



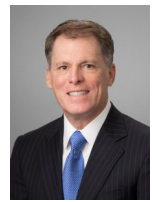
Weekly E&P Update

December 5, 2023

Vol. 48

Will History Repeat Itself?

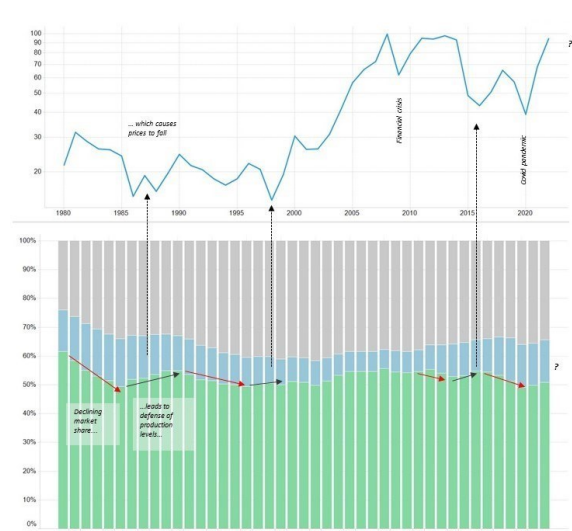
By Steve Hendrickson
President of Ralph E. Davis Associates



In our newsletter, we've commented several times about how the US upstream energy industry has tremendous success in responding to investor demands for greater capital discipline while still delivering production growth. Currently, US oil production is approximately 13 million barrels per day, and the CEO of Pioneer Natural Resources has said we will grow to 15 million barrels per day over the next five years. The Energy Information Agency is more reserved and is projecting the average US production in 2024 to be just over 13 million barrels per day, about a 3% increase over the 2023 average.

Nevertheless, despite recent OPEC production cuts or extensions of existing cuts, we're seeing signs of production oversupply that has led to lower prices. It's reasonable to consider the ramifications of continued increases in US production rates.

Since 1980, we've seen instances where the set-up was similar. That is, a period of strong prices was followed by production growth in non-OPEC countries. This led OPEC to reduce its production quotas to maintain supply/demand balance and price levels. Eventually, however, the loss of market share became too much for OPEC to bear, and they either stopped cutting or increased their production. Which ultimately led to oversupply and price drops that pushed the higher-cost producers out of the market and allowed OPEC to regain (or maintain) market share.



The chart on the left shows the US average oil price on the top (using a log scale to reflect the percentage change) and, on the bottom, the share of global oil production: the OPEC+ is in green, the US in blue, and all other producers in grey.

The red arrows indicate periods where OPEC lost market share, followed by periods of defending or gaining market share. In the previous three cycles, prices responded negatively once OPEC decided they had lost more market share than they were willing to accept.

The question now is, are we approaching another cycle? Some producers may think - according to a recent Enverus report, "oil producers' hedging activity was higher than normal during the quarter, increasing 2024-dated hedge volumes by 120%."

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(Source: Energy Information Agency / RED Analysis)

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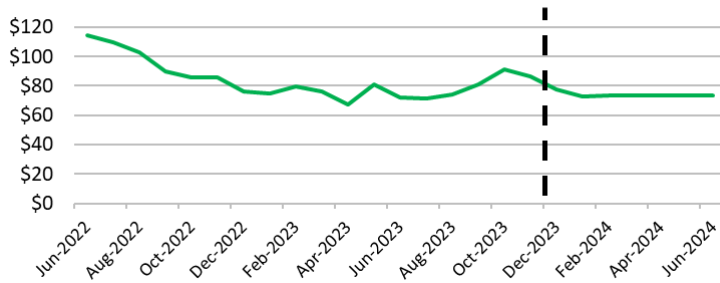
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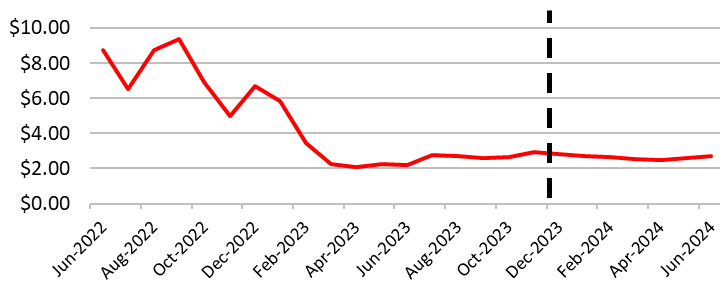


NYMEX FUTURE PRICING

WTI Spot Pricing



HH Spot Pricing



MONDAY'S MARKET CLOSE

NYMEX WTI CRUDE OIL FUTURES
as of December 04, 2023 Close (\$/bbl)

Period	Current	WoW Change	Last Week	1 Yr Ago
2024	\$73.28	(\$1.18)	\$74.46	\$75.48
2025	\$70.25	(\$0.54)	\$70.79	\$71.82
2026	\$67.09	(\$0.26)	\$67.35	\$68.93
2027	\$64.75	(\$0.05)	\$64.80	\$66.51
2028	\$63.05	\$0.14	\$62.91	\$64.36

NYMEX HH NATURAL GAS FUTURES
as of December 04, 2023 Close (\$/MMBtu)

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$2.88	\$0.09	\$2.79	\$4.71
2024	\$3.76	\$0.69	\$3.07	\$4.54
2025	\$3.96	\$0.02	\$3.94	\$4.49
2026	\$3.89	(\$0.20)	\$4.09	\$4.45
2027	\$3.83	(\$0.21)	\$4.04	\$4.50

