



Weekly E&P Update

July 25, 2023

Vol. 29

Hybrid Electric Vehicles Superior to All Electric

By Steve Hendrickson
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In an edition of [our newsletter earlier this year](#), we examined the limitations of the United States' rare earth minerals mining and manufacturing capacity and how this presents a solid headwind to electric vehicle adoption and may become a new source of energy insecurity. Now comes [an article](#) by an avowed climate hawk describing how our emphasis on fully electric vehicles (EVs) in the face of constrained mineral resources can result in more carbon emissions than if the same minerals were used to build hybrid electric vehicles. The article cites findings by Toyota that "the amount of [minerals] needed for one long-range electric vehicle would be enough for either six plug-in hybrids or 90 of the type of hybrid that can't be plugged in for a recharge" and that "the overall carbon reduction of those 90 hybrids over their lifetimes is 37 times as much as a single battery electric vehicle."

Toyota's claims were substantiated by [Ashley Nunes](#), a "senior research associate at Harvard Law School and the director for federal policy, climate and energy at the [Breakthrough Institute](#). Nunes makes several points in supporting his argument:

- EVs consume vast amounts of minerals because they have large batteries
- They have large batteries because consumers won't buy them unless they have a long-range (hundreds of miles)
- Large batteries make EVs more expensive, which decreases the demand
- Higher prices mean people keep driving their existing internal combustion engine (ICE) powered vehicles longer
- The production of EVs produces more greenhouse emissions than making ICE vehicles does, so it takes years (depending on driving habits and the fuel used to generate the electricity) to breakeven from a carbon standpoint

Plug-in hybrids, however, alleviate many of these concerns. Because they have a backup ICE engine and we have an extensive refueling network, drivers can use battery power for frequent short trips without the fear of being stranded on a longer journey. They cost less than EVs, so they would be within reach of more consumers. And they use fewer rare earth metals per vehicle, which allows us to use our limited resources more effectively and reduce our exposure to foreign sources.

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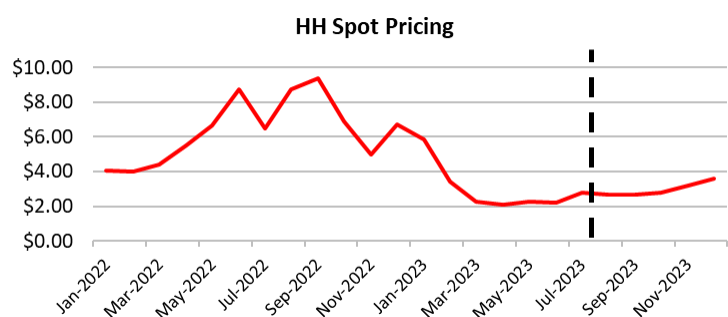
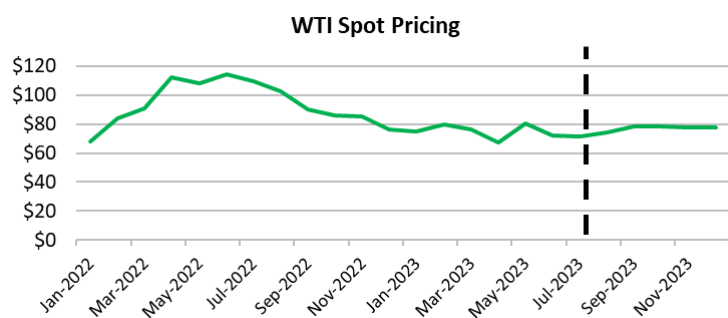
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NYMEX FUTURE PRICING



MONDAY'S MARKET CLOSE

NYMEX WTI CRUDE OIL FUTURES as of July 24, 2023 Close (\$/bbl)

| Period | Current | WoW Change | Last Week | 1 Yr Ago |
|--------|---------|------------|-----------|----------|
| 2023 | \$78.19 | \$4.34 | \$73.84 | \$83.69 |
| 2024 | \$74.90 | \$3.61 | \$71.29 | \$77.06 |
| 2025 | \$70.66 | \$2.92 | \$67.74 | \$72.63 |
| 2026 | \$67.27 | \$2.42 | \$64.85 | \$69.53 |
| 2027 | \$64.46 | \$2.05 | \$62.41 | \$67.41 |

NYMEX HH NATURAL GAS FUTURES as of July 24, 2023 Close (\$/MMBtu)

| Period | Current | WoW Change | Last Week | 1 Yr Ago |
|--------|---------|------------|-----------|----------|
| 2023 | \$2.99 | \$0.17 | \$2.82 | \$5.60 |
| 2024 | \$3.51 | \$0.08 | \$3.43 | \$4.69 |
| 2025 | \$3.98 | \$0.07 | \$3.91 | \$4.47 |
| 2026 | \$4.00 | \$0.09 | \$3.91 | \$4.35 |
| 2027 | \$3.96 | \$0.12 | \$3.84 | \$4.27 |

INDUSTRY METRICS—QUICK SNAPSHOT

| | Current | Last Week | WoW Change | %Change |
|--|----------------|------------------|-------------------|----------------|
| Crude Oil Near-Month Price (\$/bbl) | \$78.85 | \$75.85 | \$3.00 | 4% |
| Natural Gas Near-Month Price (\$/MMBtu) | \$2.70 | \$2.66 | \$0.04 | 2% |
| Weekly Upstream-Deal Transaction Value (\$MM) | \$86.00 | \$4,986.25 | (\$4,900.25) | (98%) |
| Weekly Number of Upstream-Deal Transactions | 3 | 4 | (1) | (25%) |
| Current Total US Rig Count | 669 | 675 | (6) | (0.9%) |
| US Field Crude Oil Production (MMbbl/day) | 12.3 | 12.3 | 0 | - |
| US Field Dry Natural Gas Production (Bcf/day) | 107.1 | 107.4 | (0.3) | (0.3%) |
| Commercial Crude Oil Stocks-Excluding SPR (MMbbl) | 457 | 458 | (0.7) | (0.2%) |
| Natural Gas Stocks-Working Gas Underground Storage (Bcf) | 2,971 | 2,930 | 41 | 1% |
| Total Drilled But Uncompleted Wells (DUC-Last Month) | 4,804 | 4,834 | (30) | (0.6%) |

