



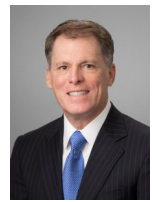
Weekly E&P Update

August 1, 2023

Vol. 30

Advanced DIY Computing is Becoming More Accessible

By Steve Hendrickson
President of Ralph E. Davis Associates



Regular readers of our column will remember that one aspect of my career I've genuinely enjoyed is witnessing and participating in applying increasingly powerful computational capabilities. The energy business is not the only field experiencing this transformation, but its impact has been particularly significant due to the complexity and volume of information that must be processed at every stage of development.

In the early 1980s, when computers first reached our desks, there was little available software. Those running IBM-based processors didn't even have a "Windows" style user interface until after 1985. The software industry was still nascent and didn't always cater to petroleum engineering problems, which compelled large companies like the one I worked for to develop in-house solutions. However, times have changed, and we've increasingly relied on third-party software. While this has generally been beneficial, it can pose challenges when the software fails to meet specific requirements or becomes prohibitively expensive for infrequent use.

In recent years, we've witnessed remarkable advances that have made creating customized computing solutions more accessible and cost-effective, even for non-coding experts. Here are a few noteworthy examples:

- 1) Open-source platforms - Languages like R and Python have emerged as free, user-friendly options with extensive packages of functions that cater to a wide range of mathematical and statistical challenges.
- 2) ChatGPT - OpenAI's ChatGPT stands out for its coding capabilities. While it excels at handling simple requests, more complex problems may require some trial and error or additional research. Nonetheless, it is a valuable tool for identifying and addressing minor bugs.
- 3) GitHub Co-pilot - Developed as a set of AI extensions for Visual Studio Code, GitHub Co-pilot draws on vast knowledge from Stack Overflow and GitHub to assist with writing code in multiple programming languages. It can anticipate the next line of code or even complete a comment's train of thought, offering substantial assistance in development tasks. While Visual Studio Code remains free, Co-pilot incurs a modest monthly cost.
- 4) Widget-based programming - One handy solution is Orange ML, an open-source product enabling users to tackle machine learning problems by constructing pipelines using widgets for various solution steps.

These approaches not only simplify the process of DIY computing but also enhance efficiency. For instance, many of us have long relied on Excel to solve engineering problems. However, its computational overhead can prove burdensome when extensive number crunching is involved. In contrast, Monte Carlo simulations that take several minutes to complete in Excel can be run in R in seconds, making it a more efficient choice.

In conclusion, these developments have paved the way for a more approachable and user-friendly landscape of DIY computing, enabling individuals and businesses to harness computational power effectively and economically. As technology continues to advance, we can expect further democratization of computing expertise, revolutionizing problem-solving across diverse industries.

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](#)

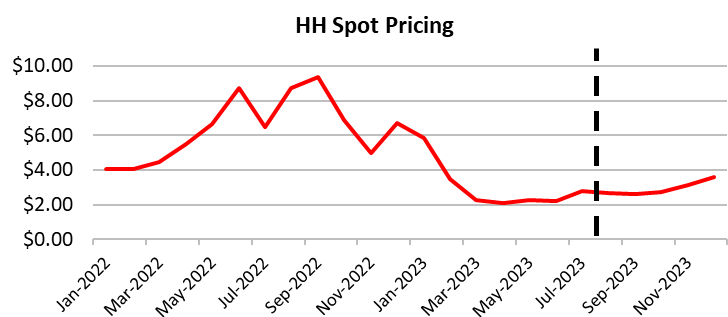
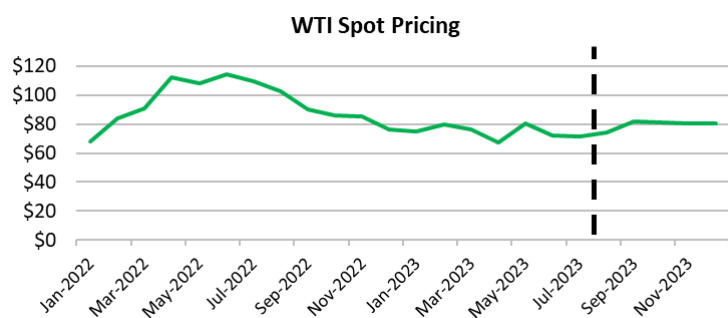
[Historical Production of US Shale Regions](#)

[Upcoming Events](#)

[About Us/Key Contacts](#)



NYMEX FUTURE PRICING



MONDAY'S MARKET CLOSE

NYMEX WTI CRUDE OIL FUTURES as of July 31, 2023 Close (\$/bbl)

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$81.08	\$2.89	\$78.19	\$85.82
2024	\$77.25	\$2.35	\$74.90	\$78.70
2025	\$72.39	\$1.73	\$70.66	\$73.91
2026	\$68.58	\$1.31	\$67.27	\$70.46
2027	\$65.46	\$1.00	\$64.46	\$68.13

NYMEX HH NATURAL GAS FUTURES as of July 31, 2023 Close (\$/MMBtu)

