



Weekly E&P Update

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BCarbon Announces Protocol to Incentivize Well Plugging

By Steve Hendrickson
President of Ralph E. Davis Associates



Last week, [BCarbon](#), a non-profit carbon registry founded in 2020, [announced](#) that it has begun accepting applications for tax credits under its [new methane capture and reclamation \(MCR\) protocol](#). The protocol issues credits for "plugging idle and orphaned wells that would otherwise continue to be unplugged and leaking harmful greenhouse gases and volatile organic compounds." Ralph E Davis Associates was pleased to play a role in the development of the technical aspects of the protocol.

BCarbon has a strong relationship with the Baker Institute for Public Policy at Rice University. Through this relationship, and with the engagement of hundreds of experts and stakeholders, it had previously issued carbon credit protocols for sequestering carbon in soil, forests, and living shorelines. The MCR protocol is poised to address another significant source of greenhouse gas emissions by preventing ongoing methane leaks from unplugged wells.

Other entities have established carbon registries and protocols for reducing methane emissions by plugging wells. Still, one of the important and unique aspects of the MCR protocol is the method of estimating gas leakage to establish the baseline emissions. Other protocols rely on costly and time-consuming measurement techniques, but the MCR uses "historical production decline curve analysis combined with a leak estimation model." As stated in the protocol, "the key underlying observation is that leaking wells eventually completely exhaust the gas that is potentially available over long time horizons." The published protocol includes spreadsheets to estimate the amount of gas available to leak from decline curve analysis of historical production data and estimations on the amount of leaked gas over time given observed well conditions.

In addition to establishing a means to estimate the baseline emissions, the protocol sets standards for verification that the subject wells were properly plugged according to state regulatory requirements and that no leaks are detected immediately after plugging and a year later. Hopefully, this protocol will be important in addressing the county's thousands of orphaned and abandoned wells.

Table Of Contents

[This Week in Oil & Gas](#)

[US Commodity Prices](#)

[Industry Headlines](#)

[Recent Transactions](#)

[Rig Activity by US Region](#)

[Deal Value by US Region](#)

[Total US Rig Count by US Region](#)

[US Daily Crude & Dry Natural Gas Production](#)

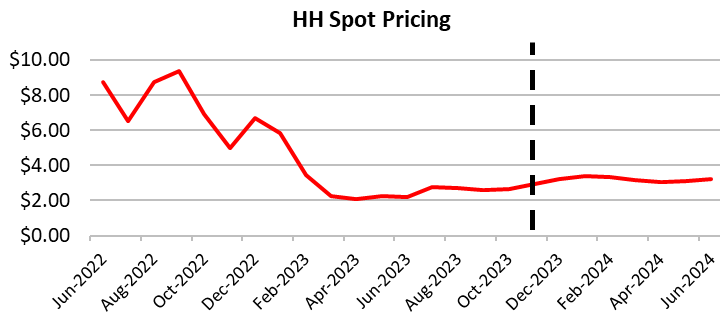
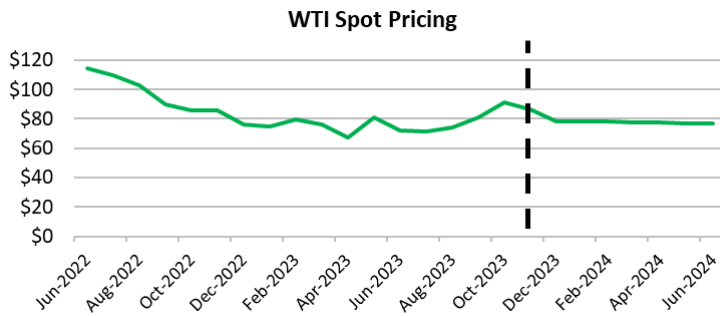
[Historical Production of US Shale Regions](#)

[Upcoming Events](#)

[About Us/Key Contacts](#)



NYMEX FUTURE PRICING



MONDAY'S MARKET CLOSE

NYMEX WTI CRUDE OIL FUTURES as of November 13, 2023 Close (\$/bbl)

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$78.26	(\$2.56)	\$80.82	\$83.08
2024	\$76.64	(\$2.03)	\$78.67	\$75.38
2025	\$72.55	(\$1.66)	\$74.21	\$70.82
2026	\$69.19	(\$1.45)	\$70.64	\$67.45
2027	\$66.61	(\$1.23)	\$67.84	\$64.64

NYMEX HH NATURAL GAS FUTURES as of November 13, 2023 Close (\$/MMBtu)

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$3.20	(\$0.06)	\$3.26	\$5.17
2024	\$3.39	(\$0.11)	\$3.50	\$4.66
2025	\$4.11	(\$0.04)	\$4.15	\$4.57
2026	\$4.17	(\$0.06)	\$4.23	\$4.52
2027	\$4.08	(\$0.04)	\$4.12	\$4.50