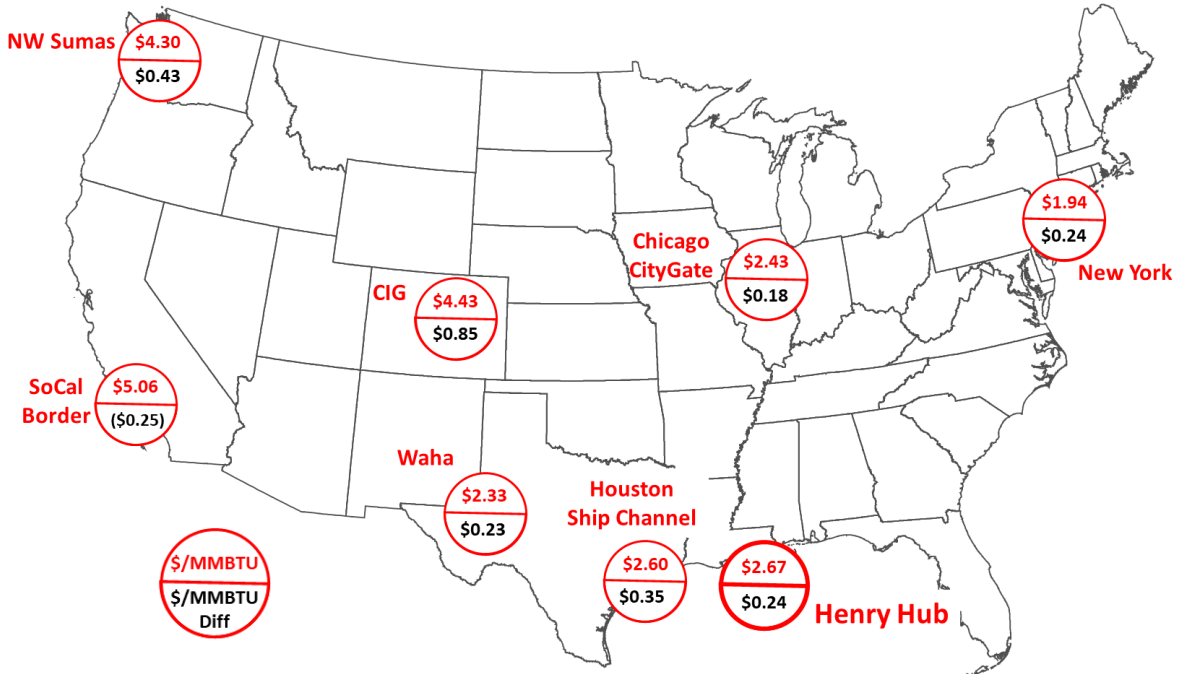
*Source—Energy Information Administration, United States (EIA)

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

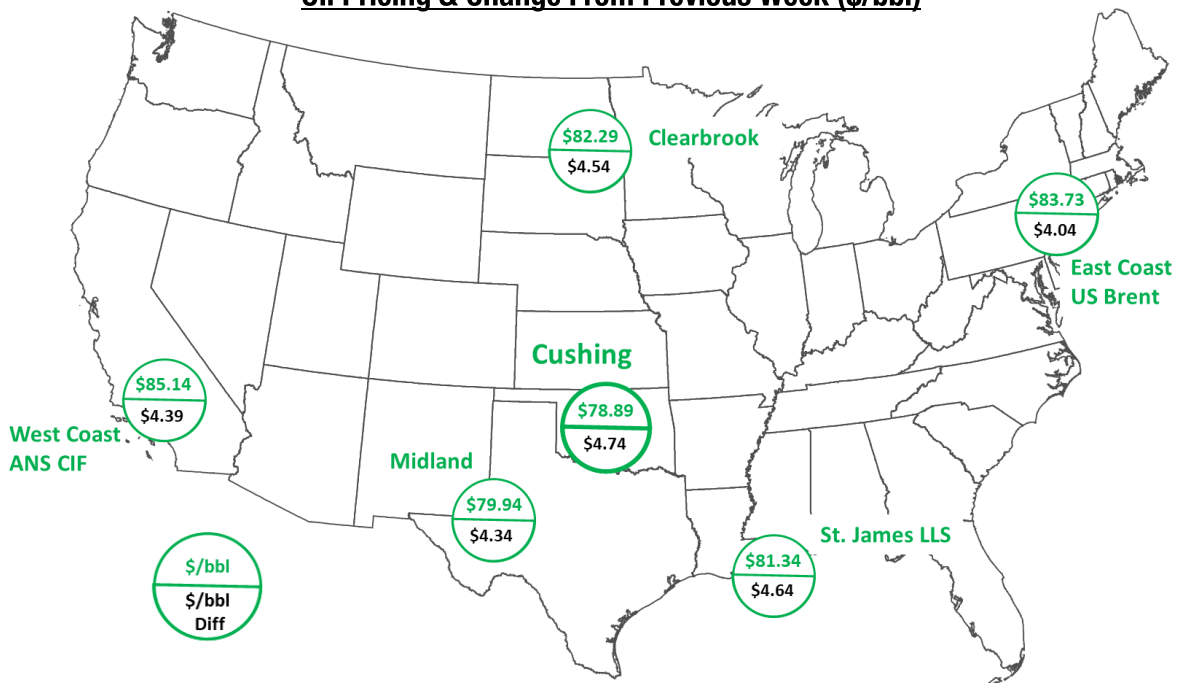


US COMMODITY PRICES CONTINUED

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



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



*Source—Bloomberg LP



SELECTED INDUSTRY HEADLINES

Oil Prices Rise 2% To 3-Month High On Tight Supply, China Stimulus Hopes

Oil prices climbed on tightening supply, rising U.S. gasoline demand, hopes for Chinese stimulus measures and technical buying.