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$3.02	\$0.03	\$2.99	\$5.66
2024	\$3.50	(\$0.01)	\$3.51	\$4.68
2025	\$3.97	(\$0.01)	\$3.98	\$4.50
2026	\$4.02	\$0.01	\$4.00	\$4.40
2027	\$3.96	(\$0.00)	\$3.96	\$4.33

INDUSTRY METRICS—QUICK SNAPSHOT

	Current	Last Week	WoW Change	%Change
Crude Oil Near-Month Price (\$/bbl)	\$81.73	\$78.85	\$2.88	4%
Natural Gas Near-Month Price (\$/MMBtu)	\$2.64	\$2.70	(\$0.06)	(2%)
Weekly Upstream-Deal Transaction Value (\$MM)	\$0.00	\$86.00	(\$86.00)	(100%)
Weekly Number of Upstream-Deal Transactions	0	3	(3)	(100%)
Current Total US Rig Count	664	669	(5)	(0.7%)
US Field Crude Oil Production (MMbbl/day)	12.2	12.3	(0.1)	(0.8%)
US Field Dry Natural Gas Production (Bcf/day)	107.5	107.1	0.4	0.4%
Commercial Crude Oil Stocks-Excluding SPR (MMbbl)	457	457	(0.6)	(0.1%)
Natural Gas Stocks-Working Gas Underground Storage (Bcf)	2,987	2,971	16	0.5%
Total Drilled But Uncompleted Wells (DUC-Last Month)	4,804	4,804	0	-

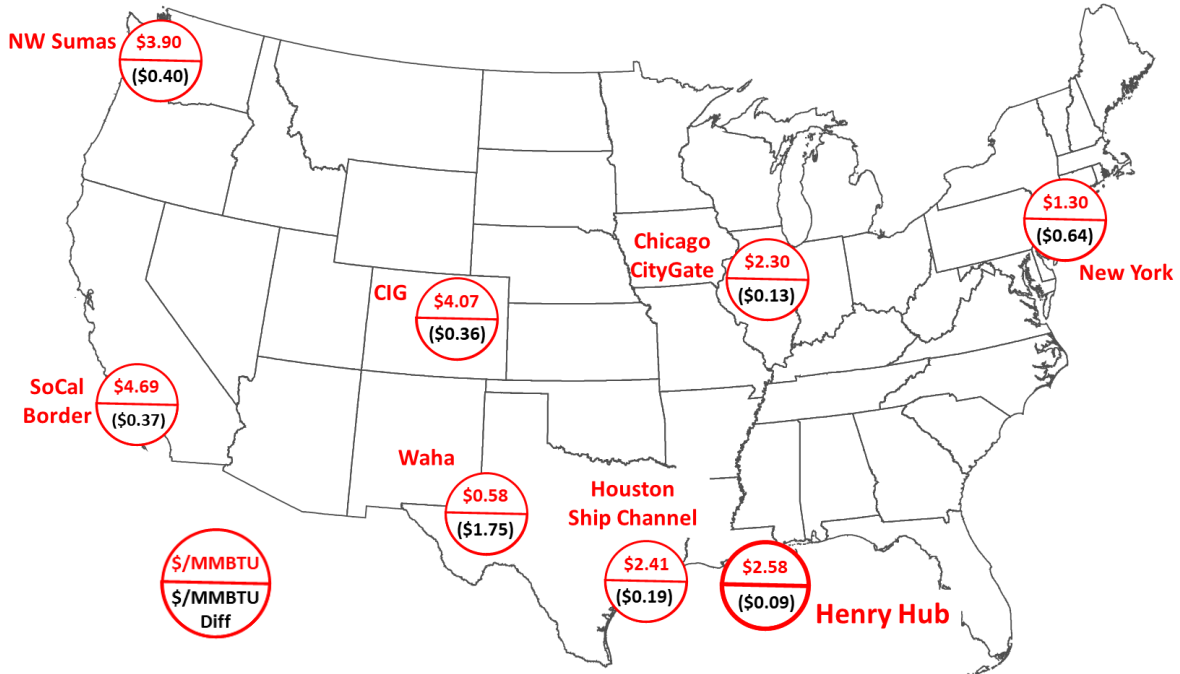
*Source—Energy Information Administration, United States (EIA)