INDUSTRY METRICS—QUICK SNAPSHOT

	Current	Last Week	WoW Change	%Change
Crude Oil Near-Month Price (\$/bbl)	\$73.30	\$75.31	(\$2.01)	(3%)
Natural Gas Near-Month Price (\$/MMBtu)	\$2.70	\$2.78	(\$0.08)	(3%)
Weekly Upstream-Deal Transaction Value (\$MM)	\$0.00	\$174.00	(\$174.00)	(100%)
Weekly Number of Upstream-Deal Transactions	0	1	(1)	(100%)
Current Total US Rig Count	625	622	3	0.5%
US Field Crude Oil Production (MMbbl/day)	13.2	13.2	0	-
US Field Dry Natural Gas Production (Bcf/day)	111.9	111.1	0.8	0.7%
Commercial Crude Oil Stocks-Excluding SPR (MMbbl)	450	448	2	0.4%
Natural Gas Stocks-Working Gas Underground Storage (Bcf)	3,836	3,826	10	0.3%
Total Drilled But Uncompleted Wells (DUC-Last Month)	4,524	4,524	0	-

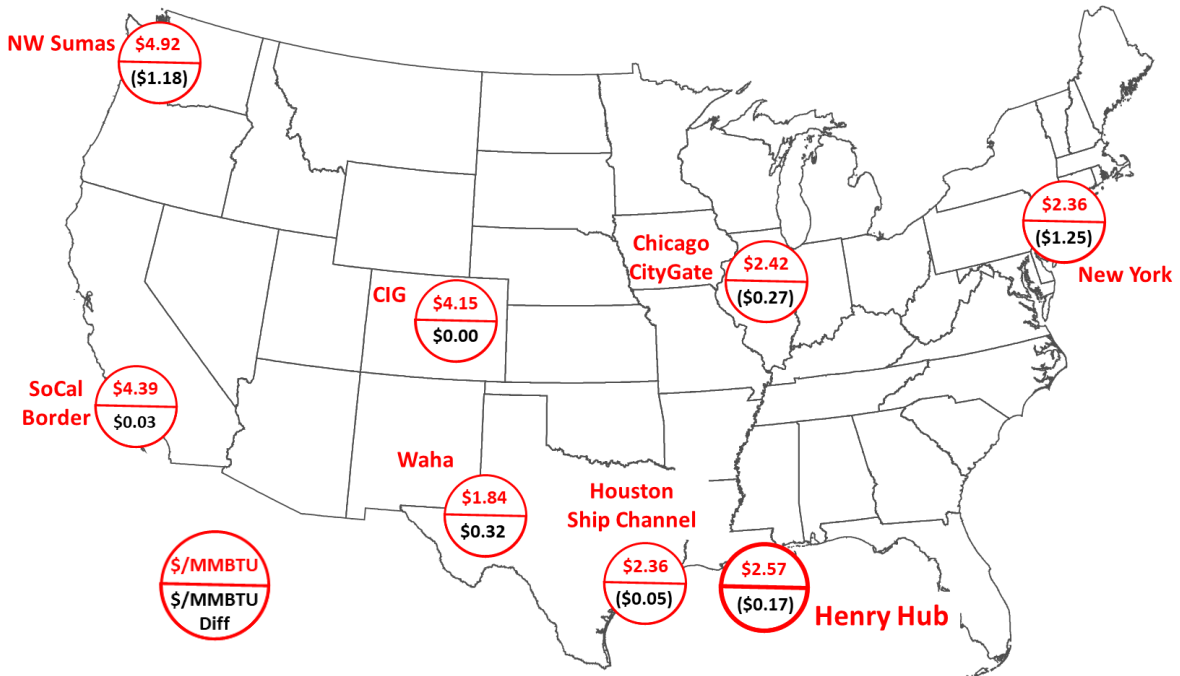
*Source—Energy Information Administration, United States (EIA)

*Source—Baker Hughes North America Rotary Rig Count & PLS M&A Database

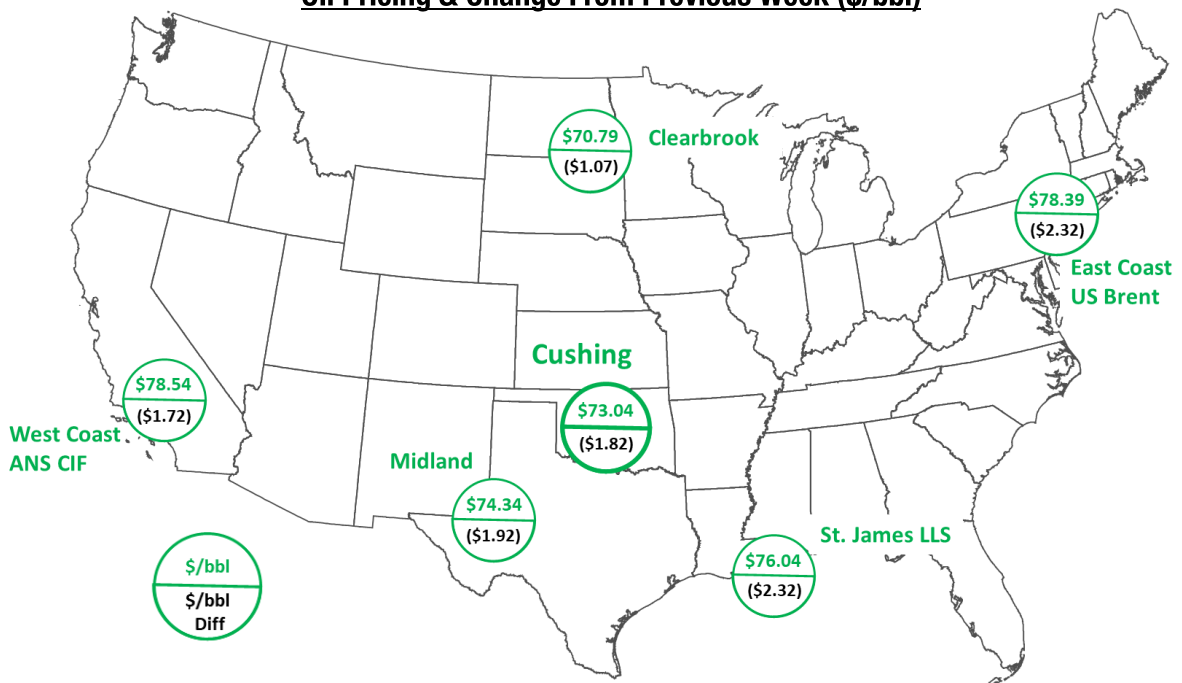


US COMMODITY PRICES CONTINUED

Natural Gas Pricing & Change From Previous Week (\$/MMBtu)



Oil Pricing & Change From Previous Week (\$/bbl)



*Source—Bloomberg LP



SELECTED INDUSTRY HEADLINES

OPEC+ Agrees Oil Output Cuts Approaching 2 Million BPD, Sources Say

OPEC+ oil producers on Thursday agreed to voluntary output cuts approaching 2 million barrels per day for early next year led by Saudi Arabia rolling over its current voluntary cut, delegates told Reuters.

