



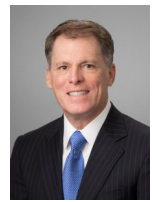
# Weekly E&P Update

July 11, 2023

Vol. 27

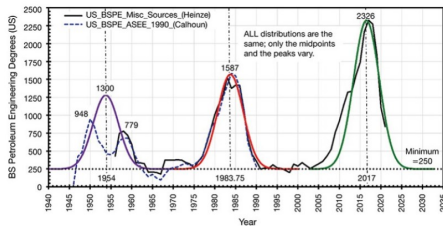
## Petroleum Engineering Enrollment Continues to Slip Despite Ongoing Need

By Steve Hendrickson  
President of Ralph E. Davis Associates



I had a conversation recently with a senior executive at a major oil and gas company where he described some of their recent university recruiting challenges. He pointed out that petroleum engineering enrollment is down significantly, and some universities may close their programs. Some engineering colleges may cease to offer a petroleum engineering degree if their enrollment numbers continue to decrease.

According to a [2022 article](#) in the Journal of Petroleum Technology (JPT), there have been three distinct waves of petroleum engineering enrollment since the end of World War II. As shown in the chart below, these corresponded with the war's end, the 1970's "oil crisis" and the shale revolution. Each of these periods experienced [significant oil price increases](#).



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(Source: Journal of Petroleum Technology)

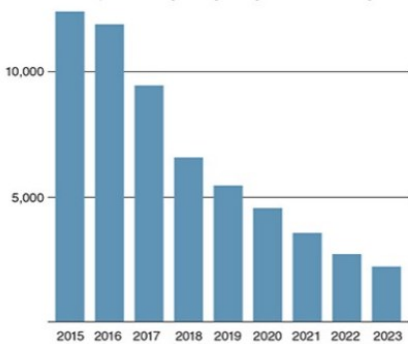
A 2023 JPT article confirms that the downward trend has continued to the present. Less than 700 students were expected to graduate in 2023, and enrollment continues to decline. It seems plausible that, absent another significant and sustained price shock, we will be back in the 250 graduates per year range, but with a domestic oil and gas industry that is substantially larger than in the 1990's. At the same time, many of the engineers hired in the early 1980's have already or will soon retire.

Undoubtedly, [some of this trend can be traced to the declining perceptions](#) of the industry and uncertainty about whether a petroleum engineering degree will lead to high-earning employment over a 40 to 50-year career. [Universities strive to adapt](#) to these challenges amidst a fast-changing landscape that includes the development of new energy technologies, continued advancements in computing and artificial intelligence, and the recognition that we will need significant hydrocarbon resources for decades in any scenario.

The challenge will lie in broadening these students' knowledge while also increasing their reliance on more advanced computing and data analytics without losing fundamental science, mathematics, and critical thinking skills. Accomplishing this will require changes at the university level and continued skill development over the course of a career.

### Enrollment Declines Nearing Bottom

The number of petroleum engineering undergraduates declined again.



Source: Lloyd Heinze/Texas Tech.

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(Source: Journal of Petroleum Technology)

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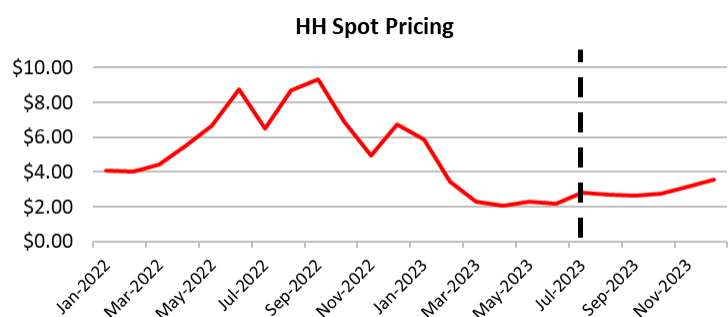
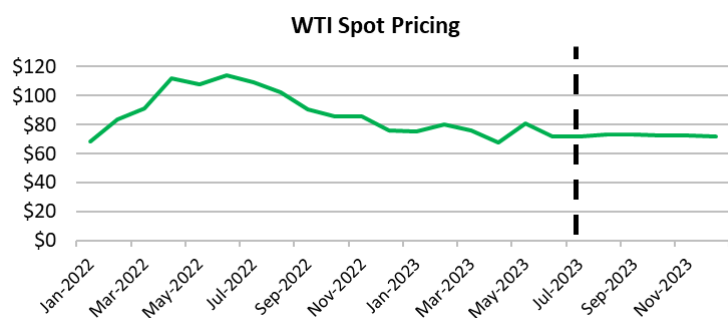
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## NYMEX FUTURE PRICING



## MONDAY'S MARKET CLOSE

### **NYMEX WTI CRUDE OIL FUTURES as of July 10, 2023 Close (\$/bbl)**

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$72.62	\$3.16	\$69.46	\$83.29
2024	\$70.10	\$2.25	\$67.85	\$76.22
2025	\$66.72	\$1.71	\$65.01	\$71.52
2026	\$63.95	\$1.32	\$62.63	\$68.04
2027	\$61.56	\$1.08	\$60.48	\$65.60

