



May 13, 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 May 13, 2024

- **U.S. economic indicators remained steady.** The ADS Index, published by the Philadelphia Federal Reserve, reflects manufacturing, industrial activity, and the U.S. employment situation. As of early May, it has shown signs of weakening but still aligns with slow GDP growth in Q2 2024. Despite entrenched price inflation and lowered expectations for a Federal Reserve rate cut, the bond premium for low credit quality slipped slightly but remains near its highest levels since last December.
- **Oil market fundamentals tightened.** For the week ended May 10, U.S. petroleum demand and exports reached the upper end of their respective 5-year ranges. Oil production held steady at 13.1 million barrels per day. There was a drawdown of 1.4 million barrels in crude oil inventories, according to the Energy Information Administration (EIA). West Texas Intermediate (WTI) oil prices stayed below \$80 per barrel despite these tighter market conditions and ongoing geopolitical uncertainties in the Middle East.
- **Despite strong inventory levels, natural gas prices increased.** As highlighted in the [Chart of the Week](#), U.S. natural gas production, mainly from the Permian Basin and associated with oil production, has been rising. U.S. natural gas net exports reached a record high of 14.0 billion cubic feet per day (bcf/d) in March, then seasonally adjusted to 12.8 bcf/d in April, according to the EIA. This record was primarily due to increased pipeline exports to Mexico and Canada rather than liquefied natural gas (LNG) exports, which decreased by 0.5 bcf/d month-over-month. Futures prices for next month's natural gas delivery increased by over 40% in the past two weeks, with a further increase of 50% expected between the June and December contracts per CME Group.

TXOGA Chart of the Week: U.S. natural gas production has continued to rise, mainly from the Permian Basin and associated with oil production

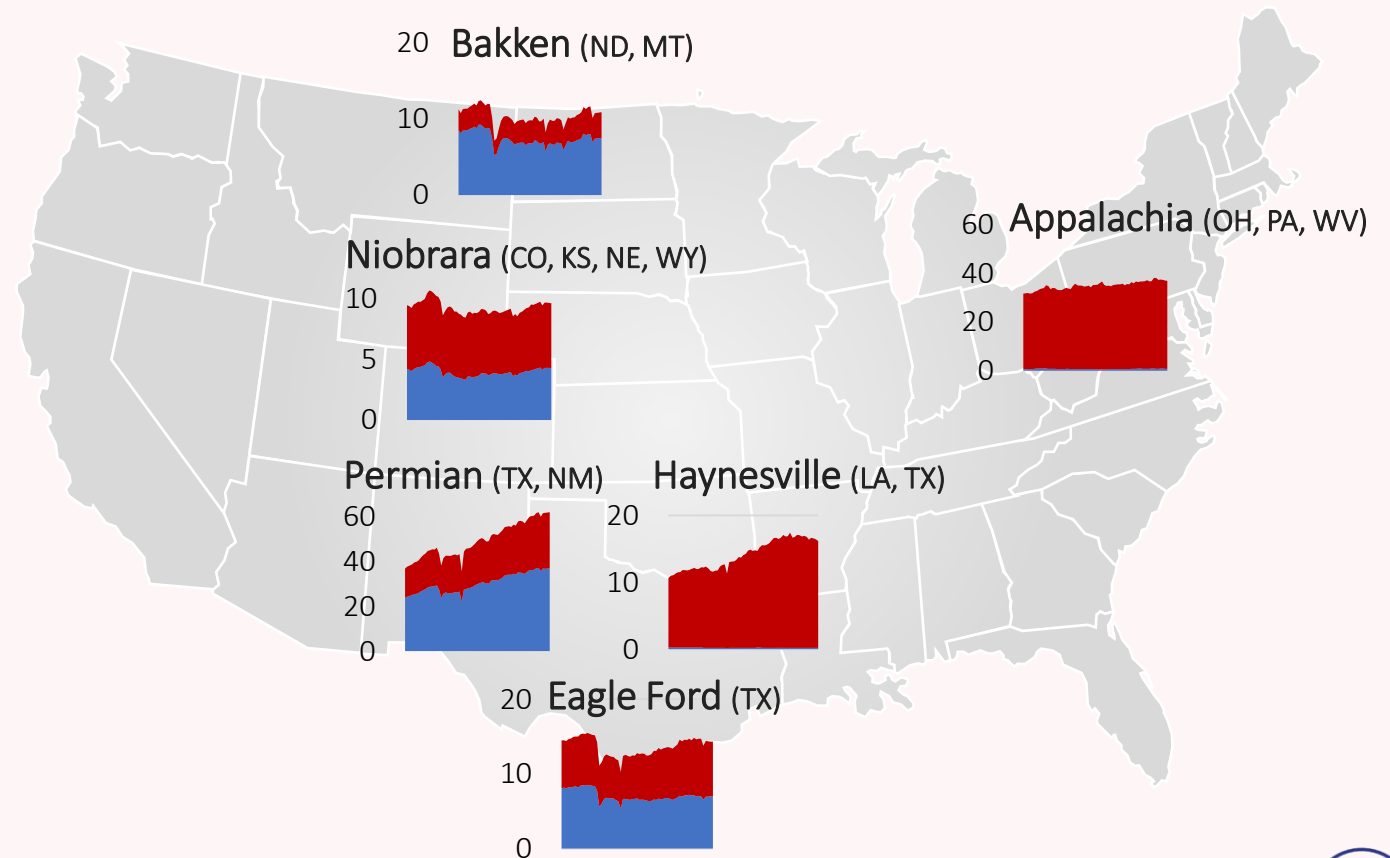
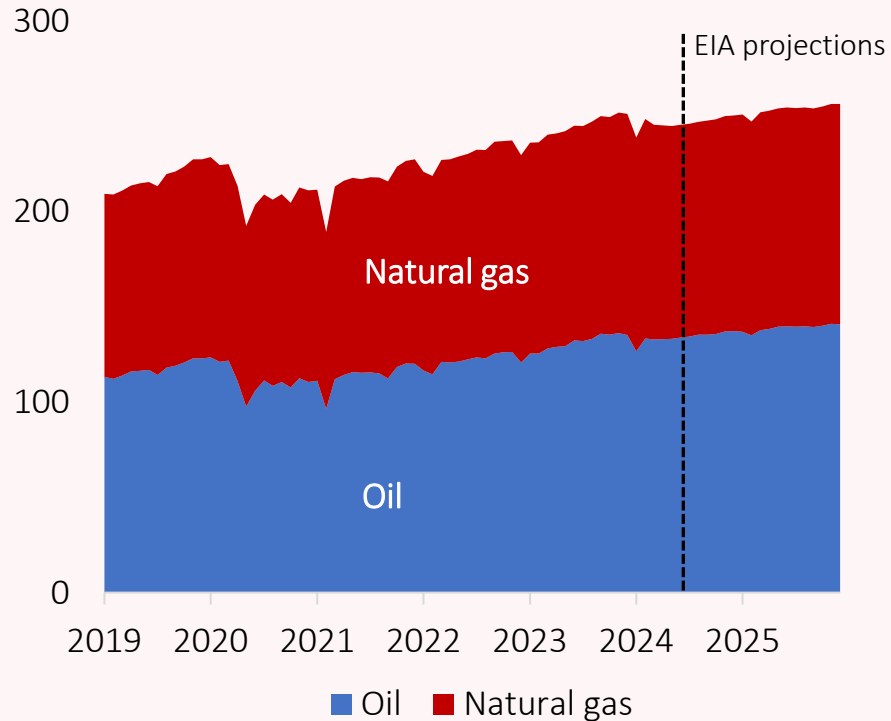


