

R. Dean Foreman, Ph.D.
Oil Market Prospects for 2025 and Beyond
Baker Institute
December 19, 2024



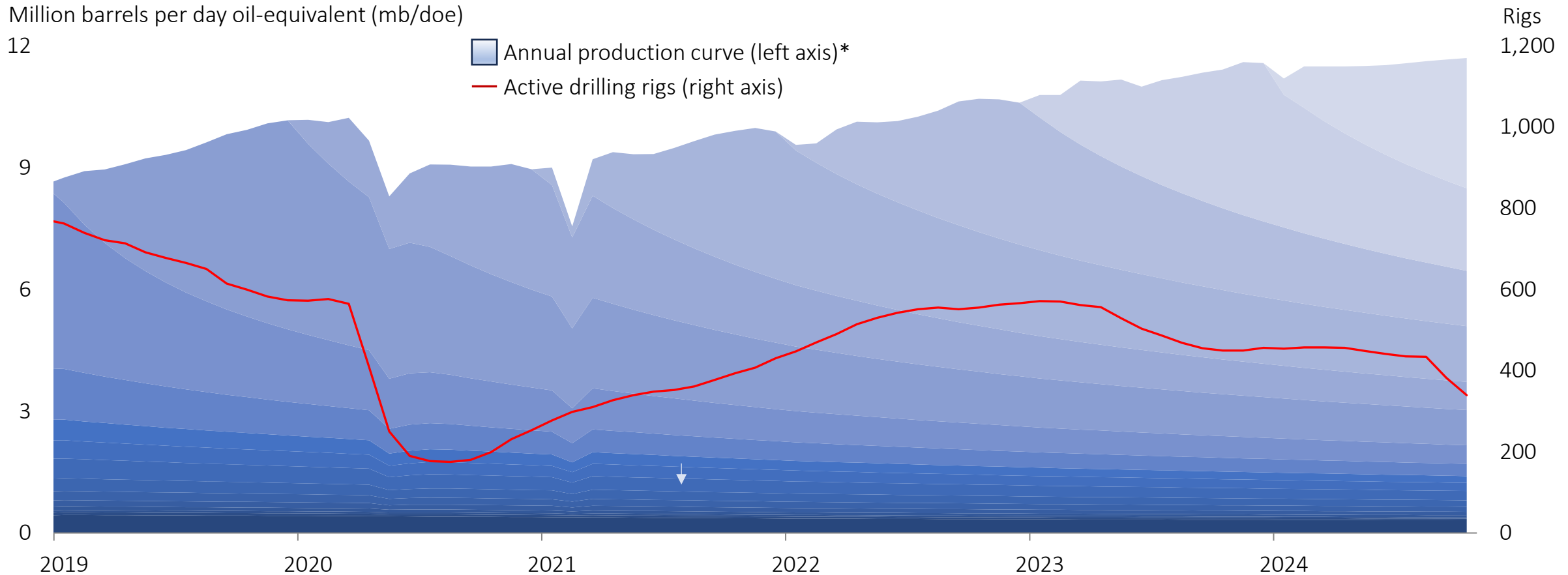
Key Points

- ▶ **Texas oil and natural gas production is at or near record highs.** Led by the Permian Basin, Texas oil and natural gas production has continued to grow, with 5.8 million barrels per day of crude oil production, 33.2 billion cubic feet per day of natural gas marketed production, and 4.0 mb/d of natural gas liquids (NGLs) in November 2024 by TXOGA's estimates
- ▶ **Texas' shares of U.S. production have risen** to 43% of U.S. oil and 29.1% of U.S. natural gas marketed production year-to-date through November 2024, by TXOGA's estimates
- ▶ **Rig productivity gains have continued despite fewer active rigs, due to advances in drilling, analytics, and automation**
- ▶ **The cumulative impacts of Federal regulations** that affect the oil and natural gas industry's emissions, permitting, water and wastewater management, and other monitoring and reporting requirements are consequential and drive uncertainty over operational practices, compliance costs, and environmental responsibilities
- ▶ **Trade, tariffs, and potential tariff retaliation** could pose additional uncertainties that are important to Texas