### **NYMEX HH NATURAL GAS FUTURES as of July 10, 2023 Close (\$/MMBtu)**

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$2.95	(\$0.11)	\$3.06	\$5.02
2024	\$3.51	(\$0.04)	\$3.55	\$4.53
2025	\$3.95	(\$0.04)	\$3.99	\$4.38
2026	\$3.92	(\$0.06)	\$3.98	\$4.30
2027	\$3.83	(\$0.07)	\$3.90	\$4.25

## INDUSTRY METRICS—QUICK SNAPSHOT

	<b>Current</b>	<b>Last Week</b>	<b>WoW Change</b>	<b>%Change</b>
Crude Oil Near-Month Price (\$/bbl)	\$73.86	\$69.82	\$4.04	6%
Natural Gas Near-Month Price (\$/MMBtu)	\$2.57	\$2.68	(\$0.11)	(4%)
Weekly Upstream-Deal Transaction Value (\$MM)	\$9.28	\$41.50	(\$32.22)	(78%)
Weekly Number of Upstream-Deal Transactions	4	3	1	33%
Current Total US Rig Count	682	674	6	1%
US Field Crude Oil Production (MMbbl/day)	12.2	12.2	0.2	2%
US Field Dry Natural Gas Production (Bcf/day)	104.9	105.8	2	1%
Commercial Crude Oil Stocks-Excluding SPR (MMbbl)	463	454	(2)	(0.3%)
Natural Gas Stocks-Working Gas Underground Storage (Bcf)	2,729	2,805	72	3%
Total Drilled But Uncompleted Wells (DUC-Last Month)	4,834	4,834	0	-

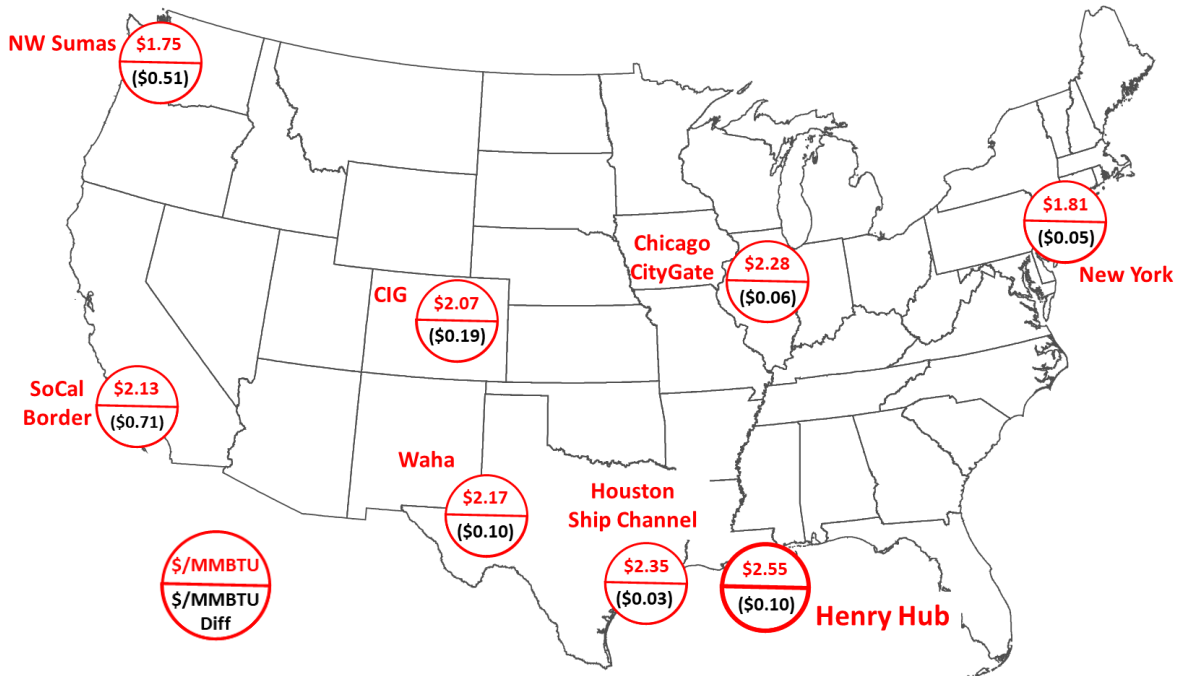
\*Source—Energy Information Administration, United States (EIA)