INDUSTRY METRICS—QUICK SNAPSHOT

	Current	Last Week	WoW Change	%Change
Crude Oil Near-Month Price (\$/bbl)	\$78.53	\$81.13	(\$2.60)	(3%)
Natural Gas Near-Month Price (\$/MMBtu)	\$3.23	\$3.37	(\$0.14)	(4%)
Weekly Upstream-Deal Transaction Value (\$MM)	\$932.50	\$73.50	\$859.00	1,169%
Weekly Number of Upstream-Deal Transactions	3	2	1	50%
Current Total US Rig Count	616	618	(2)	(0.3%)
US Field Crude Oil Production (MMbbl/day)	13.2	13.2	0	-
US Field Dry Natural Gas Production (Bcf/day)	110.0	107.9	2	2%
Commercial Crude Oil Stocks-Excluding SPR (MMbbl)	422	422	0	-
Natural Gas Stocks-Working Gas Underground Storage (Bcf)	3,779	3,779	0	-
Total Drilled But Uncompleted Wells (DUC-Last Month)	4,524	4,681	(157)	(3%)

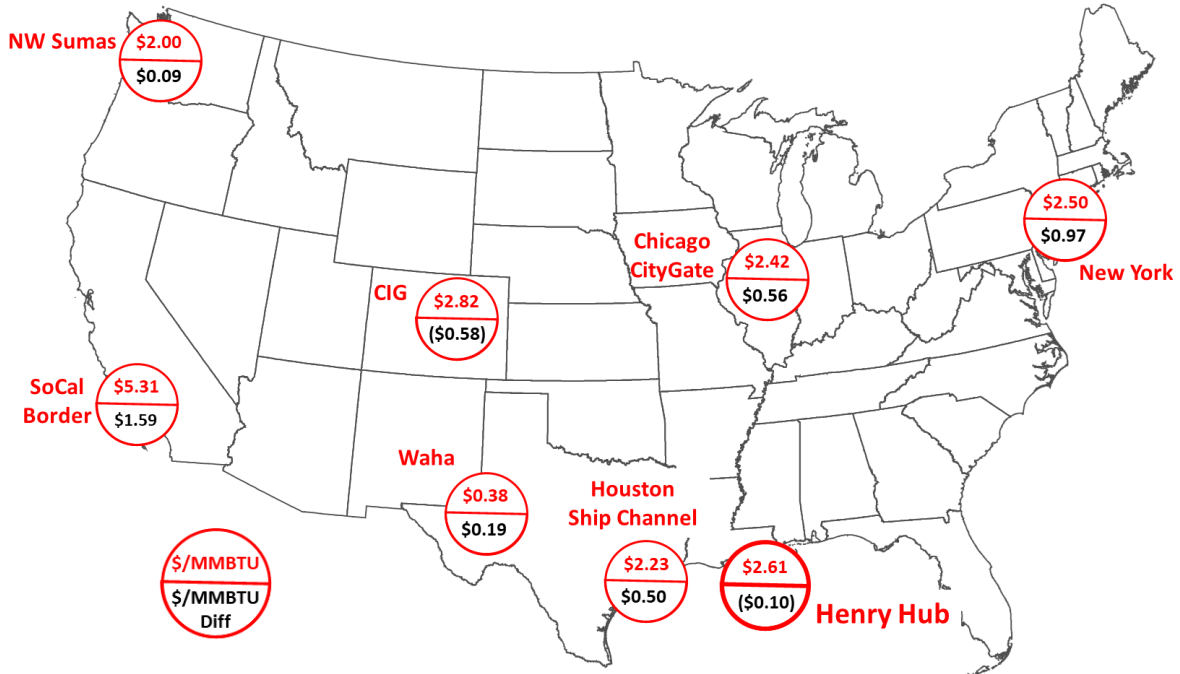
*Source—Energy Information Administration, United States (EIA)

