



July 22, 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 22, 2024

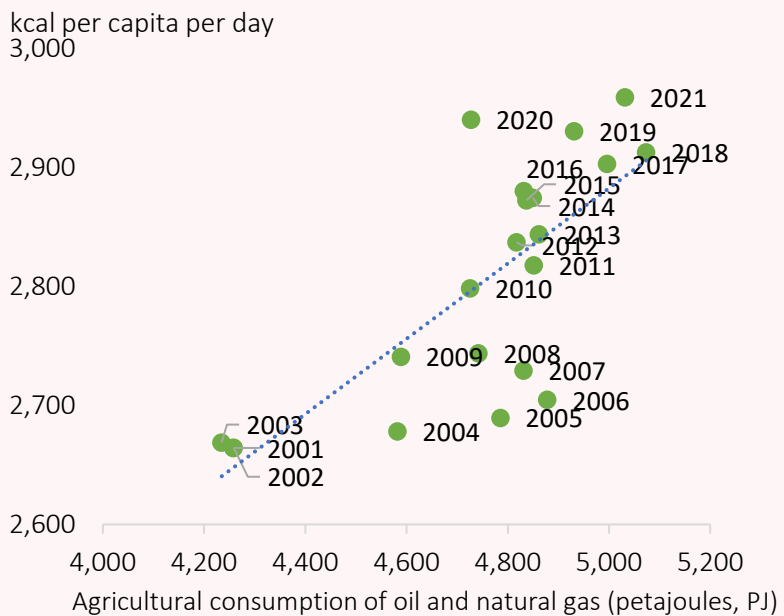
- **U.S. industrial indicators rise, while consumer sentiment falls.** U.S. industrial production rose by 1.6% year-over-year (y/y) in June, marking the strongest increase since November 2022. The Aruoba-Diebold-Scotti (ADS) Business Conditions Index from the Federal Reserve Bank of Philadelphia showed continued acceleration in early July, suggesting improved economic growth at the beginning of Q3 2024. However, consumer sentiment fell for the third straight month, down by over 14% since March 2024, which has historically corresponded with slower consumer spending.
- **Oil market fundamentals tightened.** Consistent with Energy Information Administration (EIA) monthly estimates, global crude oil inventories fell by 1.8 million barrels per day (mb/d) in June and by another 0.3 mb/d in July. U.S. weekly petroleum data showed that domestic crude oil stocks (excluding the Strategic Petroleum Reserve) fell by 20.5 million barrels (4.4%) over the past three weeks, nearing the bottom of the five-year range. These withdrawals occurred despite U.S. production maintaining a record-high pace of 13.3 mb/d over the past couple of weeks.
- **With natural gas seasonal inventories above the five-year range, natural gas prices fell by 7.5% week-over-week (w/w) to \$2.10 per million Btu.** Notably, inventory growth slowed to just 0.3% w/w, and futures prices for December delivery have risen to 55% higher than those for August delivery.
- **Agricultural energy inputs continue to grow.** As highlighted in the [Chart of the Week](#), oil and natural gas inputs to global agricultural energy have continued to grow along with food supplies. The overall relationship has remained consistent across time and for most individual countries, underscoring the foundational role that oil and natural gas play in enabling agricultural productivity and food security.

TXOGA Chart of the Week: Oil and natural gas enable global agriculture

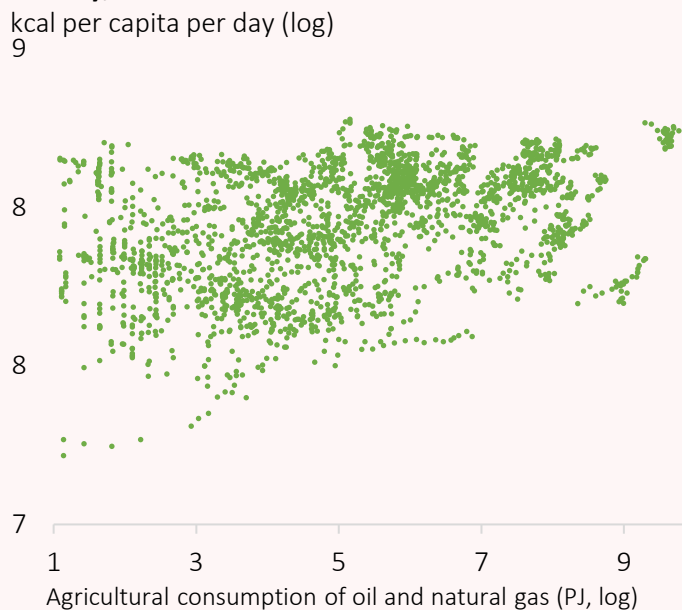


- Oil, natural gas, and refined petroleum products have remained fundamental to agricultural production and productivity gains in transportation, heating, processing, feed and fertilizers, with no signs of slowing.
- The left panel shows that, with rising global food supplies, agricultural industry consumption of oil and natural gas has increased by an average of 0.8% per year over the past two decades.
- The same relationship also generally holds by individual country, as shown in the middle panel (with a log transformation) for 154 countries since 2000.
- Reinforcing the direct overall relationship and strong time dependence of individual country observations, the right panel highlights one country each from Africa, Asia Pacific, and Latin America, showing the consistency of relationships among fundamentally different emerging economies.

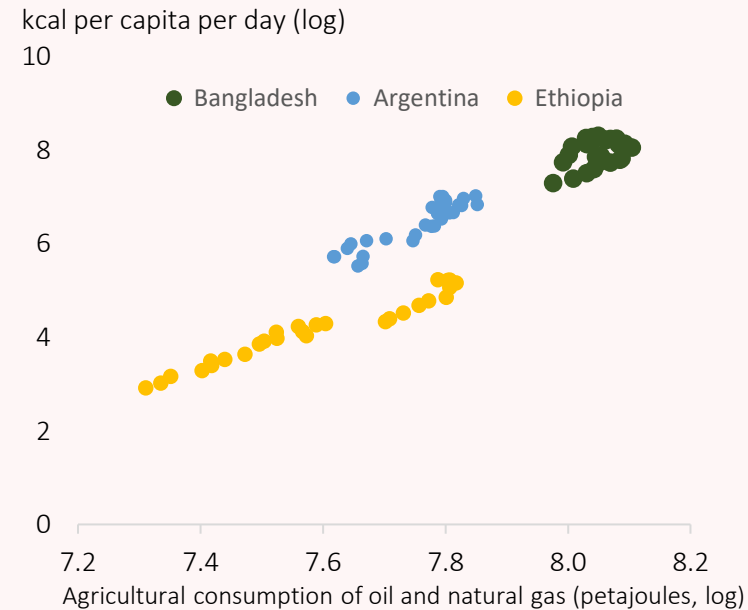
Global food supply vs. agricultural energy consumption