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

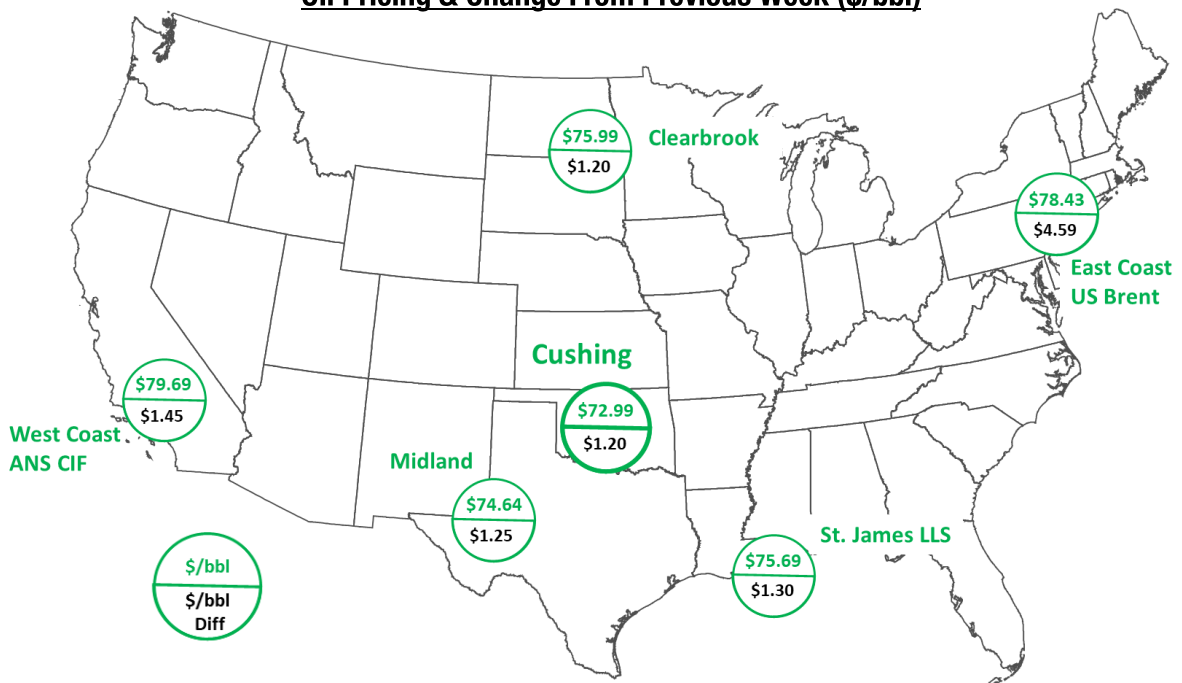


**US COMMODITY PRICES CONTINUED**

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



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



\*Source—Bloomberg LP



## **SELECTED INDUSTRY HEADLINES**

### **North America Adds Rigs Again**

North America has added several rigs week on week, according to Baker Hughes' latest rotary rig count, which was released recently.

### **Iran Floods Global Markets With Cheap Oil as Saudi Arabia Cuts Output (LOGIN CREDENTIALS REQUIRED)**

Iranian crude exports have hit a five-year high in recent months as the country ships more oil to China and other buyers.

### **Biden Administration Blocks Activist Bid To Reduce Oil, Gas Production From Federal Land**

The Biden administration has formally rebuffed a bid by environmental activists to phase down oil and gas production on federal lands and waters, marking its latest nod to the endurance of fossil fuels.

### **Norway Makes Biggest Hydrocarbon Discovery In 10 Years**

Norwegian oil and gas operator DNO ASA has made the country's largest hydrocarbon discovery in a decade, strengthening Norway's role as Europe's leading supplier of natural gas.

### **Has Texas Heat Affected Oil and Gas Operations?**

The extreme heat in Texas is having a significant impact on oil and gas operations, examining the challenges faced by the industry and potential consequences on production and infrastructure.

### **Experts Shed Light on US Critical Minerals Challenges, Solutions**

Critical minerals are essential for the transition to lower carbon energy, and legislators have a key role to play.

### **Oil And Gas Well Intervention Spending Set To Skyrocket**

As oil and gas production companies look for efficient and cost-effective methods of increasing their output, the well intervention market is set to get a healthy boost.

### **A New Natural Gas Pipeline In The Barents Sea Could Cut Europe's Reliance On LNG**

A possible new pipeline from the Barents Sea to carry natural gas from Norway's Arctic gas platforms to Europe could ease the continent's dependence on LNG imports.

### **European Gas Prices Trade at Lowest in a Month on Weak Demand (LOGIN CREDENTIALS REQUIRED)**

European natural gas prices fell to the lowest level in four weeks, due to weak demand and the winding down of maintenance in Norway.

### **Drilling for Oil in Alaska, Drilling for Oil on the Moon**

Something that becomes clear in the Arctic is that doing anything there takes longer. That includes drilling for oil.

### **Is Libya The Next Wildcard For Oil Markets**

Libya's Khalifa Haftar ordered his forces to be standby until a fair distribution of oil wealth is agreed between the leaders of its main warring factions.

### **AI Trading Playing Growing Role in Europe's Power Bills**

A Danish energy trader crunches about 30 million data points every day in an effort to predict how cloud cover in Spain and surging temperatures in Germany might ripple across to impact the price of power in France and elsewhere in Europe.



## **SELECTED RECENT TRANSACTIONS**

### **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.

### **CNX Resources To Sell Various Non-Operated Producing Oil And Gas Assets Primarily Located In The Appalachian Basin**

A subsidiary of CNX Resources Corporation entered into a definitive purchase sales agreement to sell various non-operated producing oil and gas assets primarily located in the Appalachian basin to a third party. The Company expects the transaction to close in the second quarter of 2023 and result in cash proceeds of approximately \$125 million.