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

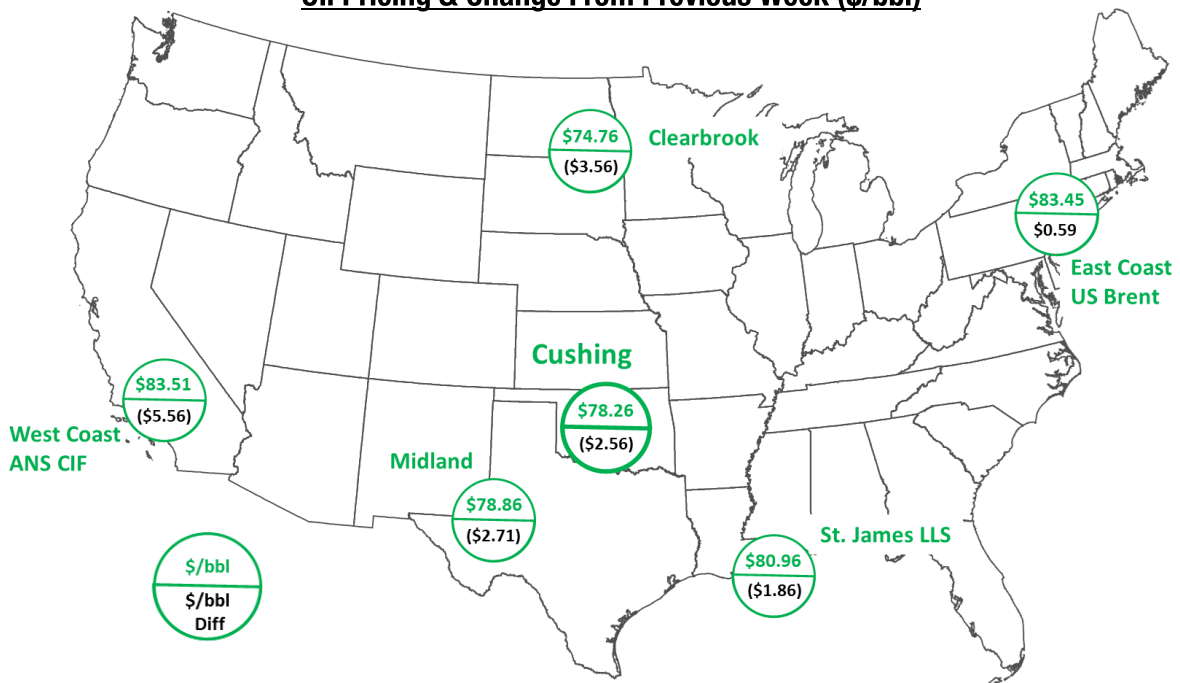


US COMMODITY PRICES CONTINUED

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



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



*Source—Bloomberg LP



SELECTED INDUSTRY HEADLINES

Alternative Shale Indicators Continue to Exhibit Resilience

Alternative shale indicators continue to exhibit resilience, despite a lower U.S. rig count, Macquarie strategists stated in an oil and gas report sent to Rigzone recently, outlining that the trend was similar to last month

Strategists Forecast USA Crude Inventory Rise

In an oil and gas report sent to Rigzone this week, Macquarie strategists revealed that they are forecasting that U.S. crude inventories will be up 4.7 million barrels for the week ending November 3.

Shale Billionaire Hamm Tackles 'Generation 3' Rock

As the aging US shale industry frets about the depletion of top-tier drilling sites and turns to megamergers to lock up more inventory, one of its pioneers is already on to the next phase.

Oil Prices Under Pressure But Sentiment Could Soon Shift

Oil prices continued to tumble recently as demand concerns and inventory build-ups added to bearish sentiment, but with an OPEC+ meeting at the end of the month and the potential of an escalation in the Gaza war things could change rapidly.

Adding U.S. WTI Crude to Brent Benchmark Has Gone Well, ICE Says

The addition of U.S. WTI Midland crude into the global dated Brent oil benchmark has gone smoothly, the head of research at the Intercontinental Exchange (ICE), home of the Brent crude futures contract, said recently.

Gas E&Ps Fixated on Rising Demand for US LNG Exports (LOGIN CREDENTIALS REQUIRED)

Third-quarter earnings for U.S. natural gas producers plummeted compared to last year, when prices spiked to their highest levels since the Great Recession.

Weekly Natural Gas Spot and Futures Prices Struggle Amid Record Production (LOGIN CREDENTIALS REQUIRED)

Mild temperatures and light heating demand intersected with surging production volumes to send weekly natural gas cash and futures prices lower.

Soaring Fees at Panama Canal Have LNG Shippers Taking Long Route

Liquefied natural gas shippers increasingly are opting to travel up to two weeks longer and almost 6,000 nautical miles further to bypass the Panama Canal as transporters of other fuel pay nearly \$4 million to jump the long queue.

Nuclear Is Out, Hydrogen Is In: Where Countries Put Energy R&D Money

Combined government spending on energy research and development is higher than it's been for 50 years.

Large Oil & Gas Deals May Improve Industry's Climate Efforts

In the wake of two US oil and gas megadeals in October, analysts said bigger just might be better in the battle against greenhouse gas emissions.

Three Decarbonization Priorities for Oil and Gas

As oil and gas companies use record profits to reinvest in the energy transition, priorities should center around on emissions management, decarbonization, clean technology and safety practices.

Oxy Attracts World's Largest Investment House to World's Largest DAC Project

New York-based BlackRock will put up more than half a billion dollars into Occidental's first direct air capture project that is now 30% completed.



SELECTED RECENT TRANSACTIONS

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

Mach Natural Resources said on Monday 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.

Vitesse Energy Acquires \$50 Million in Oil, Gas Interests in North Dakota's Williston Basin

Vitesse Energy has acquired additional oil and gas interests in the Williston basin of North Dakota that will result in approximately \$50 million of acquisition and related development capital expenditures, primarily in the third and fourth quarters of 2023, the company said recently.