Led by the Permian Basin, Texas' shale oil and tight gas production has risen despite the utilization of fewer rigs



➤ EIA estimates show oil and natural gas production across Texas shale basins changes in October 2024: Permian (+3.0% y/y), Eagle Ford (1.7% y/y), Anadarko (-5.3% y/y) and Haynesville (-11.1% y/y)



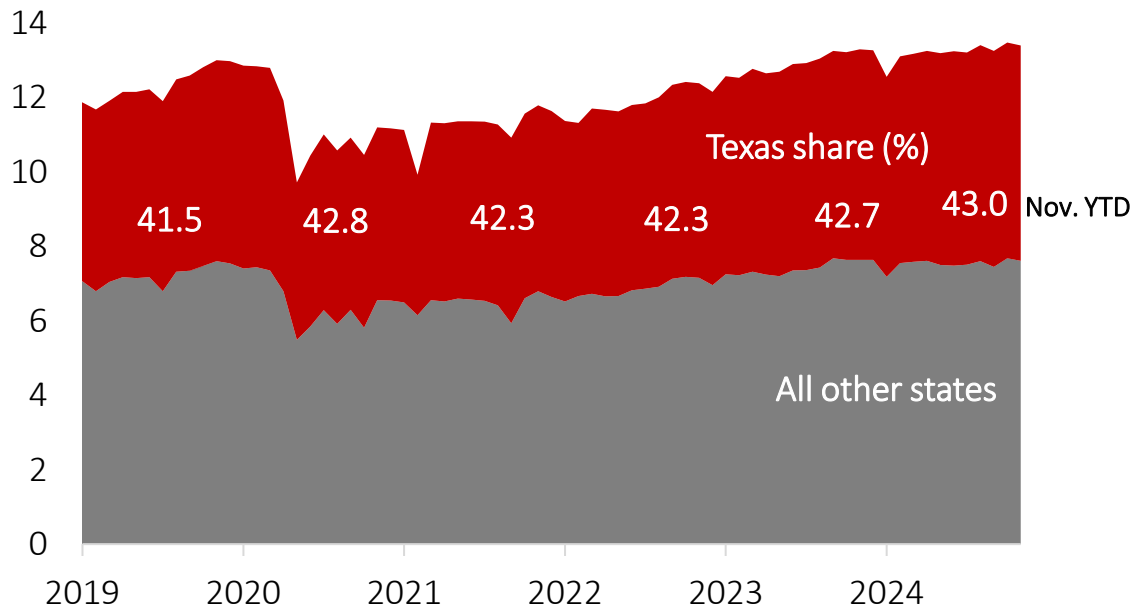
Texas' oil and natural gas production sustained strong levels



- ▶ TXOGA's projections show that Texas produced 5.8 mb/d of crude oil, 33.2 bcf/d of natural gas marketed production, and 4.0 mb/d of NGLs in November.
- ▶ EIA data for September showed Texas crude oil production at 5.81 mb/d and natural gas marketed production of 33.4 bcf/d.
- ▶ TXOGA estimates that Texas has produced 43.0% of U.S. crude oil and 29.1% of U.S. natural gas marketed production year-to-date through November 2024, increasing their shares of U.S. and global production.