Food supply vs. agricultural energy consumption by country, 1990-2021

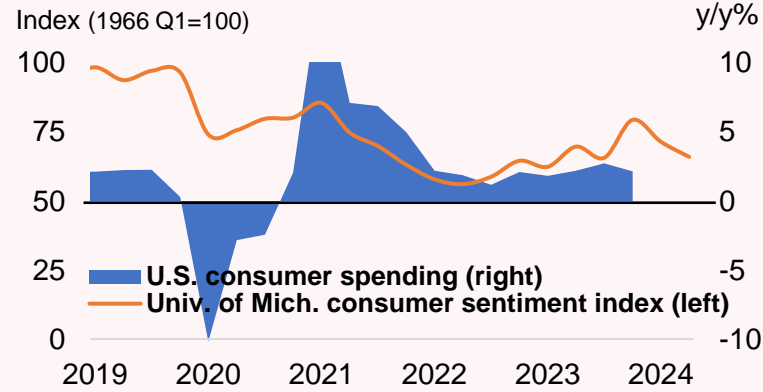


Food supply vs. agricultural energy consumption for selected economies, 1990-2021



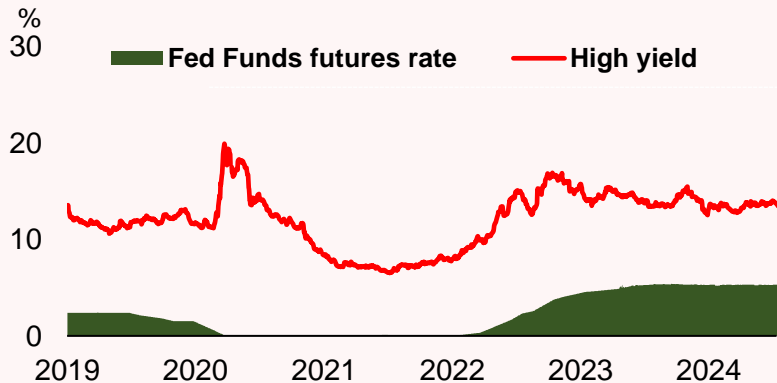
U.S. economic indicators

Consumer sentiment vs. spending



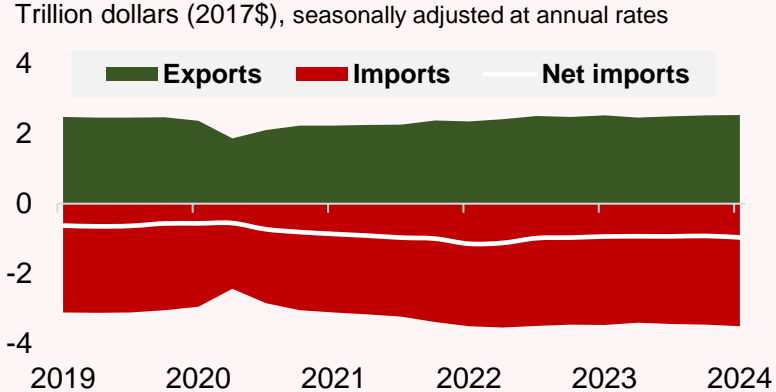
Consumer sentiment slipped by 3.2% m/m in early July, according to the University of Michigan's survey, Historically this implies positive but slower economy-wide spending growth for Q3 2024.

Fed Funds rate and CCC and lower corporate bond yields



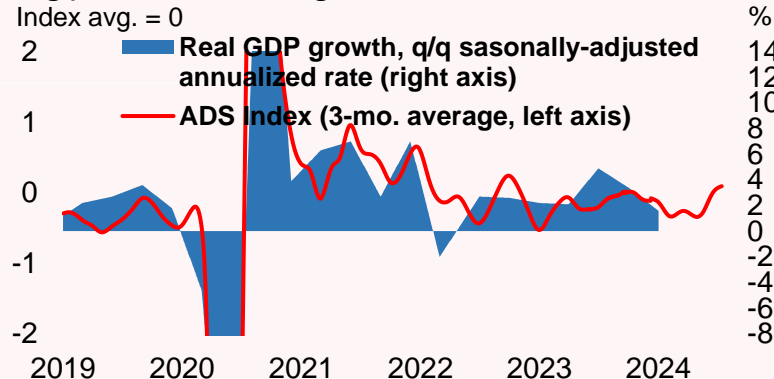
Bond premium for low credit fell. High yield (HY) rates reflect debt costs for firms with below-investment grade credit quality. For the week ended July 18, HY rates fell by 0.3% w/w to 13.5%, while Fed Funds futures rates remained at 5.3%, resulting in a premium for low credit quality of 8.2%.

Real net exports of goods and services



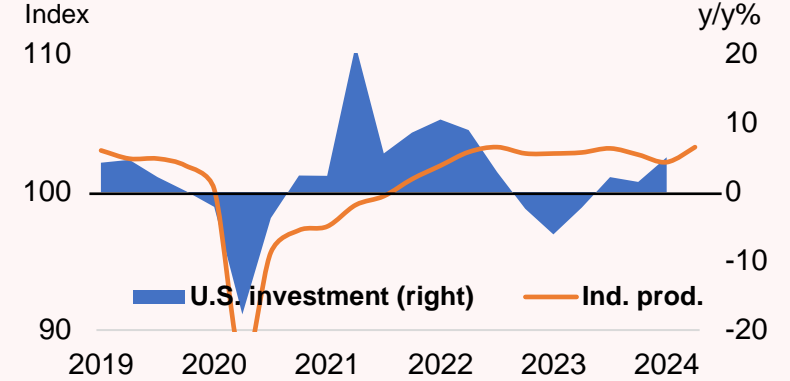
U.S. trade deficit revised to be narrower. The U.S. real trade deficit ran at an annualized rate of \$960B in Q1 2024 per BEA final estimates, down from a prior estimate of \$975B. On a nominal basis, the trade surplus for petroleum and products was revised downwards to an annualized rate of \$52 billion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



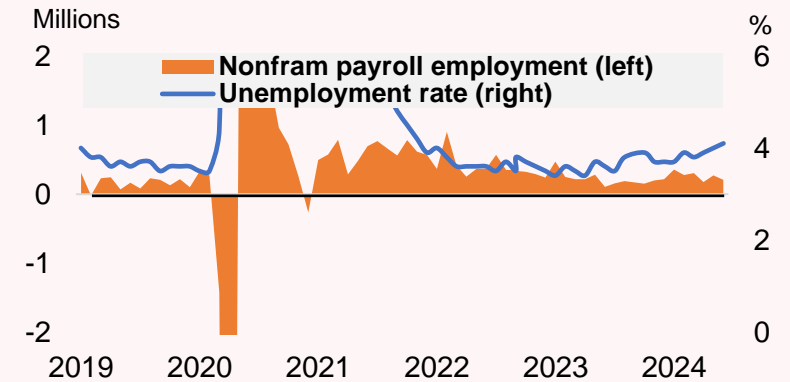
The ADS index has strengthened in July, suggesting solid GDP growth. The ADS business conditions index, published by the Philadelphia Fed. Res. Bank, is a leading indicator of GDP growth. A rolling 3-month average of the ADS index has accurately reflected real GDP growth and with recent increases remains consistent with further growth in Q3.