- ▶ Texas has driven nearly two-thirds of total U.S. oil and natural gas production growth as of May 2024 versus a year ago
- ▶ Among major U.S. producing regions as of May 2024, only the Permian and Niobrara grew year-over-year per EIA, and the Permian accounted for the vast majority of total U.S. production growth

U.S. and regional oil and natural gas production on natural gas-equivalent energy basis, 2019-April 2024

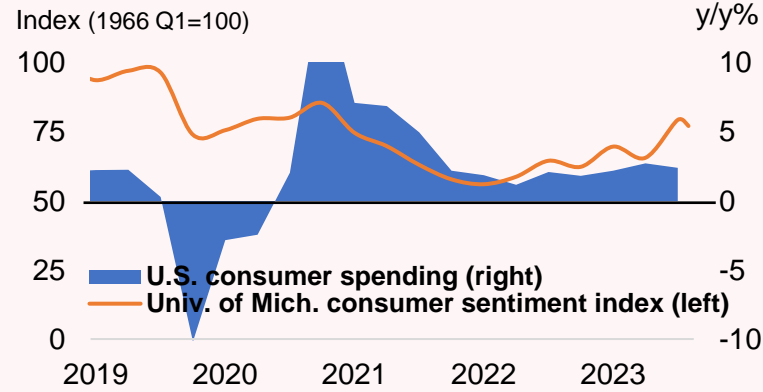
United States

Billion cubic feet per day natural gas-equivalent (bcf/de)



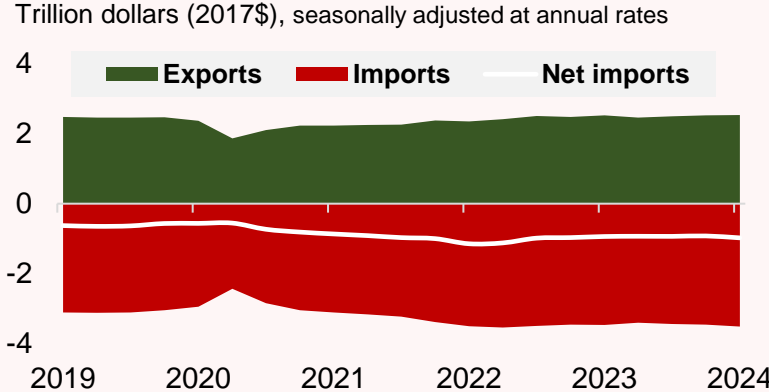
U.S. economic indicators

Consumer sentiment vs. spending



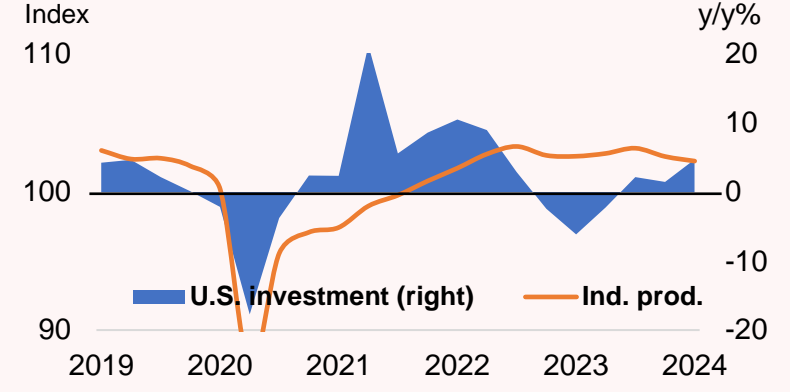
Consumer spending grew by 2.4% y/y in Q1 2024. This growth was predicated on improved consumer sentiment, which remained solid with a final April index reading of 77.2 in the Univ. of Michigan's survey. The improvement in consumer sentiment has historically remained consistent with further spending growth in 2024.

Real net exports of goods and services



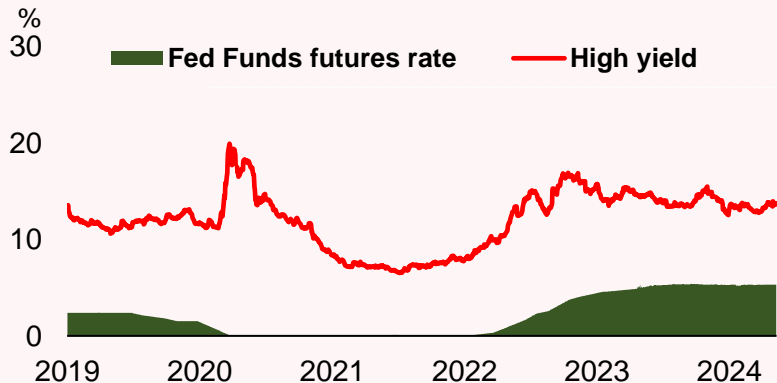
U.S. trade deficit revised to be larger. The U.S. real trade deficit ran at an annualized rate of \$973 billion in Q1 2023 per BEA initial estimates. On a nominal basis, the trade surplus for petroleum and products ran at annualized rate of \$52 billion in Q1 2024, up from \$36.7 billion a year ago, to the highest quarterly petroleum trade surplus on record.

Industrial production and investment growth



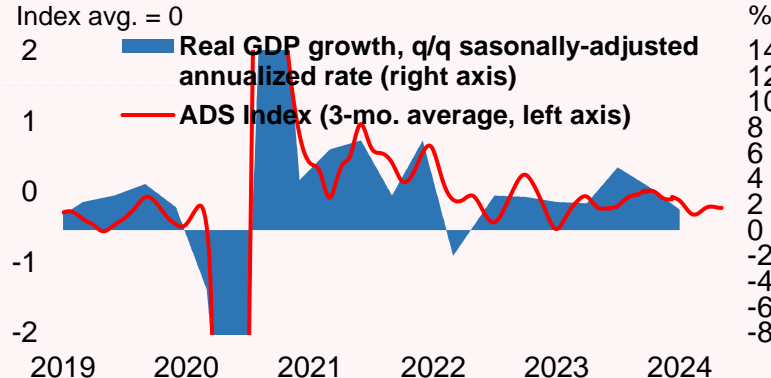
Industrial production rose by 0.4% m/m in March 2024 and remained consistent with economy-side investment growth, which rose by 4.7% y/y in Q1 2024.