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

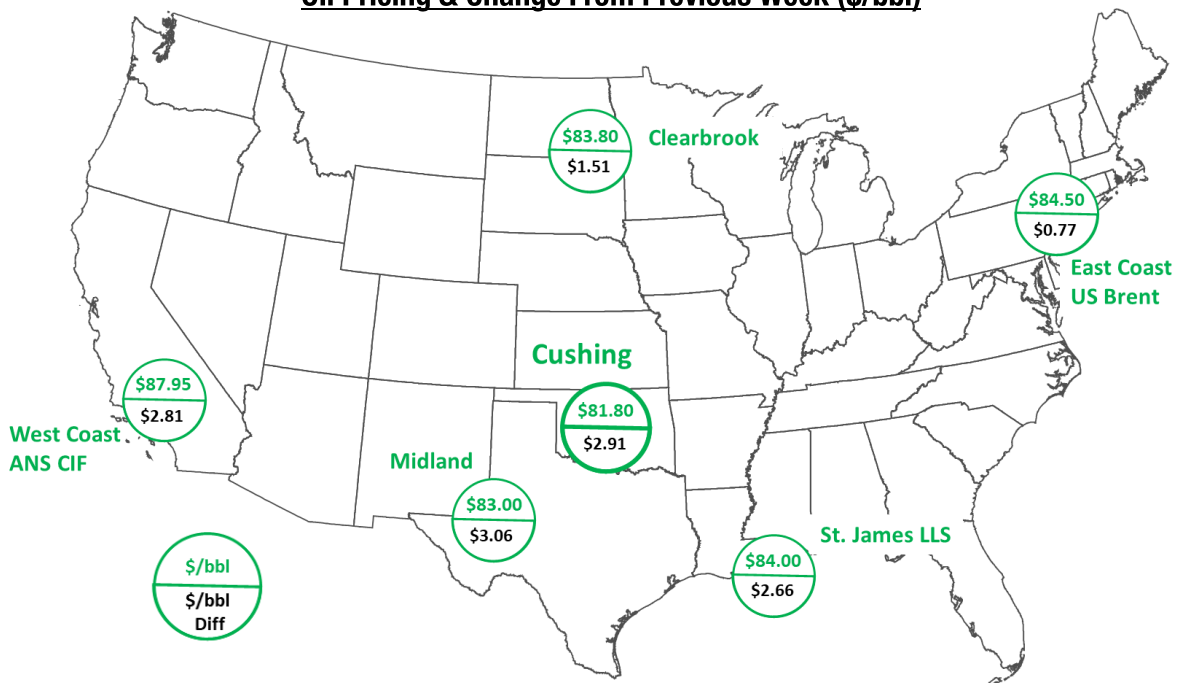


US COMMODITY PRICES CONTINUED

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



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



*Source—Bloomberg LP



SELECTED INDUSTRY HEADLINES

Texas Crude Production Sets New Record As U.S. Demand Climbs To Seasonal Peak

Crude output in Texas surged to a record in May just as U.S. demand climbed to a fresh seasonal peak.

Oil Inventory Drops Set Stage For Higher Prices (LOGIN CREDENTIALS REQUIRED)

Oil inventories are beginning to fall in some regions as demand outpaces supply constrained by deep production cuts from OPEC leader Saudi Arabia, providing support for prices which are expected to rise in coming months.

Oil Exploration Grows But Discovered Volumes Fall To New Lows

Spending on conventional oil and gas exploration is rebounding and expected to top \$50 billion this year, the highest since 2019, but operators are still waiting for the results they had hoped for. Rystad Energy research shows that despite the rising investments, discovered volumes are falling to new lows.

Energy Trade Groups Urge Biden Administration To Support Domestic Energy Production With “robust” Offshore Leasing Program

The American Petroleum Institute and Energy Workforce & Technology Council joined with 17 energy trade groups representing all sectors of the U.S. natural gas and oil industry in calling on the Biden administration to support U.S. energy security by finalizing a robust program for federal offshore leasing.

US Shale Slowdown Spreads TO Oil Services Industry

Oilfield services groups are feeling the squeeze from a slowdown in activity in the US shale patch as companies scale back on oil and gas drilling.

U.S. Shale Drilling Set For Recovery, Oilfield Service Firm Says

Drilling activity in the U.S. shale patch is about to rebound later this year and next year as oil prices have strengthened recently, American oilfield services firms said this week.

Innovations Continue To Push The Limits of Efficiency (LOGIN CREDENTIALS REQUIRED)

Now well into the second half of 2023, the importance of hydraulic fracturing completion efficiencies remains the focal point for many service companies and operators, as both continue to be impacted by higher associated costs brought on by inflationary and activity-driven effects in 2022.

Strategists Project 9.3MM Barrel USA Crude Inventory Drop

Macquarie strategists projected that U.S. crude inventories will be down 9.3 million barrels for the week ending July 28 in a new report sent to Rigzone on Monday.

California Relying On Fossil Fuels For Critical Power Amid Record Heat Wave: ‘We Need Natural Gas’

The state of California continues to rely heavily upon fossil fuel-fired power plants to ensure its residents and businesses have access to reliable electricity amid the ongoing heat wave.

Russia On Course To Drill Record Number Of Oil Wells Despite Sanctions And Cuts

Russian oil producers accelerated the drilling of production wells in the first half of this year despite the Western sanctions and Moscow’s pledge to reduce output by the end of the year and cut exports in August, data seen by Bloomberg showed on Monday.

Hundreds Of New Oil And Gas Licenses Will Be Granted In UK

UK Prime Minister Rishi Sunak has confirmed that hundreds of new oil and gas licenses will be granted in the UK, the UK government revealed in a release posted on its website this week.

How Generative AI Can Help Individuals Invest In ESG-Forward Companies

The cofounder of Daizy says we need to untangle the E, the S, and the G in ESG; report, track, and measure each category separately; and make that data available to everyone.

ESG Watch: Investors Hail End To ‘Alphabet Soup’ of Sustainability Disclosure With New ISSB Standards (LOGIN CREDENTIALS REQUIRED)

The world of global business standards is a deliberate and slow-moving one. That makes the recent release of the first International Sustainability Standards Board (ISSB) standards after just 18 months lightning quick, in relative terms.