Civitas Resources to Buy Permian Assets For About \$2.1 Billion

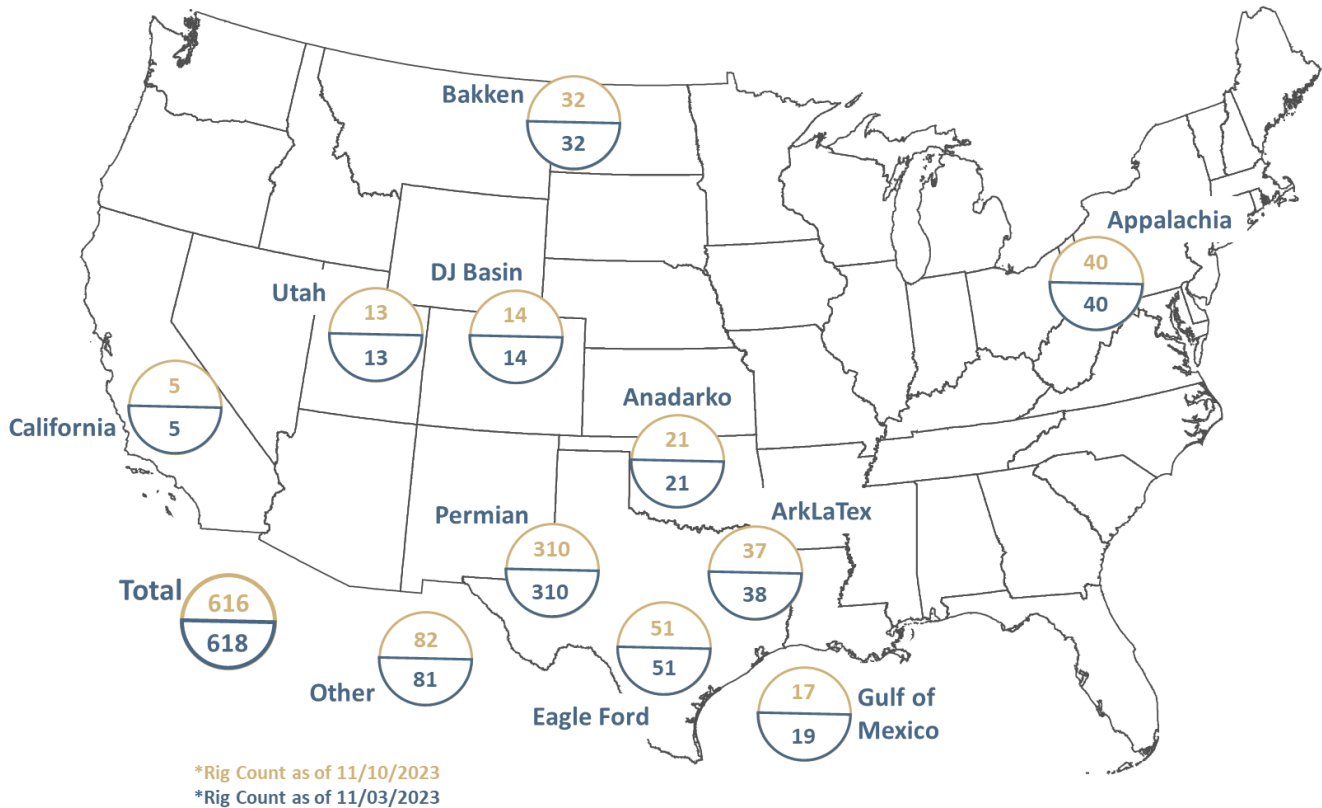
Civitas Resources will buy acreage in the oil-rich Permian Basin from global energy trader Vitol's U.S. upstream venture for about \$2.1 billion in cash and stock, the U.S. oil and gas producer said recently.

1979 Royalties, LP Announces Northern Midland Basin Minerals & Royalty Acquisition From Peacemaker Royalties

1979 Royalties, LP a subsidiary of Endeavor Energy Resources, announced it has closed the acquisition of oil & gas mineral and royalty interests from Peacemaker Royalties, a portfolio company of EnCap Investments, in the Midland Basin for \$61 million in cash.