Oil Markets Are Still Volatile, U.S. Energy Chief Says, Calling For Further Supplies

Volatility is still weighing on oil markets, U.S. Energy Secretary Jennifer Granholm said recently, reiterating calls for additional supplies.

Goldman Sachs Expects 'All Time High' Oil Demand To Spur Large Deficits, Boosting Prices

Goldman Sachs forecasts "sizeable deficits" in the oil markets driving higher crude prices, especially as an "all time high" demand for the commodity looms.

Russian Crude Oil Exports Continue To Plunge

Russia's crude oil exports by sea continued to slump last week and are now well below the February levels and nearly 1.5 million barrels per day (bpd) lower than the recent peak at the end of April, tanker-tracking data monitored by Bloomberg showed recently.

USA Shale Oil Production Set to Fall Next Month

Shale oil production, which has revolutionized the energy industry and transformed the US economy, will stop growing in August, according to a government report.

Oil Prices Steady Near 3-Month Highs

Oil prices were steady on Tuesday, hovering near three-month highs as signs of tighter supplies lifted sentiment.

America's Rise As An Energy Export Powerhouse Hinges On One Town (LOGIN CREDENTIALS REQUIRED)

The U.S. has transformed global markets by boosting crude-oil exports more than 30-fold over the past decade. Much of the boom hinges on Corpus Christi Bay.

UK Energy Minister We Will Produce 100% Of North Sea Oil And Gas

UK Energy Minister Grant Shapps says the British government intends to extract one-hundred percent of its North Sea oil and gas reserves and still achieve net-zero carbon emissions by 2050, while the Labour Party has vowed to refrain from issuing any further exploration and production licenses if elected by January 2025.

China Begins Drilling "Ultra-Deep" 10,000-Meter Natural Gas Well

China has begun drilling a 10,000-meter hole in the ground for the second time this year as it seeks ultra-deep reserves of natural gas.

U.S. Plans To Spend \$700 Million To Reduce Methane Emissions From Oil, Gas Sector

The U.S. Environmental Protection Agency (EPA) and Department of Energy said recently that the U.S. government will allocate up to \$700 million in financing to track and lower methane emissions from the oil and gas industry, with grants to states accounting for half of the total.

USA Bill Wants Environment Agency To Control Fracking

Proposed legislation in the USA is seeking to authorize the Environment Protection Agency to regulate hydraulic fracturing to protect water resources.

Global Hunt for Crude Sends Offshore Oil Stocks Soaring (LOGIN CREDENTIALS REQUIRED)

Offshore oil stocks are pumping out big gains, lifted by investors betting the future of energy production lies in deep water.

The SPR Could Stay Half Empty Forever

The Biden Administration has released close to 300 million barrels of crude from the SPR, but the reserves may never be replenished.



SELECTED RECENT TRANSACTIONS

ExxonMobil Announces Acquisition Of Denbury

Exxon Mobil Corporation (NYSE: XOM) today announced it has entered into a definitive agreement to acquire Denbury Inc., an experienced developer of carbon capture, utilization and storage (CCS) solutions and enhanced oil recovery. The acquisition is an all-stock transaction valued at \$4.9 billion, or \$89.45 per share based on ExxonMobil's closing price recently.

Sandridge Energy, Inc. Announces The Closing Of An Acquisition Which Increases Its Interest In Wells It Operates In The Northwest Stack

SandRidge Energy, Inc. today announced the closing of an acquisition which increases its interest in twenty-six producing wells operated by the Company within the Northwest Stack play for approximately \$11.25 million.

Ring Energy Announces Accretive All Cash Asset Acquisition Strategically Expanding Core Operating Area

Ring Energy, Inc. today announced it has entered into an agreement to acquire the Central Basin Platform assets of Founders Oil & Gas IV, LLC for \$75 million in cash. Founders' CBP operations are located in the Permian Basin in Ector County, Texas and are focused on the development of approximately 3,600 net acres that are similar to Ring's CBP assets acquired in 2022 from Stronghold Energy Operating II, LLC and its affiliate.

Zenith Energy Expands Its US Presence With Stateside Energy LLC Deal

Zenith Energy Ltd. the international energy production company with assets in Africa and Europe, has announced that it has entered into an agreement with Stateside Energy LLC, an Oklahoma-based oil and gas operator, to acquire and operate a portfolio of oil production and development licences in Oklahoma, as well as certain other states in the USA.

Civitas Resources to Enter Permian Basin through Transformative Transactions

Civitas has also agreed to purchase Hibernia's Midland Basin assets for \$2.25 billion in cash, subject to customary purchase price adjustments.

SM Energy Company Announces Certain Second Quarter 2023 Activity And Acquired 6,300 Net Acres In The Midland Basin

The Company's Midland Basin assets are located in the Permian Basin in West Texas is comprised of approximately 80,000 net acres.

Riverbend Energy Group Announces Acquisition to Mark the Rebuilding of Its Non-Operated Energy Strategy

Riverbend Energy Group, via certain of its affiliates, announced today the acquisition of a sizeable non-operated working interest position in the core of the Williston Basin.