Fed Funds rate and CCC and lower corporate bond yields



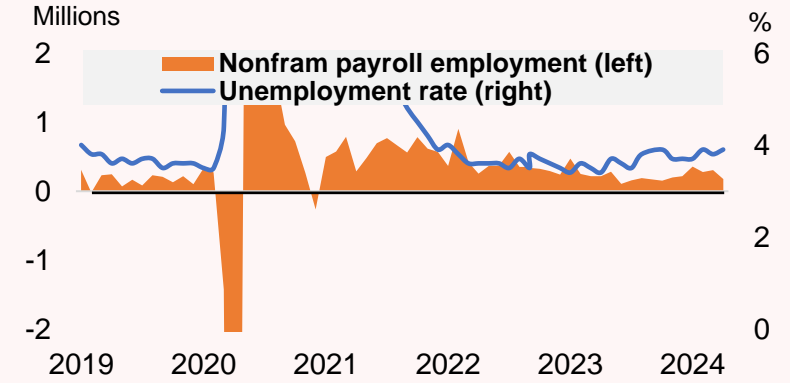
Bond premium for low credit quality slipped. High yield (HY) rates reflect debt costs for firms with below-investment grade credit quality. For the week ended May 10, HY rates fell by 0.1% w/w to 13.8% while the Fed Funds futures held steady at 5.3%, lowering the premium for low credit quality to 8.5%.

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



Real GDP growth has continued to grow in line with the ADS index. 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 remains consistent with GDP growth in Q2.

Nonfarm payroll employment & unemployment rate

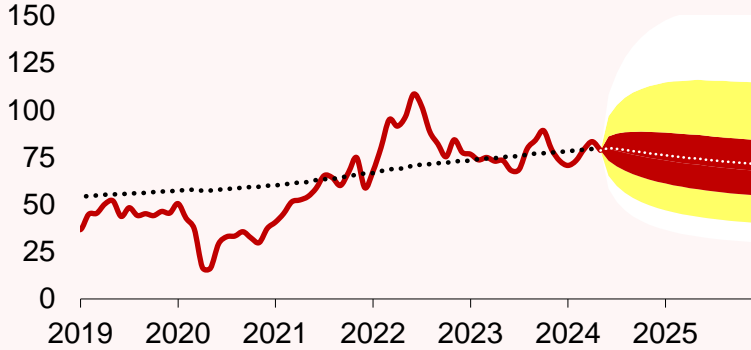


Lukewarm labor market growth. The employment situation is a lagging indicator of GDP growth. The U.S. unemployment rate rose by 0.1% m/m to 3.9% in April per BLS, while non-farm payrolls increased by 175,000.

U.S. oil market indicators

WTI crude oil price mean reversion analysis

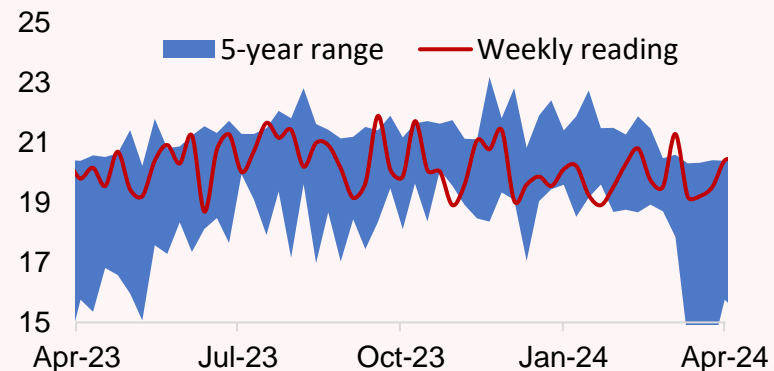
Dollars per barrel (2024\$)



Near-term futures prices currently align with the historical mean reversion target. 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.

U.S. petroleum demand

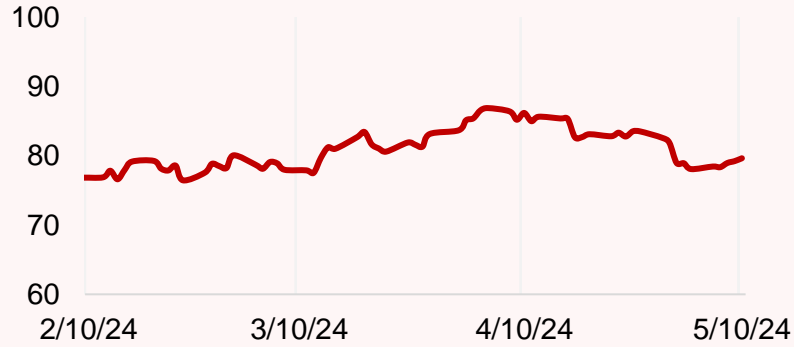
Million barrels per day (mb/d)



Petroleum demand remained historically strong. U.S. petroleum demand, as measured by deliveries, slipped by 0.1 mb/d w/w to 20.3 mb/d for the week ended May 3 and remained at the top of the five-year range.

WTI crude prompt month futures prices

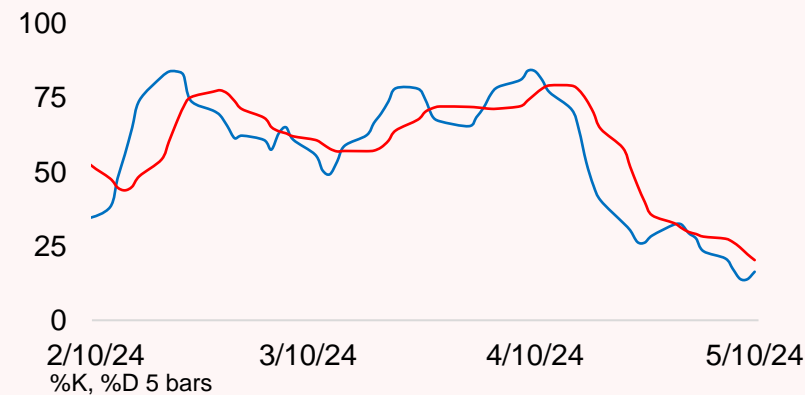
Dollars per barrel



WTI crude oil prices remained near \$79 per barrel for the week ended May 10, reflecting historically strong inventories despite Middle East geopolitical uncertainties.

WTI crude prompt month futures slow stochastic

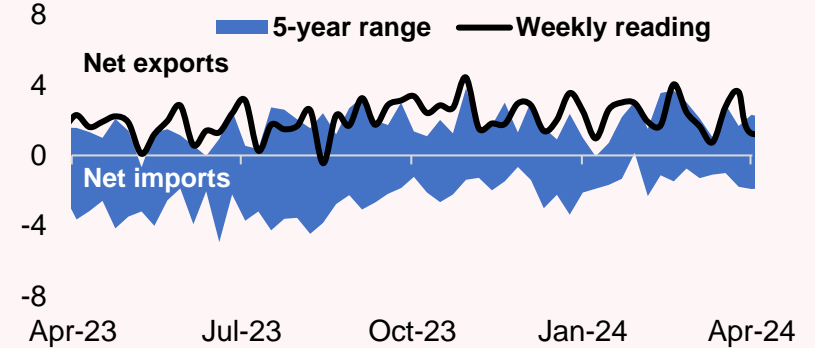
Index level



Price momentum continued to weaken during the week ended May 10.