RIG ACTIVITY BY US REGION

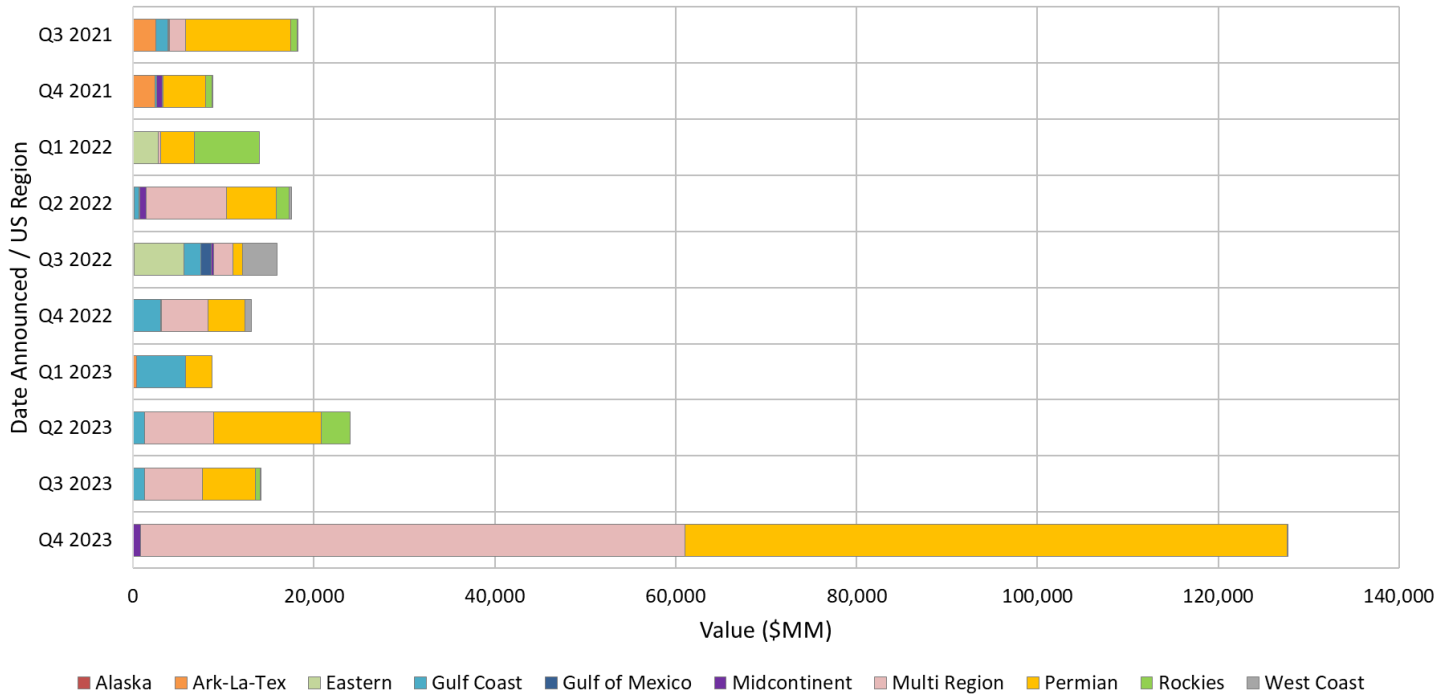


	Week Ending 11/10/2023		Week Ending 11/03/2023		Week Ending 11/11/2022
U.S. Rig Breakouts	Count	+/-	Count	+/-	Count
Oil	494	(2)	496	(128)	622
Gas	118	0	118	(37)	155
Not Specified	4	0	4	2	2
Directional	53	(1)	54	7	46
Horizontal	551	2	549	(160)	711
Vertical	12	(3)	15	(10)	22
Land (Inc Others)	595	1	594	(163)	758
Inland Waters	2	(1)	3	(2)	4
Offshore	19	(2)	21	2	17
US Total	616	(2)	618	(163)	779

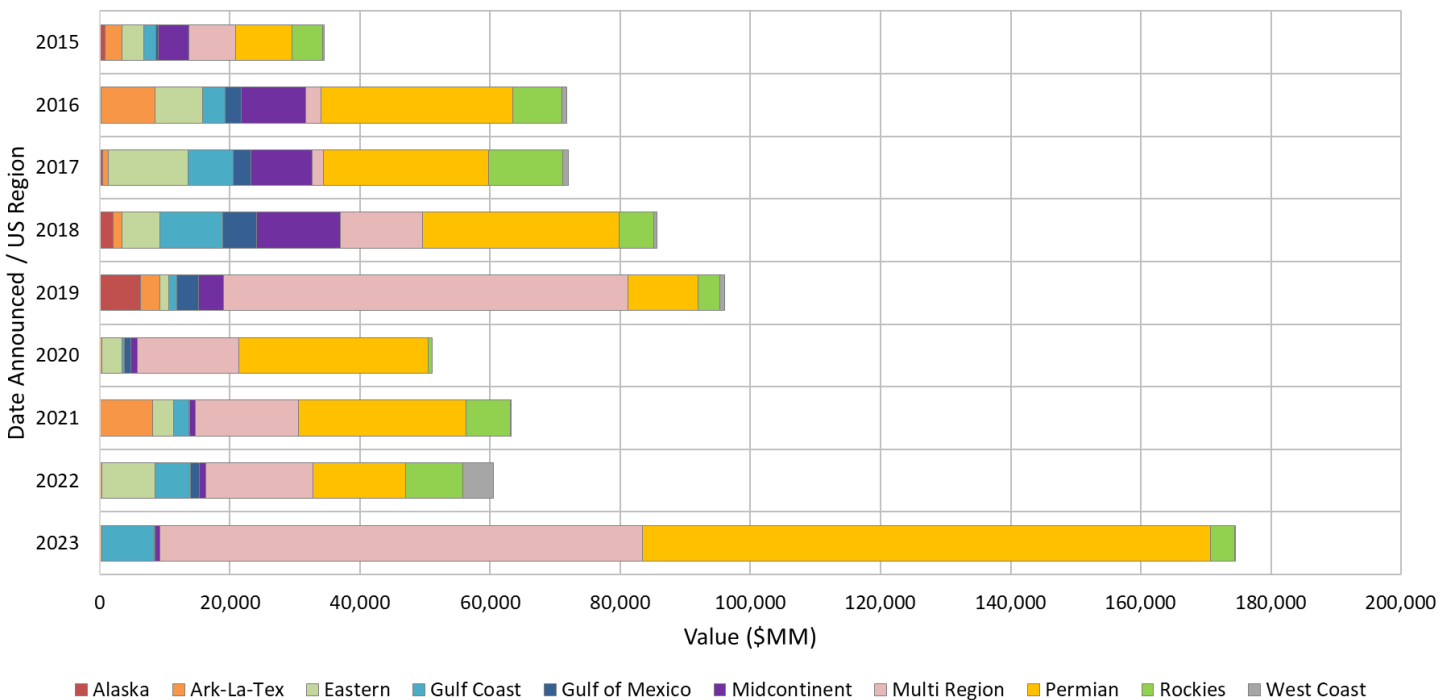
*Source—Baker Hughes Weekly Rig Counts



DEAL VALUE BY US REGION (BY QUARTER)