Earthstone Energy Announces \$1.0 Billion Delaware Basin Acquisition

Earthstone Energy, Inc. recently announced that it has entered into an agreement to acquire Novo Oil & Gas Holdings, LLC, a privately-held Delaware Basin focused E&P company backed by EnCap Investments L.P., for \$1.5 billion.

Westlawn Group Forms Ellipsis U.S. Onshore Holdings To Acquire Assets Located In The Delaware Basin

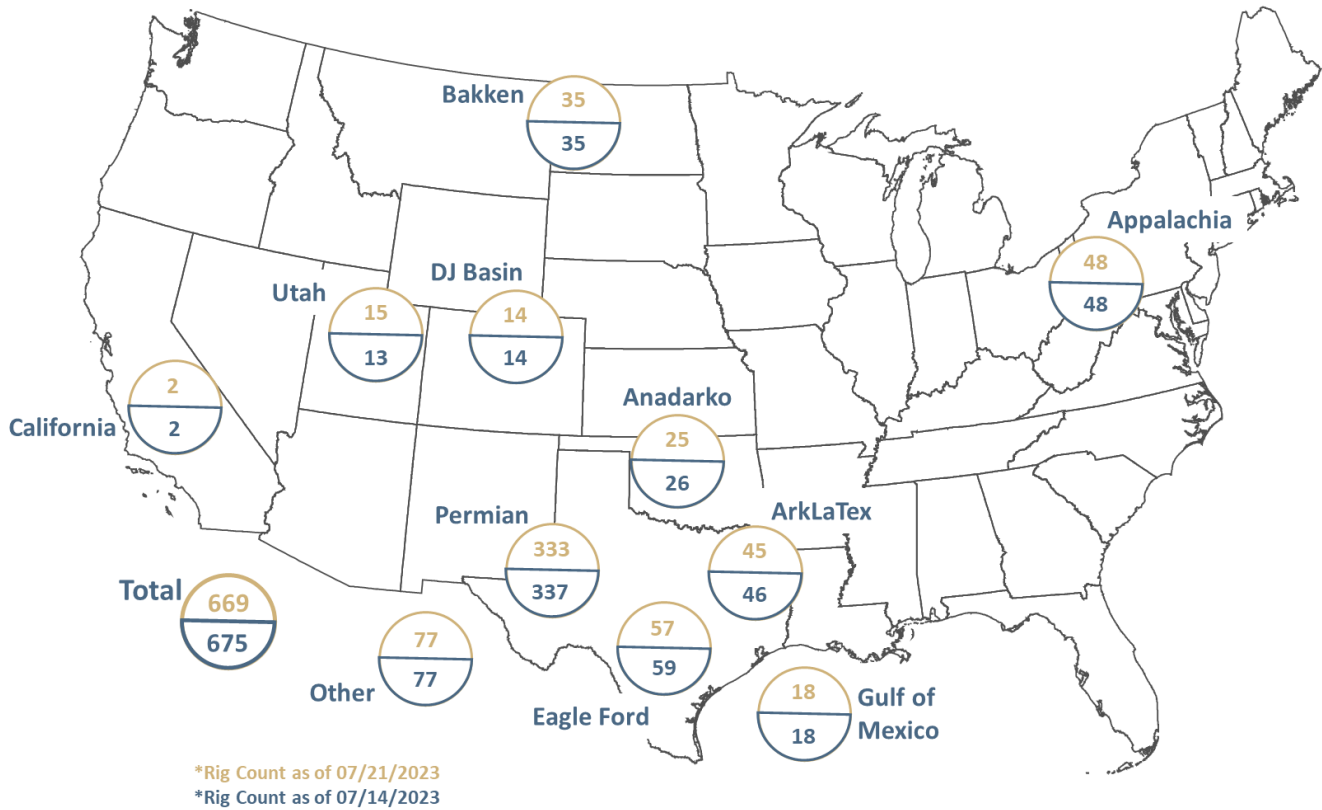
Westlawn Group, LLC is pleased to announce the formation of Ellipsis U.S. Onshore Holdings, LLC. Headquartered in Dallas, Texas, Ellipsis is a private energy company formed to pursue the acquisition and development of large, producing oil and natural gas assets in the United States.

Lucero Energy Corp. Announces US\$104.6 Million Asset Disposition, Revised 2023 Guidance And Normal Course Issuer Bid

Lucero Energy Corp. is pleased to announce the Company has executed and closed a definitive purchase and sale agreement with an arm's length purchaser, to divest of certain non-strategic, non-operated assets within Lucero's North Dakota Bakken/Three Forks play for cash consideration of C\$140.2 million before customary closing adjustments.