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

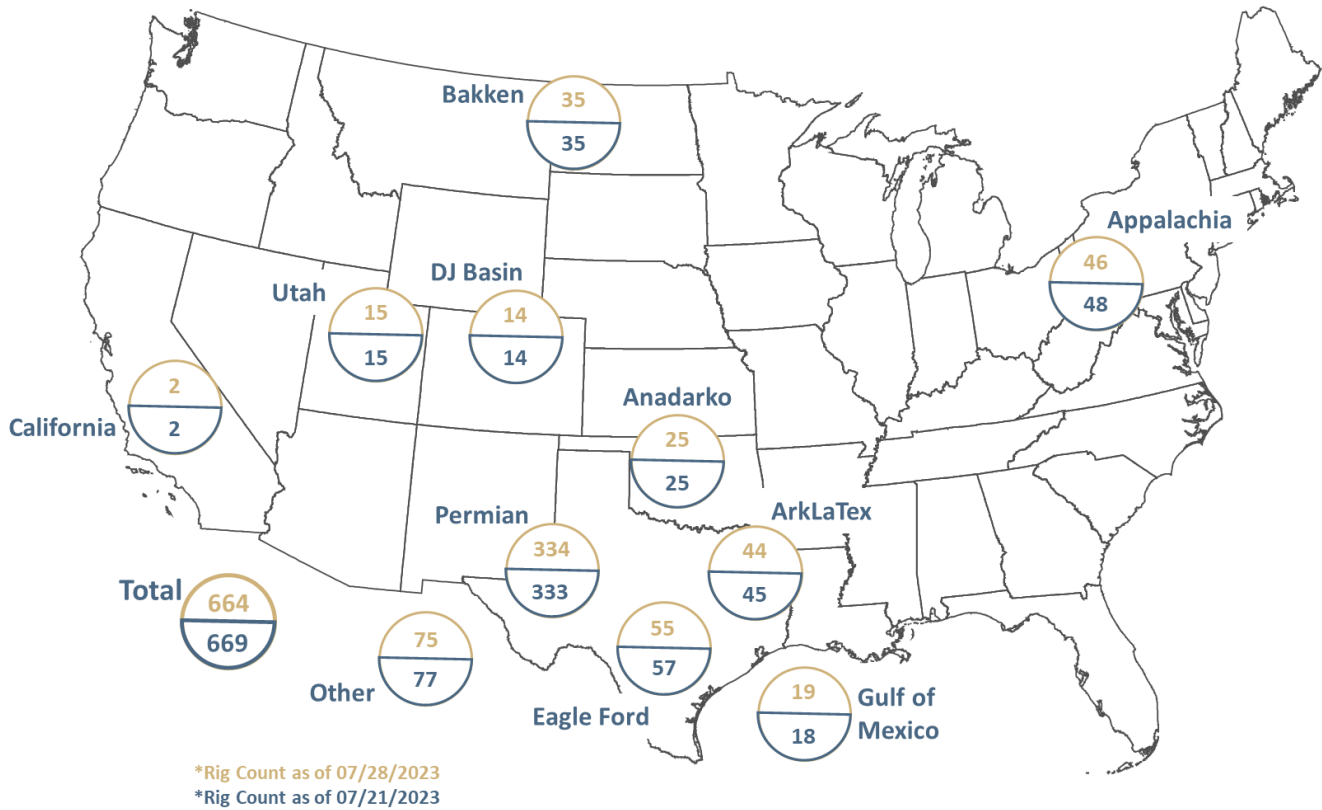
Westlawn Group, LLC is pleased to announce the formation of Ellipsis U.S. Onshore Holdings, LLC. Headquartered in Dallas, Texas, Ellipsis is a private energy company formed to pursue the acquisition and development of large, producing oil and natural gas assets in the United States.