Record US Oil Output Challenges Saudi Mastery

U.S. crude oil production set a record for the second month running in September, highlighting the challenge to Saudi Arabia and its OPEC partners as they cut their own production to boost prices.

Oil Settles Lower, Erasing Early Gains

Oil extended declines, closing out a sixth straight weekly drop, as the OPEC+ output cuts announced Thursday failed to dispel the market's gloom over swelling global supplies.

Oil Prices Retreat As OPEC+ Cuts Another 684KBPD, Brazil Joins OPEC+

Oil prices began to retreat on Thursday afternoon as it became clear that OPEC+ members were agreeing to voluntary cuts beginning in the new year, and that those cuts would be announced only by each member country instead of by the group as a whole.

Wall Street Shrugs Off Latest OPEC+ Oil Cuts (LOGIN CREDENTIALS REQUIRED)

Members of the oil-producers group known as OPEC+ have tried to push crude prices upward with unexpected supply cuts since last year.

Natural Gas is Now Stronger Than Ever in the United States Power Sector

For the very first time, on 28 August 2023, the United States met more than half of its electricity demand from natural gas.

Gas Giving Way to Oil, NGLs in Ohio's Utica Shale (LOGIN CREDENTIALS REQUIRED)

Operators in Ohio's natural gas-rich Utica Shale are increasingly targeting the play's volatile oil window, setting the stage for a dramatic shift in its production profile.

No Let-Up for Mild December Temps as Natural Gas Futures Drop Deeper Below \$3 (LOGIN CREDENTIALS REQUIRED)

As milder temperatures continued to blanket Lower 48 forecast maps over the weekend, suggesting weak weather-driven demand could persist well into December, natural gas futures were trading sharply lower early Monday.

US November LNG Exports Approach Record Levels Amid Higher Output

U.S. liquefied natural gas (LNG) exports in November rose to the second highest monthly production level on record, 7.99 million metric tons of the superchilled gas, according to tanker tracking data.

Geothermal Plant of Fervo, Google Starts Up in Nevada

The enhanced geothermal project of Houston-based startup Fervo Energy and Google has started operations, with carbon-free electricity flowing into the local grid serving Google's Nevada data centers.

EPA Casts Wide Net to Slash Methane From Oil and Gas Operations

More U.S. oil and gas operations will be regulated for methane than ever before under sweeping new federal standards, which for the first time cover petroleum infrastructure built prior to 2015.

Safer Than Ever, But Room for Improvement

Advanced technology and social changes have made the oil patch less dangerous for U.S. workers, but industry insiders say there is always room for improvement.



SELECTED RECENT TRANSACTIONS

NOG Expands Permian Presence, Enters Ohio Utica Shale With \$170 Million Acquisitions

Northern Oil and Gas, Inc. has entered into a definitive agreement with a private party to acquire non-operated interests across approximately 3,000 net acres located primarily in Lea and Eddy Counties, New Mexico.

Australia's Karoon Energy to Buy Stakes in US Offshore Assets For \$720 Million

Karoon Energy announced deals worth \$720 million recently to buy stakes in certain offshore oil and gas fields in the Gulf of Mexico from U.S.-based LLOG Exploration, in a move to diversify operations beyond Brazil and Australia.

WhiteHawk to Acquire Marcellus Assets For \$54 Million

WhiteHawk Energy, LLC is acquiring additional Marcellus Shale natural gas mineral and royalty assets for a total price of \$54.0 million.

Acacia Research Acquires Majority Stake in Benchmark Energy

Acacia Research Corporation today announced that it has acquired a majority interest in Benchmark Energy II, LLC.

Mach Natural Resources to Buy Anadarko Basin Assets For \$815 Million

Mach Natural Resources said on Monday said it will buy certain oil and gas assets in the Anadarko Basin in Oklahoma from privately-held Paloma Partners for \$815 million in cash.

Sitio Royalties to Exit Appalachia, Anadarko Basins

With 192 acquisitions under its belt, Sitio Royalties recently inked a deal to divest all of its assets in the Appalachia and Anadarko basins for \$117.5 million.

Phoenix Capital Acquires Mineral and Royalty Acreage in Colorado From Source Rock

Phoenix announced the completion of its purchase of 896 net royalty acres in Weld County, Colorado. The purchase encompasses mineral and royalty interests across a total of 96 permitted wells.

Earthstone Energy Sells Non-core Gulf Coast Assets in Texas

Earthstone recently agreed to sell certain non-core assets located in Karnes and Gonzales counties of Texas on approximately 2,800 net acres for a purchase price of \$66.5 million.

Chevron to Buy Hess Corp For \$53 Billion in All-Stock Deal

Chevron has agreed to buy Hess for \$53 billion in stock to gain a bigger U.S. oil footprint and a stake in rival Exxon Mobil's massive Guyana discoveries, the latest in a series of blockbuster U.S. oil combinations.

Trio Secures Option to Acquire Gas Prospect in Sacramento Basin

California-based Trio Petroleum Corp. has secured a four-month option with exclusivity to acquire a natural gas prospect in the Sacramento Basin, which has the potential to produce an estimated 40 billion cubic feet of gas.