RIG ACTIVITY BY US REGION

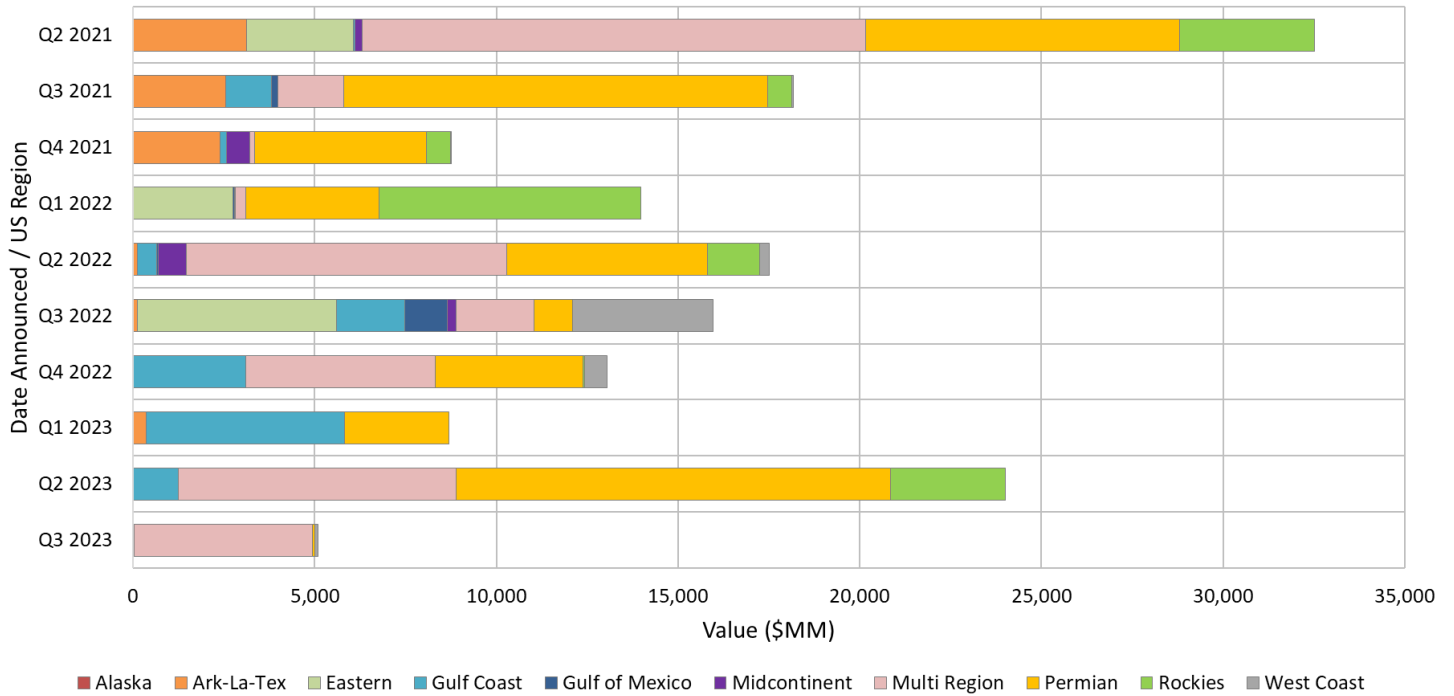


| | Week Ending 07/21/2023 | | | Week Ending 07/14/2023 | | Week Ending 07/22/2022 |
|--------------------|------------------------|------------|------------|------------------------|------------|------------------------|
| U.S. Rig Breakouts | Count | +/- | Count | +/- | Count | |
| Oil | 530 | (7) | 537 | (69) | 599 | |
| Gas | 131 | (2) | 133 | (24) | 155 | |
| Not Specified | 8 | 3 | 5 | 4 | 4 | |
| Directional | 51 | (1) | 52 | 11 | 40 | |
| Horizontal | 600 | (6) | 606 | (87) | 687 | |
| Vertical | 18 | 1 | 17 | (13) | 31 | |
| Land (Inc Others) | 647 | (5) | 652 | (91) | 738 | |
| Inland Waters | 4 | (1) | 5 | 0 | 4 | |
| Offshore | 18 | 0 | 18 | 2 | 16 | |
| US Total | 669 | (6) | 675 | (89) | 758 | |