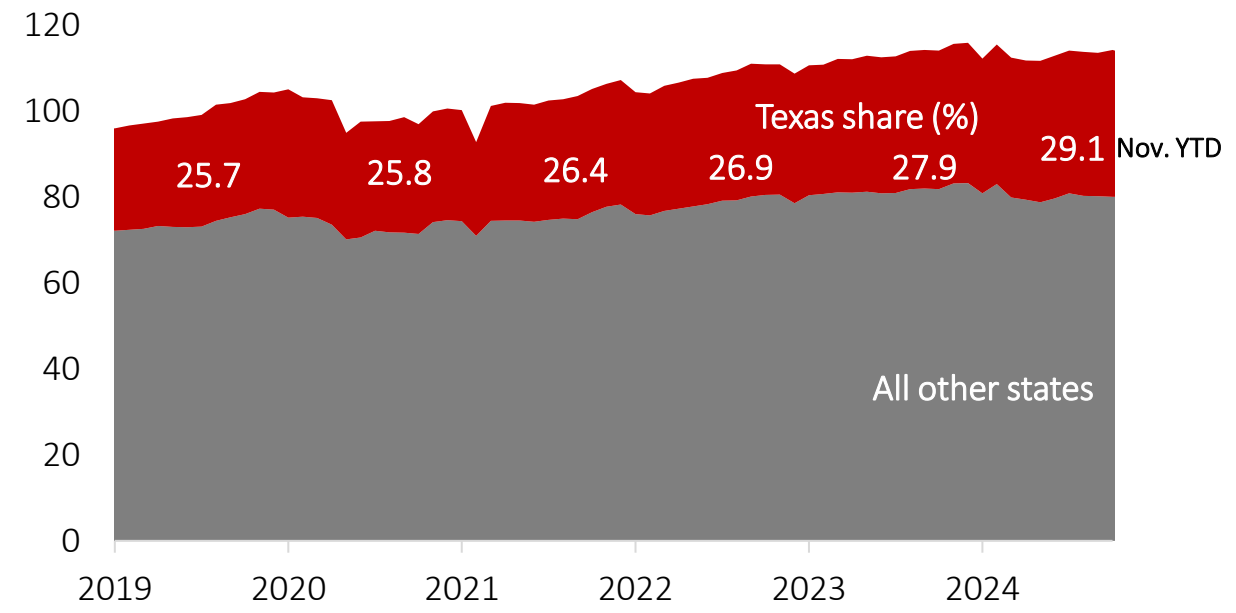
U.S. and Texas crude oil production

Million barrels per day (mb/d)



U.S. and Texas natural gas marketed production

Billion cubic feet per day (bcf/d)



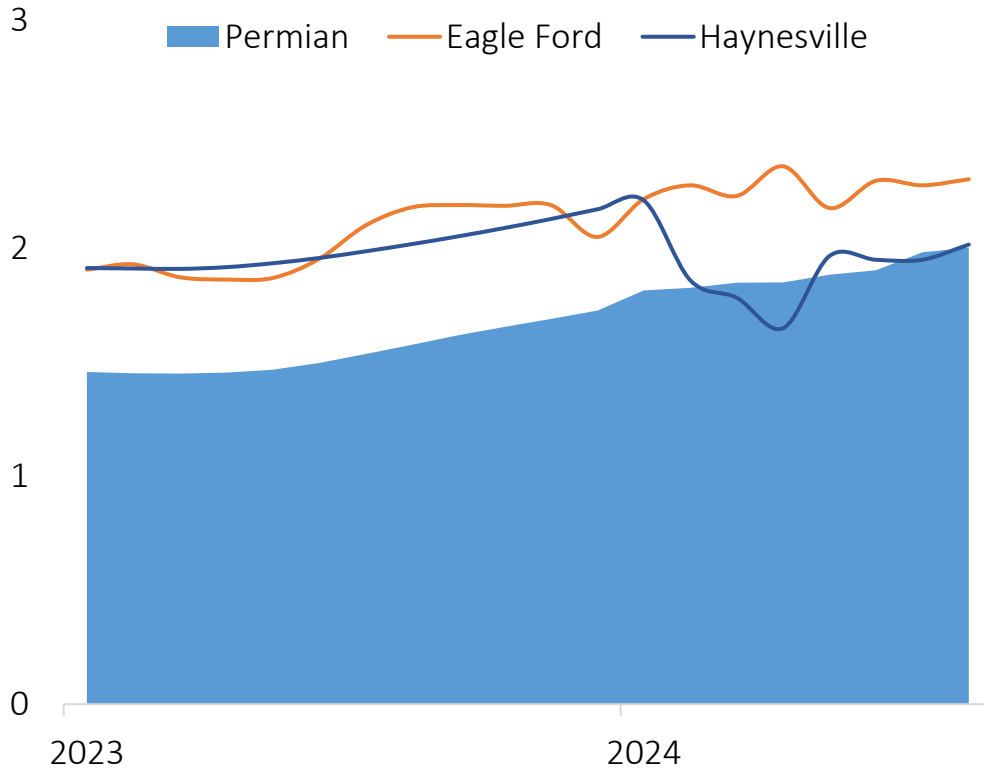
Rig productivity gains have continued to enable production growth