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

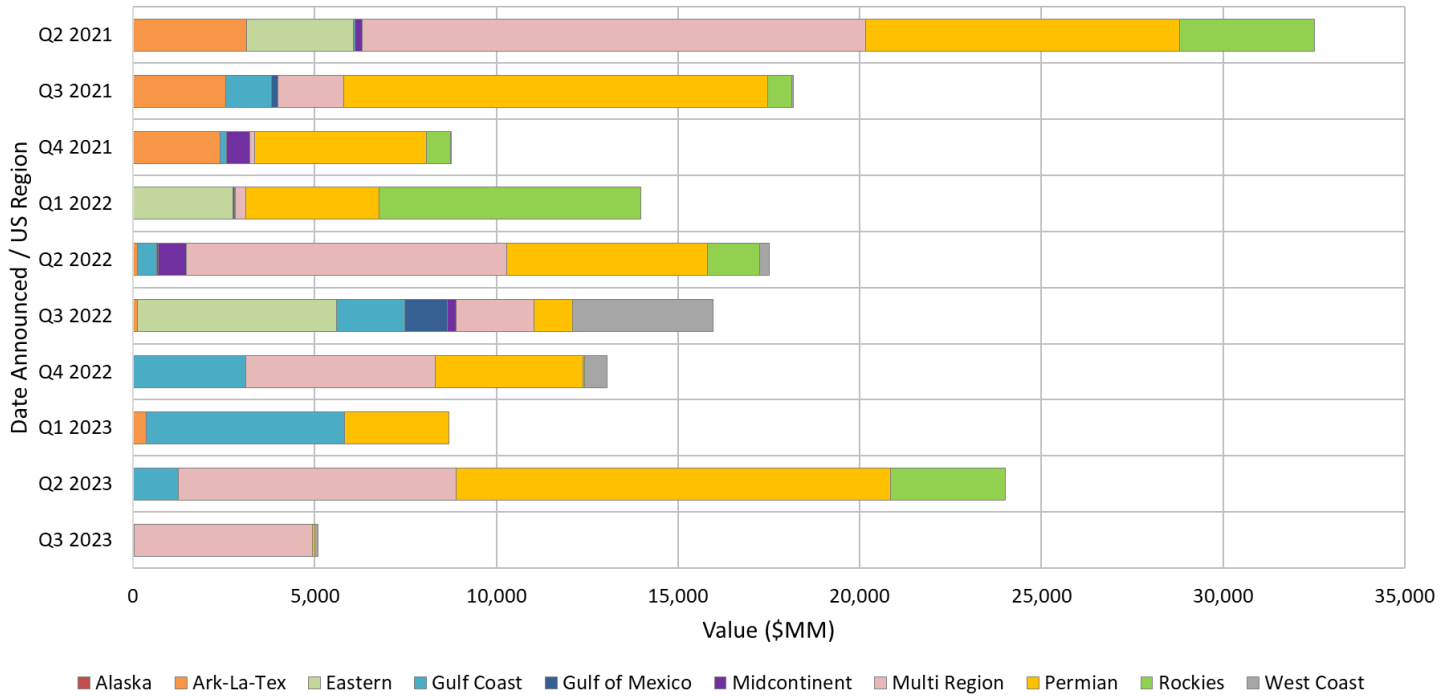


	Week Ending 07/28/2023			Week Ending 07/21/2023		Week Ending 07/29/2022
U.S. Rig Breakouts	Count	+/-	Count	+/-	Count	
Oil	529	(1)	530	(76)	605	
Gas	128	(3)	131	(29)	157	
Not Specified	7	(1)	8	2	5	
Directional	53	2	51	15	38	
Horizontal	592	(8)	600	(105)	697	
Vertical	19	1	18	(13)	32	
Land (Inc Others)	640	(7)	647	(106)	746	
Inland Waters	5	1	4	1	4	
Offshore	19	1	18	2	17	
US Total	664	(5)	669	(103)	767	

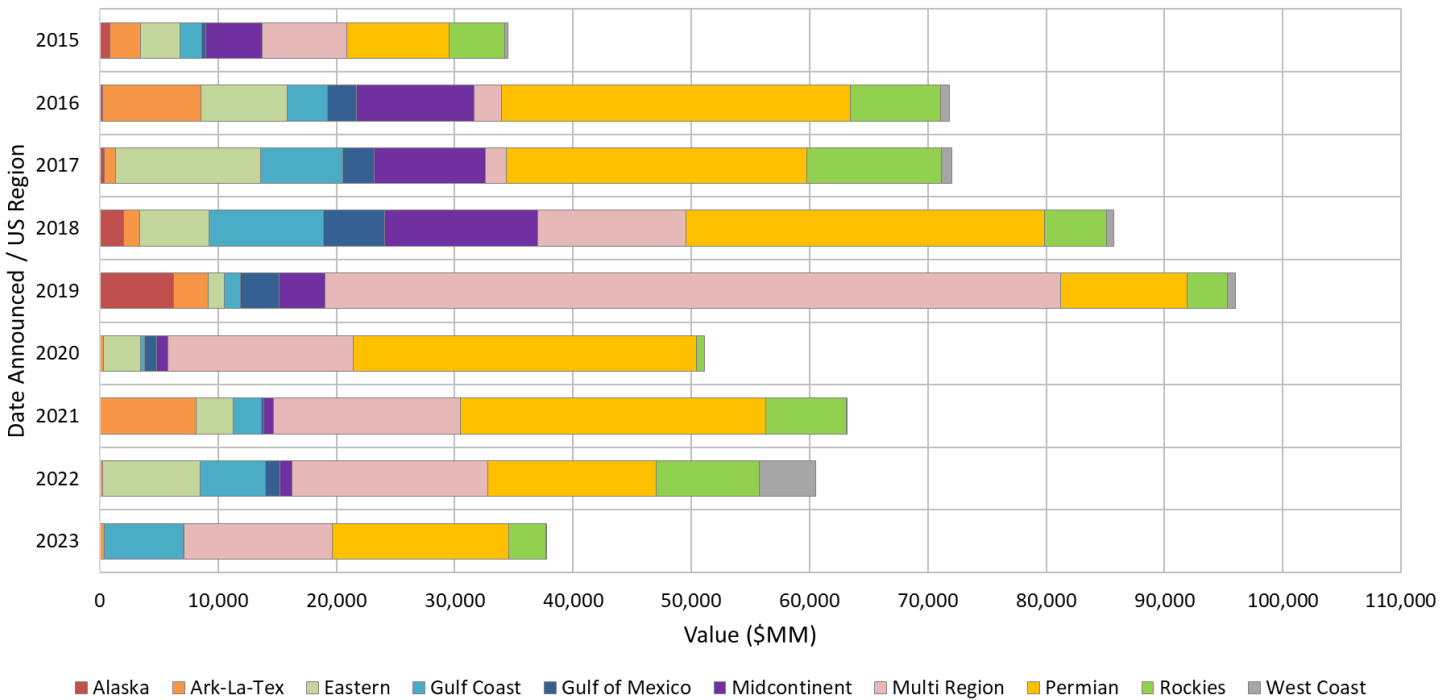
*Source—Baker Hughes Weekly Rig Counts



DEAL VALUE BY US REGION (BY QUARTER)



