



July 8, 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 8, 2024

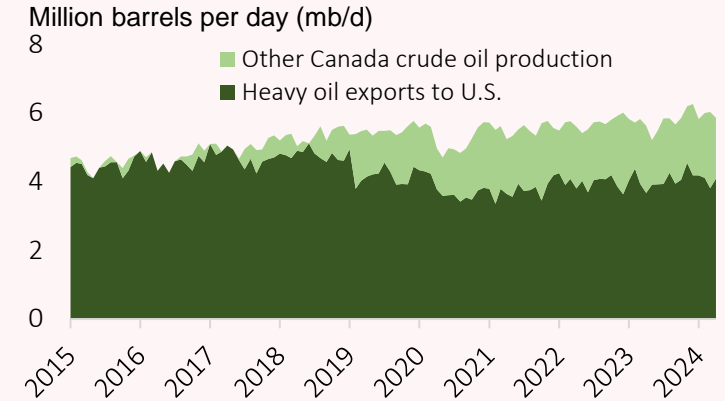
- ▶ **U.S. economic indicators remain solid.** The Aruoba-Diebold-Scotti (ADS) Business Conditions Index from the Federal Reserve Bank of Philadelphia showed ongoing favorable conditions, suggesting economic growth in Q2 and so far in Q3 2024. The June employment report by the Bureau of Labor Statistics was solid with 206,000 non-farm payroll additions and an unemployment rate to 4.1%. However, a solid employment situation plus steady consumer price inflation (3.3% year-over-year (y/y) in May) reduced near-term prospects for cuts to the Federal Funds rate, which in turn raised longer-term interest rates including the average high-yield corporate bond yield above 14.0% as of July 5, its highest since December 2023.
- ▶ **Oil market fundamentals tightened.** As highlighted in the [Chart of the Week](#), U.S. Gulf Coast refiners continued to shift away from crude oil imports from Canada towards domestic crude oil, facilitated by record domestic production led by Texas. U.S. crude oil production held steady at 13.2 million barrels per day (mb/d) as of June 28, while natural gas liquids (NGLs) production neared a record high of 7.0 mb/d, per the Energy Information Administration (EIA). Also as of June 28, summer driving boosted domestic petroleum demand to 21.1 mb/d and petroleum net exports to 2.9 mb/d, both at the top of their respective 5-year ranges. Together these factors resulted in a reduction in domestic crude oil inventories by 12.2 million barrels week-over-week (w/w) as of June 28 – the 11th largest weekly inventory withdrawal on record since 1982 – supporting West Texas Intermediate (WTI) crude oil prices near \$84 per barrel.
- ▶ **Record-high U.S. natural gas net exports: 14.3 billion cubic feet per day in June per EIA.** With strong production, however, U.S. natural gas storage rose by 1.2% w/w to 3.1 trillion cubic feet, which was 7% above the top of its five-year range. Futures prices for August delivery fell by over 10% w/w to nearly \$2.30 per million Btu.



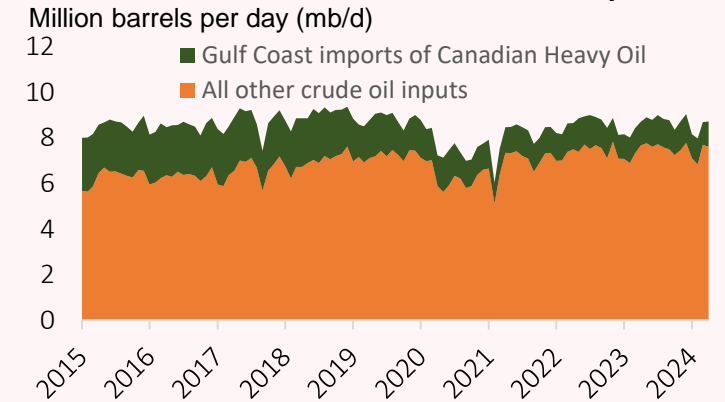
U.S. imports of Canadian heavy oil have recovered to pre-pandemic levels but lost share to other crude oils on the Gulf Coast

- Canadian oil production is a source of supply growth for global markets and rose by 0.2 mb/d y/y as of April 2024 per EIA estimates. Canadian exports of heavy oil to the U.S. rose by twice as much, 0.4 mb/d y/y in April per EIA, suggesting that relatively more Canadian crude oil has been refined in the U.S. this year.
- While refiners in the Midwest U.S. (PADD 2) have utilized relatively more Canadian crude over time, including 1.0 mb/d more in April 2024 than in April 2015, U.S. Gulf Coast refiners have used 1.0 mb/d less over the same period and instead have processed relatively more light sweet domestic crude oil.
- A crack spread is a proxy for gross refining margins, calculated as the difference per barrel between the cost of crude oil inputs and a standardized mix of products outputs, expressed in dollars per barrel.
- U.S. Gulf Coast (gross) crack spreads, based on using either West Texas Intermediate (WTI) or Western Canadian Select (WCS) as the crude oil input, show the economic incentive to process crude oil has fallen from historically high levels following escalation of Russia's war in Ukraine since Feb. 2022 but eased over time, as Russian refined products found customers despite sanctions.
- Lower crack spreads so far this year have primarily reflected crude oil input cost decreases.

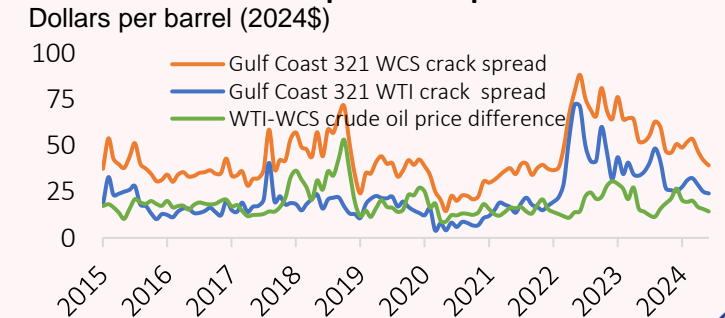
Canada crude oil production and exports to U.S.