Ellipsis U.S. Onshore Holdings Acquires Additional Assets Located in The Delaware Basin

Ellipsis U.S. Onshore Holdings LLC, a portfolio company of Westlawn Group LLC, recently announced the acquisition of additional assets located in the Delaware Basin of Texas and New Mexico

Exxon Mobil Agrees to Buy Pioneer Natural Resources For Nearly \$60 Billion in All-Stock Merger

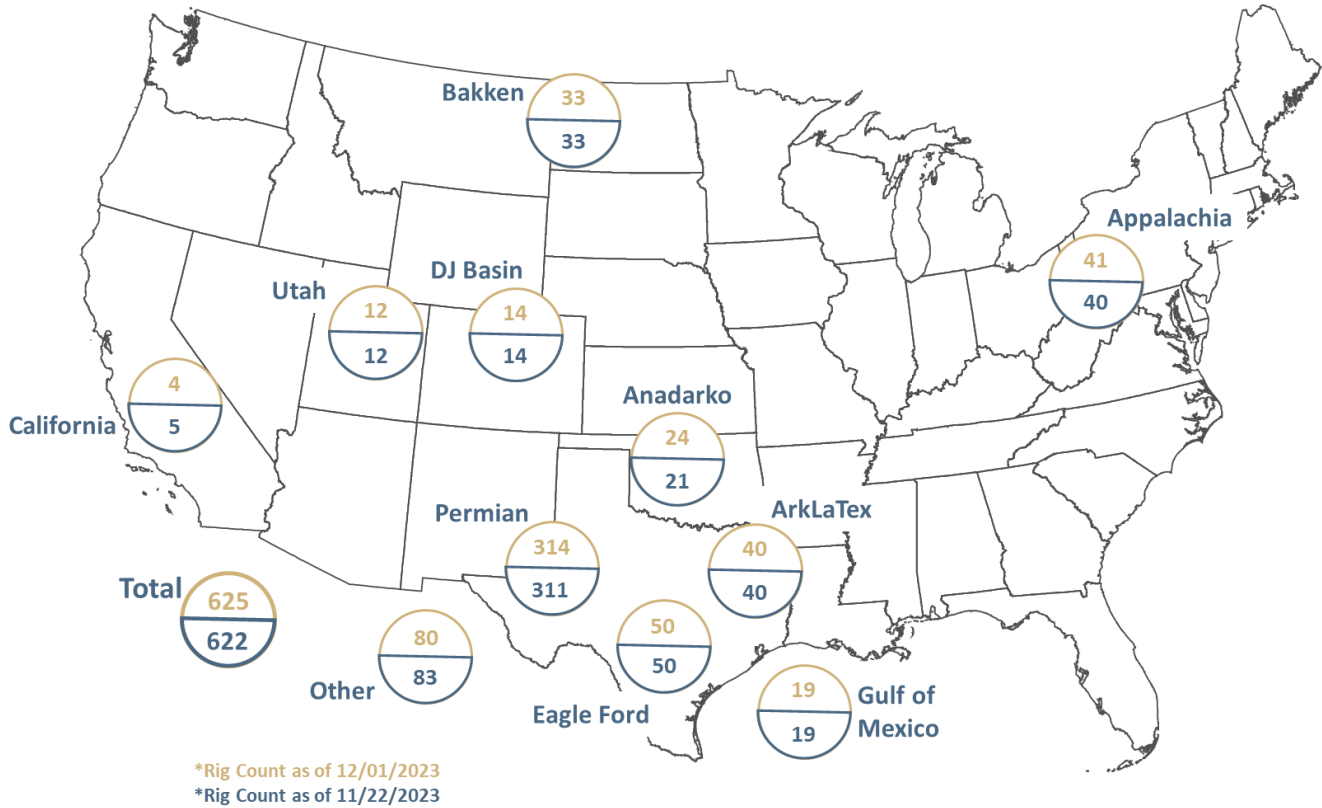
Exxon Mobil said recently that it agreed to buy shale rival Pioneer Natural Resources for \$59.5 billion in an all-stock deal, or \$253 per share.

Kimmeridge Signs Deals For Eagle Ford Assets, Gas Transport

Kimmeridge Texas Gas, an affiliate of investment firm Kimmeridge, has signed a definitive agreement to acquire certain upstream assets from an undisclosed private seller in a bid to expand its footprint in the Eagle Ford shale play.