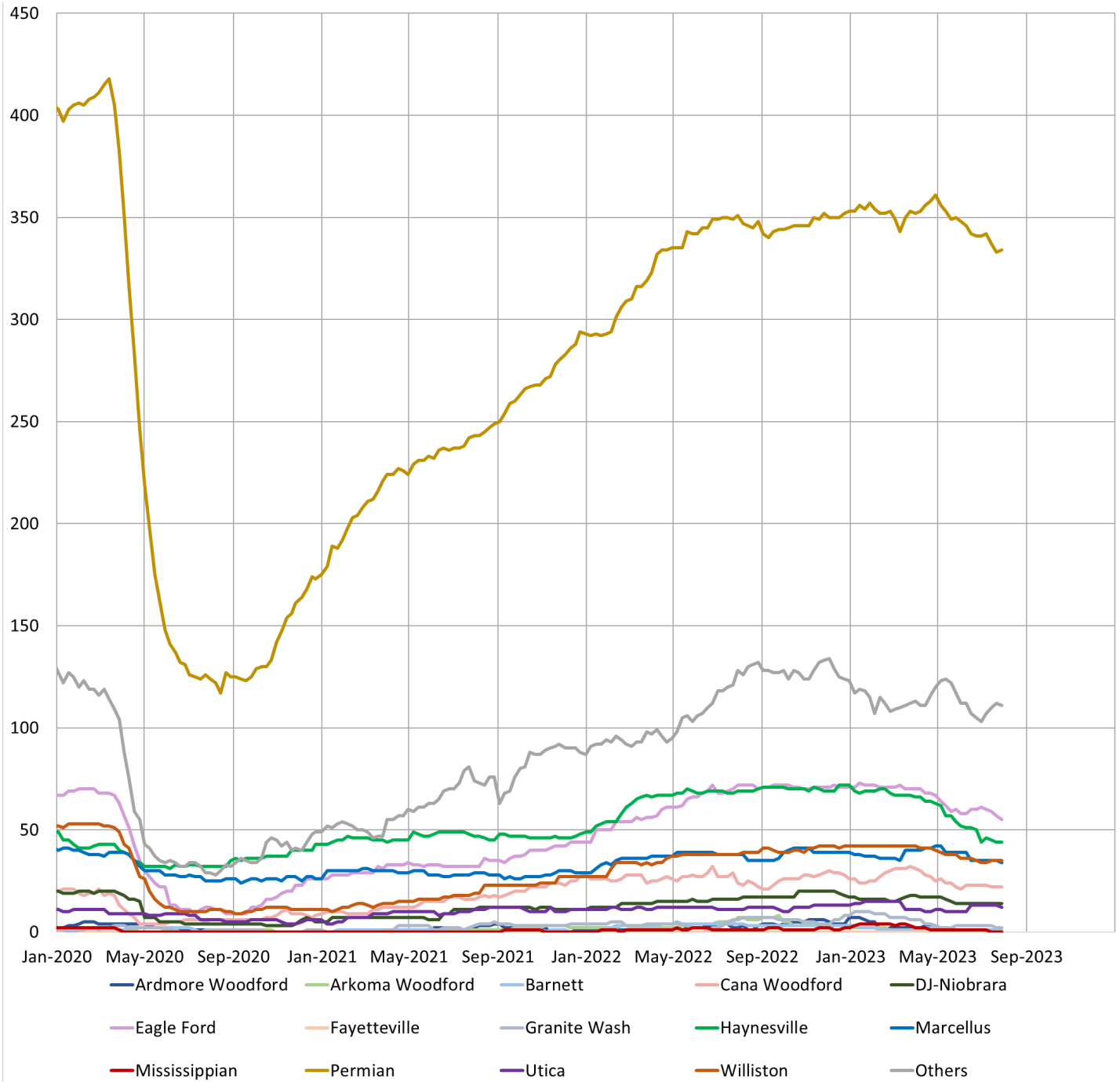
DEAL VALUE BY US REGION (BY YEAR)



