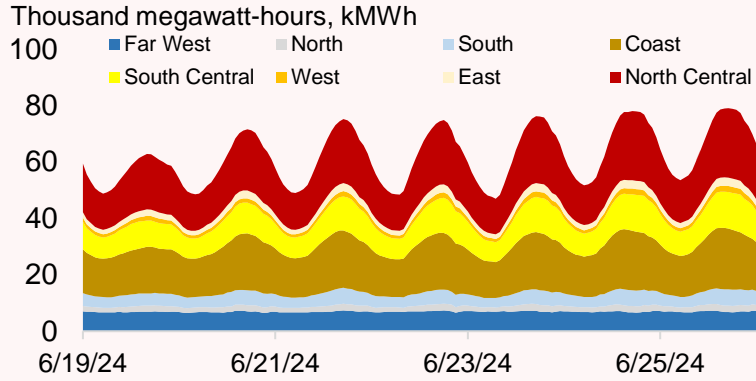


**Texas' drilling rig activity decreased** for the week ended June 28 per Baker Hughes. Texas had 252 oil-directed rigs (down by 4 rigs w/w) and 25 natural gas-directed rigs (down by 1 rig w/w).

# Texas Electricity Analysis

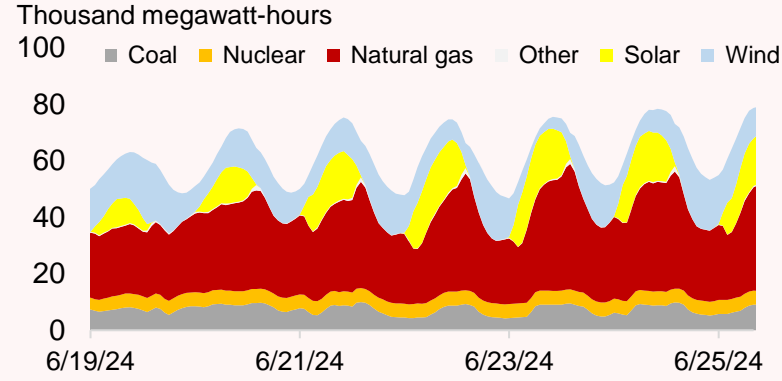


## ERCOT electricity load by region



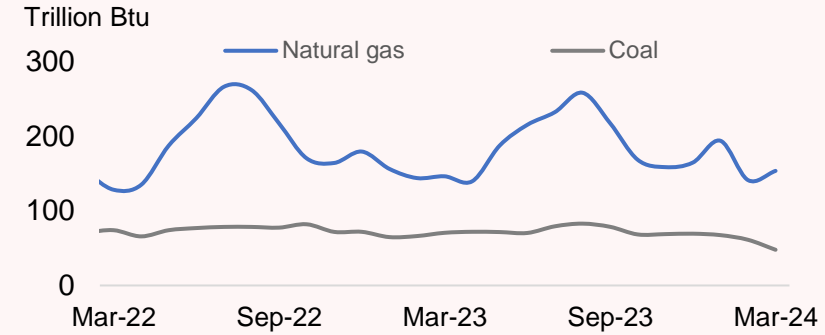
**Texas' maximum load increased.** For June 19-25, ERCOT's average hourly electricity load was steady versus the prior week, but the maximum hourly load rose by 3.9% w/w to 79.1 kMWh. Variability was the highest in the North Central and East regions.