Industrial production and investment growth



U.S. industrial production grew by 1.6% y/y in June, per the Federal Reserve Board and remains consistent with economy-wide investment growth in Q2 2024.

Nonfarm payroll employment & unemployment rate

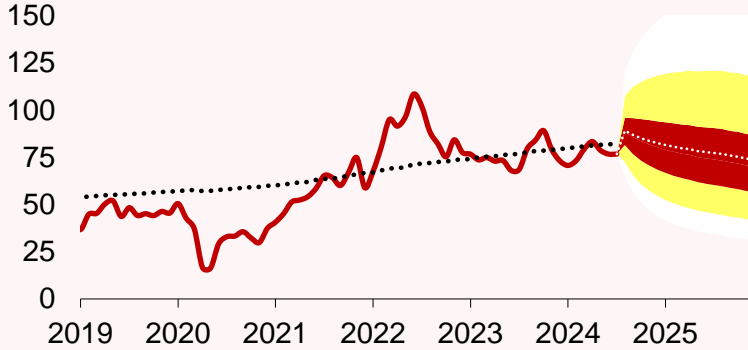


Solid labor market growth continued in June. The employment situation is a lagging indicator of GDP growth. The U.S. unemployment rate rose by 0.1% m/m to 4.1 in June per BLS, while non-farm payrolls increased by 206,000.

U.S. oil market indicators

WTI crude oil price mean reversion analysis

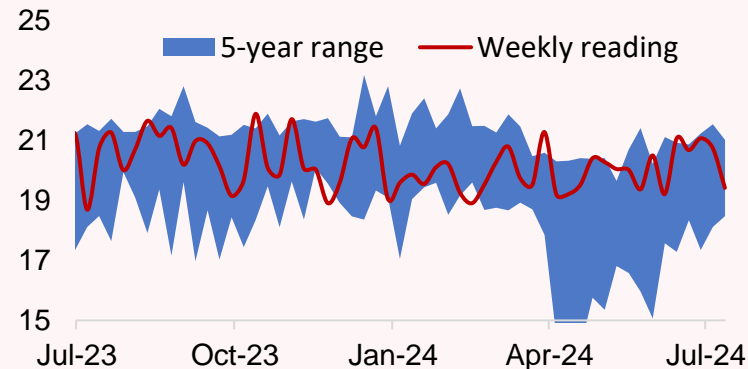
Dollars per barrel (2024\$)



Near-term futures prices have aligned with 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

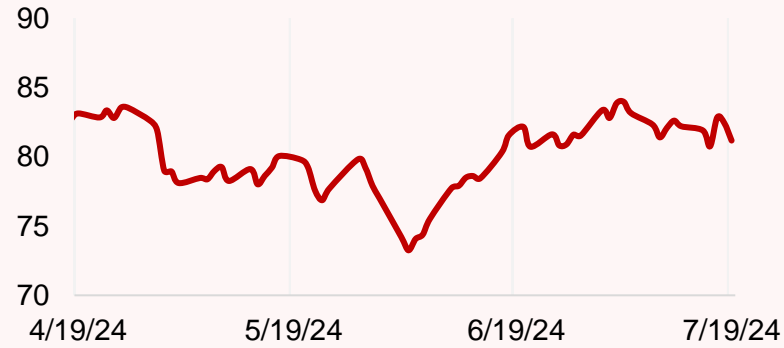
Million barrels per day (mb/d)



Petroleum demand decreased. U.S. petroleum demand, as measured by deliveries, fell by 1.3 mb/d w/w to 19.4 mb/d for the week ended July 12.

WTI crude prompt month futures prices

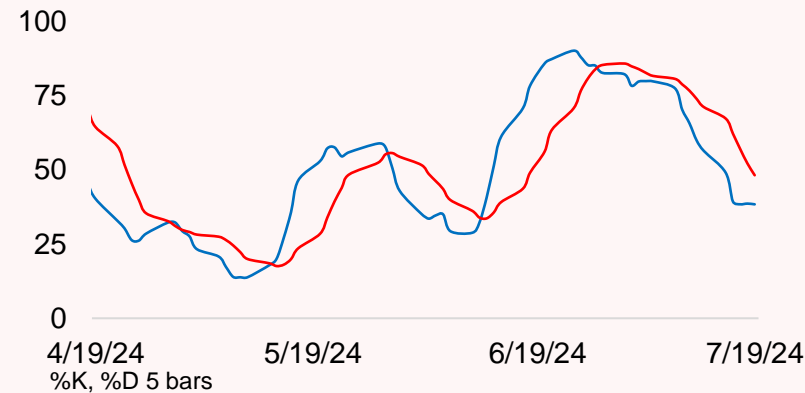
Dollars per barrel



WTI crude oil prices fell by 1.3% w/w to \$81 per barrel for the week ended July 19, supported by continued domestic crude inventory drawdowns and a continued Middle East geopolitical premium.

WTI crude prompt month futures slow stochastic

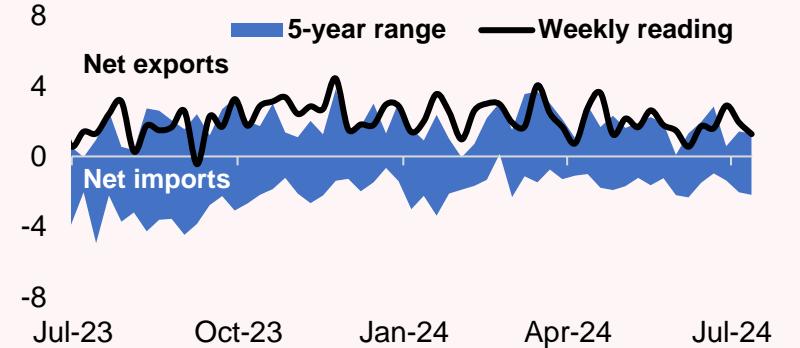
Index level



Price momentum weakened during the week ended July 19.