RIG ACTIVITY BY US REGION

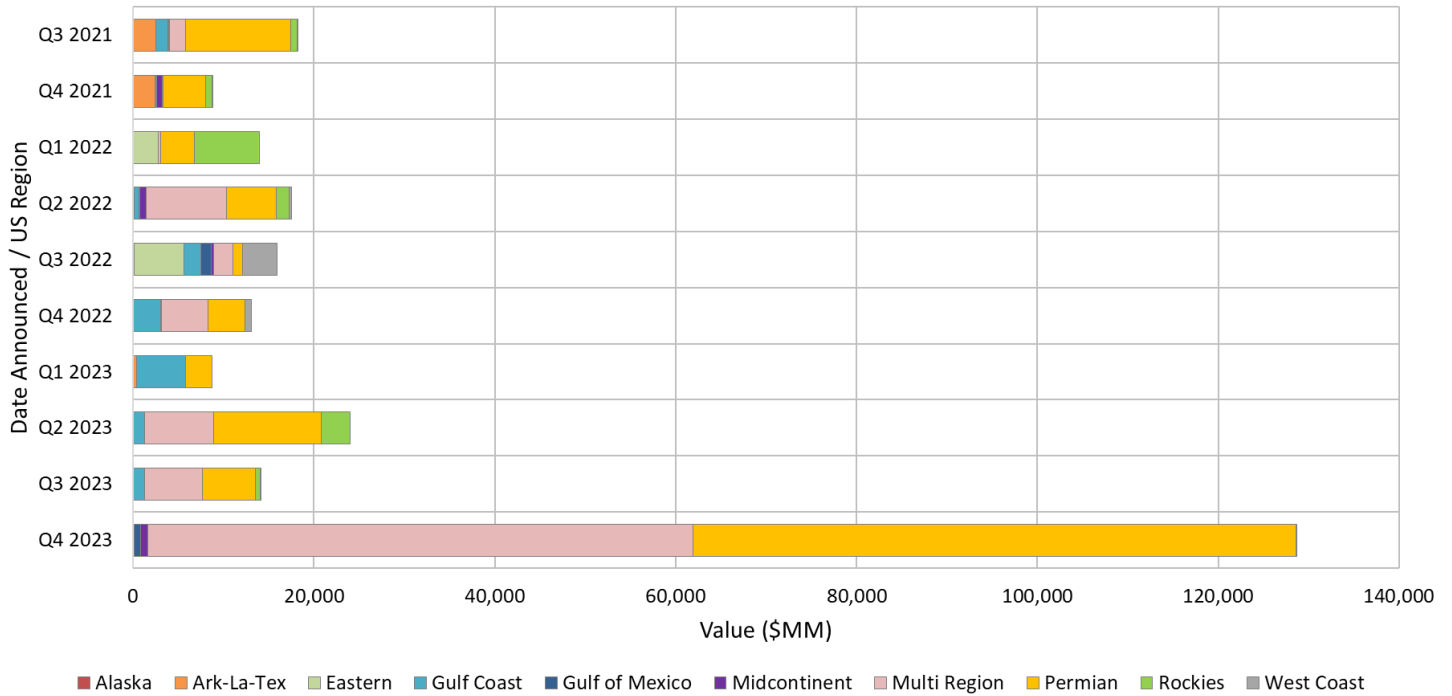


	Week Ending 12/01/2023			Week Ending 11/22/2023		Week Ending 12/02/2022
U.S. Rig Breakouts	Count	+/-	Count	+/-	Count	
Oil	505	5	500	(122)	627	
Gas	116	(1)	117	(39)	155	
Not Specified	4	(1)	5	2	2	
Directional	54	(1)	55	6	48	
Horizontal	559	5	554	(152)	711	
Vertical	12	(1)	13	(13)	25	
Land (Inc Others)	603	3	600	(160)	763	
Inland Waters	1	0	1	(2)	3	
Offshore	21	0	21	3	18	
US Total	625	3	622	(159)	784	

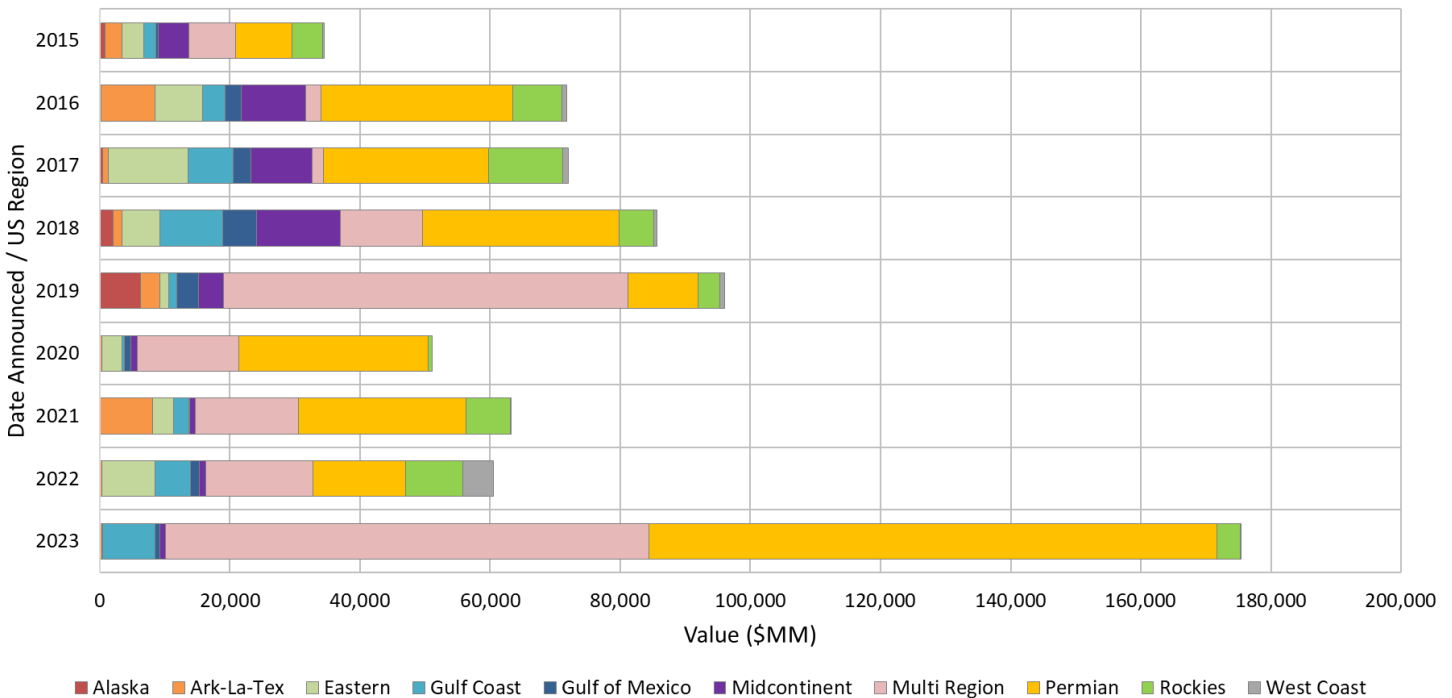
*Source—Baker Hughes Weekly Rig Counts



DEAL VALUE BY US REGION (BY QUARTER)