## ERCOT hourly electricity generation by source



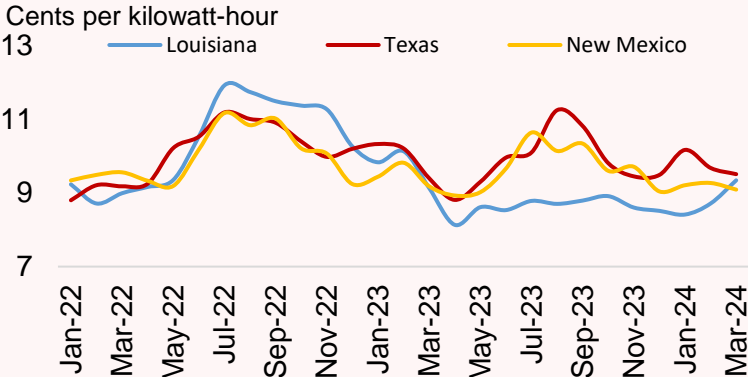
**Natural gas drove upwards of 64% of ERCOT's generation.** ERCOT's hourly electricity generation for the period June 19-25 ranged between 47 and 79 kMWh with a standard deviation of 9.6 kMWh, up by 2.6% w/w. Thermal and dispatchable sources generated as much as 84% of the region's power during the period.

## Electricity plant receipts of natural gas and coal



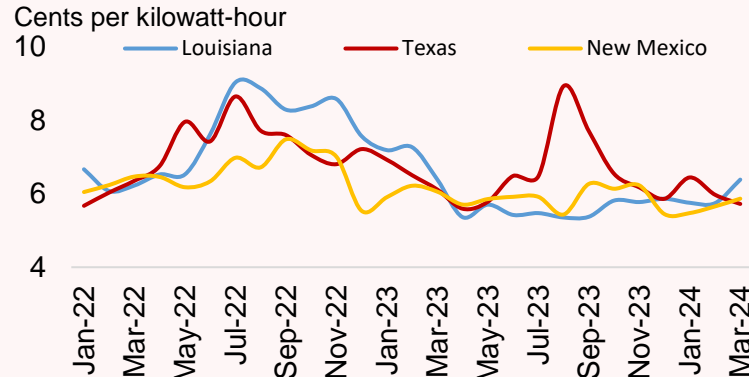
**Texas' lower natural gas receipts enabled by higher inventories.** Although Texas' thermal and dispatchable energy needs have continued to grow, the maximum monthly quantities of natural gas and coal that generators received have fallen over the past two years, thanks at least in part to greater inventories. In the latest data, Texas' natural gas storage of 687 bcf in Feb. 2024 increased by 143 bcf (26.4%) versus its level in Feb. 2022.

## Electricity prices – average across all end-use sectors



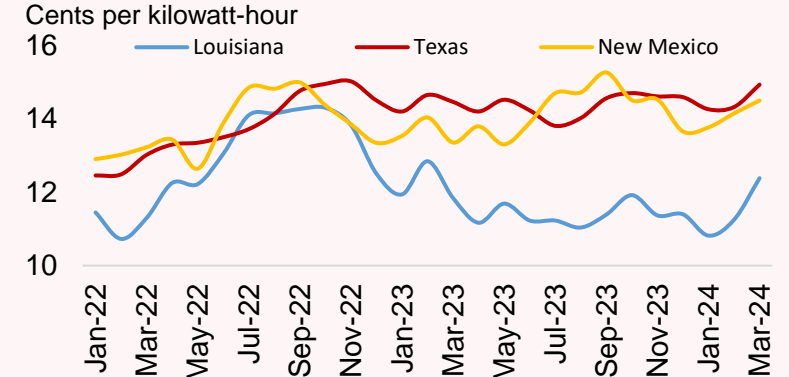
**Texas' electricity prices rose in March.** The average price of electricity in Texas (9.51 cents per kWh) increased by 1.2% y/y in March, while those in Louisiana and New Mexico remained lower.

## Industrial electricity prices



**Texas' industrial electricity prices decreased.** For Texas' industrial consumers, the 5.72 cents per kWh average price of electricity decreased by 6.4% y/y in March – and returned to be below those in Louisiana and New Mexico.

## Residential electricity prices



**Texas' residential electricity prices increased.** For Texas' residential consumers, the average price of electricity (14.92 cents per kWh) rose by 3.3% y/y in March and remained 3.0% above that in New Mexico and 20.5% above that in Louisiana.