U.S. Gulf Coast utilization of Canadian Heavy Oil

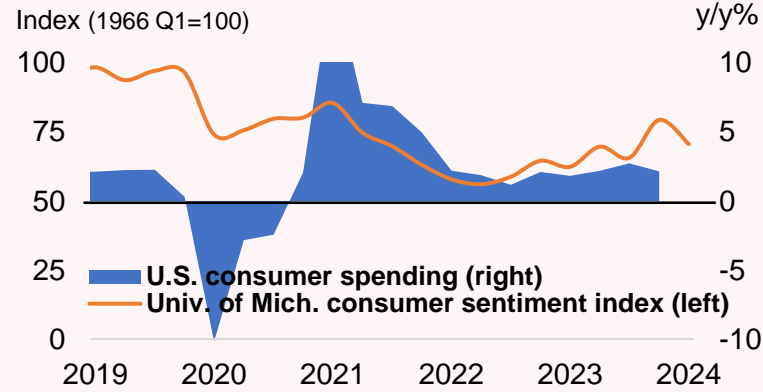


U.S. Gulf Coast Crack Spread Comparisons



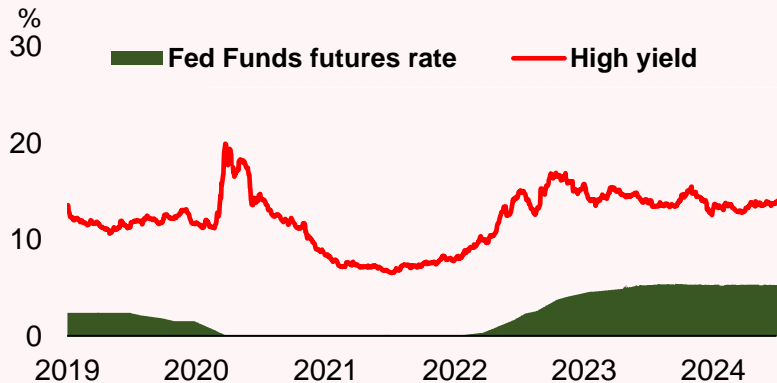
U.S. economic indicators

Consumer sentiment vs. spending



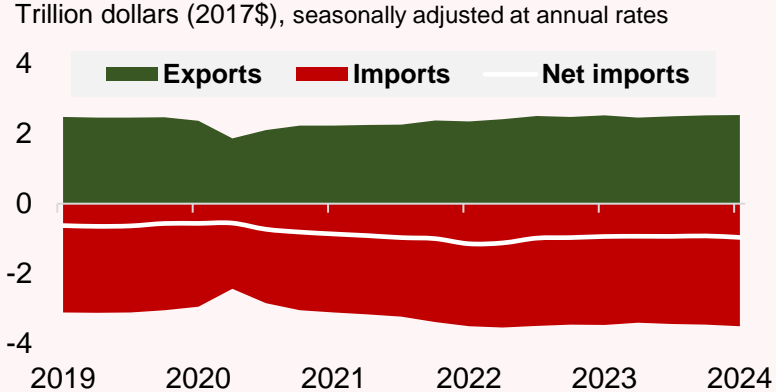
Consumer spending was revised downwards by 0.1% to a rate of 2.16% y/y in the final GDP readings for Q1 2024, per the Bureau of Economic Analysis. Consumer sentiment, according to the University of Michigan's survey, decreased by 10% between Q1 and Q2 2024. Historically this implies slower spending growth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

Fed Funds rate and CCC and lower corporate bond yields



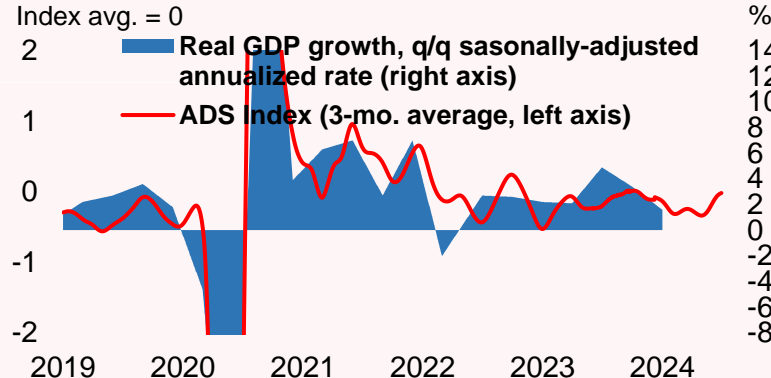
Bond premium for low credit rose. High yield (HY) rates reflect debt costs for firms with below-investment grade credit quality. For the week ended July 5, HY rates rose by 0.2% w/w to 14.1%, while Fed Funds futures rates remained at 5.3%, resulting in a premium for low credit quality of 8.7%, the highest since December 2023.

Real net exports of goods and services



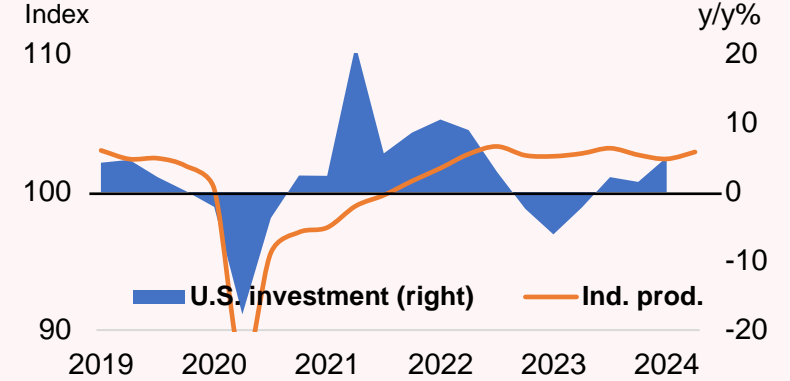
U.S. trade deficit revised to be narrower. The U.S. real trade deficit ran at an annualized rate of \$960B in Q1 2024 per BEA final estimates, down from a prior estimate of \$975B. On a nominal basis, the trade surplus for petroleum and products was revised downwards to an annualized rate of \$52 billion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



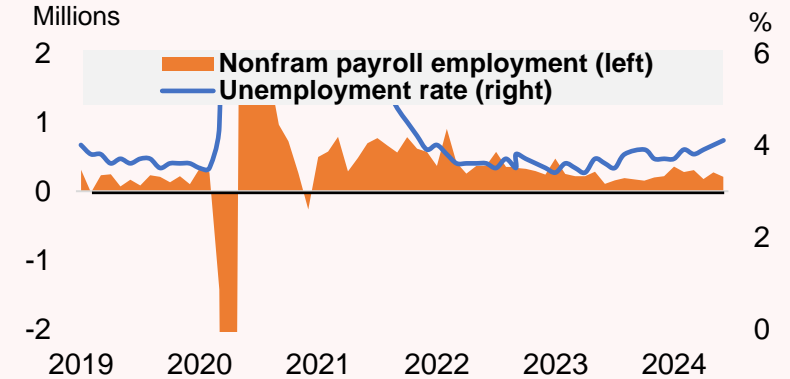
The ADS index has strengthened, suggesting solid Q2 GDP growth. The ADS business conditions index, published by the Philadelphia Fed. Res. Bank, is a leading indicator of GDP growth. A rolling 3-month average of the ADS index accurately reflected growth in Q1 2024 real GDP and with recent increases remains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