- Solid productivity: EIA's revised estimates of rig productivity across major Texas producing basins in October 2024 show strong increases year-over-year for the Permian Basin (+21.0% y/y) and Haynesville (15.5% y/y), but a modest gain in the Eagle Ford (+2.3% y/y)

Texas rig productivity by basin – new monthly production per rig

Thousand barrels per day oil-equivalent, kb/doe



Oil and natural gas innovation headlines

Shale Oil Is More Likely To Boom Than Peak

Forbes, December 3, 2024

Drilling advances: Is it always only about people?

WorldOil.com, November 2024

Automation, Robotics Transforming How Industry Drills Wells

JPT.SPE.org, November 2024

The Evolution of the Land Drilling Rig

JPT.SPE.org, October 2024

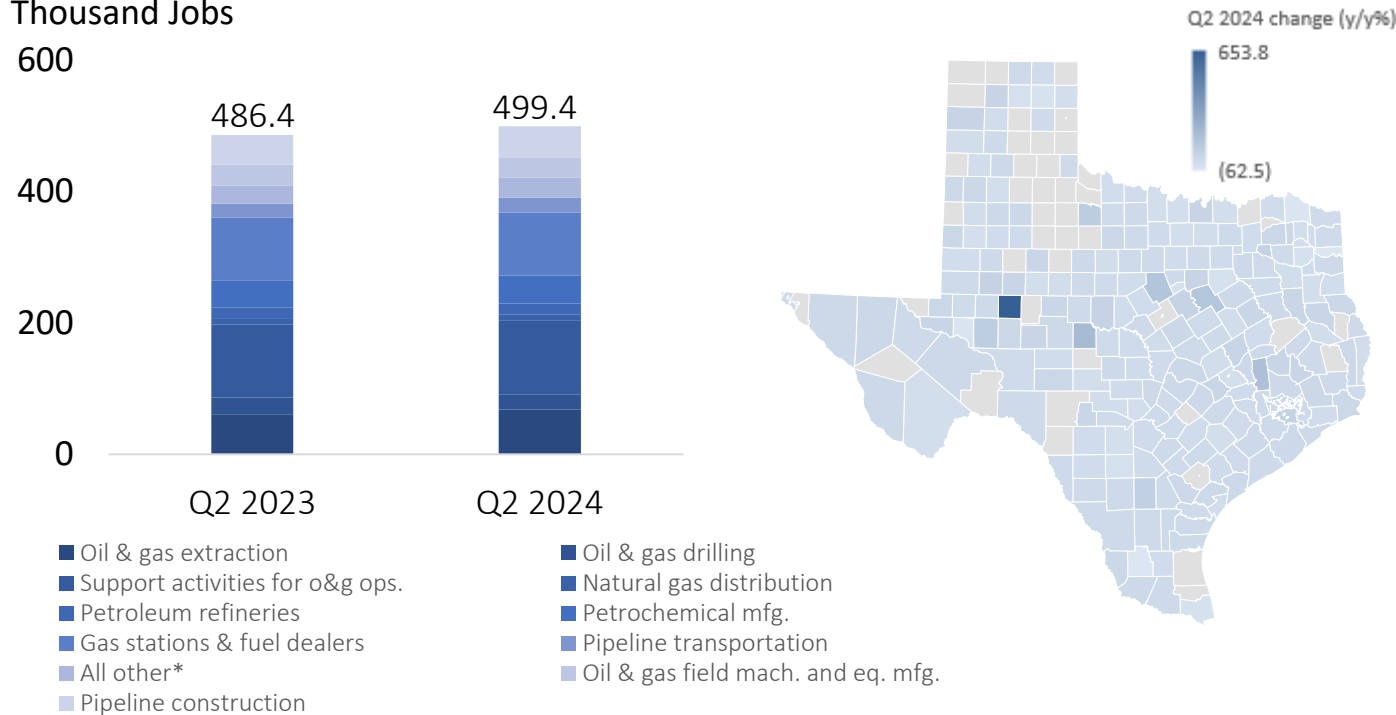
Texas' oil and natural gas industry employment rose to 499,444 in Q2 2024