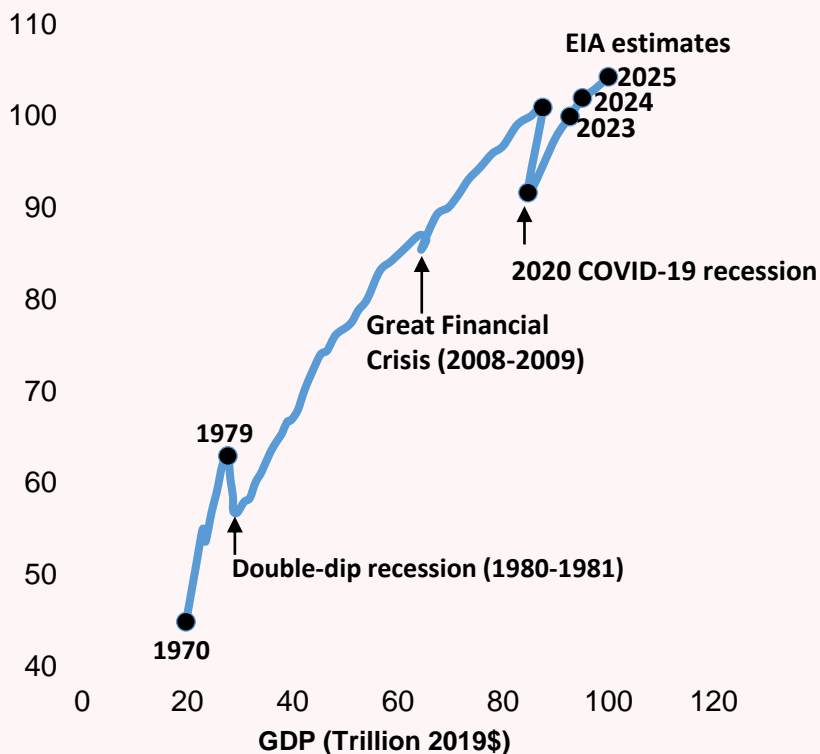
# Global Oil Market Balance Projections to 2025



- Solid demand and inventory drawdowns.** EIA's June 2024 Short-Term Energy Outlook upgraded global oil demand to 103.0 mb/d in 2025 and 104.5 mb/d in 2025 – both record highs. Led by the U.S. and other non-OPEC nations, annual oil production growth could motivate a reversal in 2025, whereby OPEC+ increases output in their view.
- For oil inventories, the EIA projects global stock withdrawals to continue through Q1 2025,** corresponding with Brent crude oil prices of \$84 in 2024, compared with \$82 per barrel currently.