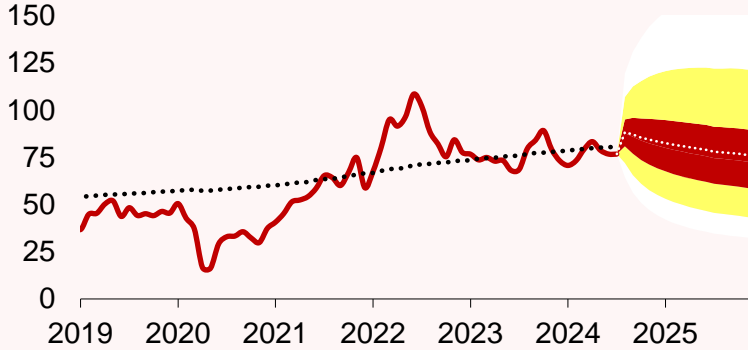


Solid labor market growth continued in June. The employment situation is a lagging indicator of GDP growth. The U.S. unemployment rate rose by 0.1% m/m to 4.1 in June per BLS, while non-farm payrolls increased by 206,000.

U.S. oil market indicators

WTI crude oil price mean reversion analysis

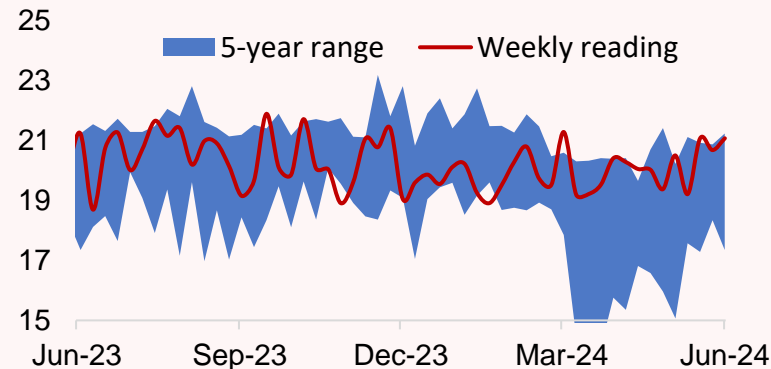
Dollars per barrel (2024\$)



Near-term futures prices have risen above the historical mean reversion target. 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

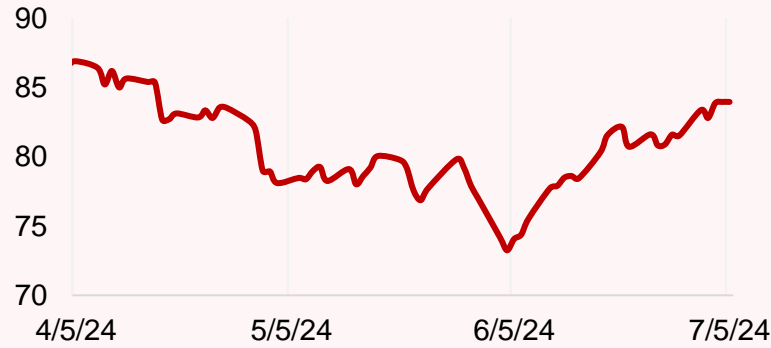
Million barrels per day (mb/d)



Petroleum demand increased. U.S. petroleum demand, as measured by deliveries, increased by 0.4 mb/d w/w to 21.1 mb/d for the week ended June 28 and to the top of the 5-year range.

WTI crude prompt month futures prices

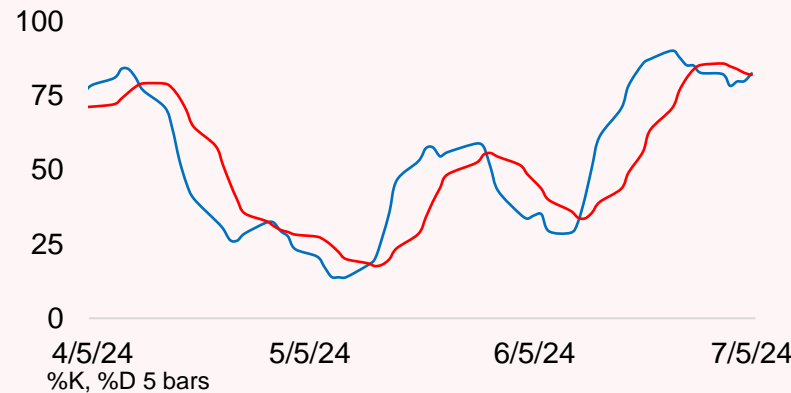
Dollars per barrel



WTI crude oil prices rose to \$84 per barrel for the week ended July 5 in response to the historically large inventory drawdown and a continued Middle East geopolitical premium.

WTI crude prompt month futures slow stochastic

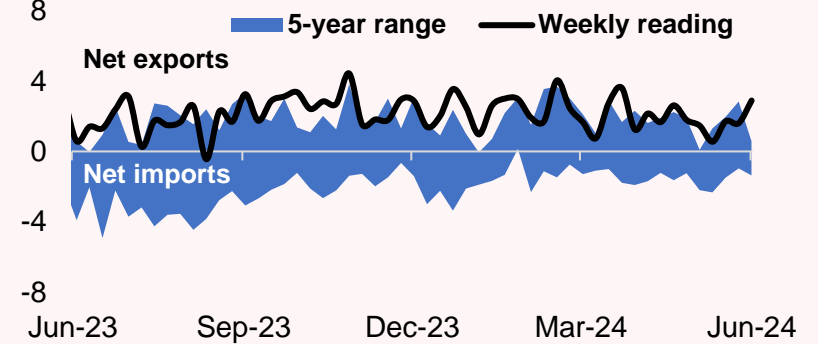
Index level



Price momentum remained solid during the week ended July 5.

U.S. petroleum net exports (imports)

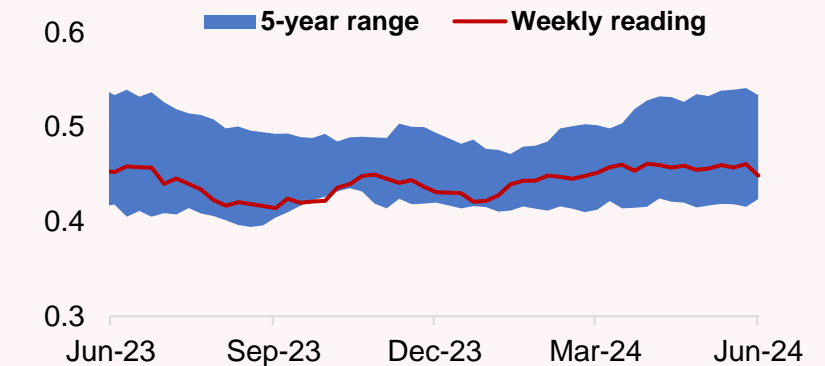
Million barrels per day, mb/d



Petroleum net exports rose. The U.S. was a petroleum net exporter of 2.9 mb/d for the week ended June 28, up by 1.3 mb/d from the prior week and above the 5-year range.