- ▶ Texas' oil and natural gas industry employment and wages grew by 2.7% y/y and 6.7% y/y, respectively, in Q2 2024, raising the totals to nearly 499,444 jobs and \$14.3 billion in wages.
- ▶ 64% of the year-over-year job growth occurred in the upstream and supporting services, while nearly 40% of the job growth occurred in pipeline construction and transportation per the latest data (released on November 15, 2024) from the U.S. Census Bureau and Texas Workforce Commission.

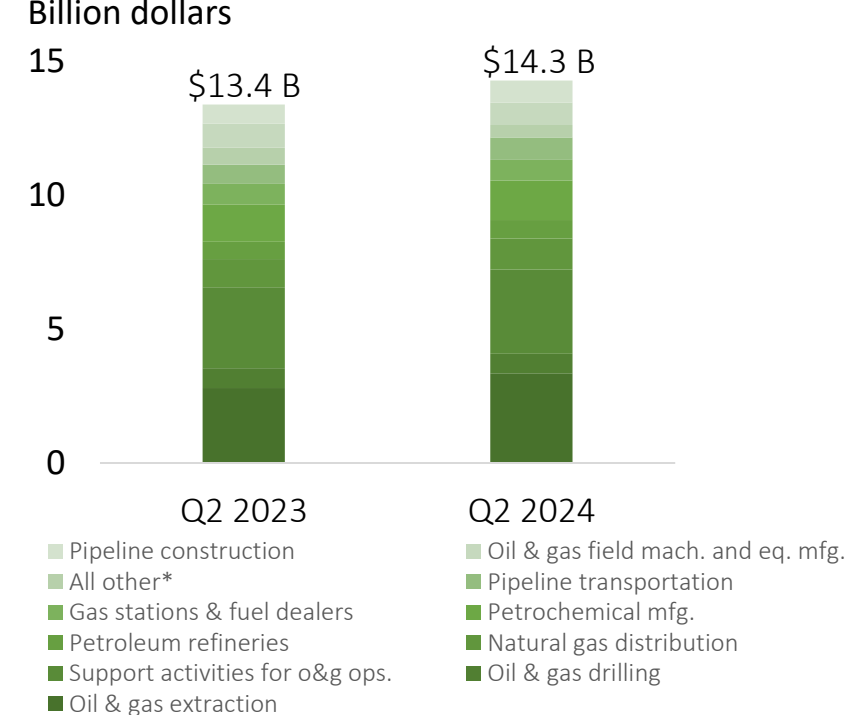
Texas oil and natural gas industry direct employment rose by +2.7% y/y in Q2 2024

Thousand Jobs



Texas oil and natural gas industry direct wages rose by +6.7% y/y in Q2 2024

Billion dollars



* 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.