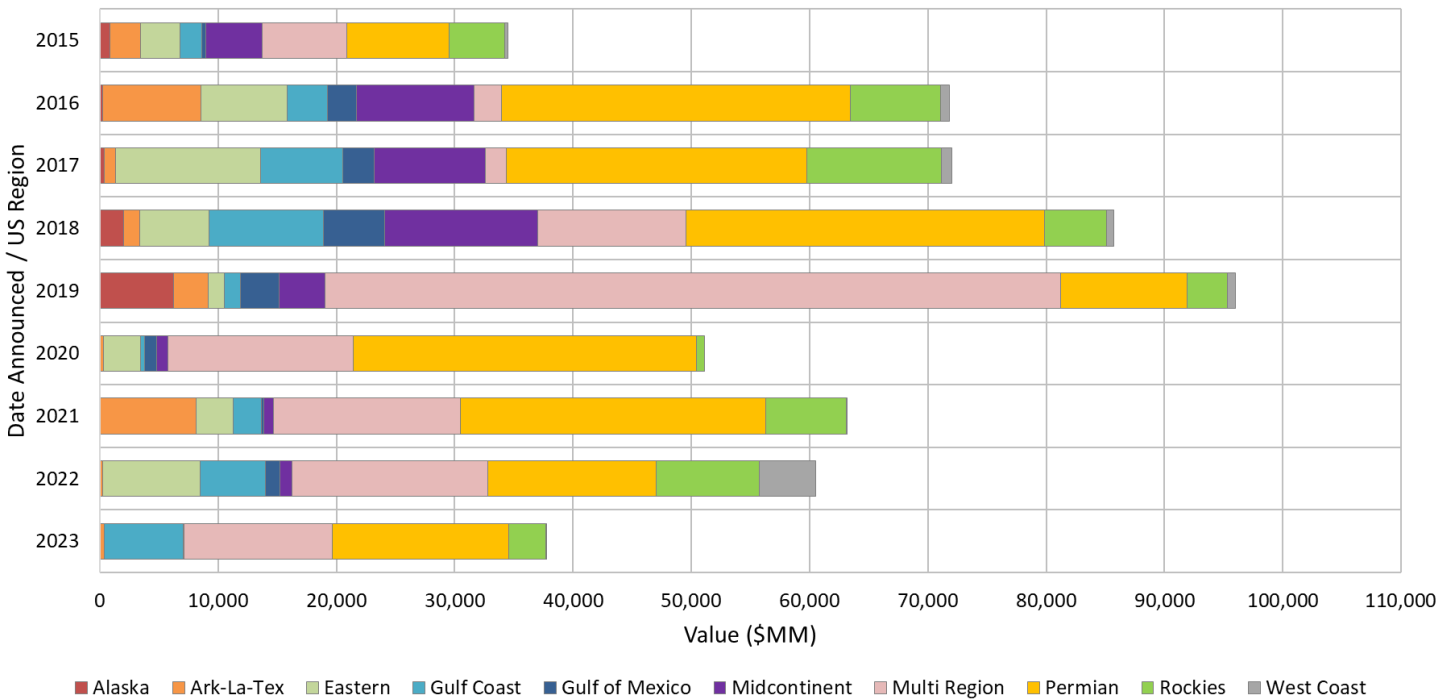
*Source—Baker Hughes Weekly Rig Counts



DEAL VALUE BY US REGION (BY QUARTER)



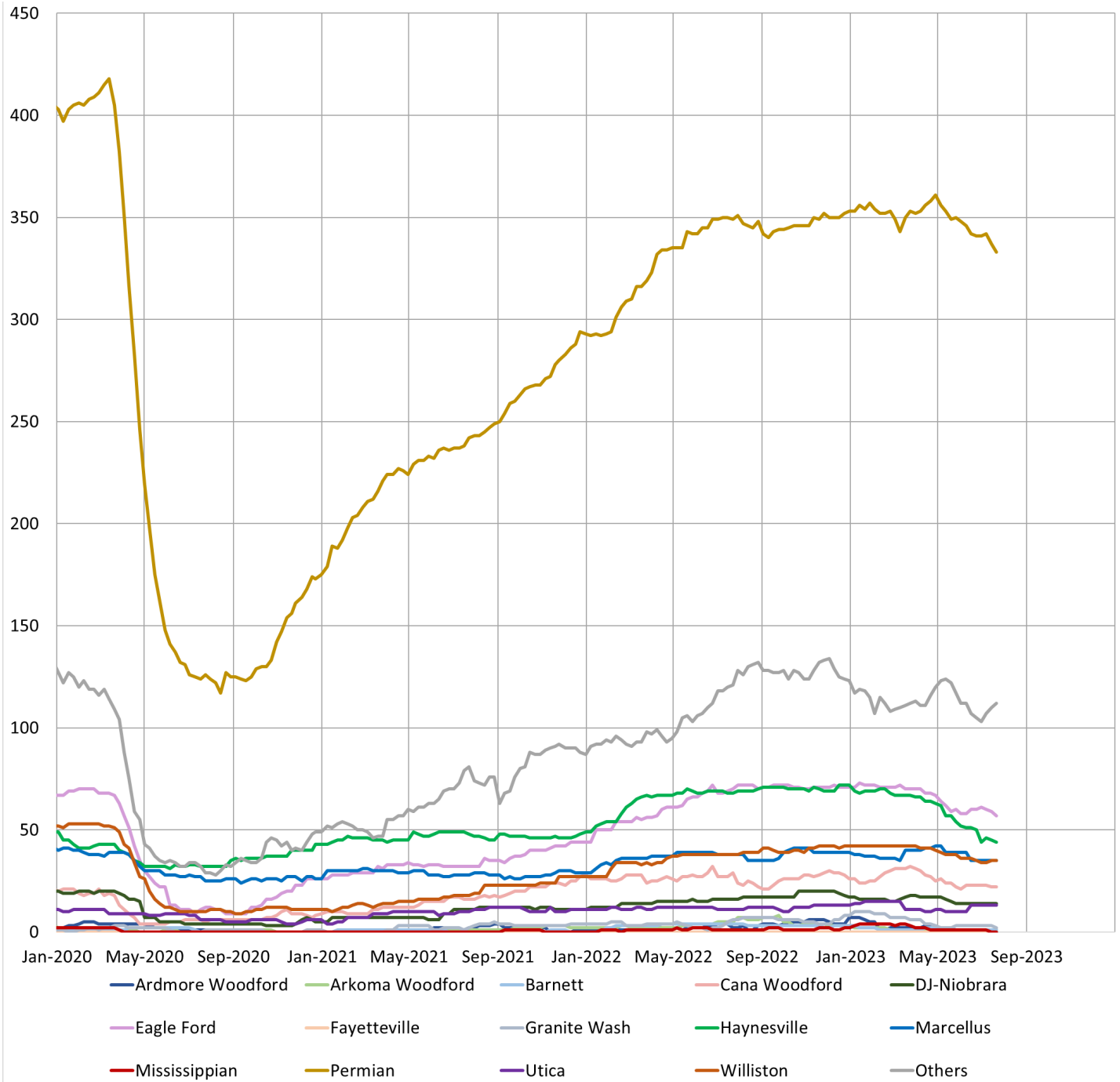
DEAL VALUE BY US REGION (BY YEAR)