### **Chord Energy Divests Permian Assets to Private E&P**

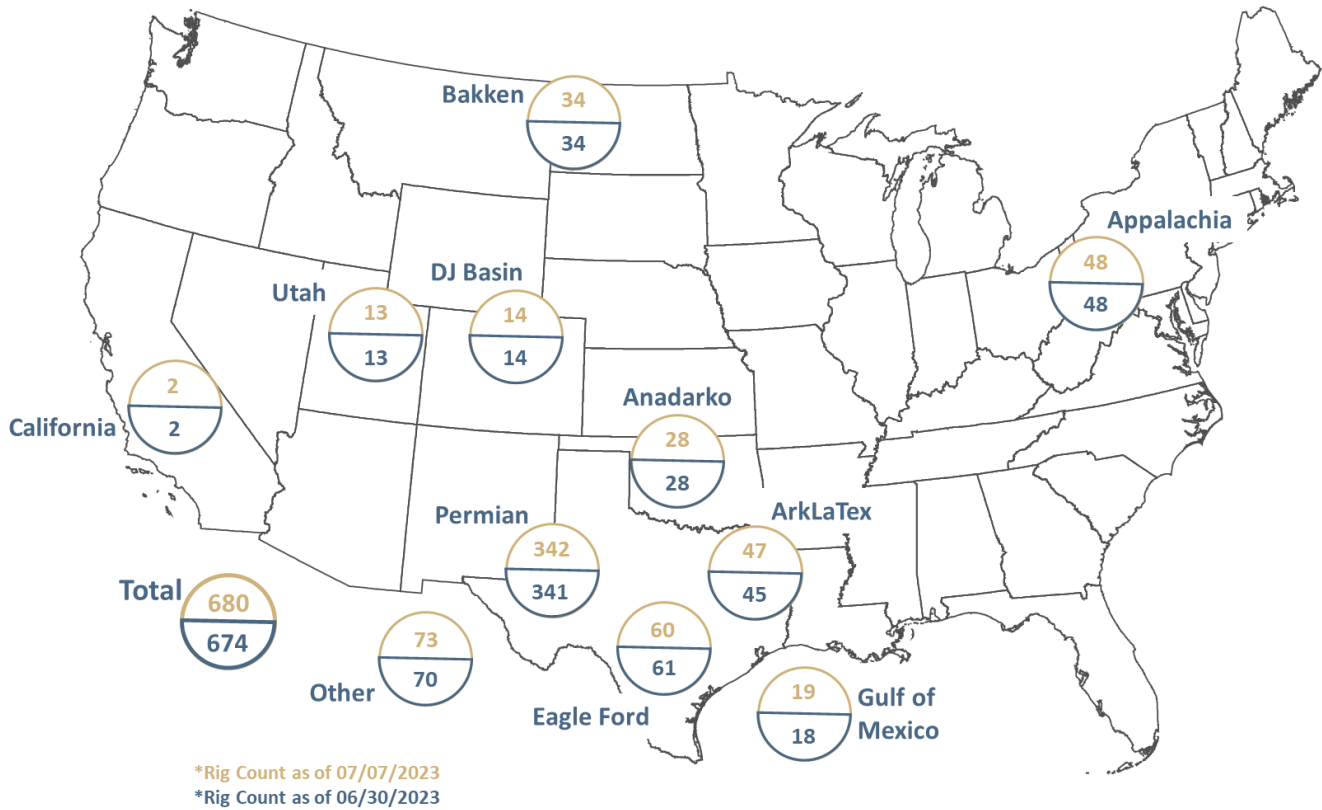
Chord Energy is selling non-core acreage and wells, primarily in the Central Basin Platform, to private E&P BCP Resources, which is focused on developing and optimizing legacy assets.

### **Family Office-Led Private Consortium Acquires PureWest**

PureWest Energy, LLC, a leading Rocky Mountain independent natural gas producer has completed an all-cash merger with a newly formed entity sponsored by a private consortium of family offices and financial institutions for a total consideration of \$1.84 billion.