U.S. petroleum net exports (imports)

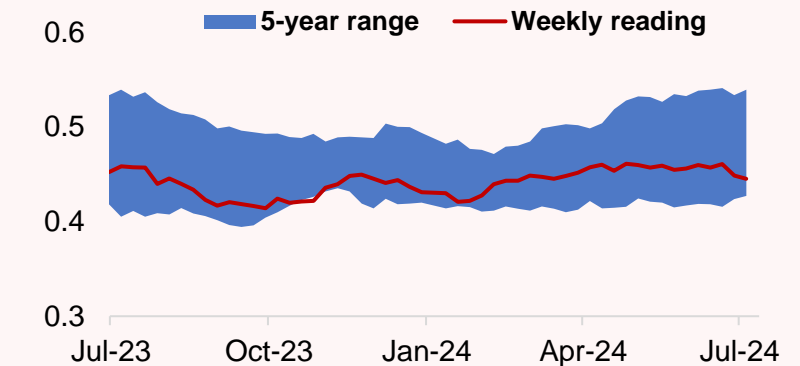
Million barrels per day, mb/d



Petroleum net exports fell. The U.S. was a petroleum net exporter of 1.2 mb/d for the week ended July 12, down by 0.7 mb/d from the prior week but remained above the 5-year range.

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

Billion barrels

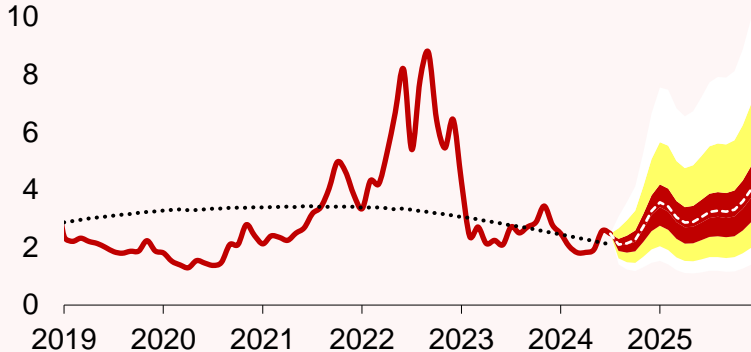


Inventories decreased. U.S. ending stocks of crude oil excluding the Strategic Petroleum Reserve (SPR) decreased by 4.9 million barrels (mb) for the week ended July 12 and have fallen by 20.5 mb (4.4%) over the past three weeks towards the bottom of the 5-year range.

U.S. natural gas market indicators

Natural gas price mean reversion analysis

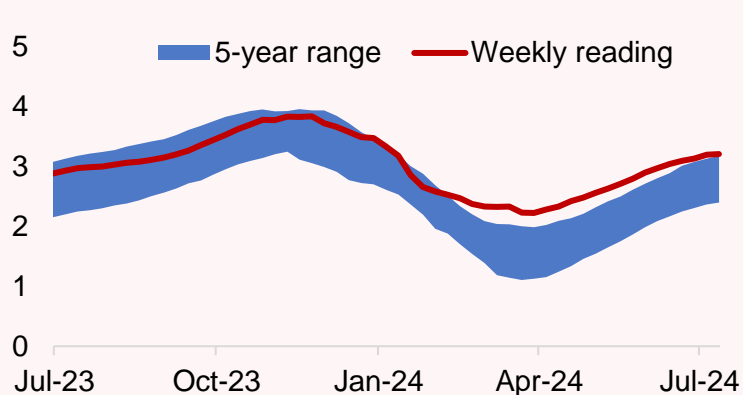
Dollars per mMBtu (2024\$)



Near-term natural gas futures prices have aligned the historical mean reversion target but rise by 55% between the August and December contracts. Confidence intervals based on past prices show the potential for greater upside than downside.

U.S. weekly working gas storage

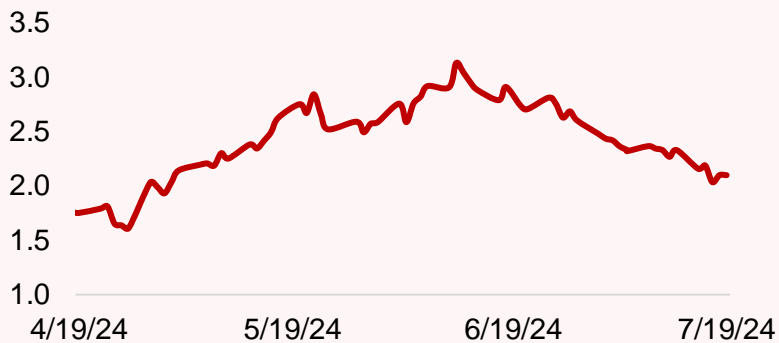
Trillion cubic feet (tcf)



Storage injections slowed. Working gas in underground storage rose by 0.3% w/w to 3.21 tcf as of July 12 but fell to 4% above the top of its 5-year range (vs. 9% above the 5-year range during the prior week).

Natural gas prompt month futures prices

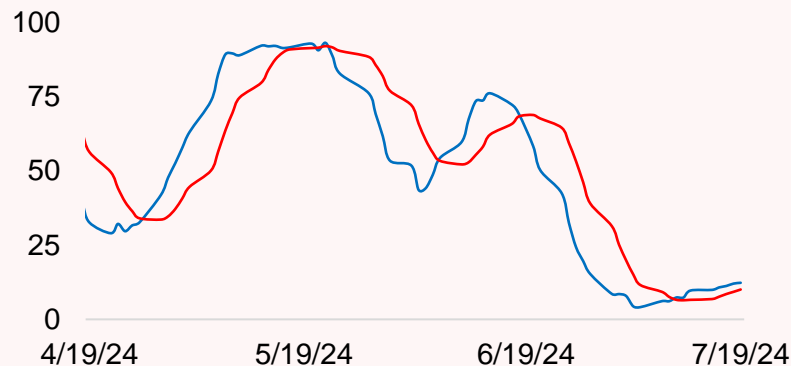
Dollars per million Btu



Natural gas prices at Henry Hub fell to around \$2.10 per million Btu for the week ended July 19, due to historically strong inventory levels.

Natural gas futures slow stochastic

Index level

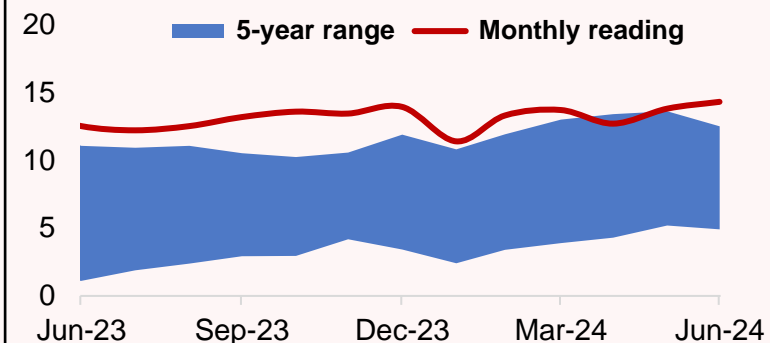


%K, %D 5 bars

Natural gas price momentum fell for the week ended July 19.