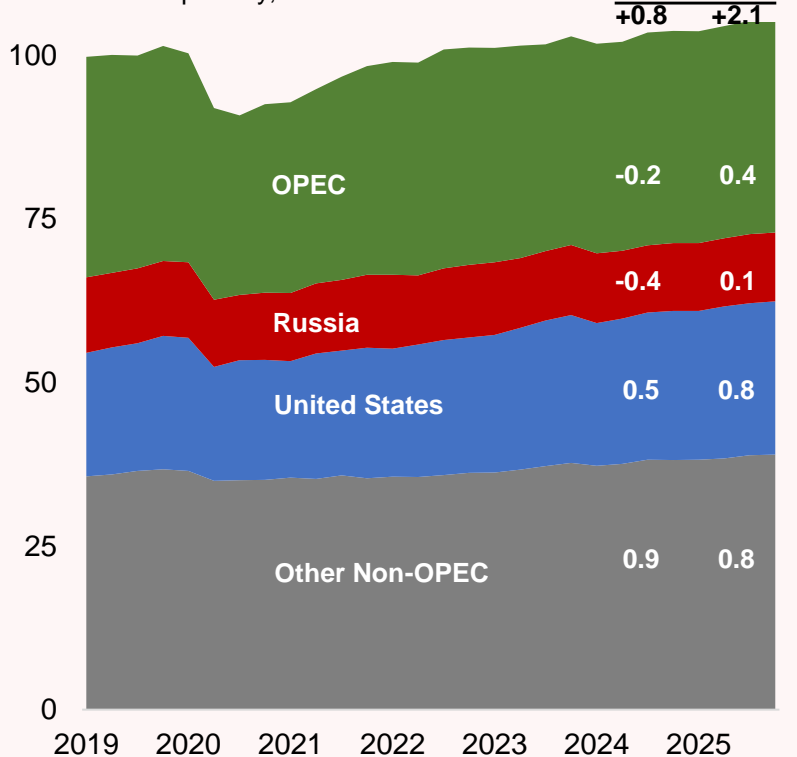
## Global oil demand and GDP

Million barrels per day (mb/d)



## Oil production by country/region

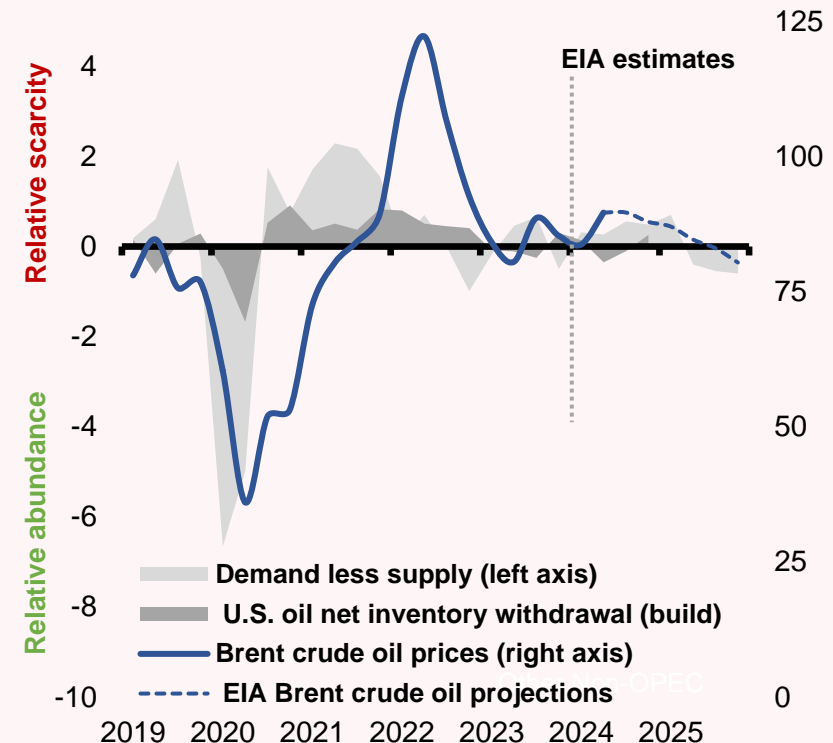
Million barrels per day, mb/d



## Global demand/supply & Brent prices

Million barrels per day (mb/d)

2024\$/Bbl



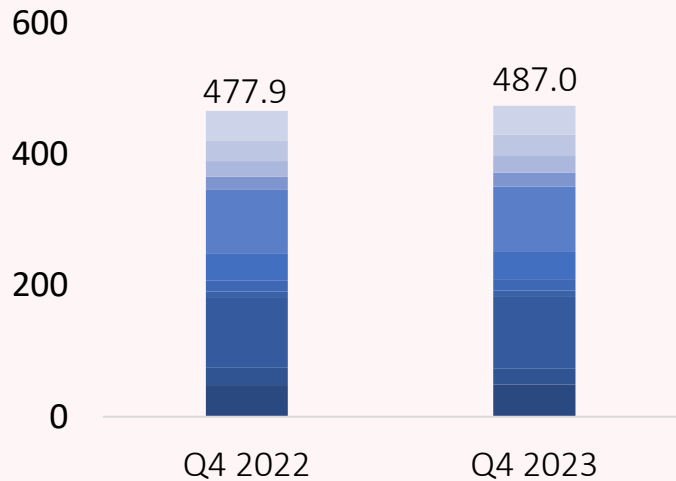
# Texas' oil and natural gas industry wages reached \$14.6 billion in Q4 2023