U.S. petroleum net exports (imports)

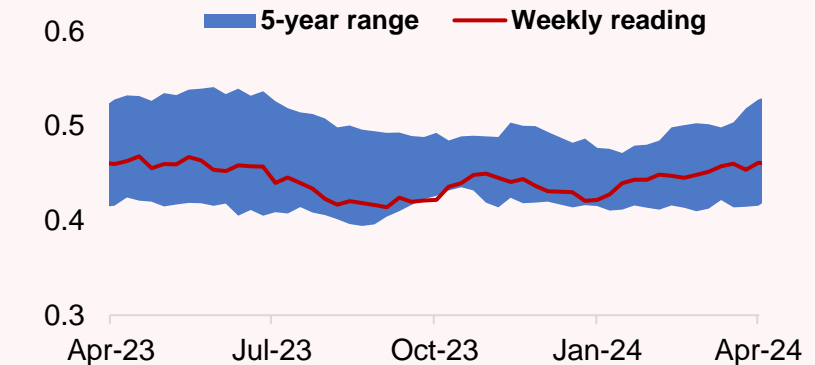
Million barrels per day, mb/d



Petroleum net exports rose. The U.S. was a petroleum net exporter of 2.2 mb/d for the week ended May 3, up by 0.9 mb/d from the prior week.

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

Billion barrels

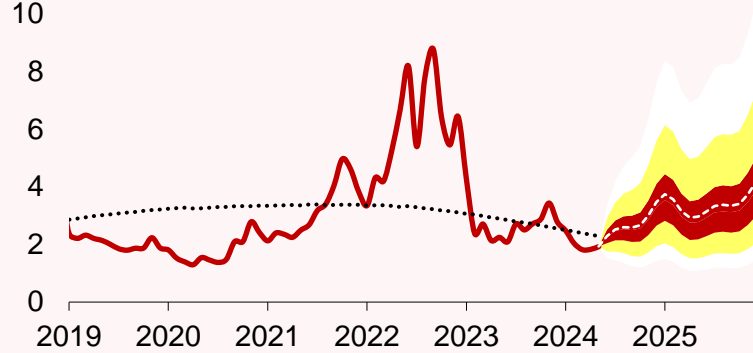


Inventories decreased. U.S. ending stocks of crude oil excluding the Strategic Petroleum Reserve (SPR) decreased by 1.4 million barrels (mb) for the week ended May 3.

U.S. natural gas market indicators

Natural gas price mean reversion analysis

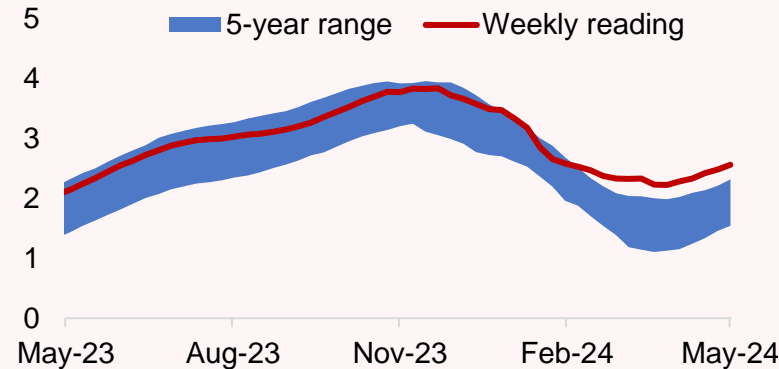
Dollars per mMBtu (2024\$)



Near-term natural gas futures are below the historical mean reversion target, but despite the recent increase in prices rise by over 50% between the June and December contracts. Confidence intervals based on past prices show the potential for greater upside than downside.

U.S. weekly working gas storage

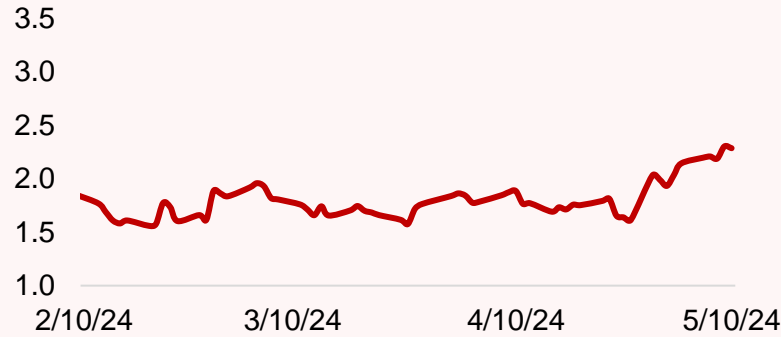
Trillion cubic feet (tcf)



Working gas in underground storage rose by 3.2% w/w to 2.56 tcf as of May 3 and remained above the 5-year range.

Natural gas prompt month futures prices

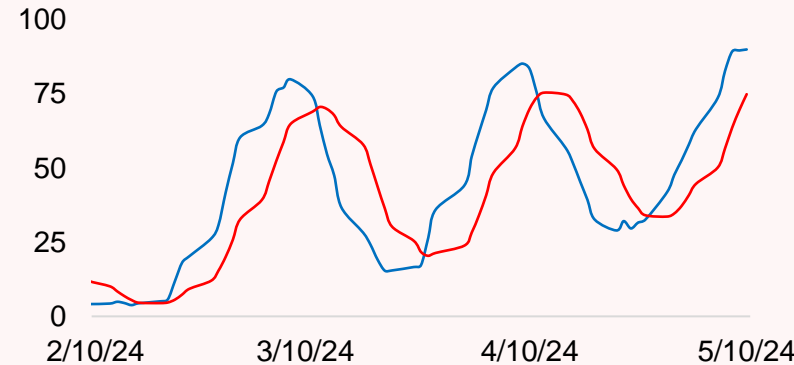
Dollars per million Btu



Natural gas prices at Henry Hub rose by over 40% over the past two weeks to around \$2.30 per million Btu for the week ended May 10 despite historically strong inventory increases.

Natural gas futures slow stochastic

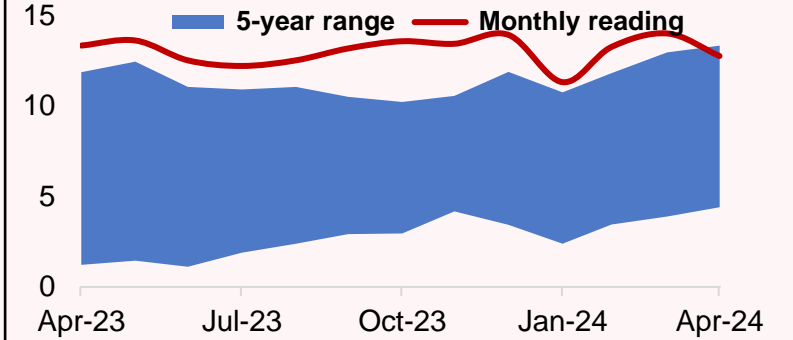
Index level



Natural gas price momentum remained positive during the week ended May 10.