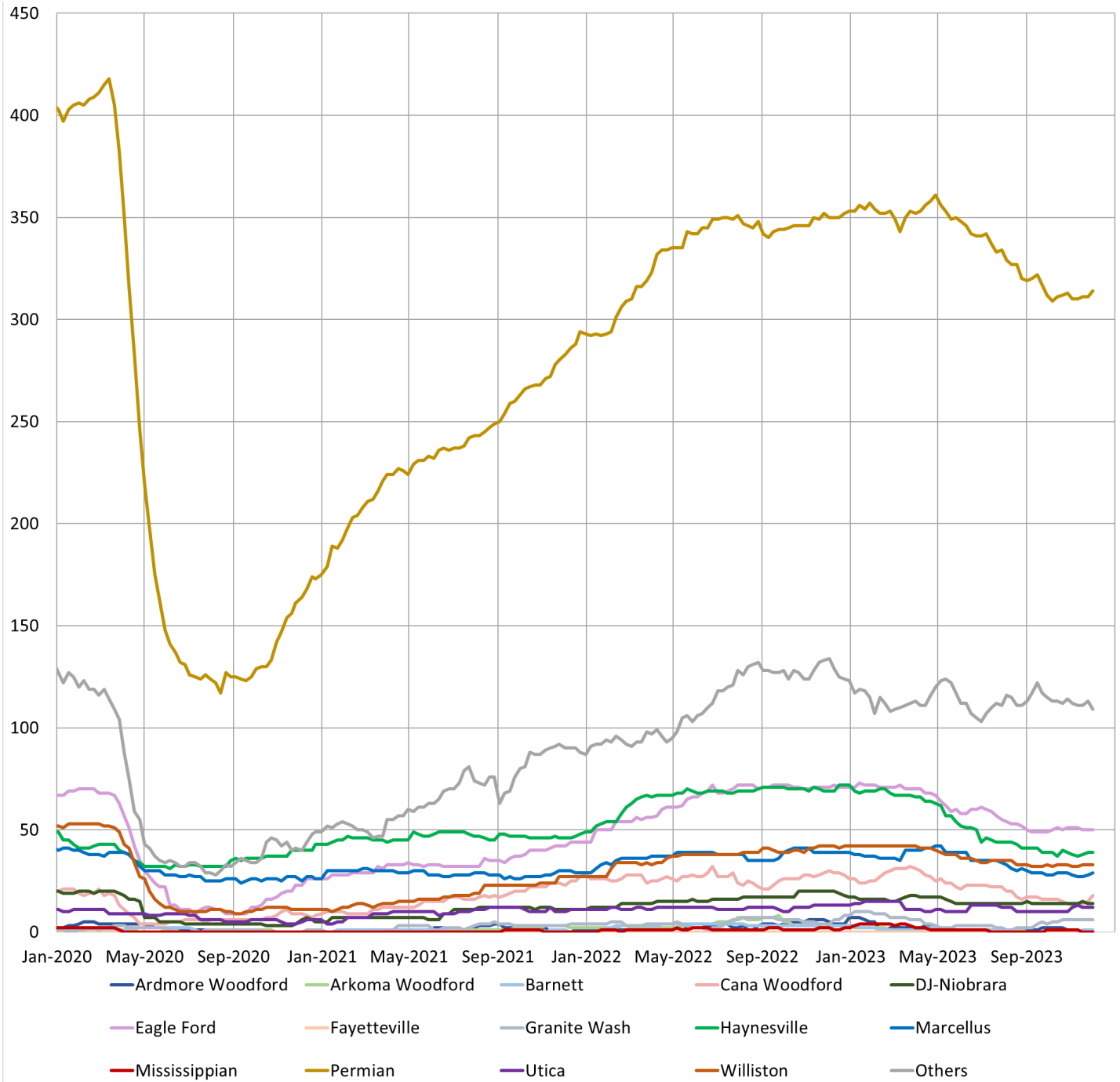
DEAL VALUE BY US REGION (BY YEAR)



*Source—PLS M&A Database (Charts exclude terminated deals)