## RIG ACTIVITY BY US REGION

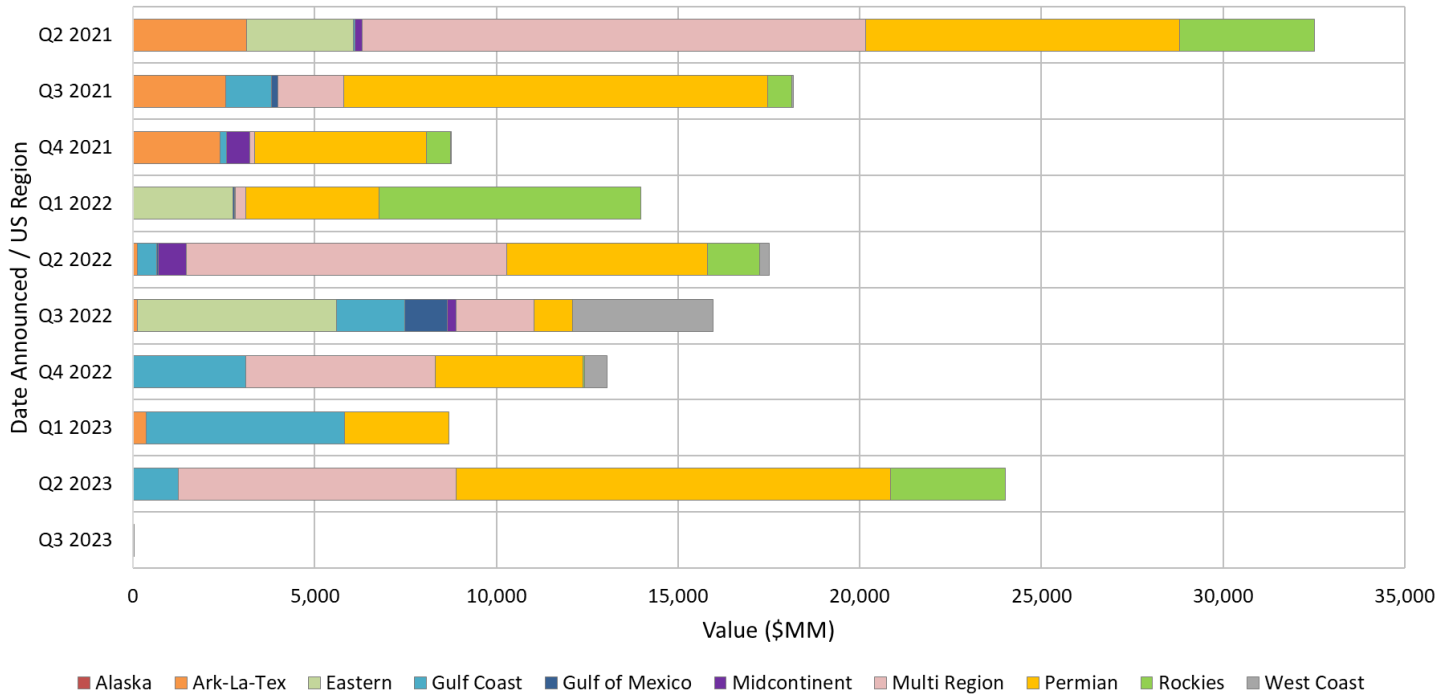


	Week Ending 07/07/2023			Week Ending 06/30/2023		Week Ending 07/08/2022
U.S. Rig Breakouts	Count	+/-	Count	+/-	Count	
Oil	540	(5)	545	(57)	597	
Gas	135	11	124	(18)	153	
Not Specified	5	0	5	3	2	
Directional	53	3	50	10	43	
Horizontal	611	5	606	(71)	682	
Vertical	16	(2)	18	(11)	27	
Land (Inc Others)	657	4	653	(74)	731	
Inland Waters	4	2	2	0	4	
Offshore	19	0	19	2	17	
<b>US Total</b>	<b>680</b>	<b>6</b>	<b>674</b>	<b>(72)</b>	<b>752</b>	