U.S. natural gas net exports

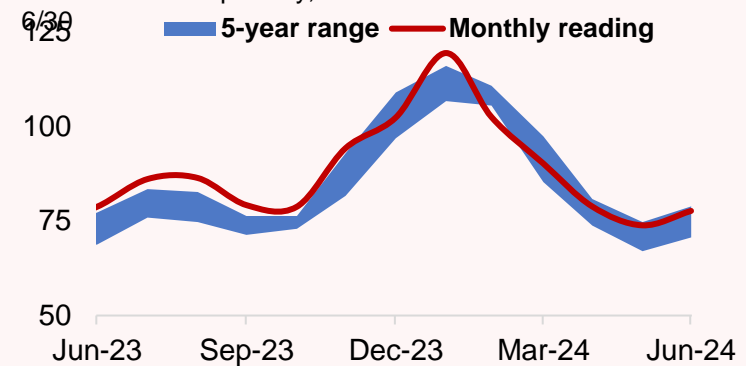
Billion cubic feet per day, bcf/d



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. natural gas consumption

Billion cubic feet per day, bcf/d

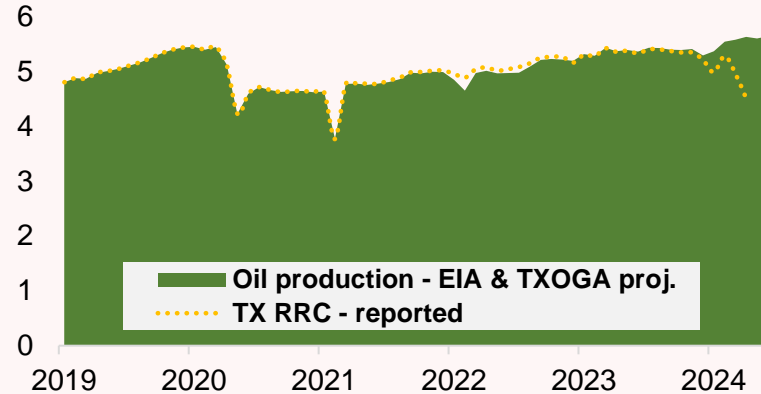


Consumption increased. U.S. natural gas consumption rose by 3.8 bcf/d m/m to 77.6 bcf/d in June as estimated by EIA.

Texas' oil and natural gas production

Texas crude oil production, Jan. 2019 – June 2024

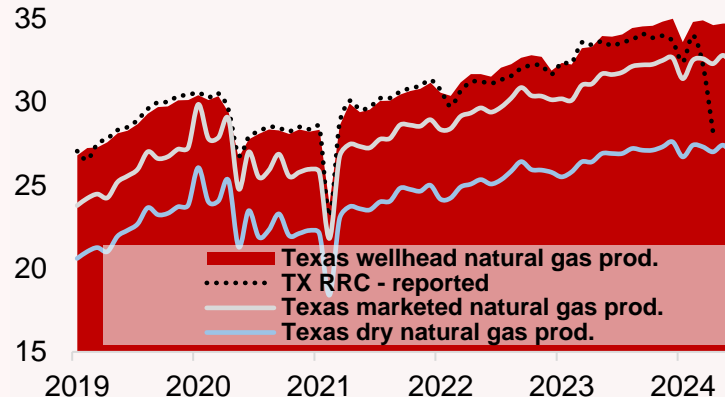
Million barrels per day (mb/d)



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

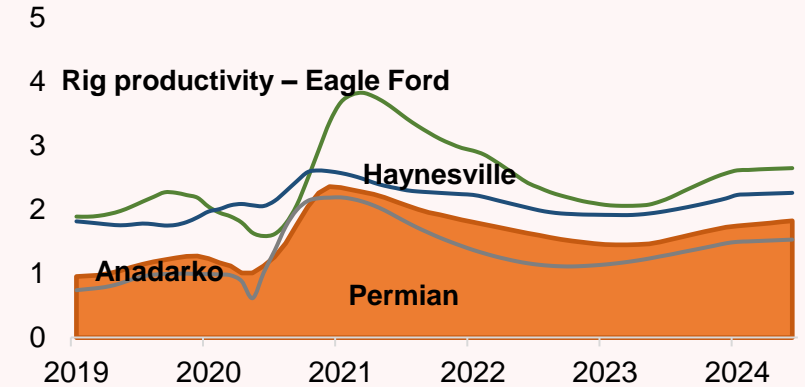
Billion cubic feet per day (bcf/d)



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

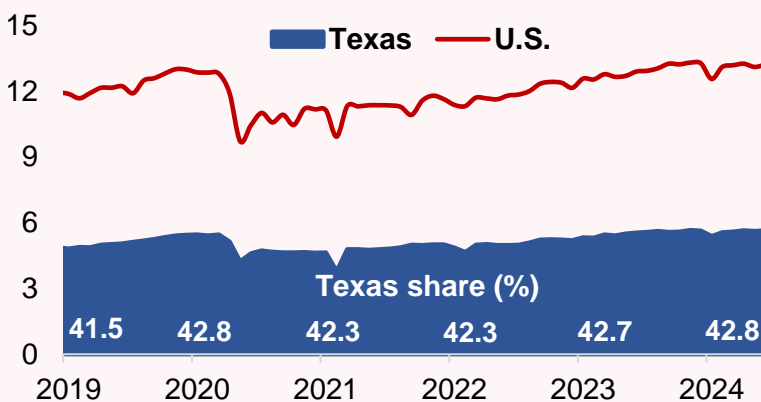
Thousand barrels per day oil-equivalent, kb/dae



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

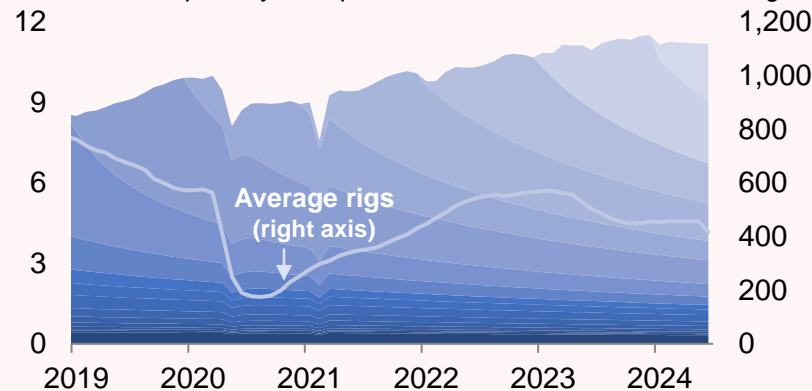
Million barrels per day (mb/d)