- ▶ Texas' oil and natural gas industry employment and wages grew by 1.9% y/y and 5.8% y/y, respectively, in Q4 2023, raising the totals to over 487,000 jobs and \$14.6 billion in wages – the highest fourth quarter wages on record.
- ▶ Over 40% of the job growth occurred in the upstream and supporting services, 25% in petroleum wholesale and retail trade, and 20% in oil & gas field machinery and equipment manufacturing per data the latest data (released on May 16, 2024) from the U.S. Census Bureau and Texas Workforce Commission.

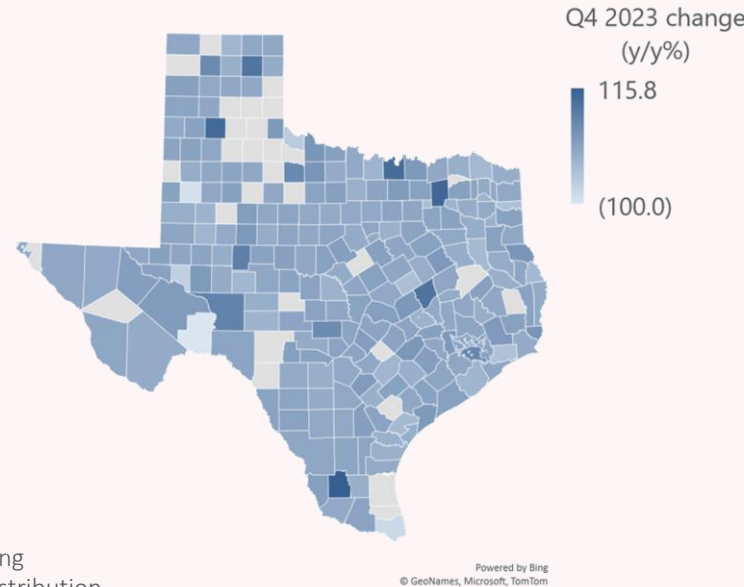
## Texas oil and natural gas industry direct employment rose by +1.9% y/y in Q4 2023

Thousand Jobs



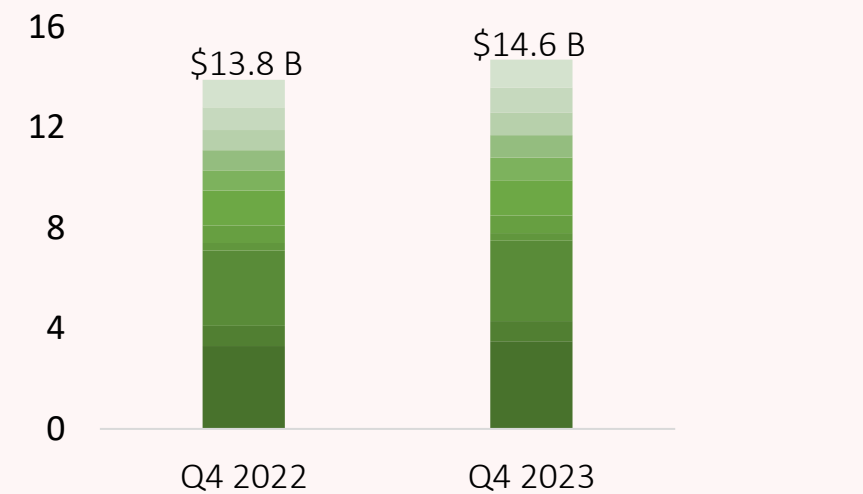
- Oil & gas extraction
- Support activities for o&g ops.
- Petroleum refineries
- Gas stations & fuel dealers
- All other\*
- Pipeline construction
- Oil & gas drilling
- Natural gas distribution
- Petrochemical mfg.
- Pipeline transportation
- Oil & gas field mach. and eq. mfg.

\* 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.



## Texas oil and natural gas industry direct wages rose by +5.8% y/y in Q4 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

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