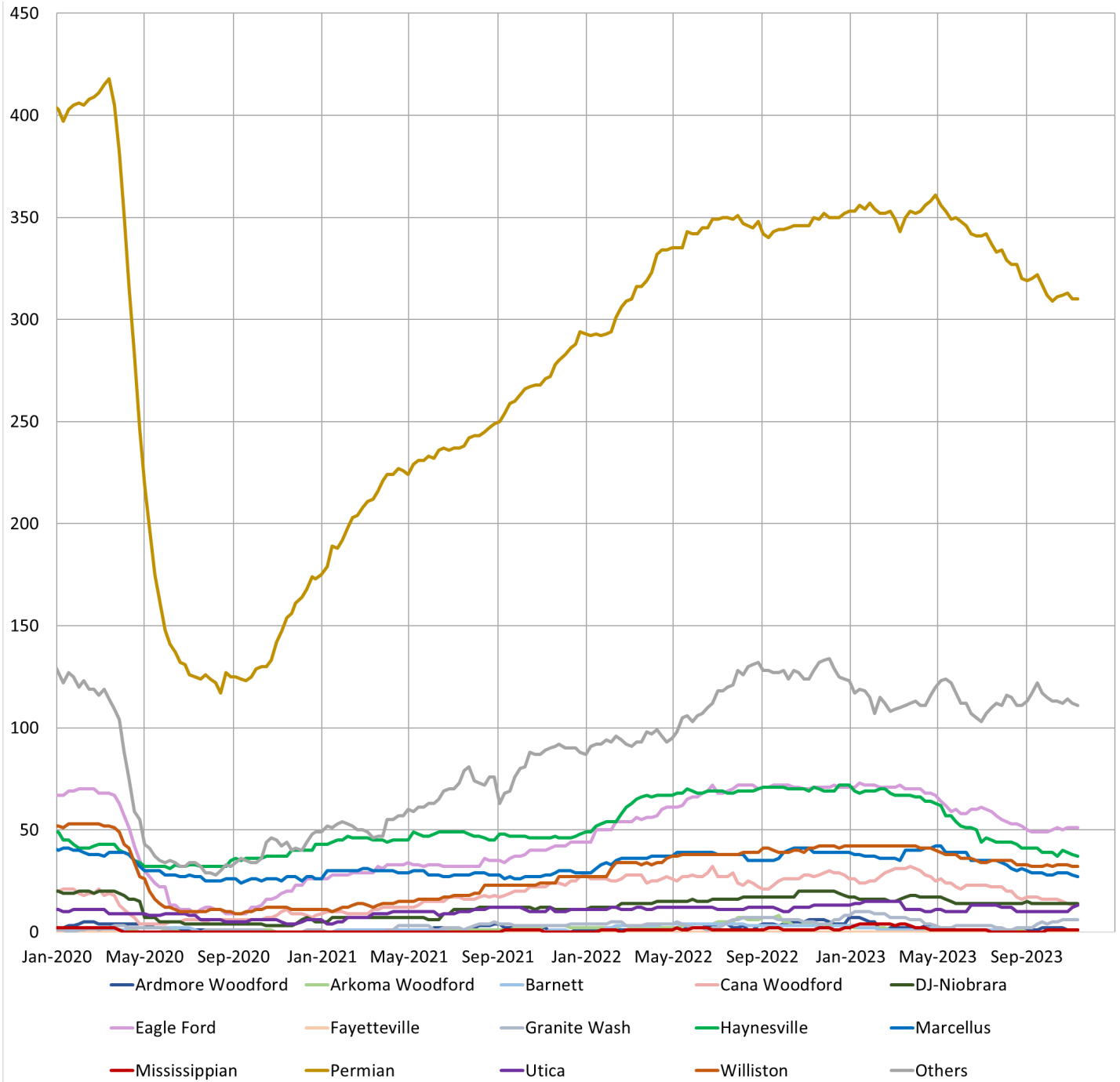
DEAL VALUE BY US REGION (BY YEAR)