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

Billion barrels

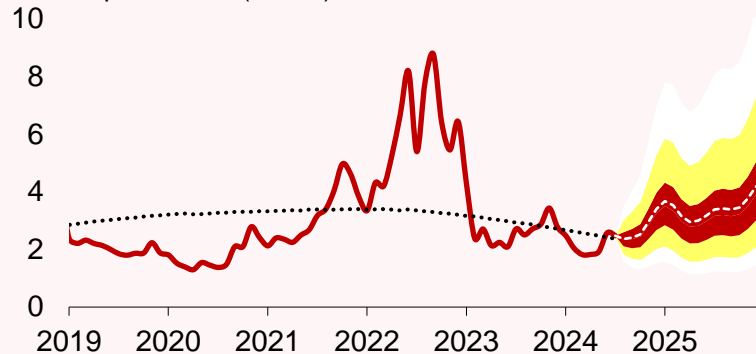


Inventories decreased. U.S. ending stocks of crude oil excluding the Strategic Petroleum Reserve (SPR) decreased by 12.2 million barrels (mb) for the week ended June 28 – the 11th largest weekly drawdown on record since 1982.

U.S. natural gas market indicators

Natural gas price mean reversion analysis

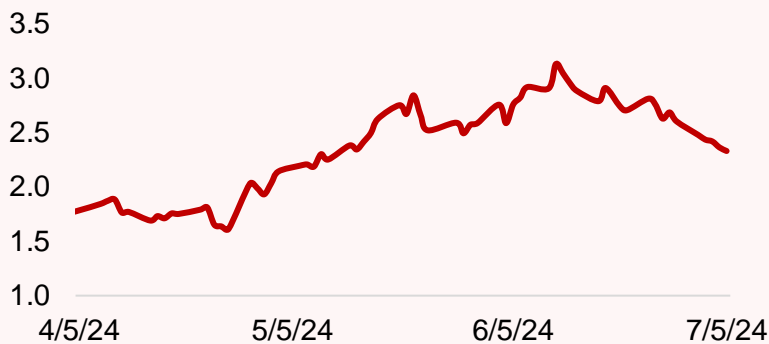
Dollars per mMBtu (2024\$)



Near-term natural gas futures prices have aligned the historical mean reversion target but rise by 45% 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

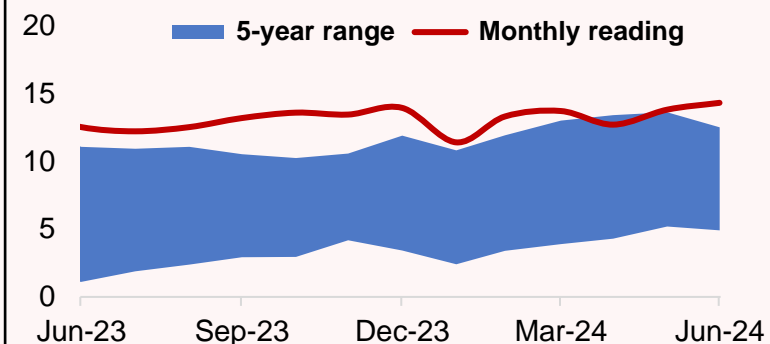
Dollars per million Btu



Natural gas prices at Henry Hub head fell to nearly \$2.30 per million Btu for the week ended July 5 with historically strong inventory levels.

U.S. natural gas net exports

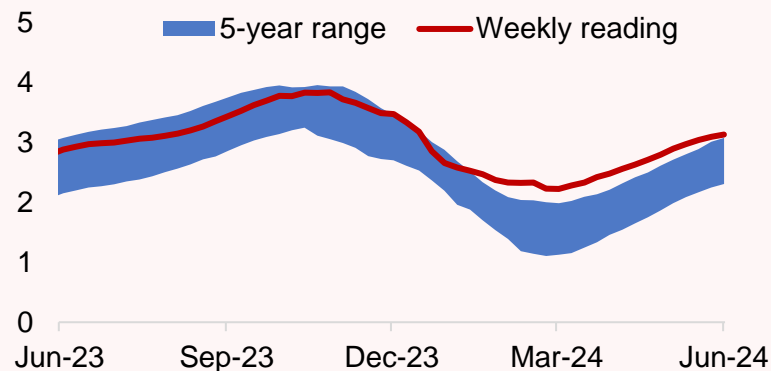
Billion cubic feet per day, bcf/d



Record-high natural gas net exports. Record-high U.S. natural gas net exports in June of 14.3 bcf/d rose from 13.8 bcf/d in May as estimated by EIA.

U.S. weekly working gas storage

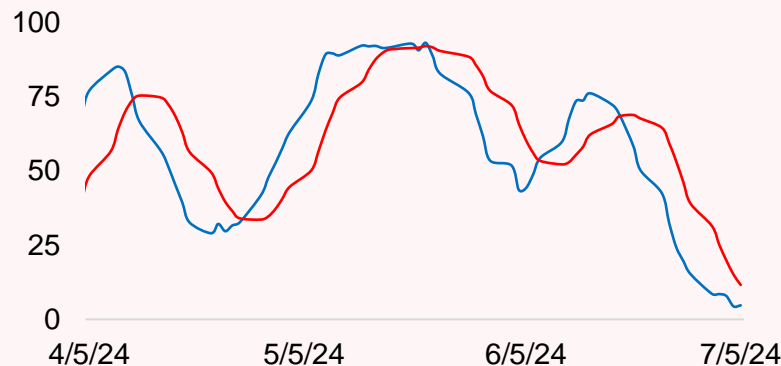
Trillion cubic feet (tcf)



Slower storage injections. Working gas in underground storage rose by 1.2% w/w to 3.13 tcf as of June 28 and to 7% above the top of its 5-year range.

Natural gas futures slow stochastic

Index level

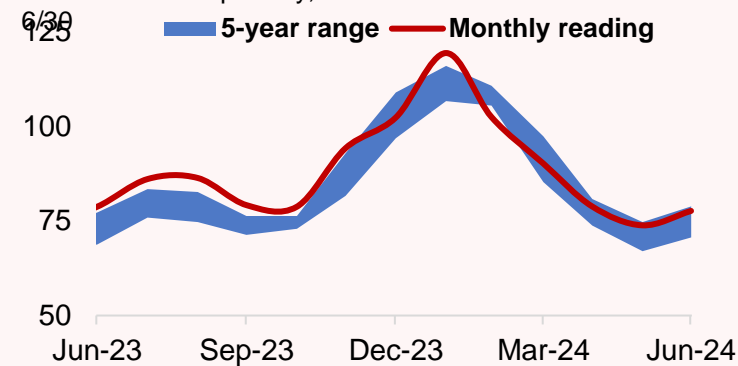


%K, %D 5 bars

Natural gas price momentum decreased for the week ended July 5.