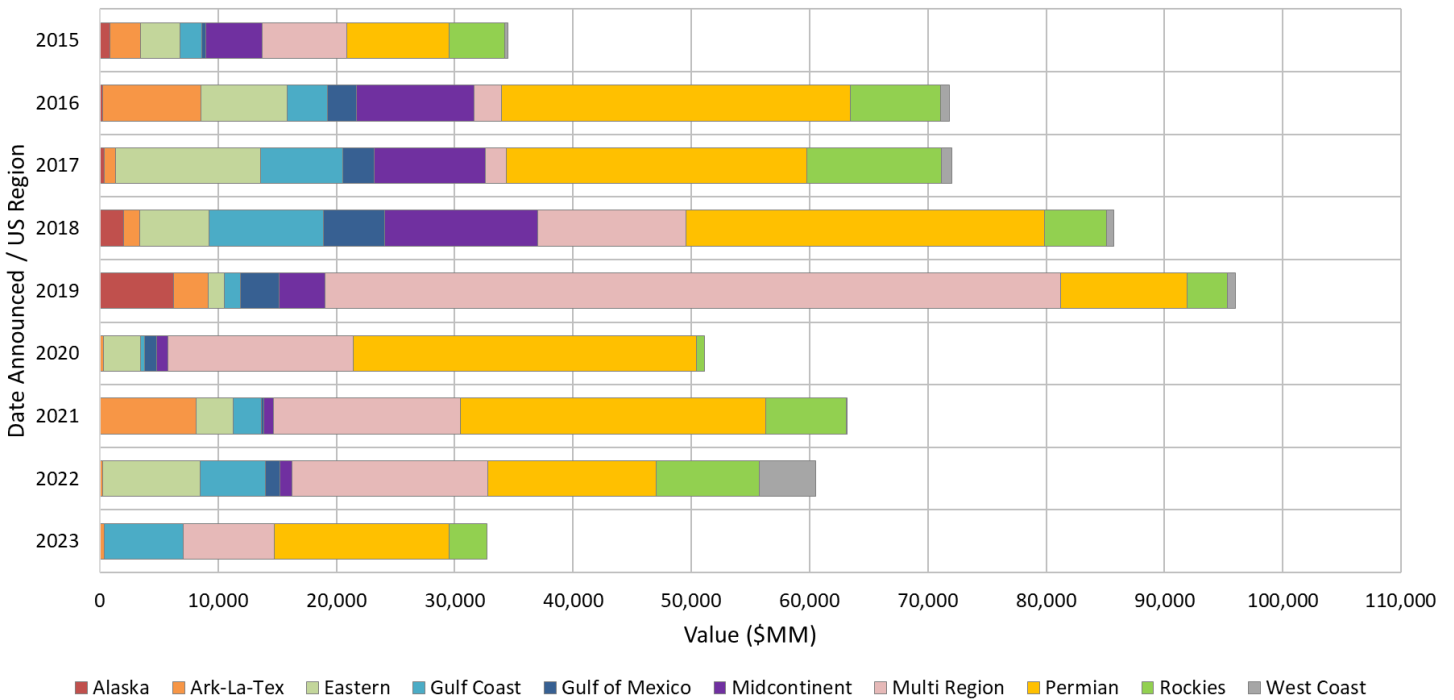
\*Source—Baker Hughes Weekly Rig Counts



## DEAL VALUE BY US REGION (BY QUARTER)



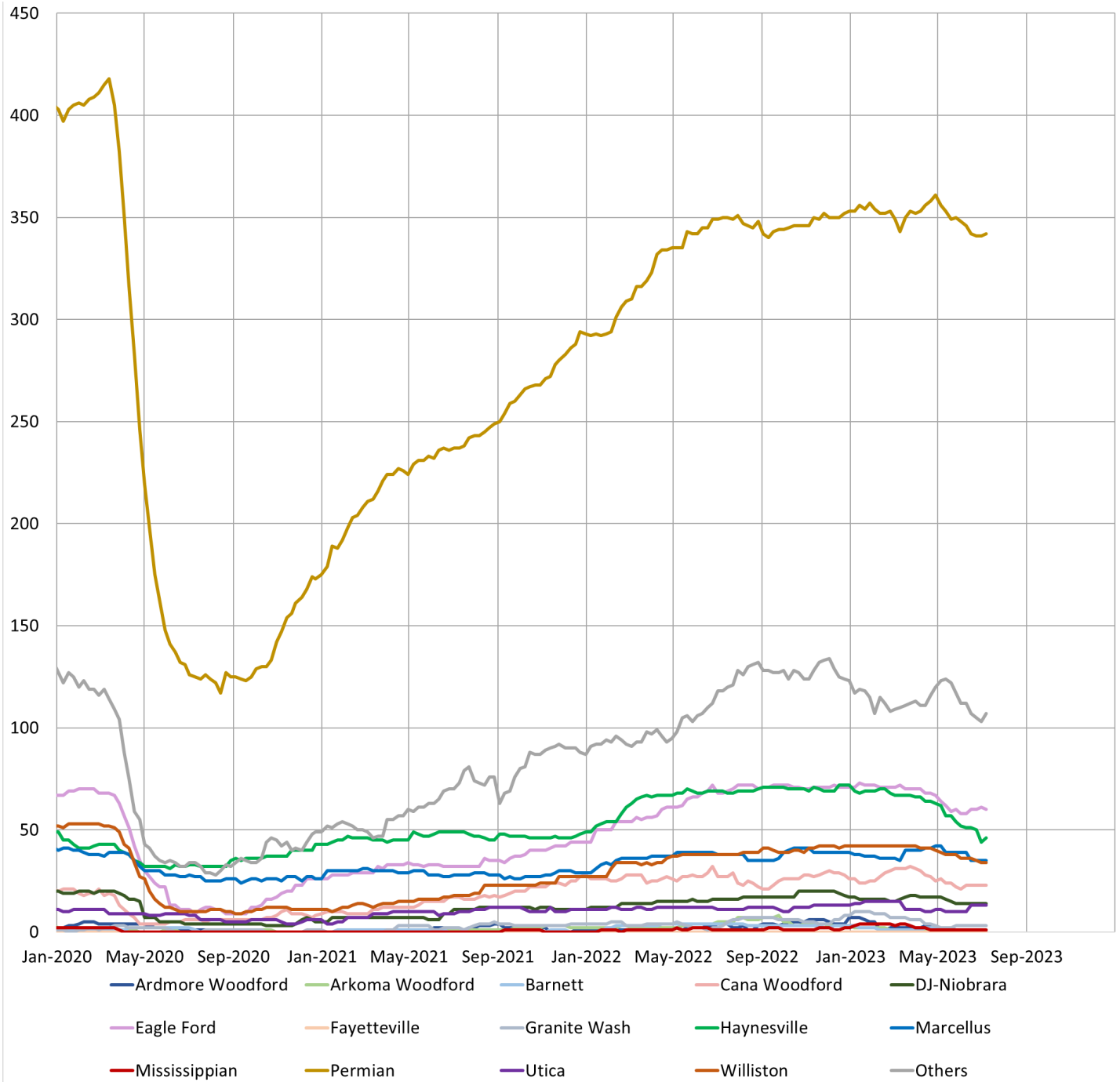
## DEAL VALUE BY US REGION (BY YEAR)