U.S. natural gas net exports

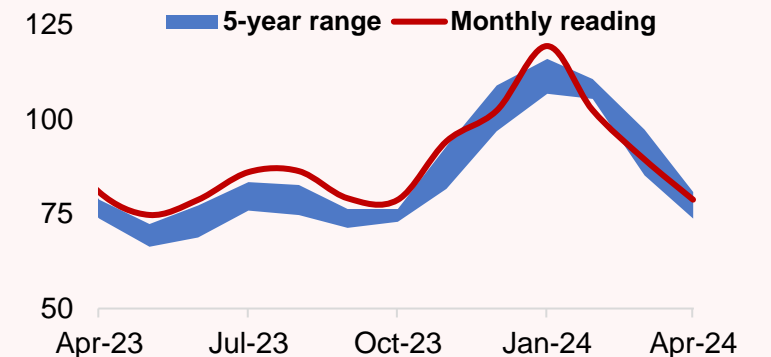
Billion cubic feet per day, bcf/d



Natural gas exports slipped. U.S. natural gas net exports in April 12.8 bcf/d, down from an upward-revised record-high of 14.0 bcf/d in March per EIA.

U.S. natural gas consumption

Billion cubic feet per day, bcf/d

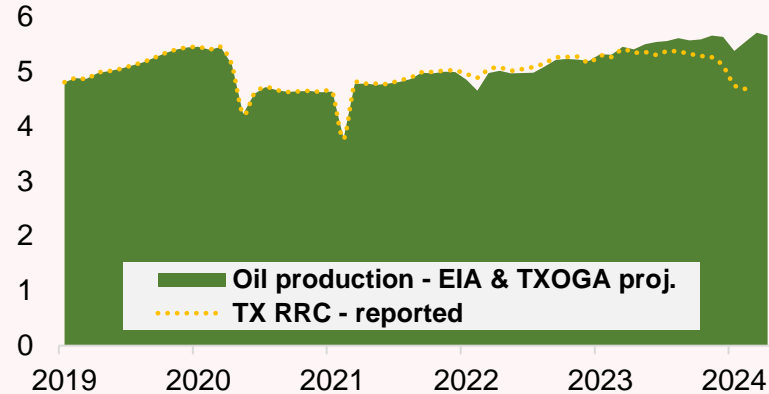


Consumption decreased. U.S. natural gas consumption of 79.0 bcf/d in April came in below EIA's projection and was down from 80.7 bcf/d a year ago.

Texas' oil and natural gas production

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

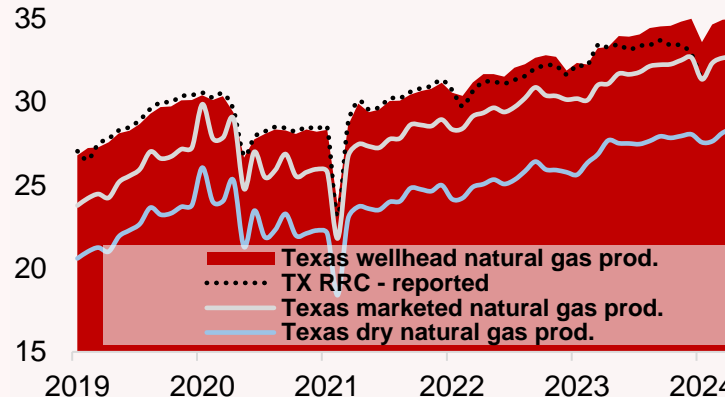
Million barrels per day (mb/d)



Oil production increased. Texas' oil production of 5.6 mb/d in February and rebounded following Winter Storm Heather in January per EIA. TXOGA estimates that Texas crude oil production rose to 5.7 mb/d in March and April.

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

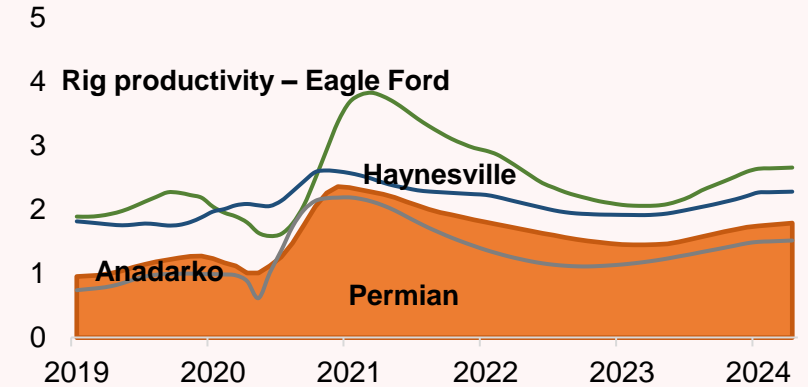
Billion cubic feet per day (bcf/d)



Natural gas production increased. Texas' natural gas production of 34.6 bcf/d of gross withdrawals and 32.3 bcf/d of marketed production in Feb. were impacted by Winter Storm Heather per EIA. TXOGA estimates that production rose in April to 35.0 bcf/d of gross withdrawals, 32.7 bcf/d of marketed production, and 28.4 bcf/d of dry gas production.

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

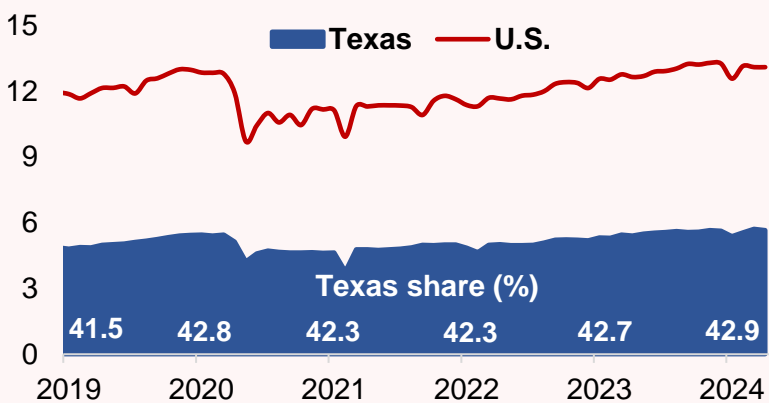
Thousand barrels per day oil-equivalent, kb/dae



Strong productivity to start the year. EIA estimates of rig productivity for April 2024 show continued increases year-over-year across the major Texas basins, including the Anadarko (+25.7% y/y), Eagle Ford (+28.8% y/y), Permian (+23.3% y/y), and Haynesville (+18.7% y/y).