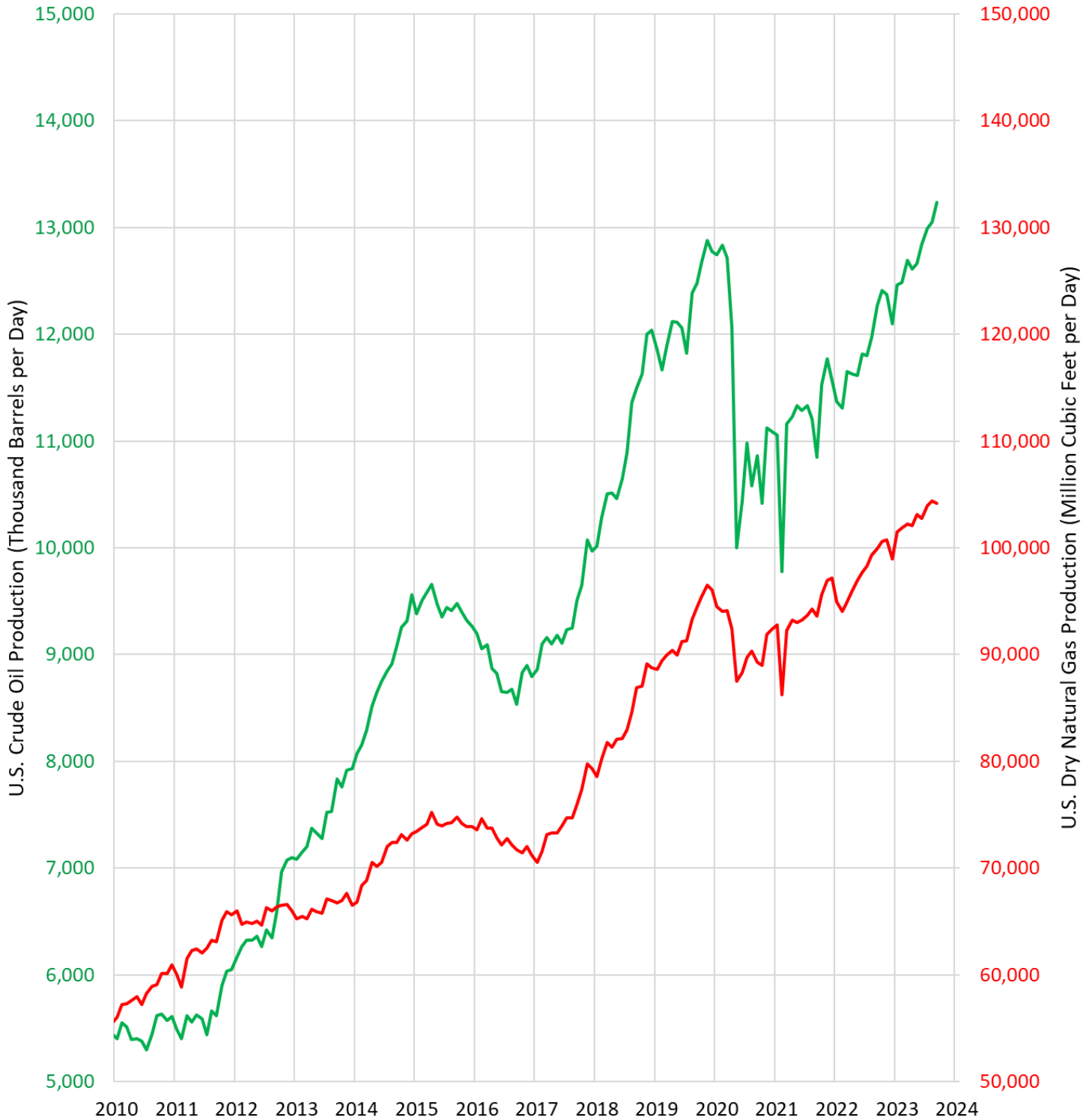
RIG ACTIVITY BY US REGION



*Source—Baker Hughes Weekly Rig Counts



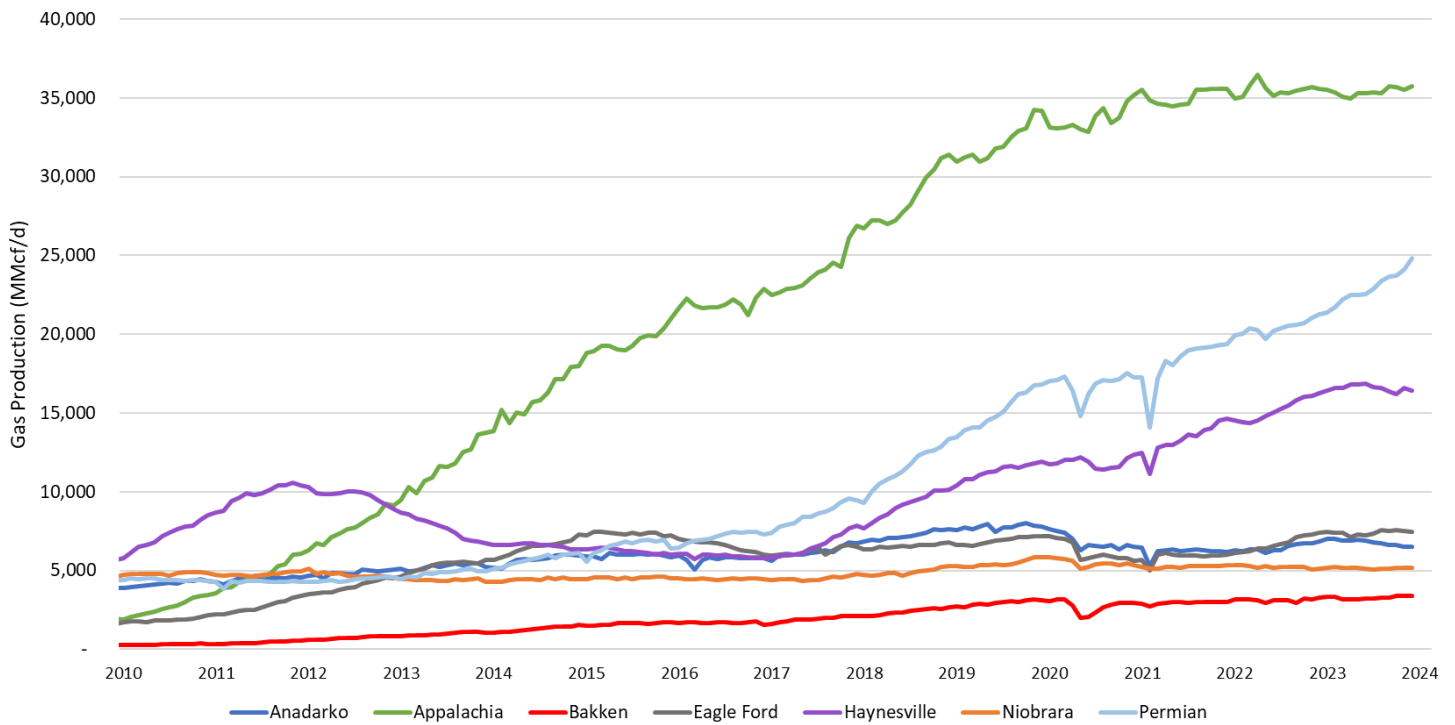
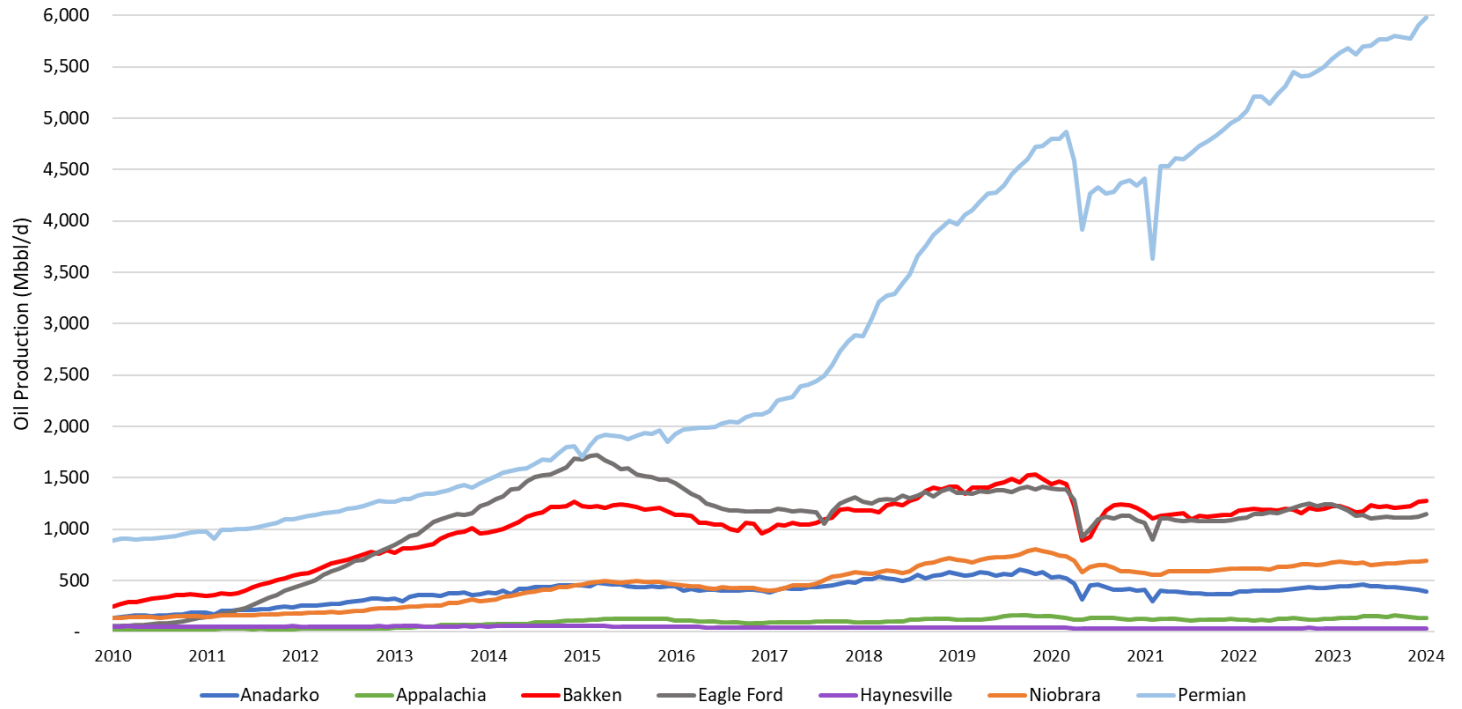
US DAILY CRUDE (MMbbl) & DRY NATURAL GAS PRODUCTION (MMcf)