U.S. natural gas consumption

Billion cubic feet per day, bcf/d

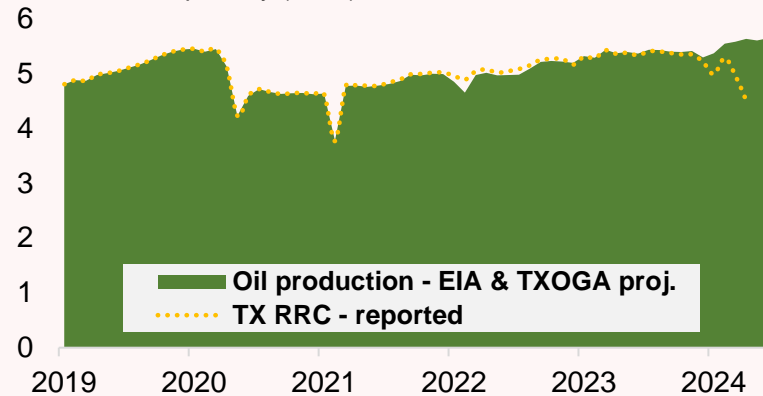


Consumption increased. U.S. natural gas consumption rose by 3.8 bcf/d m/m to 77.6 bcf/d in June as estimated by EIA.

Texas' oil and natural gas production

Texas crude oil production, Jan. 2019 – June 2024

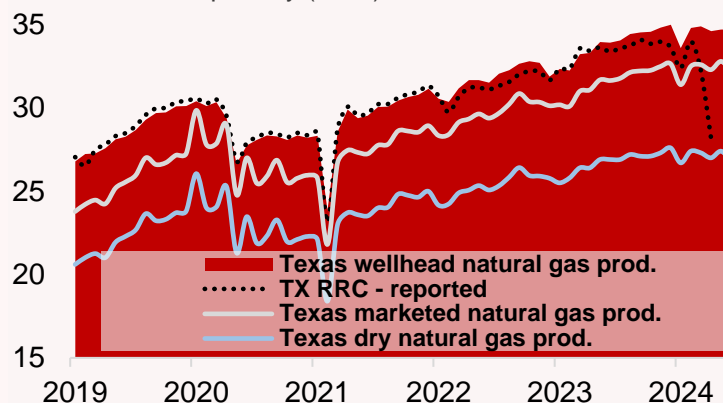
Million barrels per day (mb/d)



Oil production held strong. Texas' oil production edged up over 5.6 mb/d in April per EIA. TXOGA estimates that Texas crude oil production held at 5.6 mb/d June.

Texas natural gas production, Jan. 2019 – June 2024

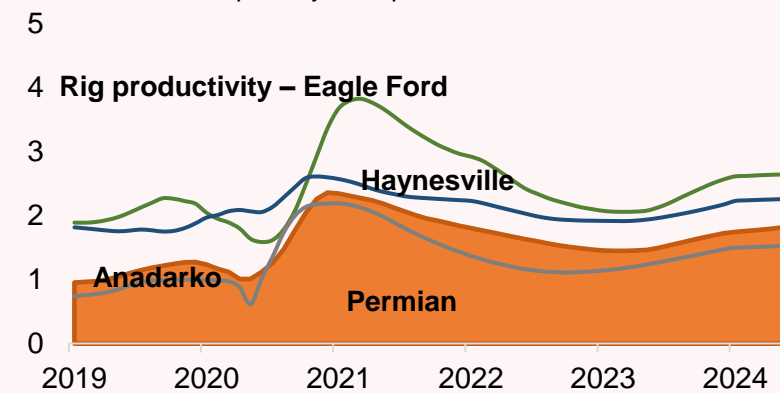
Billion cubic feet per day (bcf/d)



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 April per EIA. TXOGA estimates that Texas' marketed production fell to 32.2 bcf/d in June with 27.0 bcf/d of dry gas production.

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

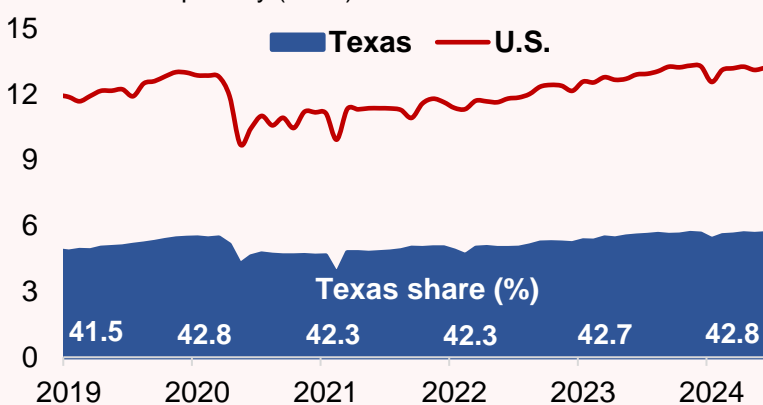
Thousand barrels per day oil-equivalent, kb/dae



Strong productivity to start the year. EIA estimates of rig productivity for June 2024 show continued increases year-over-year across the major Texas basins, including the Anadarko (+20.7% y/y), Eagle Ford (+24.5% y/y), Permian (+21.9% y/y), and Haynesville (+15.3% y/y).

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

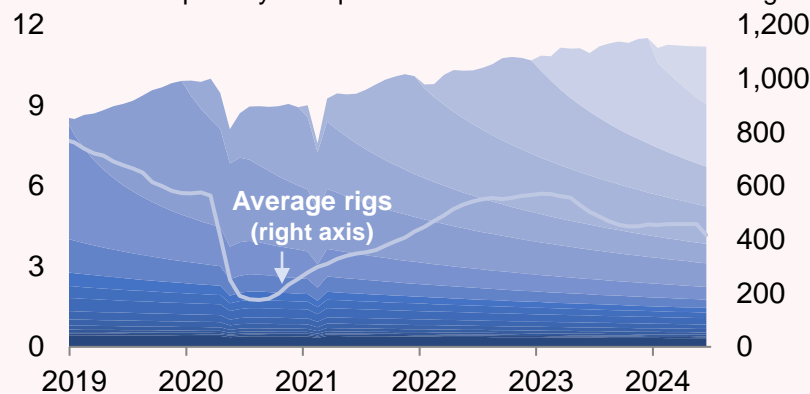
Million barrels per day (mb/d)



Texas' share increased. Texas accounted for an estimated 42.8% of U.S. crude oil production in June by TXOGA's estimates.