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

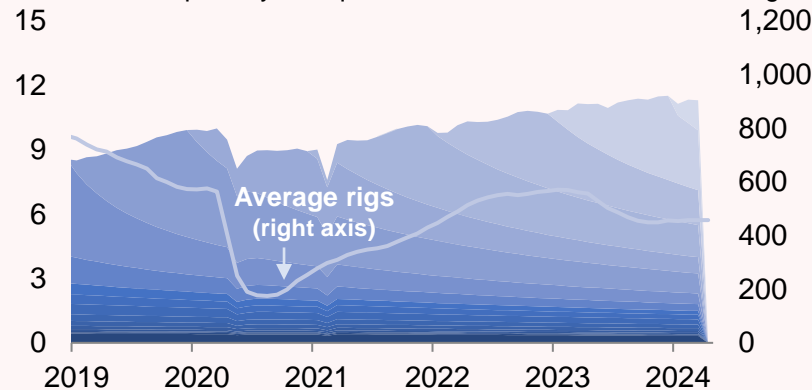
Million barrels per day (mb/d)



Texas' share increased. Texas accounted for an estimated 42.9% of U.S. crude oil production year-to-date through April.

Texas shale basin wellhead oil & natural gas production

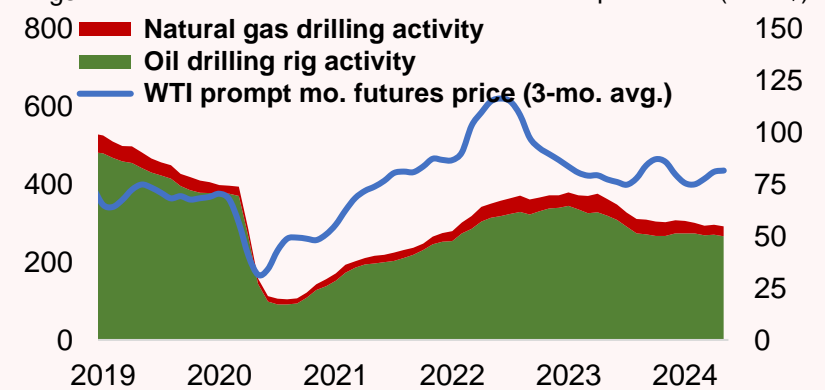
Million barrels per day oil-equivalent



EIA estimates Apr. 2024 production growth across Texas shale basins has continued to grow year-over-year in the Permian (+6.5% y/y) but fallen in the Eagle Ford (-0.1% y/y), Haynesville (-2.8% y/y), and Anadarko (-2.6% y/y) regions.

Texas drilling activity and WTI crude oil futures prices

Rigs Dollars per barrel (2024\$)



Texas' drilling rig activity decreased for the week ended May 10 per Baker Hughes. Texas had 264 oil-directed rigs (down by 3 rigs w/w) and 25 natural gas-directed rigs (unchanged w/w).

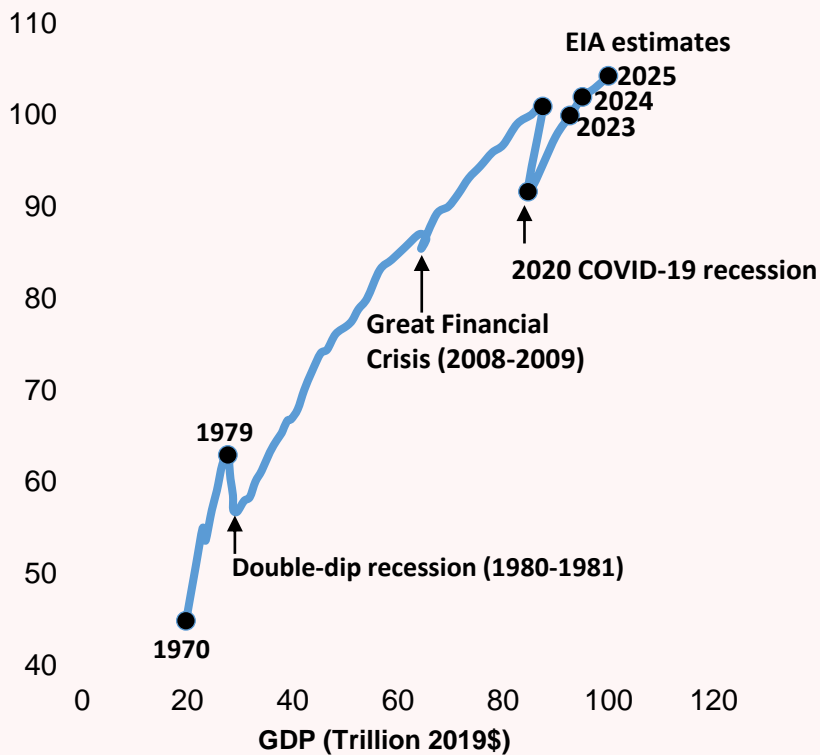
Global Oil Market Balance Projections to 2025



- Record-high global oil demand of 102.9 mb/d in 2025 and 104.3 mb/d in 2025, which reflect upgrades from last quarter corresponding with stronger economic growth per EIA
- For oil inventories, the EIA projects global stock withdrawals with a deficit of 0.3 mb/d in Q2 2024, corresponding with Brent crude oil prices of \$87.79 in 2024, compared with \$83.41 per barrel currently.

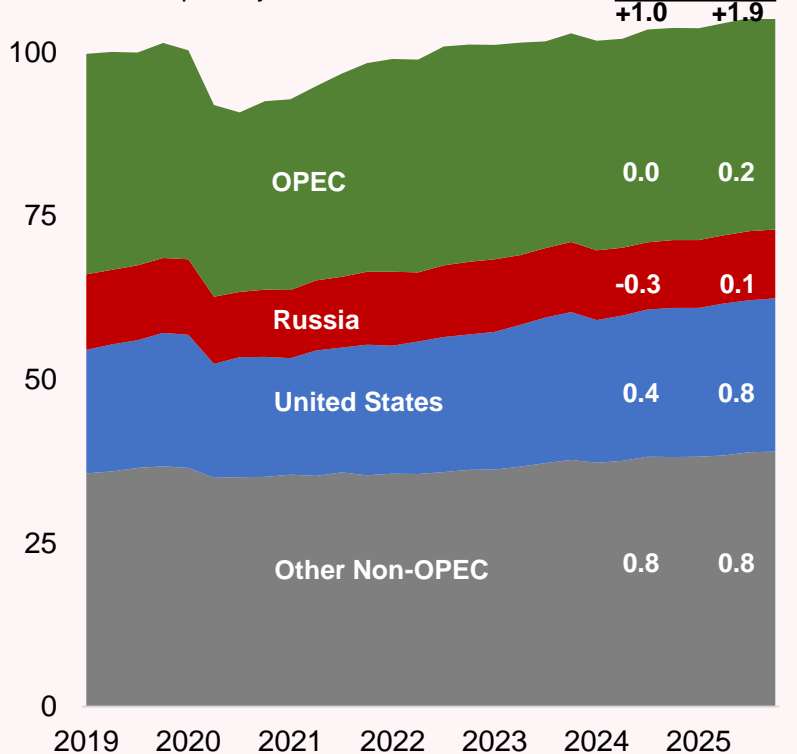
Global oil demand and GDP

Million barrels per day (mb/d)