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



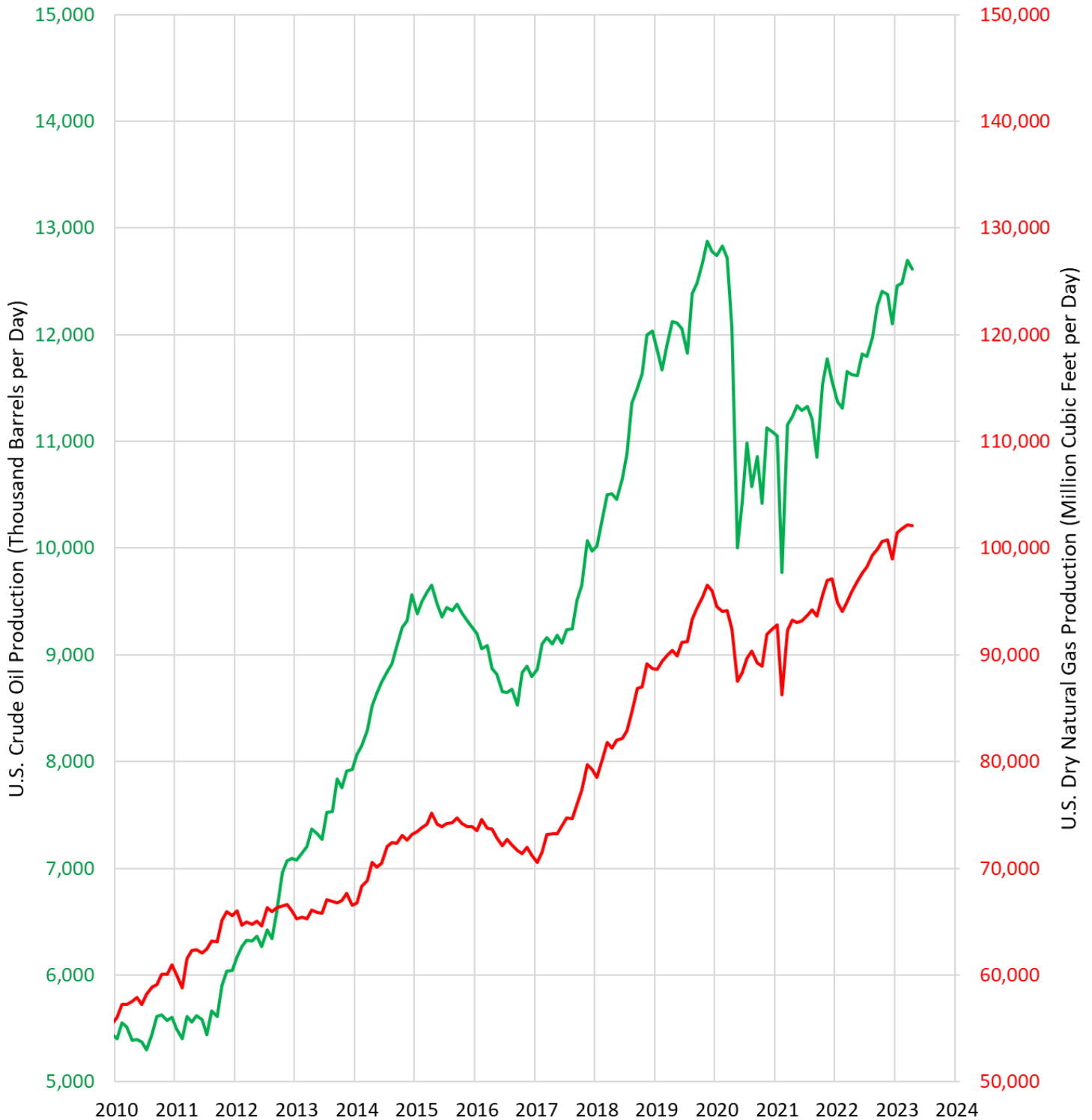
RIG ACTIVITY BY US REGION



*Source—Baker Hughes Weekly Rig Counts