Texas shale basin wellhead oil & natural gas production

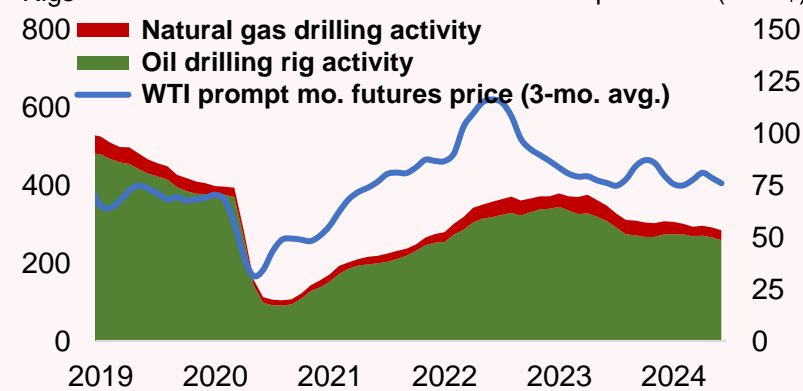
Million barrels per day oil-equivalent



EIA estimates June 2024 production growth across Texas shale basins has continued to grow year-over-year in the Permian (+9.2% y/y) but fallen in the Eagle Ford (-3.7% y/y), Haynesville (-6.8% y/y), and Anadarko (-1.8% y/y) regions.

Texas drilling activity and WTI crude oil futures prices

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

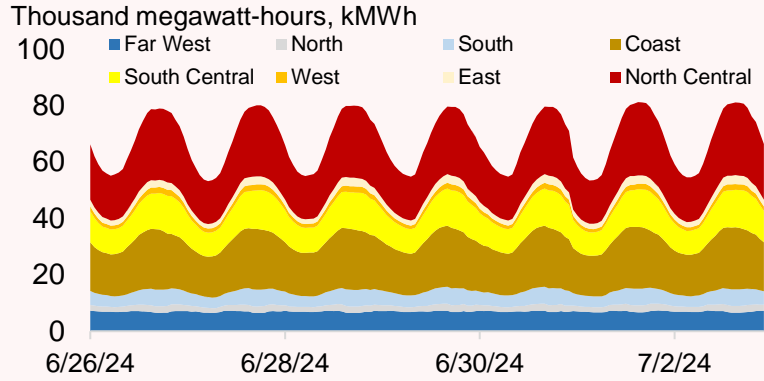


Texas' drilling rig activity decreased for the week ended June 28 per Baker Hughes. Texas had 252 oil-directed rigs (down by 4 rigs w/w) and 25 natural gas-directed rigs (down by 1 rig w/w).

Texas Electricity Analysis

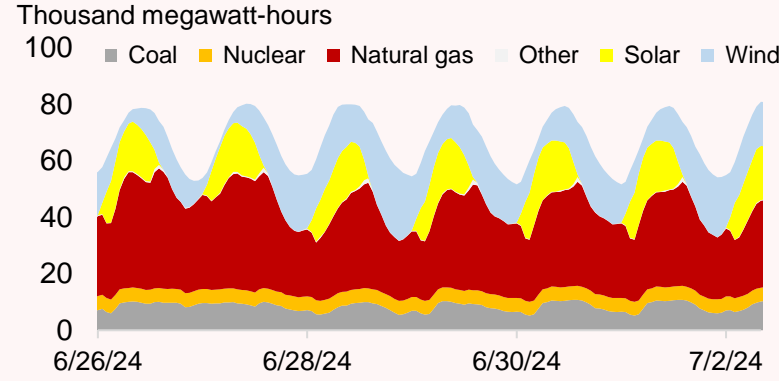


ERCOT electricity load by region



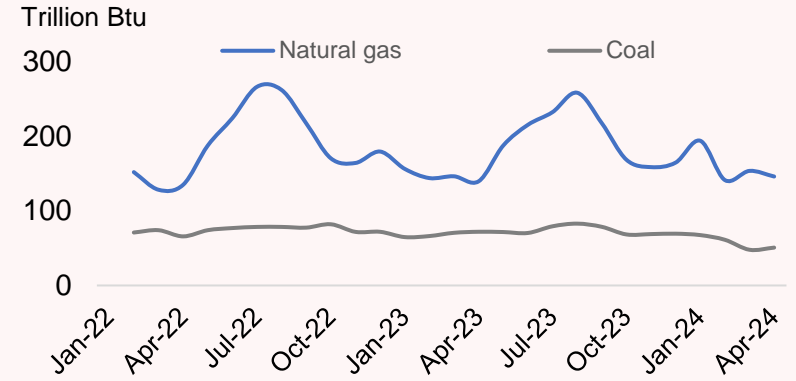
Texas' maximum load increased. For June 26-July 2, ERCOT's average hourly electricity load rose by 8.6% w/w, and the maximum hourly load rose by 2.7% w/w to 81.2 kMWh. Variability was the highest in the East and North regions.

ERCOT hourly electricity generation by source



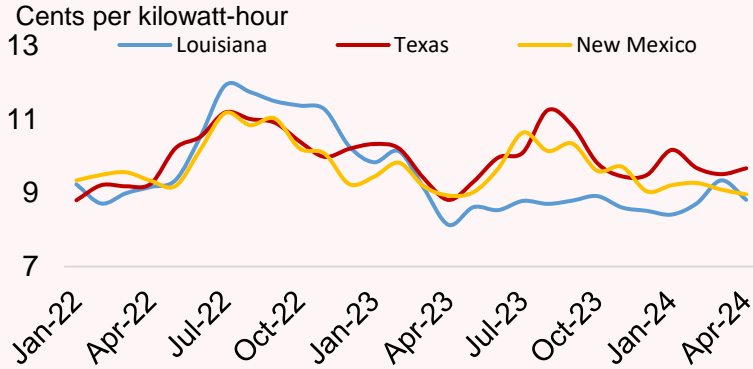
Natural gas drove upwards of 64% of ERCOT's generation. ERCOT's hourly electricity generation for the period June 26-July 2 ranged between 52 and 81 kMWh with a standard deviation of 9.6 kMWh, on par with the prior week. Thermal and dispatchable sources generated as much as 89% of the region's power during the period in the morning of June 27.