“Drill Baby, Drill!” versus the Cost of Federal Regulations



“In some cases, regulators underestimate costs or additional, unanticipated costs arise. Although the original regulatory impact assessment may have estimated a net benefit from a regulation, rising costs over time could reduce or eliminate this benefit. This often occurs in situations where technology brings unanticipated change to a market that is heavily burdened by regulation.”

[Economic Report of the President \(2018\)](#)

Key impacts of regulations

Regulations affect growth, productivity, employment, and labor mobility

- National Association of Manufacturers (NAM): 2023 U.S. regulatory burden of **\$12,800 per employee per year** for all firms, including costs associated with environmental and economic regulations

Crain, N.V., & Crain, W.M. (2023). [The Cost of Federal Regulation to the U.S. Economy, Manufacturing, and Small Business](#)

- **2024 EPA Methane Emission Reduction Program (MERP):** Waste Emissions Charge (WEC) finalized on November 12, 2024:
 - **\$900 per ton** of methane for emissions in 2024, increasing to **\$1,200 per ton** in 2025 and **\$1,500 per ton** in 2026 and beyond for facilities emissions exceeding thresholds
 - Thresholds: Annual emissions of at least 25,000 metric tons CO₂e or more with specific intensity thresholds by activity (gathering, processing, transmission)

Direct Cost impacts

- Natural gas: **\$0.20 to \$0.35 per million Btu** (methane fee only)
- Oil production: **\$0.24 to \$0.60 per barrel** (methane fee only)

Additional monitoring and mitigation costs

- [IEA](#) estimates range from **no net cost** (due to captured gas value) to \$0.60 per mmBtu

Combined MERP compliance costs

- For natural gas: Up to \$0.50+ per mmBtu
- For oil: Over \$0.70 per barrel

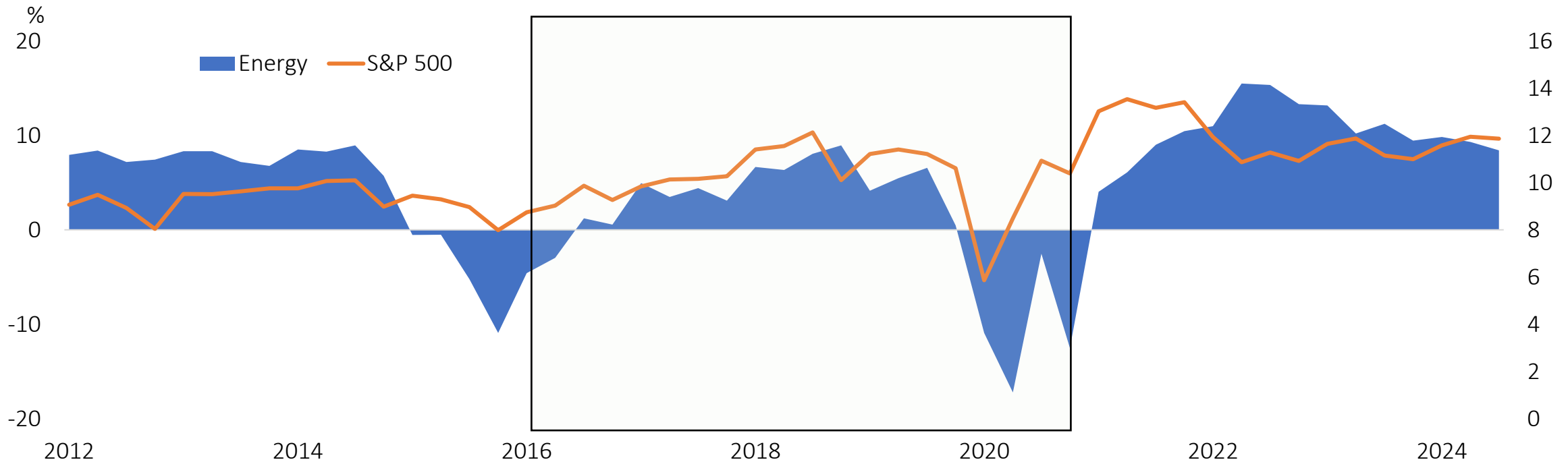
Other regulatory impacts

- Regulations influence permitting, leasing on Federal Lands, waste and wastewater management, and other monitoring and reporting requirements in the oil and natural gas industry