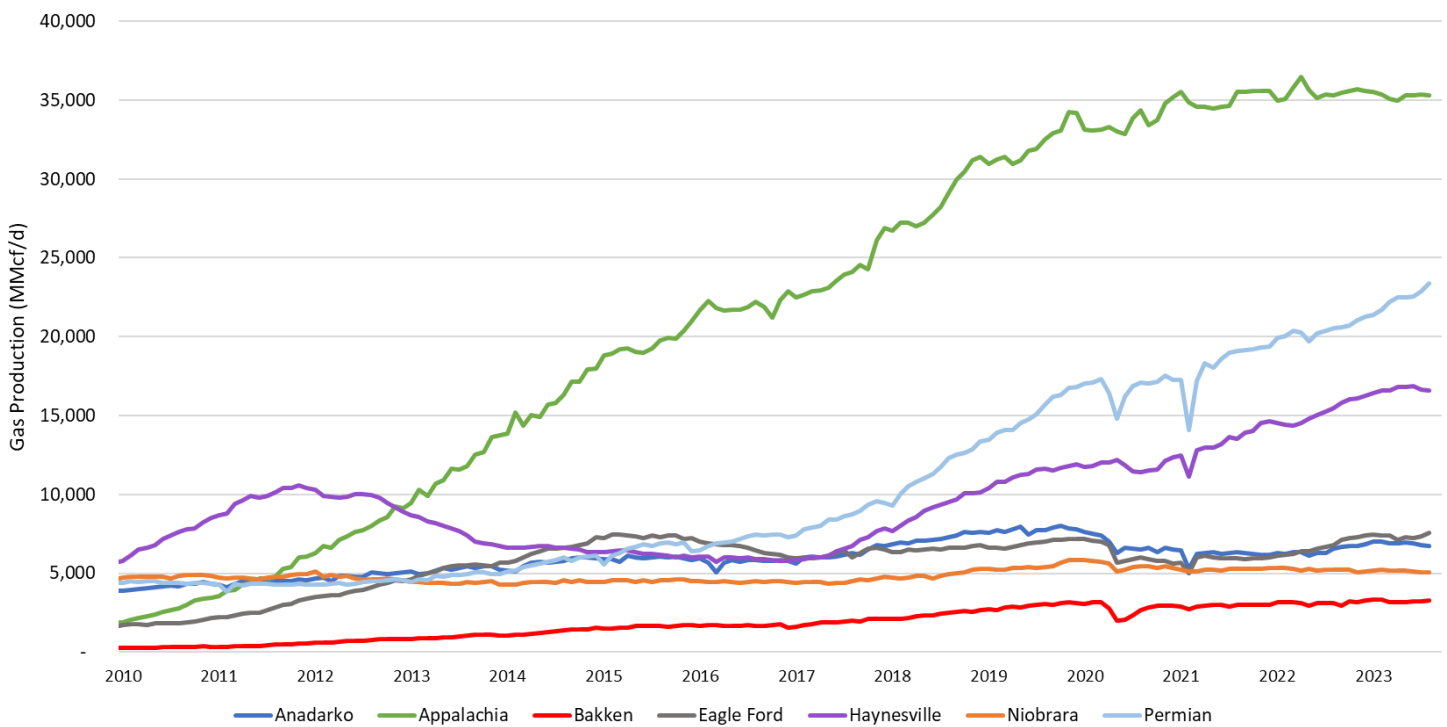
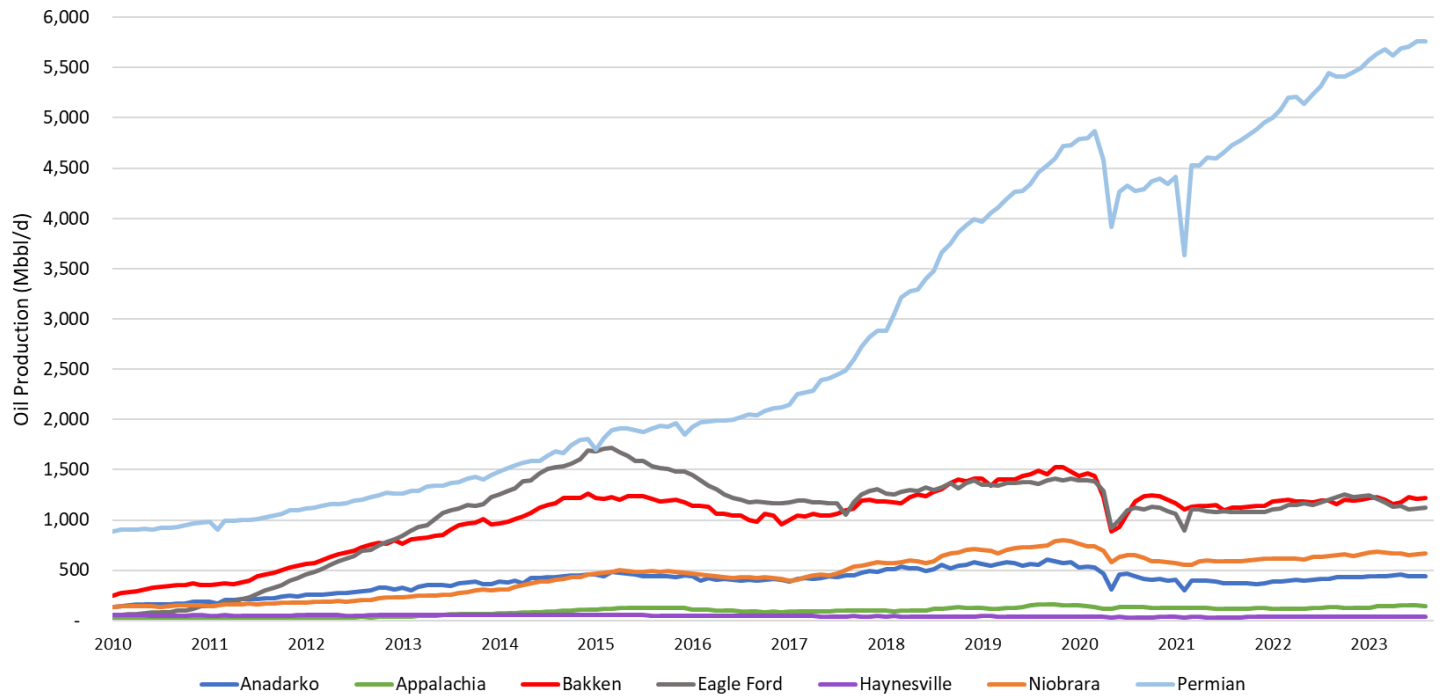
US DAILY CRUDE (MMbbl) & DRY NATURAL GAS PRODUCTION (MMcf)



*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.