Electricity plant receipts of natural gas and coal



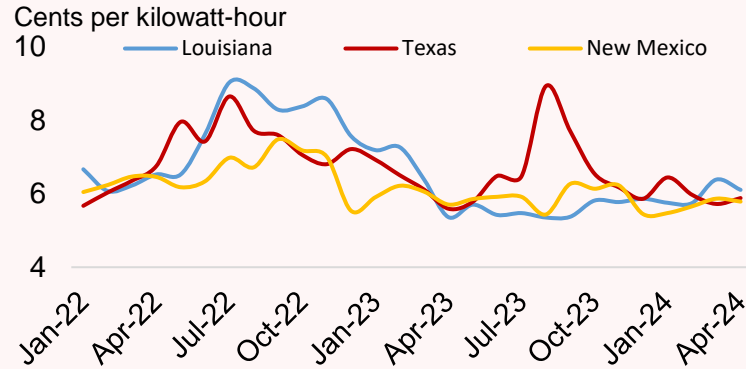
Texas' lower natural gas receipts enabled by higher inventories. Although Texas' thermal and dispatchable energy needs have continued to grow, the maximum monthly quantities of natural gas and coal that generators received have fallen over the past two years, thanks at least in part to greater inventories. 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



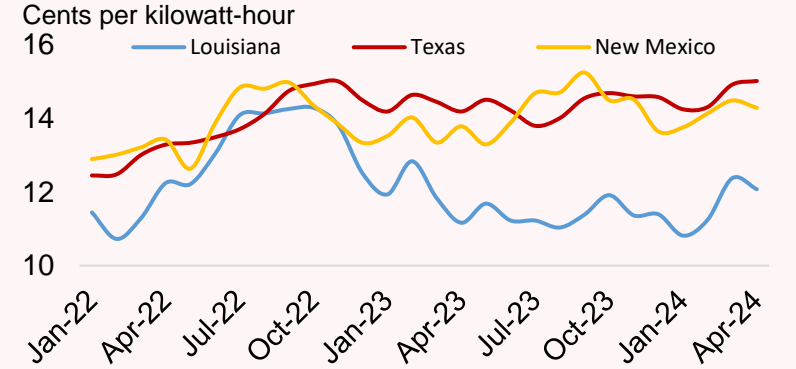
Texas' electricity prices rose in April. The average price of electricity in Texas (9.67 cents per kWh) increased by 9.7% y/y in April, while those in Louisiana and New Mexico remained lower.

Industrial electricity prices



Texas' industrial electricity prices increased. Texas' industrial electricity prices averaged 5.88 cents per kWh in April, up by 5.2% y/y – and were higher with those in New Mexico but lower than those in Louisiana.

Residential electricity prices



Texas' residential electricity prices increased. For Texas' residential consumers, the average price of electricity (15.02 cents per kWh) rose by 5.8% y/y in April and increased to 5.1% above that in New Mexico and 24.3% above that in Louisiana.

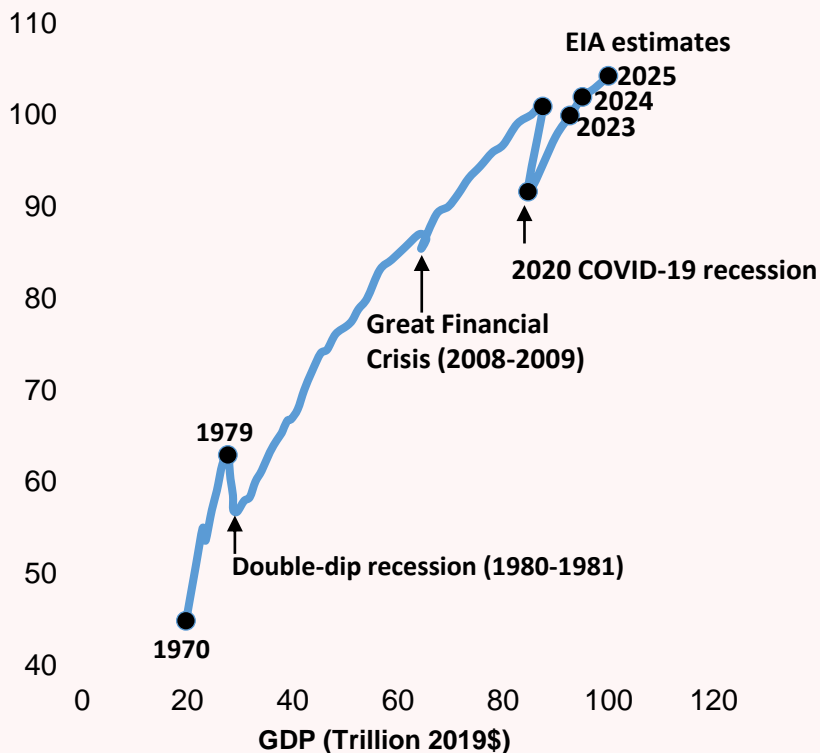
Global Oil Market Balance Projections to 2025



- 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.

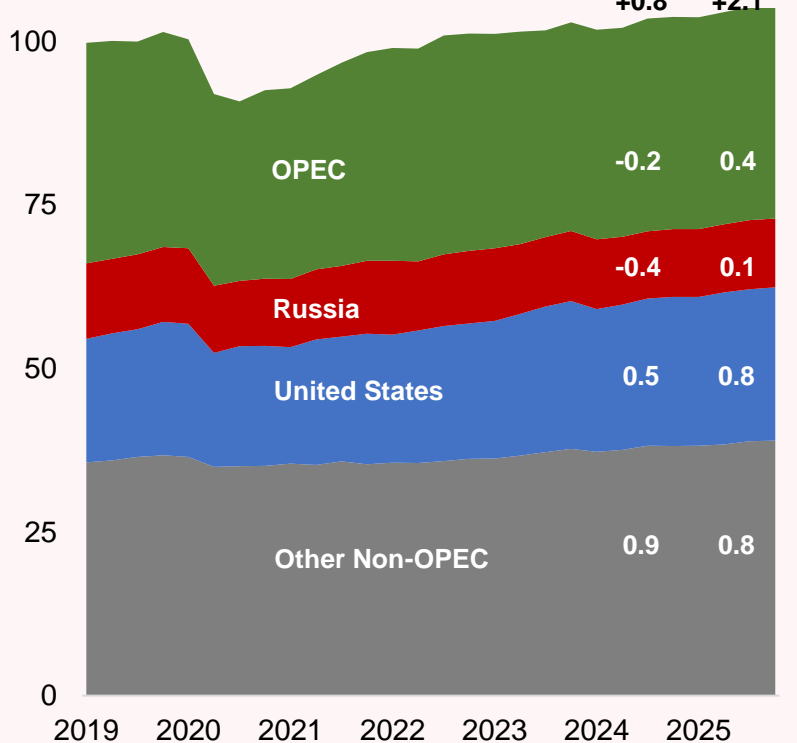
Global oil demand and GDP

Million barrels per day (mb/d)