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



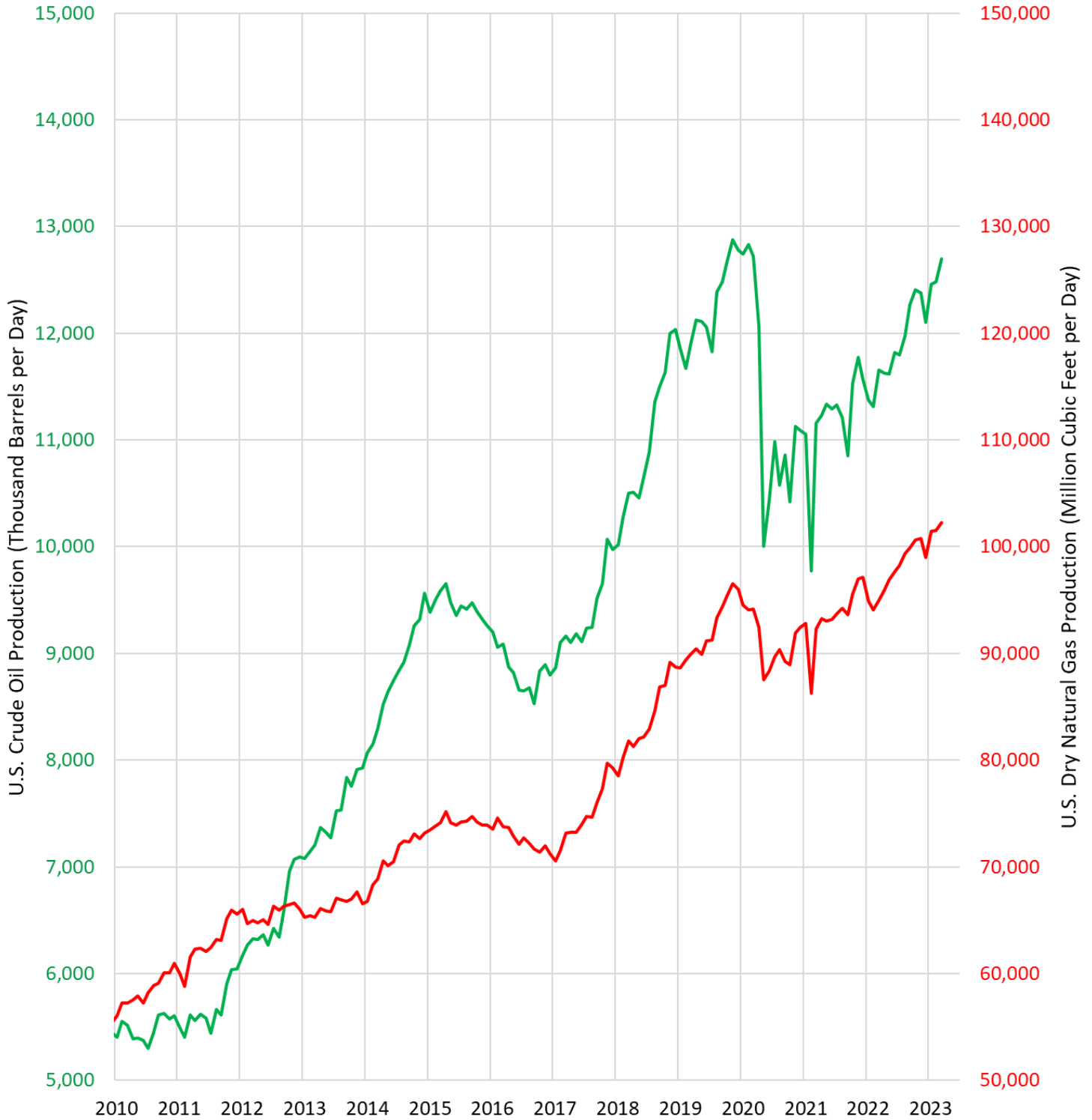
RIG ACTIVITY BY US REGION



*Source—Baker Hughes Weekly Rig Counts



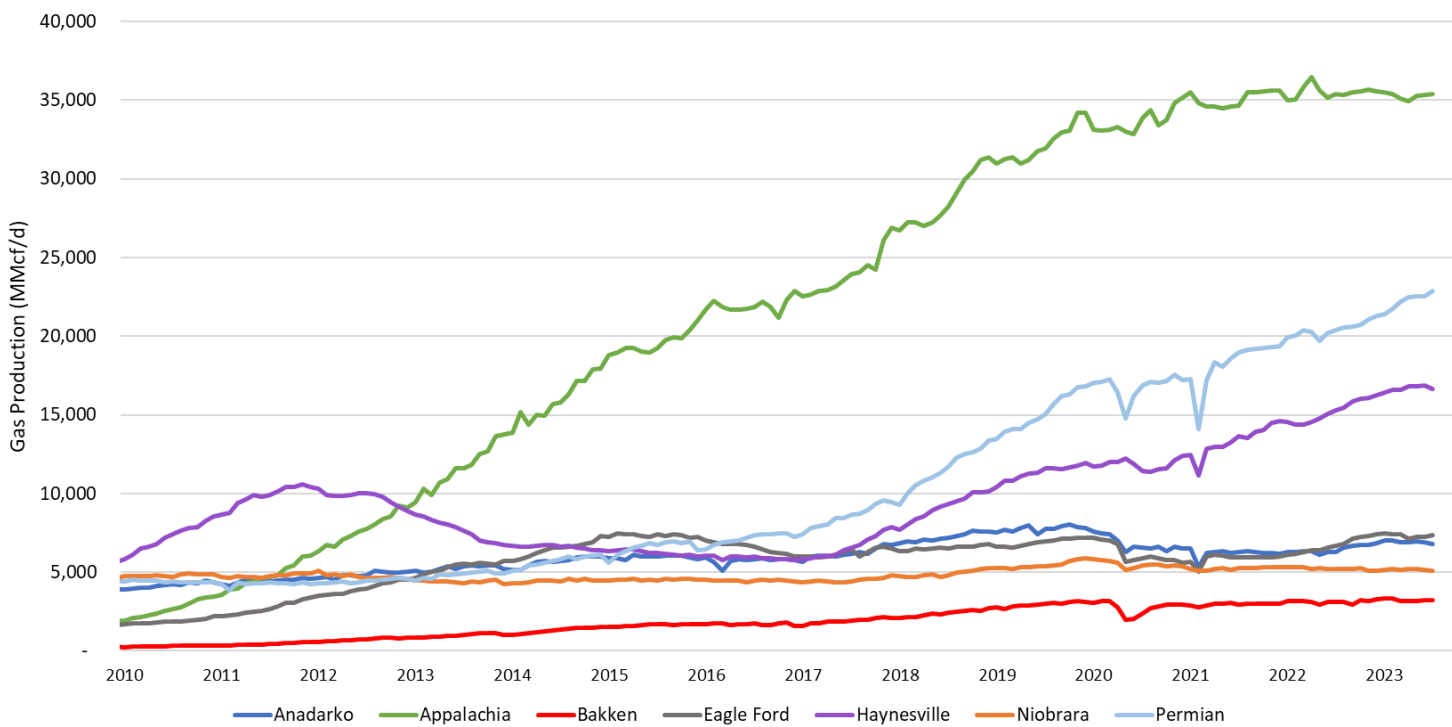
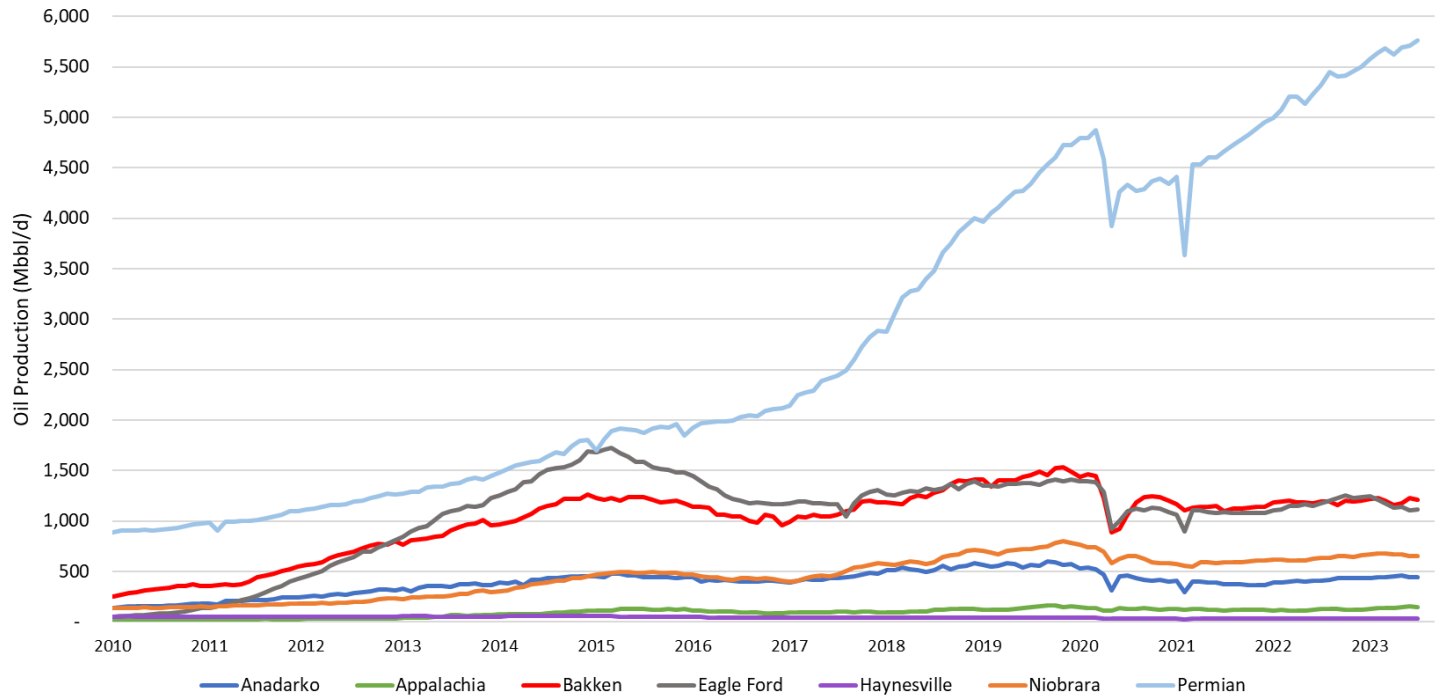
US DAILY CRUDE (MMbbl) & DRY NATURAL GAS PRODUCTION (MMcf)



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



HISTORICAL PRODUCTION OF SELECTED US SHALE REGIONS



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



UPCOMING EVENTS

August 2023

| | | |
|---|--------------|-------------------|
| <u>Salesforce For Energy (with Opportune)</u> | August 2 | Oklahoma City, OK |
| <u>Enercom Denver</u> | August 14-16 | Denver, CO |
| <u>Women In Minerals – Dine n Deal</u> | August 16 | Denver, CO |
| <u>TXCPA Energy Conference</u> | August 25 | Houston, TX |
| <u>Society of Petroleum Engineers (SPE) - Saint Arnold's Season Kick-Off Social</u> | August 30 | Houston, TX |

September 2023

| | | |
|---|-----------------|---------------------|
| <u>Enertia User Conference</u> | September 21-22 | Fort Lauderdale, FL |
| <u>HPF 29th Annual Golf Tournament</u> | September 25 | Cypress, TX |
| <u>World Oilman's Overnight Poker Tournament (WOOP)</u> | September 28-29 | Lake Charles, LA |

October 2023

| | | |
|--|---------------|------------|
| <u>Hart Energy—Energy Capital Conference</u> | October 2 | Dallas, TX |
| <u>Hart Energy—A&D Strategies and Opportunities Conference</u> | October 3 | Dallas, TX |
| <u>2023 National Conference of Bankruptcy Judges (NCBJ)</u> | October 11-14 | Austin, TX |
| <u>Tulsa Octoberfest</u> | October 19-22 | Tulsa, OK |

*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.