Oil and natural gas industry operating margins – S&P 500 Energy

- ▶ Since 2012, the oil and natural gas industry’s profit per dollar of sales (operating margin) has generally trailed that of the S&P 500 index overall—particularly so from 2016 to 2020
- ▶ In recent years (2022-2024), the industry has rebounded, with operating margins on par with the S&P 500 index, which reflects the evolution of business strategies and market conditions
- ▶ The operating model shifted with changed investor expectations for profitability and higher interest rates forcing greater financial discipline and growth primarily funded through firms' own cash flows, rather than debt, driving higher margins and lower financial risk

Operating margins (profit per dollar of sales) for the S&P 500 Energy Sector versus the broader S&P Index



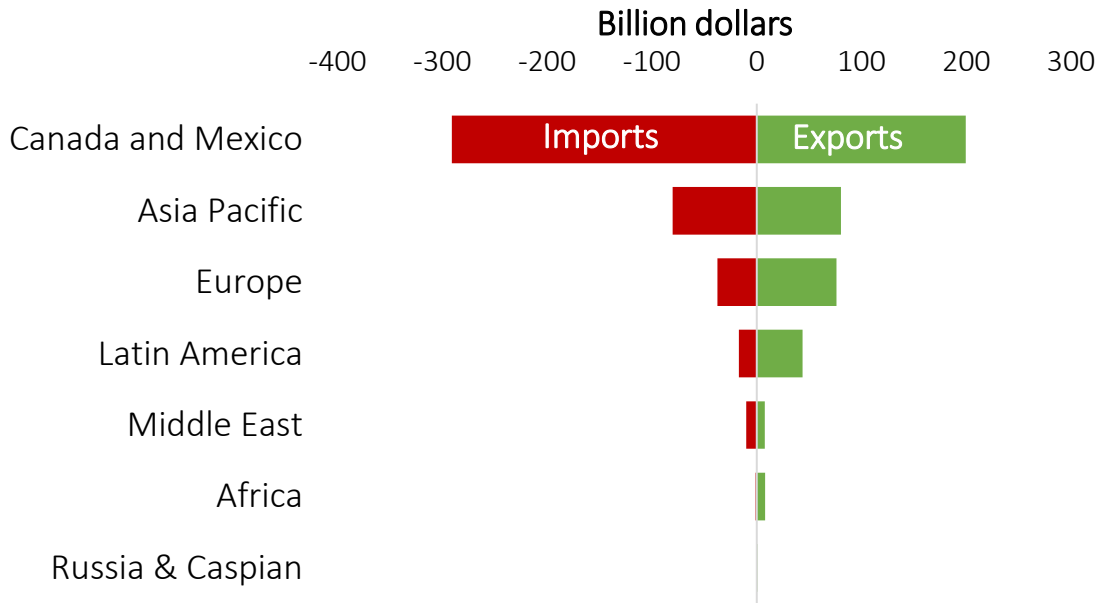
	<u>2012-2015</u>	<u>2016-2020</u>	<u>2022-2024</u>
S&P 500 Energy	4.7%	0.7%	11.5%
S&P 500 Index	6.6%	10.1%	11.5%

Texas is a net importer of goods and runs a large trade deficit with Mexico, so consumers and businesses have much at stake with potential tariffs