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

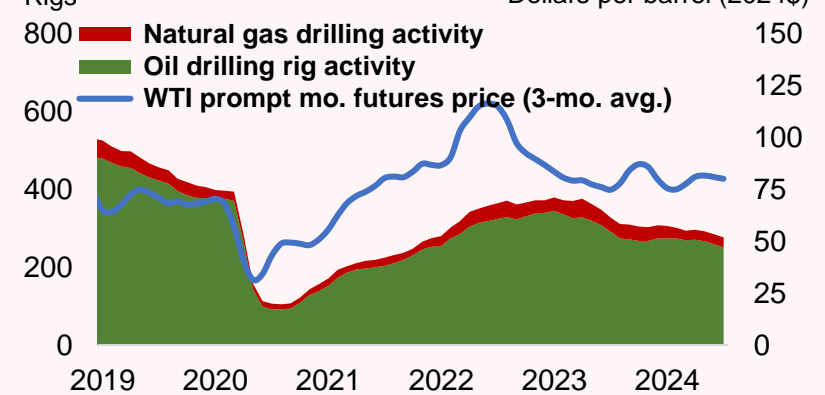
Million barrels per day oil-equivalent



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 Dollars per barrel (2024\$)

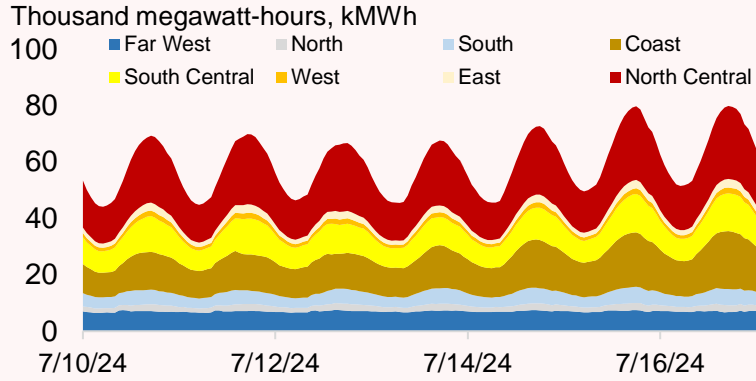


Texas' drilling rig activity held steady for the week ended July 19 per Baker Hughes. Texas had 250 oil-directed rigs and 26 natural gas-directed rigs, both unchanged from the prior week.

Texas Electricity Analysis

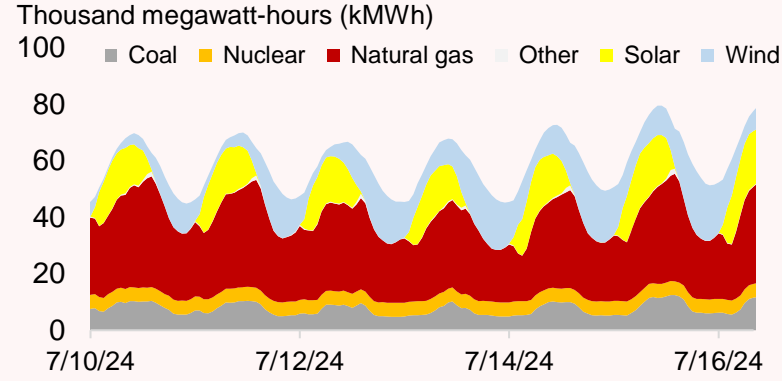


ERCOT electricity load by region



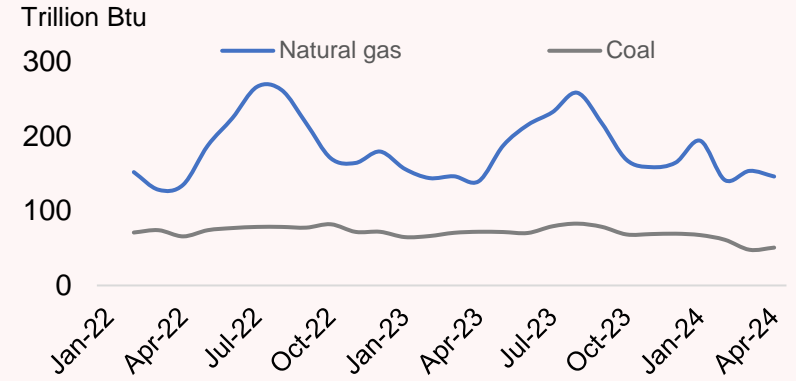
Texas' maximum load fell by 1.1% w/w. For July 10-16, ERCOT's average hourly electricity load averaged 79.8 kMWh, steady versus the prior week, while the maximum load hourly load of 79.8 kMWh fell by 1.1% w/w. Variability remained highest in the Coast and East regions.

ERCOT hourly electricity generation by source



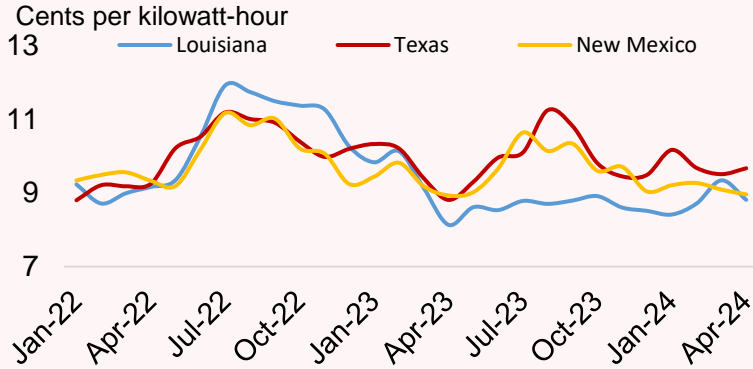
ERCOT's generation eased vs. the prior week. ERCOT's hourly electricity generation for the period July 10-16 ranged between 44 and 80 kMWh with a standard deviation of 9.9 kMWh, down by 4.7% from the prior week. Thermal and dispatchable sources generated as much as 87% of the region's power during the period in the morning of July 10.