Oil production by country/region

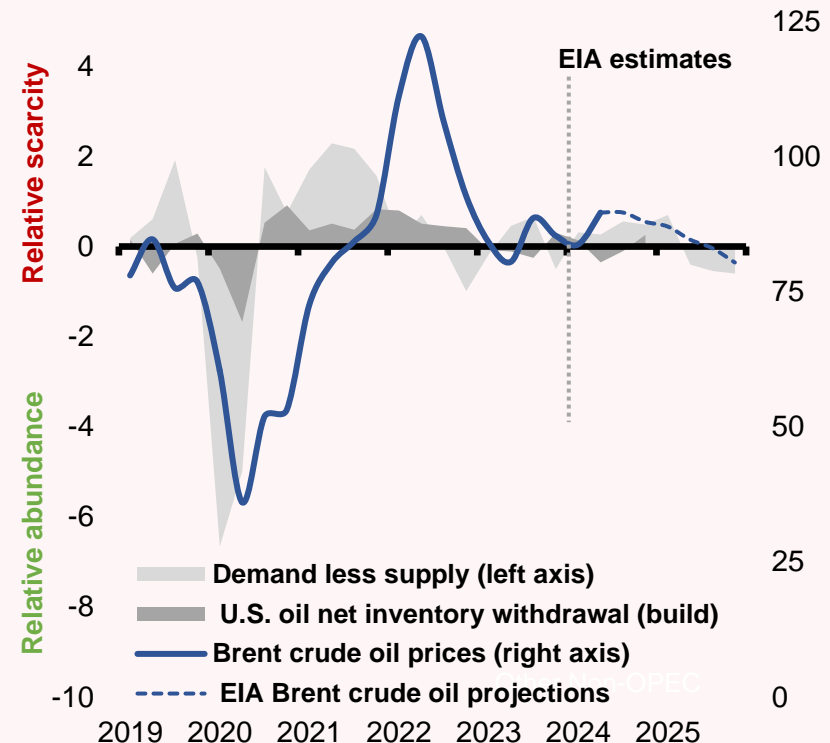
Million barrels per day, mb/d



Global demand/supply & Brent prices

Million barrels per day (mb/d)

2024\$/Bbl



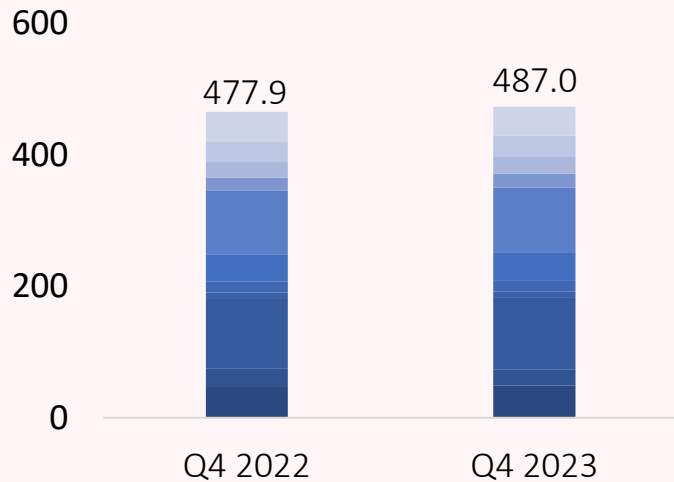
Texas' oil and natural gas industry wages reached \$14.6 billion in Q4 2023



- ▶ 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.

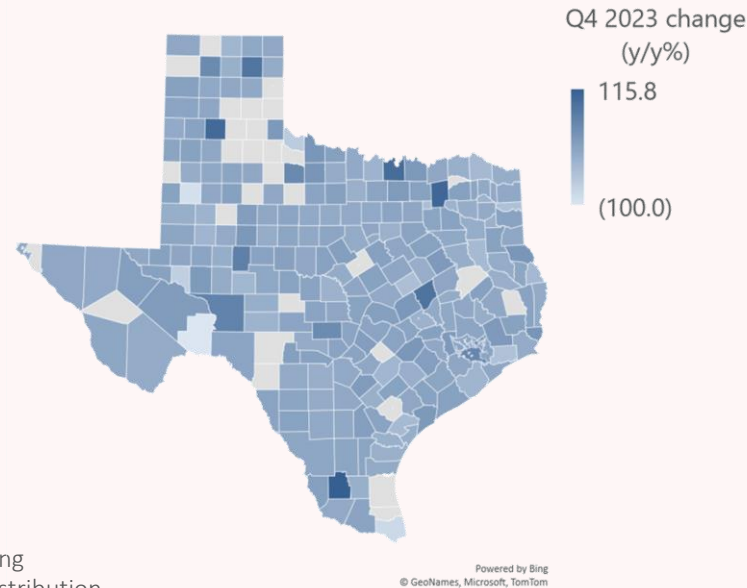
Texas oil and natural gas industry direct employment rose by +1.9% y/y in Q4 2023

Thousand Jobs



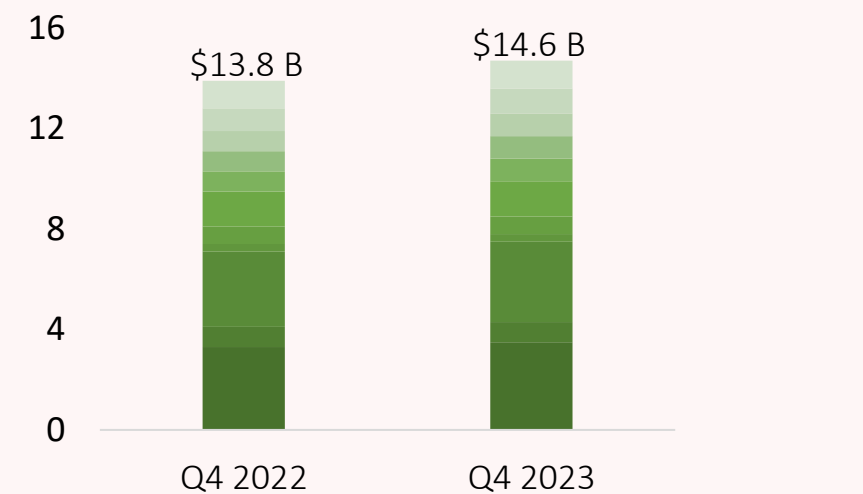
- Oil & gas extraction
- Support activities for o&g ops.
- Petroleum refineries
- Gas stations & fuel dealers
- All other*
- Pipeline construction
- Oil & gas drilling
- Natural gas distribution
- Petrochemical mfg.
- Pipeline transportation
- Oil & gas field mach. and eq. mfg.

* 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

R. Dean Foreman, Ph.D.
dforeman@txoga.org