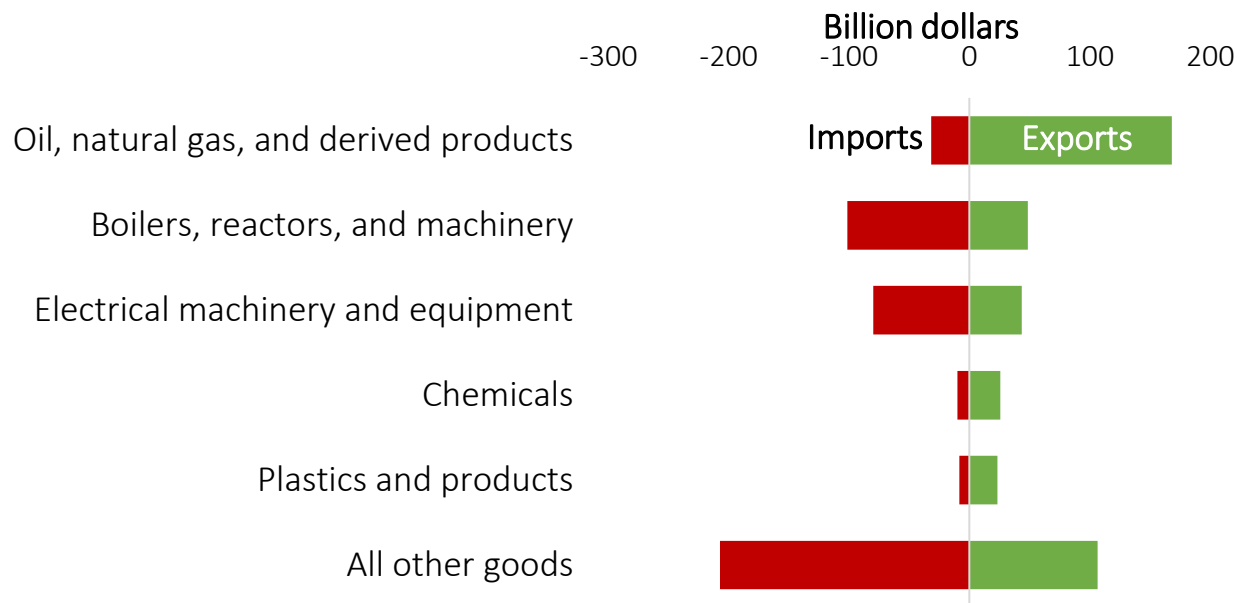


- ▶ Texas had an overall trade deficit of **\$22 billion** for goods in the first three quarters of 2024, despite exporting **\$172.0 billion** of energy products, plastics, and chemicals over the period
- ▶ Year-to-date through September, Texas ran trade surpluses with Europe (\$38.6 billion), Latin America (\$26.4 billion), and Africa (\$6.7 billion); balanced trade with Asia Pacific and the Russia & Caspian region; and deficits with Mexico (**\$87.9 billion**), Canada (\$3.3 billion), and the Middle East (\$2.4 billion)
- ▶ Texas' trade deficit with Mexico was driven by imports of motor vehicles (**\$52.6 billion**), machinery (**\$38.2 billion**), and electrical equipment (**\$15.3 billion**), offset partially by exports of energy, plastics, and chemicals

Texas international trade by region, year-to-date through September 2024



Texas international trade by product, year-to-date through September 2024



Thank you for your attention!

The screenshot shows a web browser at the URL <https://www.txoga.org/economics/>. Below the address bar, there are two dropdown menus labeled "Month" and "Year", each with a downward arrow icon. To the right of these menus is a red button labeled "Apply". Below the filters, the text "Apply filter" appears under each dropdown. The main content area displays three report cards for the "MONTHLY ENERGY ECONOMICS REVIEW". Each card features the TXOGA logo (a stylized network of red and blue nodes) and the text "TXOGA MONTHLY ENERGY ECONOMICS REVIEW". The cards are for "December 2024", "November 2024", and "October 2024". Each card has a "Learn more" link with a right-pointing arrow.

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