Electricity plant receipts of natural gas and coal



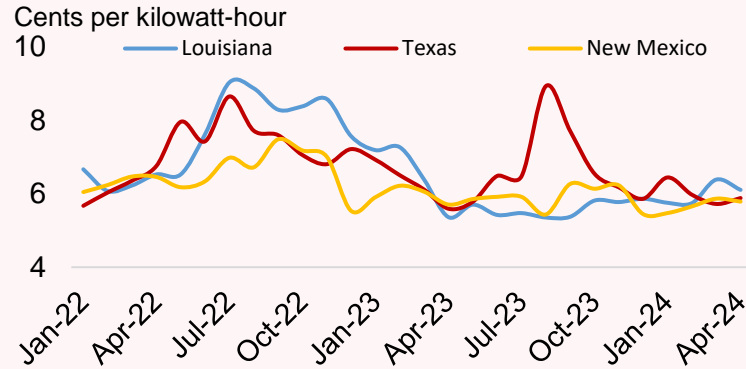
Texas' lower natural gas receipts enabled by higher inventories. Although Texas' thermal and dispatchable energy needs have continued to grow, the maximum monthly quantities of natural gas and coal that generators received have fallen over the past two years, thanks at least in part to greater inventories.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



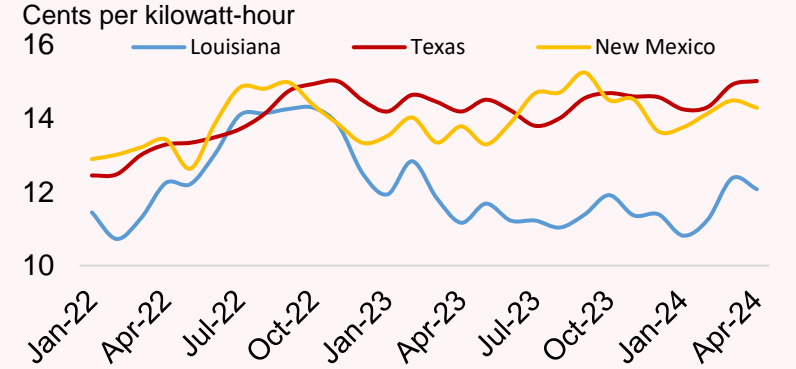
Texas' electricity prices rose in April. The average price of electricity in Texas (9.67 cents per kWh) increased by 9.7% y/y in April, while those in Louisiana and New Mexico remained lower.

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.

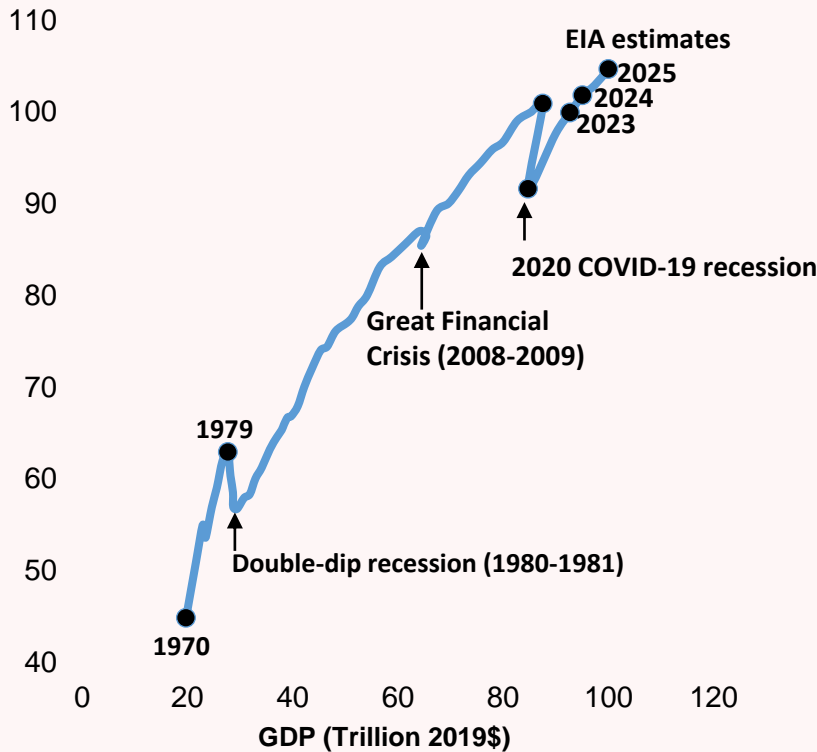
Global Oil Market Balance Projections to 2025



- **Solid demand and inventory drawdowns.** EIA's July 2024 Short-Term Energy Outlook essentially moved 0.1 mb/d of demand growth from 2024 into 2025, resulting in global demand of 102.9 mb/d this year and 104.6 mb/d next year – both record highs.
- **For oil inventories, EIA projects global stock withdrawals to continue through Q1 2025,** including 0.8 mb/d in Q3 2024 and as high as 1.0 mb/d in Q1 2025, corresponding with Brent crude oil prices of \$86.37 in 2024, compared with \$85.50 per barrel currently.

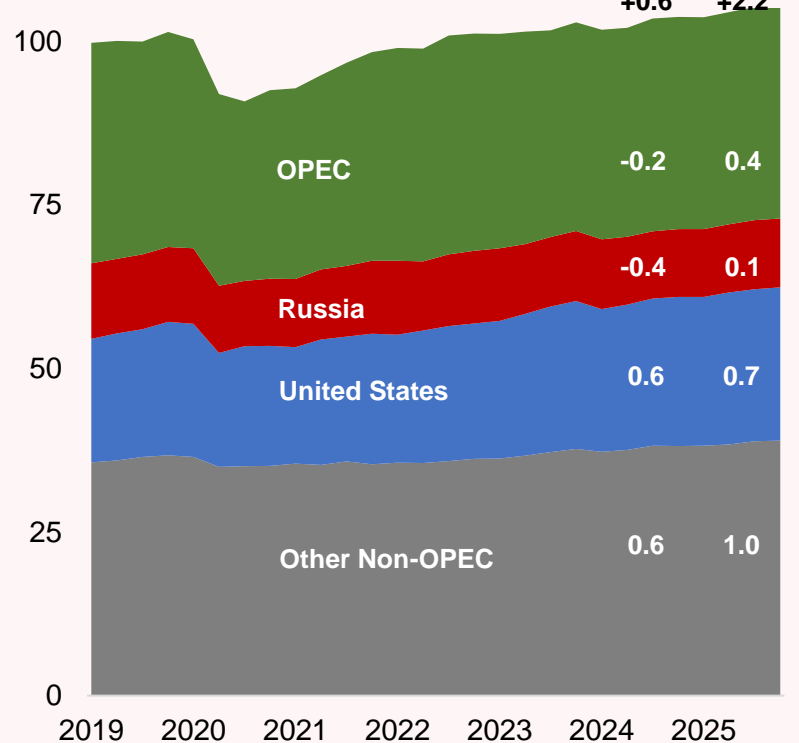
Global oil demand and GDP

Million barrels per day (mb/d)