Oil production by country/region

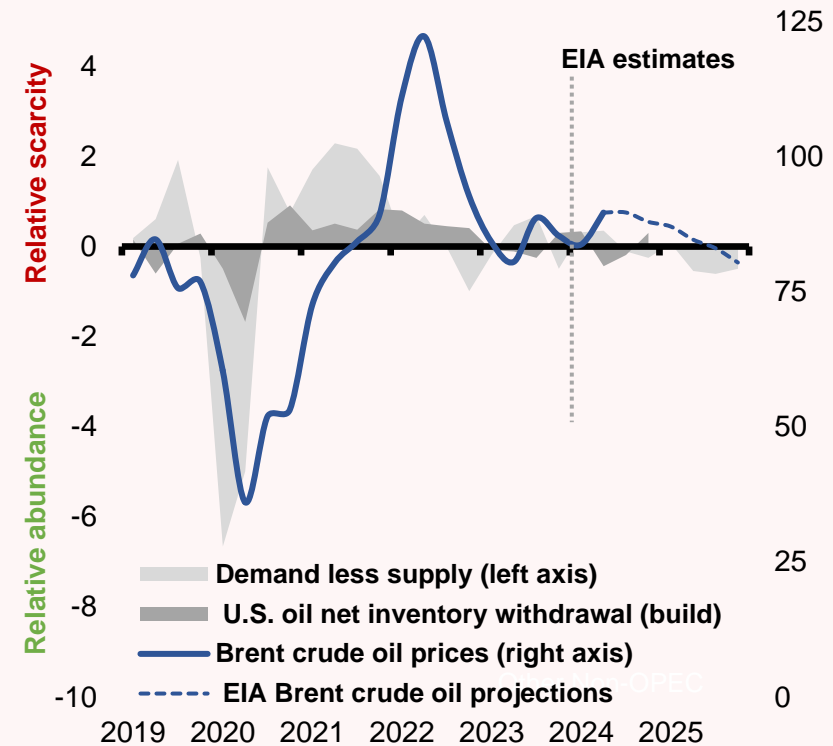
Million barrels per day, mb/d



Global demand/supply & Brent prices

Million barrels per day (mb/d)

2024\$/Bbl

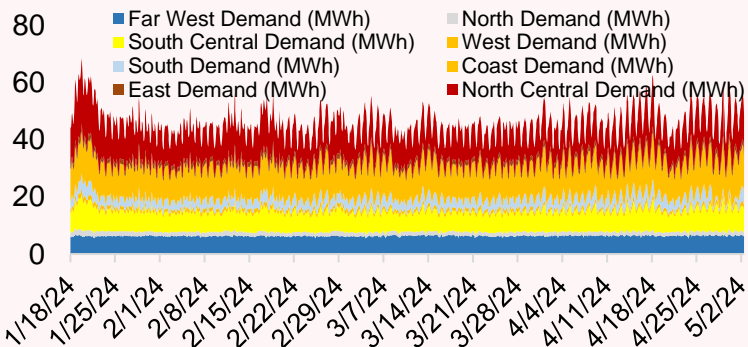


Texas Electricity Analysis



ERCOT electricity load by region

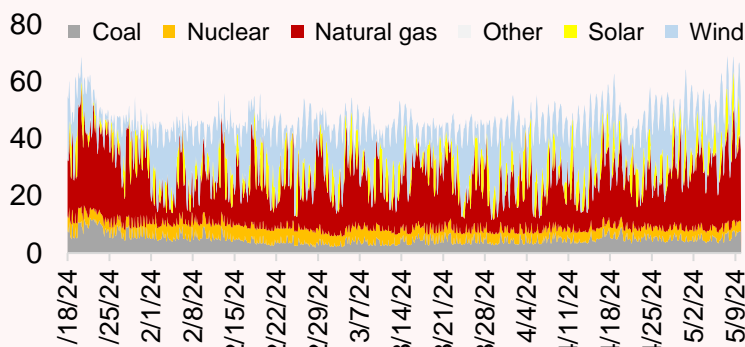
Thousand megawatt-hours



North and West Texas load increased. For May 2-9, 2024, ERCOT's average hourly electricity load rose by 2.4% w/w, while the maximum hourly load of rose by 7.4% w/w. Variability, as measured by a percentage standard deviation, was the highest in the North Central region at 21.5, up from 16.5 in the prior week.

ERCOT hourly electricity generation by source

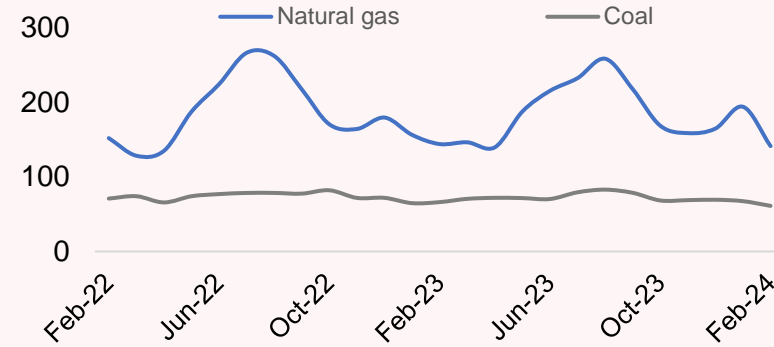
Thousand megawatt-hours



ERCOT thermal generation rose. ERCOT's hourly electricity generation for the period Apr. 26-May 2 ranged between 39 and 69 kMWh with a percentage standard deviation of 14.4, up from 11.1 in the prior week. Thermal sources contributed as much as 89% of the region's power (unchanged w/w), and natural gas drove as much as 65% over the period (down by 8% w/w).

Electricity plant receipts of natural gas and coal

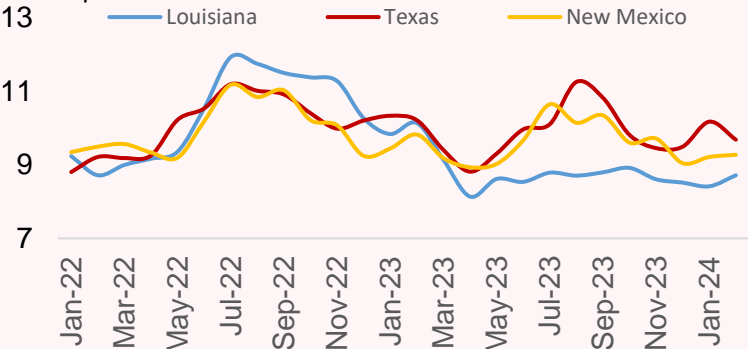
Trillion Btu



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

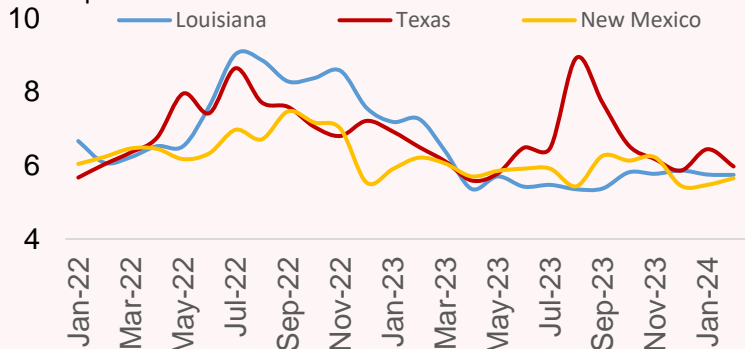
Cents per kilowatt-hour



Texas' electricity prices fell in February. The average price of electricity in Texas decreased by 4.8% m/m in February. However, Texas' average price remained 4.4% and 11.1% higher than those in Louisiana and New Mexico, respectively.