*Source—Energy Information Administration, United States (EIA)



HISTORICAL PRODUCTION OF SELECTED US SHALE REGIONS



*Source—Energy Information Administration, United States (EIA)



UPCOMING EVENTS

December 2023

Hart Energy—Hall of Fame Awards	December 5	Houston, TX
SPE—Unpacking ESG and Its Drivers	December 6	Houston, TX

January 2024

Paul “Bear” Bryant Awards	January 10	Houston, TX
IPAA—Private Capital Conference	January 17	Houston, TX

February 2024

NAPE Summit	February 7-9	Houston, TX
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*Denotes an Opportune Sponsored Event



ABOUT RALPH E. DAVIS ASSOCIATES

Ralph E. Davis Associates LLC (RED) is an industry-leading petroleum engineering and geosciences firm committed to satisfying the individual needs of clients. We accomplish this by holding ourselves to the highest standards of integrity and professionalism to deliver honest, direct and actionable insights to help clients achieve their strategic objectives. We distinguish ourselves by combining reservoir engineering, geoscience evaluation techniques and advanced data analytics with economic analyses to provide our clients with individual, customized solutions.

Banks, bondholders, private equity firms, financial institutions and law firms around the world trust in RED's diverse services and unrivaled upstream oil and gas expertise to deliver comprehensive solutions that help clients make informed decisions. We add value to every engagement by employing a team approach, leveraging Opportune LLP's experienced bench of experts in transactional due diligence, tax advisory, investment banking, restructuring and valuation.

We offer technical and economic analyses to deliver our clients a complete, independent, accurate and detailed assessment of the value of their assets. We apply a robust set of technical capabilities to assist our clients. Our capabilities include:

- Reservoir engineering and geosciences
- Economic forecasting and reporting
- Data analytics and geospatial analysis

KEY CONTACTS



Steve Hendrickson is the President of Ralph E. Davis Associates, an Opportune LLP company. Steve has over 35 years of professional leadership experience in the energy industry with a proven track record of adding value through acquisitions, development and operations. Steve is a licensed professional engineer in the state of Texas, and holds an M.S. in Finance from the University of Houston and a B.S. in Chemical Engineering from The University of Texas at Austin. He recently served as a board member of the Society of Petroleum Evaluation Engineers (SPEE) and is a registered FINRA representative.



John Beaird is Vice President of Ralph E. Davis Associates, an Opportune LLP company. John has 39 years of oil and gas management, reservoir engineering, and petroleum economics evaluation experience. Recent relevant experience includes the Permian, Western Gulf, Tx-La-Miss Salt, Mid-Continent, Denver-Julesburg, Wind River, Williston Basin, and Appalachian Basins. John is a registered Petroleum Engineer in the State of Texas and holds a B.S. in Petroleum Engineering from Louisiana Tech University. He is also an active member of the Society of Petroleum Evaluation Engineers (SPEE).



Yvonne Trujillo is a Senior Petroleum Engineer at Ralph E. Davis Associates, an Opportune LLP company. Yvonne has over 25 years experience in the oil and gas industry with extensive expertise in reserves engineering, SEC and PRMS/SPE reporting and economics and asset evaluation in conventional and unconventional reservoirs in the U.S. Lower 48. Yvonne earned a B.S. in Mechanical Engineering at Simon Bolivar University in Caracas, Venezuela and an M.S. in Petroleum Engineering at the University of Houston.



David Edwards is a Petroleum Engineer at Ralph E. Davis Associates, an Opportune LLP company. David has over three years of reserves engineering experience in conventional and unconventional reservoirs. Before RED, David was a Petroleum Engineer at a lower middle market A&D advisory firm where he handled the technical processes for marketed assets. He began his career with an operator in Dallas, where he contributed to its engineering, operations, and A&D teams. David holds an M.B.A. from The University of Texas Permian Basin and a B.S. in Petroleum Engineering from The University of Oklahoma.