Oil production by country/region

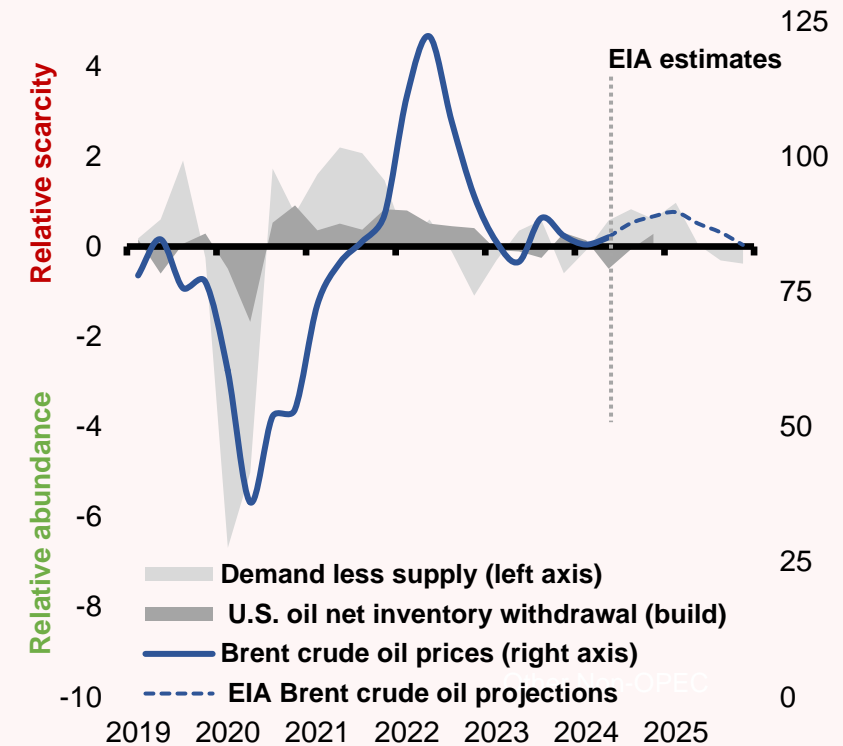
Million barrels per day, mb/d



Global demand/supply & Brent prices

Million barrels per day (mb/d)

2024\$/Bbl



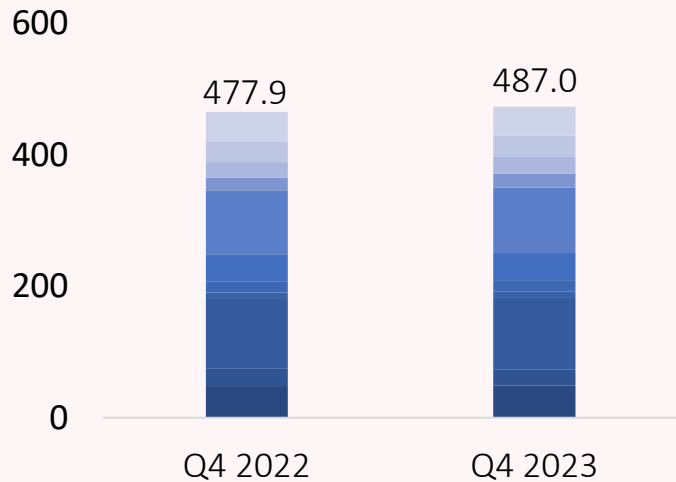
Texas' oil and natural gas industry wages reached \$14.6 billion in Q4 2023



- ▶ 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.

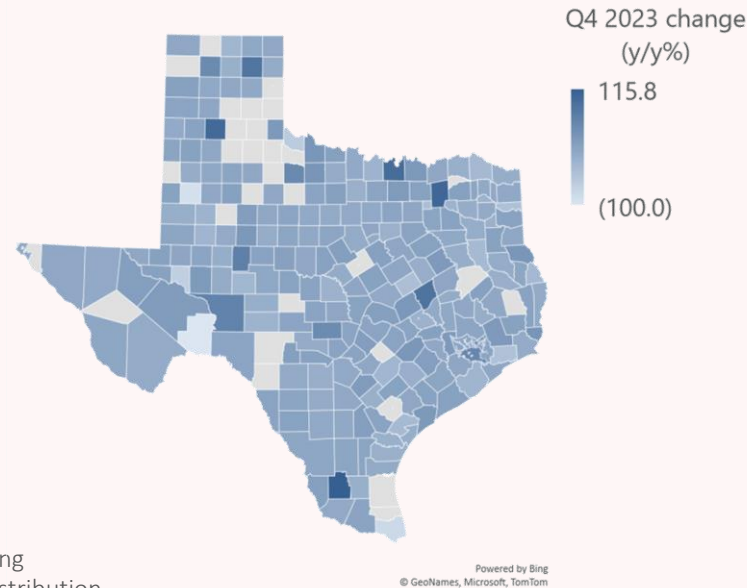
Texas oil and natural gas industry direct employment rose by +1.9% y/y in Q4 2023

Thousand Jobs



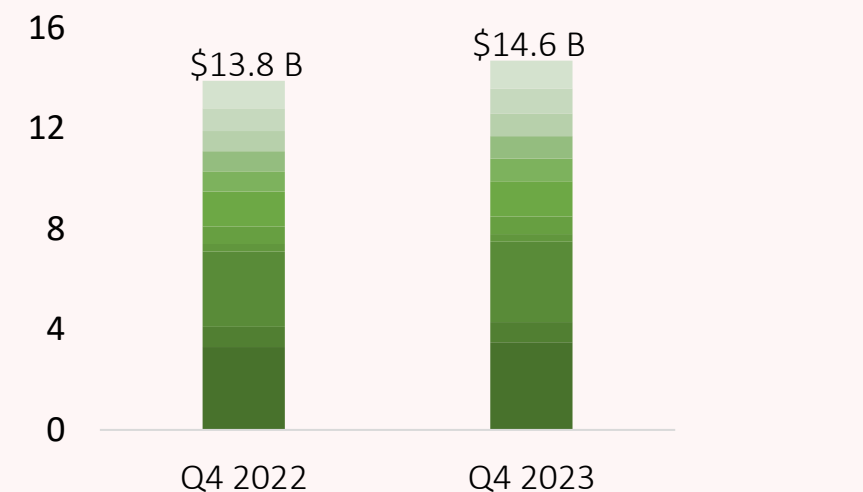
- Oil & gas extraction
- Support activities for o&g ops.
- Petroleum refineries
- Gas stations & fuel dealers
- All other*
- Pipeline construction
- Oil & gas drilling
- Natural gas distribution
- Petrochemical mfg.
- Pipeline transportation
- Oil & gas field mach. and eq. mfg.

* 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
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