Industrial electricity prices

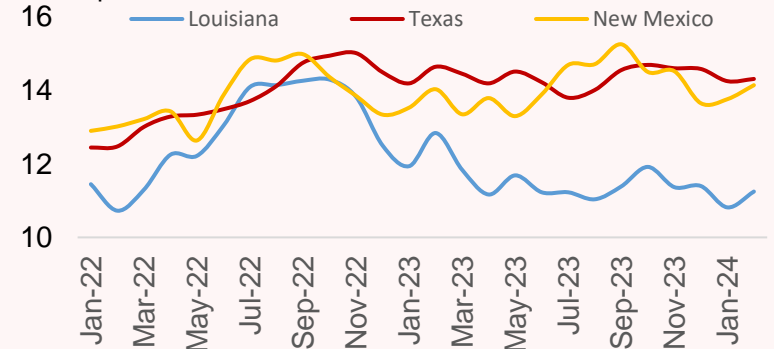
Cents per kilowatt-hour



Texas' industrial electricity prices decreased. For Texas' industrial consumers, the average price of electricity fell by 8.2% m/m in February. However, Texas' average price remained 4.0% and 5.7% higher than those in Louisiana and New Mexico, respectively.

Residential electricity prices

Cents per kilowatt-hour



Texas' residential electricity prices increased. For Texas' residential consumers, the average price of electricity rose by 0.4% m/m in February. Texas' average price remained 27.2% higher than that in Louisiana and 1.2% higher than that in New Mexico.

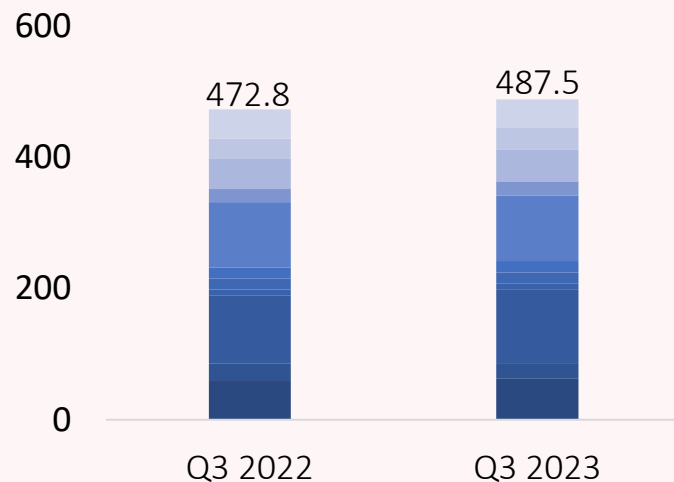
Texas' oil and natural gas industry's jobs and wages have continued to grow



- ▶ 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

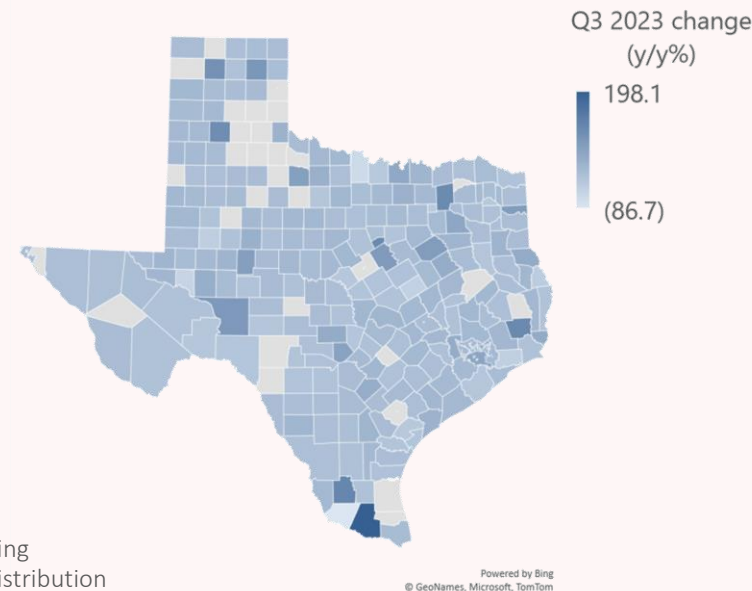
Texas oil and natural gas industry direct employment rose by +3.1% y/y in Q3 2023

Thousand Jobs



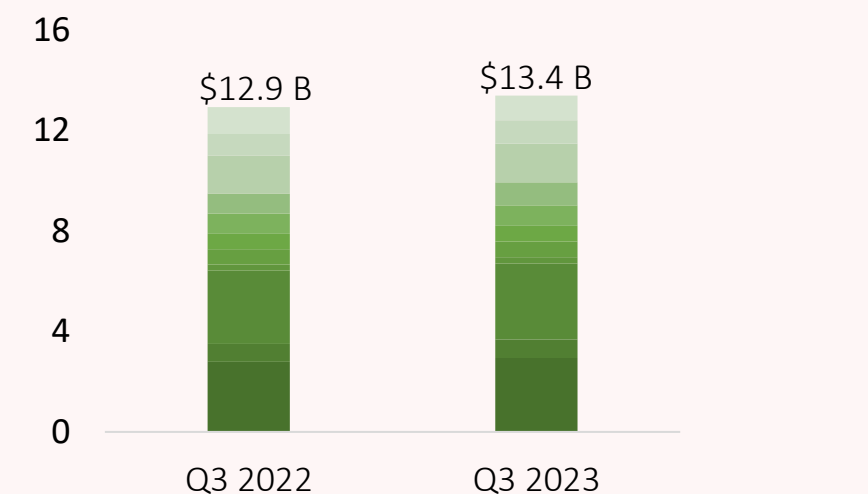
- Oil & gas extraction
- Support activities for o&g ops.
- Petroleum refineries
- Gas stations & fuel dealers
- All other*
- Pipeline construction
- Oil & gas drilling
- Natural gas distribution
- Petrochemical mfg.
- Pipeline transportation
- Oil & gas field mach. and eq. mfg.

* 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 +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
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