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



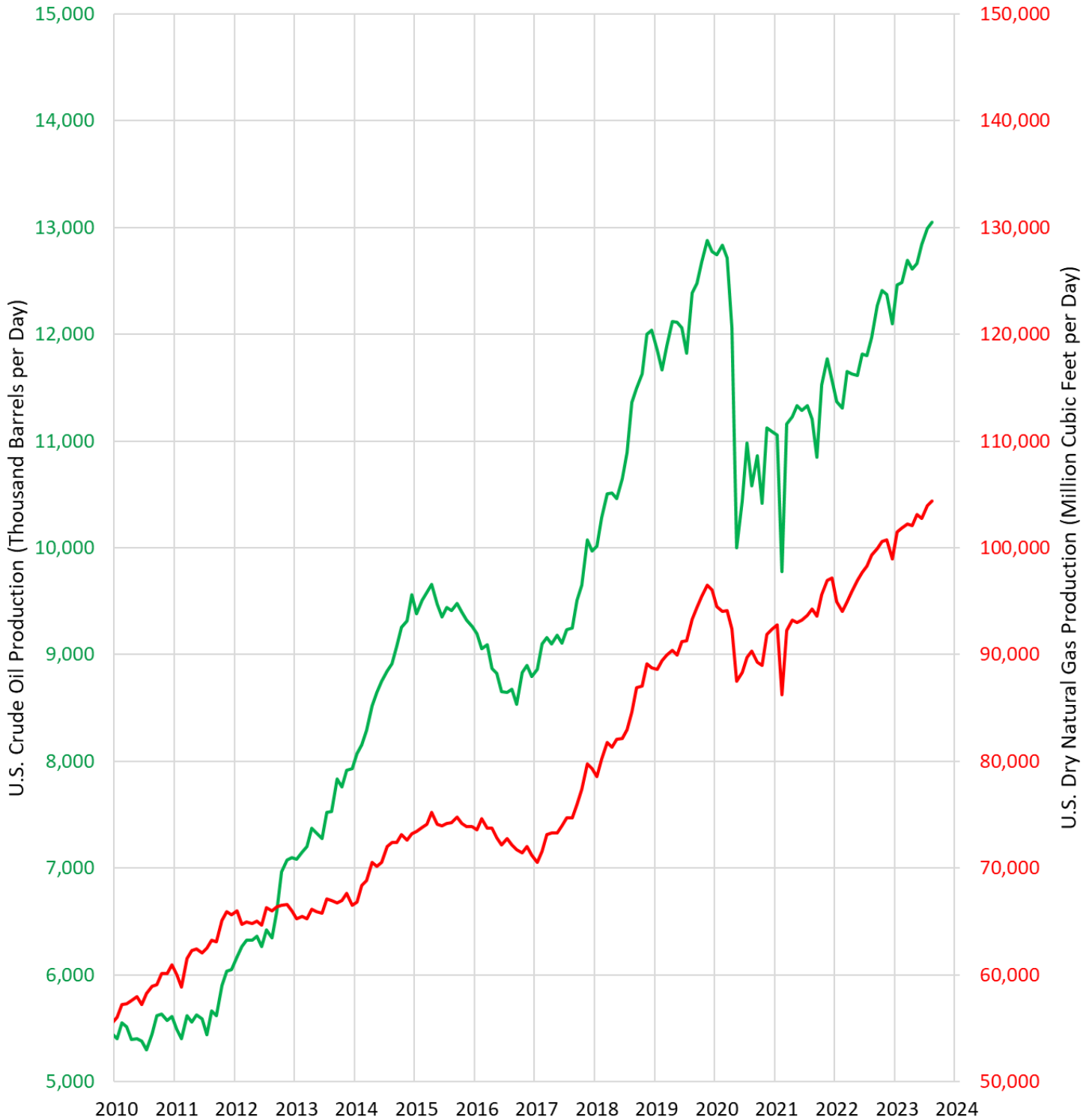
RIG ACTIVITY BY US REGION



*Source—Baker Hughes Weekly Rig Counts



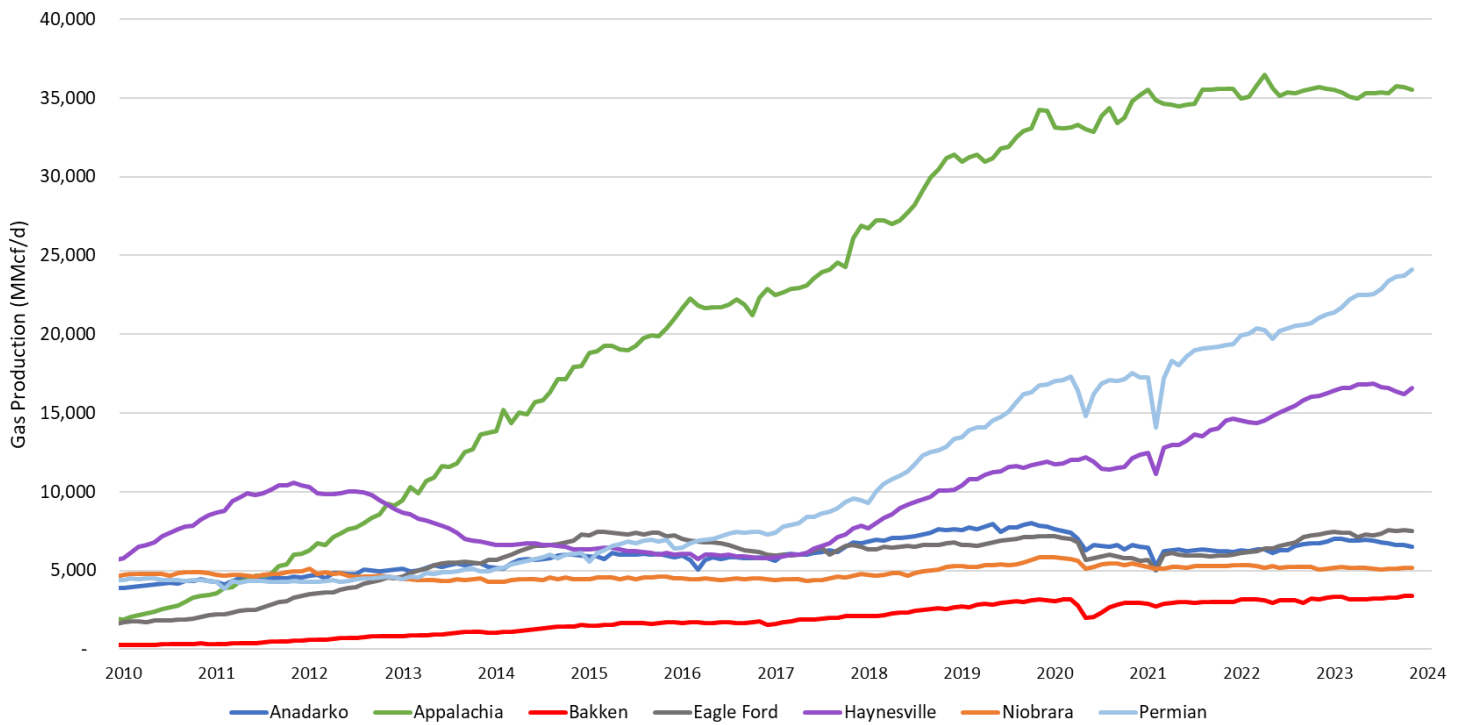
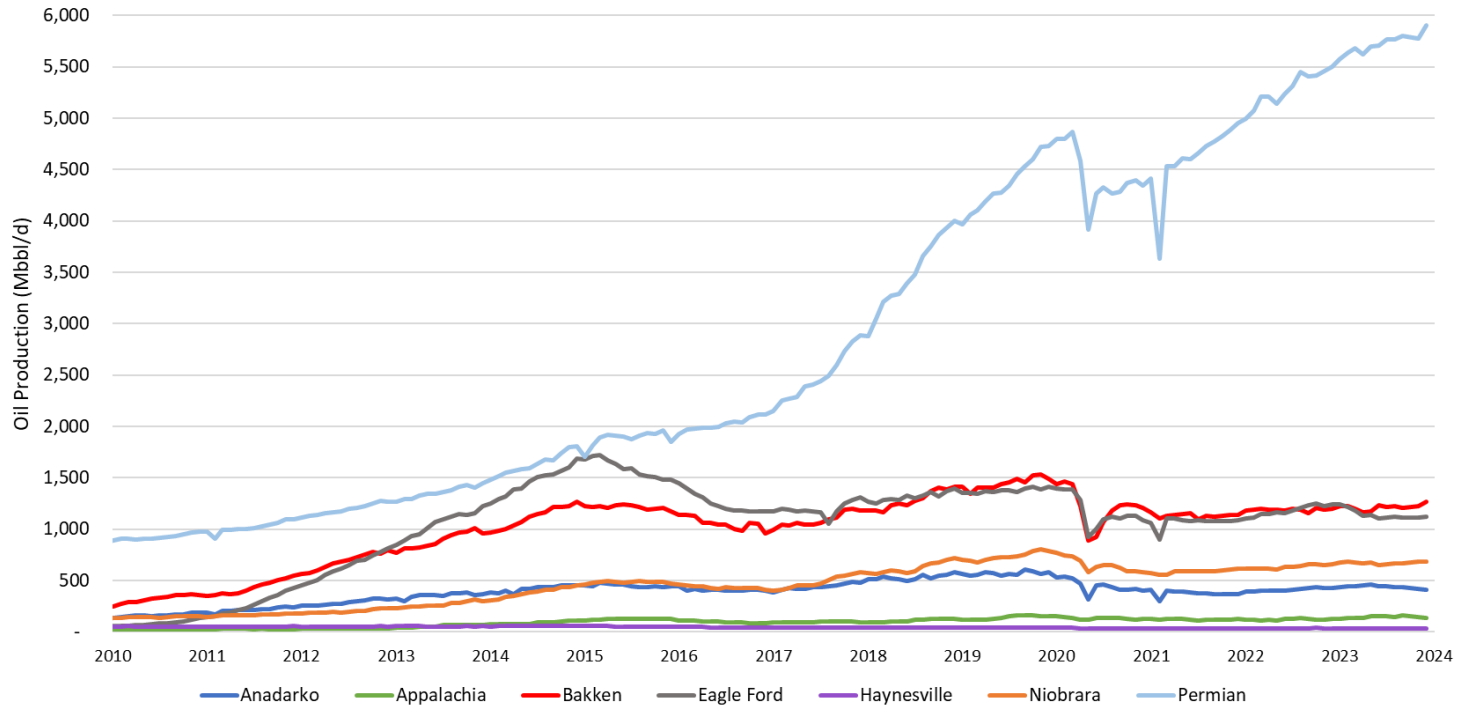
US DAILY CRUDE (MMbbl) & DRY NATURAL GAS PRODUCTION (MMcf)



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



HISTORICAL PRODUCTION OF SELECTED US SHALE REGIONS



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



UPCOMING EVENTS

November 2023

<u>A&D Workshop</u>	November 15	Houston, TX
<u>OSU Accounting and Financial Reporting Conference</u>	November 16	Tulsa, OK
<u>OSU Oil and Gas Accounting Conference</u>	November 17	Tulsa, OK
<u>Boys & Girls Club 8th Annual Sporting Clays Tournament</u>	November 17	Houston, TX
<u>IPAA Texas Hold'Em Tournament</u>	November 30	Houston, TX

December 2023

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

*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.