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



## RIG ACTIVITY BY US REGION

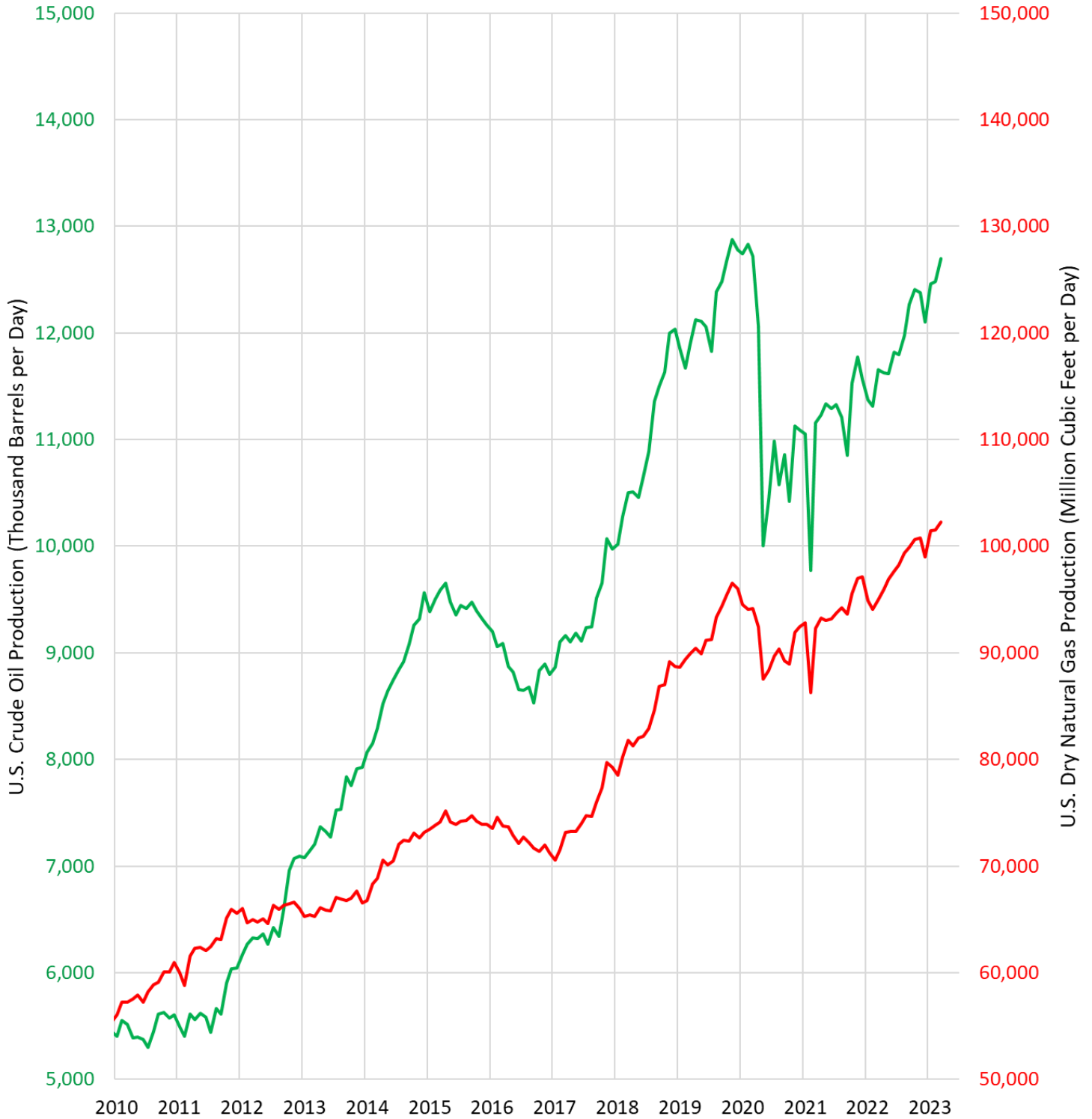


\*Source—Baker Hughes Weekly Rig Counts





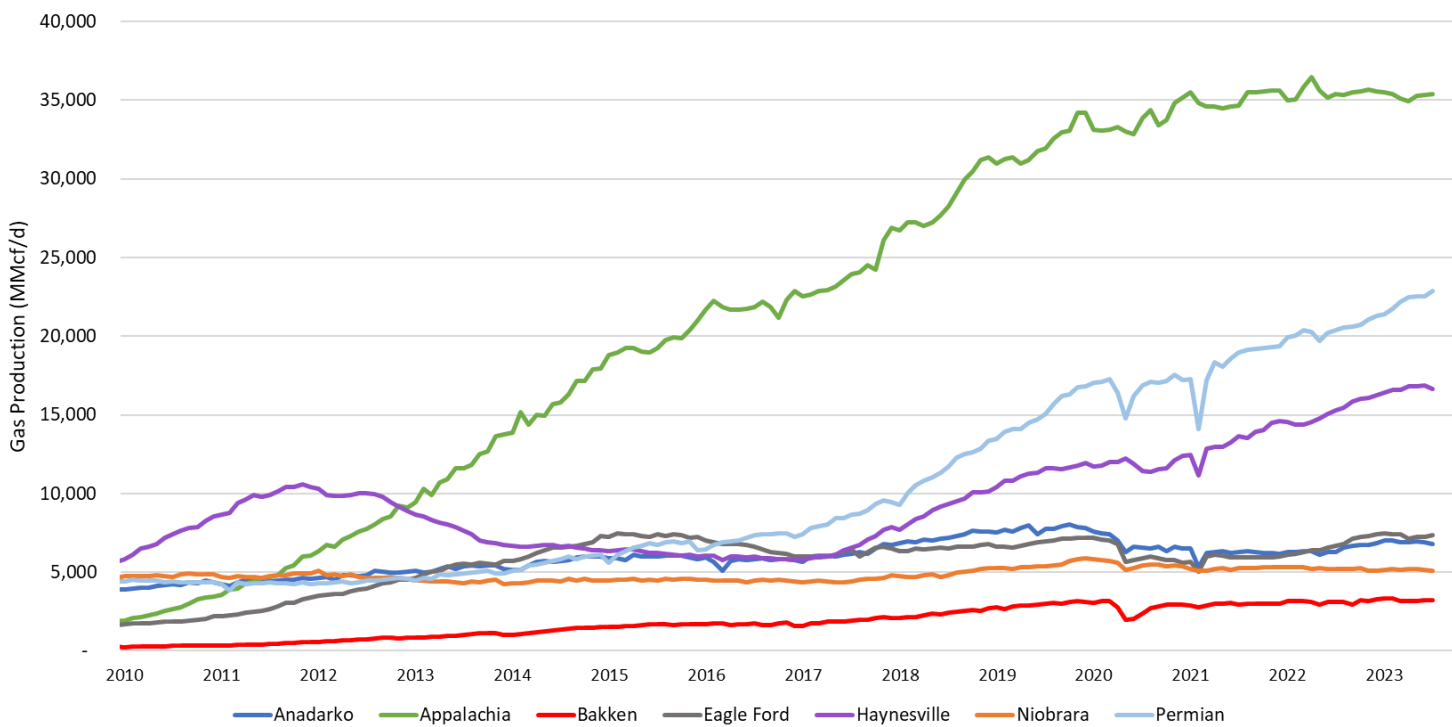
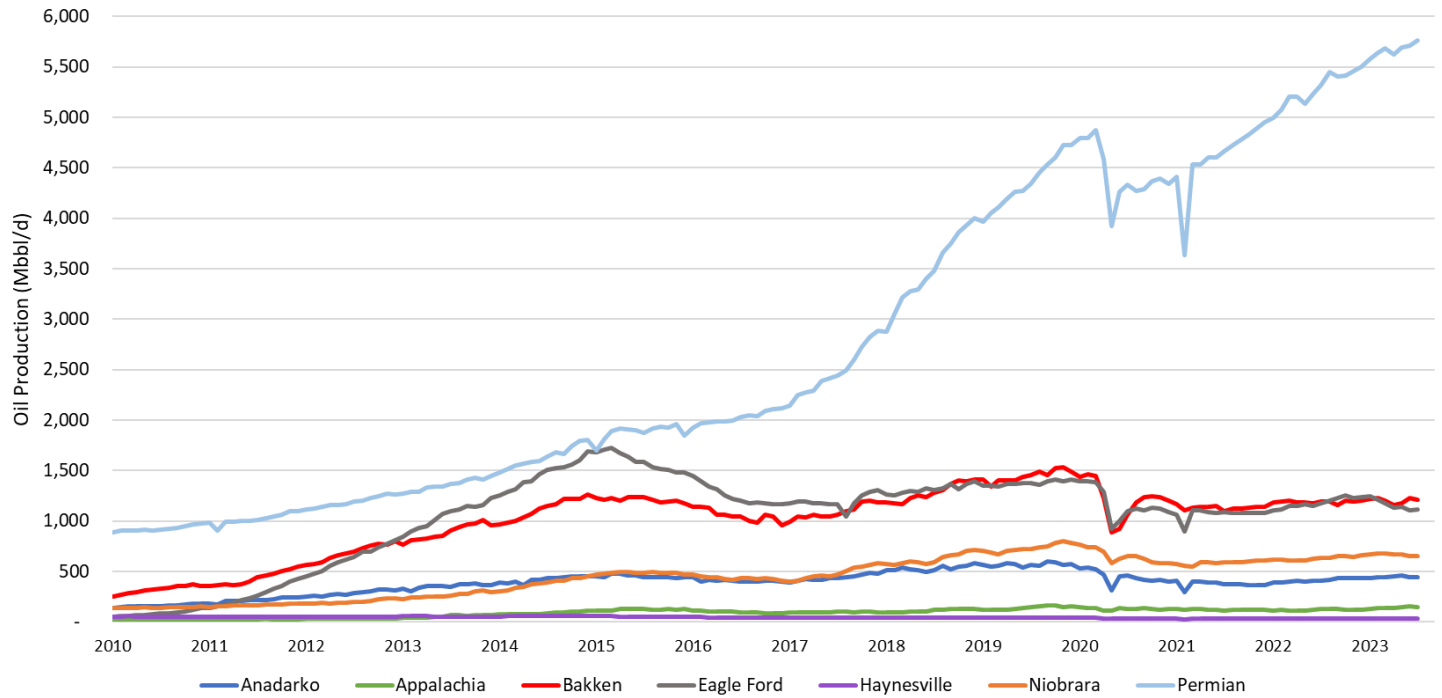
**US DAILY CRUDE (MMbbl) & DRY NATURAL GAS PRODUCTION (MMcf)**



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



## HISTORICAL PRODUCTION OF SELECTED US SHALE REGIONS



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



## **UPCOMING EVENTS**

### **July 2023**

[Banff Energy Summit](#)

July 12-14

Banff, Alberta, Canada

### **August 2023**

[Salesforce For Energy \(with Opportune\)](#)

August 2

Oklahoma City, OK

[Enercom Denver](#)

August 14-16

Denver, CO

[Women In Minerals – Dine n Deal](#)

August 16

Denver, CO

[TXCPA Energy Conference](#)

August 25

Houston, TX

### **September 2023**

[Enertia User Conference](#)

September 21-22

Fort Lauderdale, FL

[HPF 29th Annual Golf Tournament](#)

September 25

Cypress, TX

[World Oilman's Overnight Poker Tournament \(WOOP\)](#)

September 28-29

Lake Charles, LA

\*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.

