



# Weekly E&P Update

May 2, 2023

Vol. 17

## AI—How Dangerous Is It?

By Steve Hendrickson  
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Previously in this column, I've shared some thoughts on the recent improvements in artificial intelligence, specifically large language models, and how they might impact petroleum engineers and others. I continue to be impressed by the capability of these platforms. OpenAI's ChatGPT may be the most widely known, but there are many others that address more specific problems. I'm convinced that these tools will significantly affect the way many jobs are performed, especially those in the "knowledge economy."

A [recent article](#) in the New York Times highlights some concerns that computer scientists and others are expressing about the potential for unforeseen and undesirable consequences. A group of them, [in an open letter](#), have called for a six-month moratorium on further AI research so that some type of structure governing the use of these tools, perhaps including governmental regulation, can be created.

I'm skeptical of such a pause for a few reasons. First, given the current tone of discourse in our society, I'm not convinced we have the ability to reach a consensus on any regulatory structure in six months. Moreover, the development of effective AI technology is a global competition, and other countries are likely to use this period (which would probably be longer than expected) to play catch up. Also, a number of the signatories have their own AI start-ups, so their call for an R&D moratorium seems rather self-serving.

But what about valid concerns regarding broader AI adoption, especially by people or groups with bad intent? The article I referenced describes a framework of near, medium, and long-term impacts that I think is a good way to consider the issues.

Near-term impacts include misinformation and disinformation. These tools respond to users with great confidence and in convincing ways. The concern is that people will be unable to ascertain the truth and will make bad, perhaps life-threatening, decisions as a result. My response is we already live in that world, and we've been in it for a long time - I don't think AI can make it much worse.

Medium-term impacts center on job loss. We've been through this before, however. Every disruptive technology has the potential to change jobs, and some jobs will probably fade away. In my career, I've seen the demise of typists and bank tellers; for instance, the list goes on and on. Jobs will change, some will go away, and new ones will be created. Adaptation will be important.

The longer-term impacts address existential issues: the loss of control or the "loss of humanity." The experts acknowledge that these are very, very low probability events that, even if they are plausible, are a long way off. To me, these are too speculative and remote to believe a six-month R&D pause is sufficient to address them.

I learned early on that a good engineer tries to think of all the ways things can go wrong, so I commend those that are thinking about the unintended consequences of AI. A six-month development pause seems inadequate for the task, but societies should continue to seek other means to address their impact.

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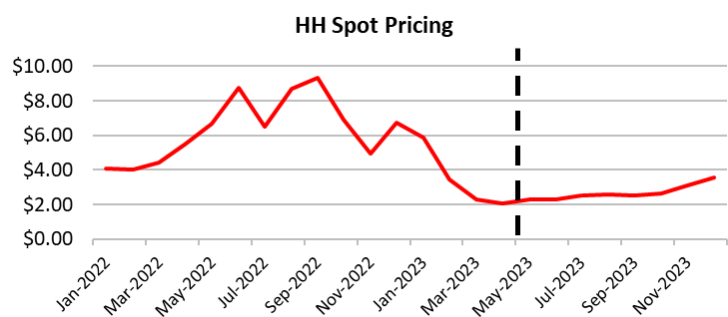
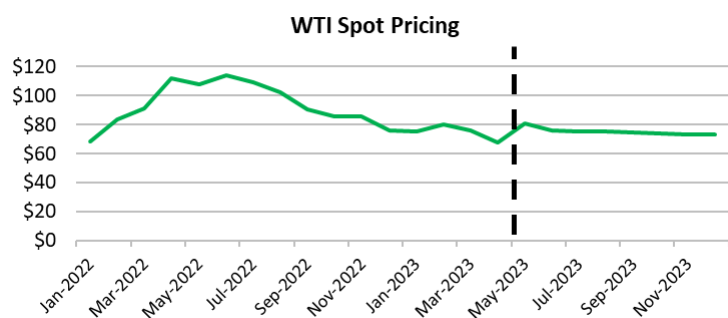
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## NYMEX FUTURE PRICING



## MONDAY'S MARKET CLOSE

### **NYMEX WTI CRUDE OIL FUTURES as of May 01, 2023 Close (\$/bbl)**

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$74.52	(\$3.09)	\$77.61	\$85.79
2024	\$70.76	(\$2.76)	\$73.52	\$76.89
2025	\$67.51	(\$2.14)	\$69.65	\$70.95
2026	\$64.95	(\$1.62)	\$66.57	\$66.90
2027	\$62.72	(\$1.20)	\$63.92	\$64.36

### **NYMEX HH NATURAL GAS FUTURES as of May 01, 2023 Close (\$/MMBtu)**

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$2.75	(\$0.08)	\$2.83	\$5.16
2024	\$3.56	(\$0.09)	\$3.65	\$4.13
2025	\$4.20	(\$0.07)	\$4.27	\$3.91
2026	\$4.28	(\$0.07)	\$4.35	\$3.94
2027	\$4.26	(\$0.04)	\$4.30	\$3.99

## INDUSTRY METRICS—QUICK SNAPSHOT

	<b>Current</b>	<b>Last Week</b>	<b>WoW Change</b>	<b>%Change</b>
Crude Oil Near-Month Price (\$/bbl)	\$74.91	\$77.97	(\$3.06)	(4%)
Natural Gas Near-Month Price (\$/MMBtu)	\$2.36	\$2.22	\$0.14	6%
Weekly Upstream-Deal Transaction Value (\$MM)	\$225.00	\$0.00	\$225.00	-
Weekly Number of Upstream-Deal Transactions	2	2	-	0%
Current Total US Rig Count	755	753	2	0.3%
US Field Crude Oil Production (MMbbl/day)	12.2	12.3	(0.1)	(0.8%)
US Field Dry Natural Gas Production (Bcf/day)	106.5	105.5	1	0.9%
Commercial Crude Oil Stocks-Excluding SPR (MMbbl)	461	466	(5)	(1%)
Natural Gas Stocks-Working Gas Underground Storage (Bcf)	2,009	1,930	79	4%
Total Drilled But Uncompleted Wells (DUC-Last Month)	4,676	4,676	-	0%

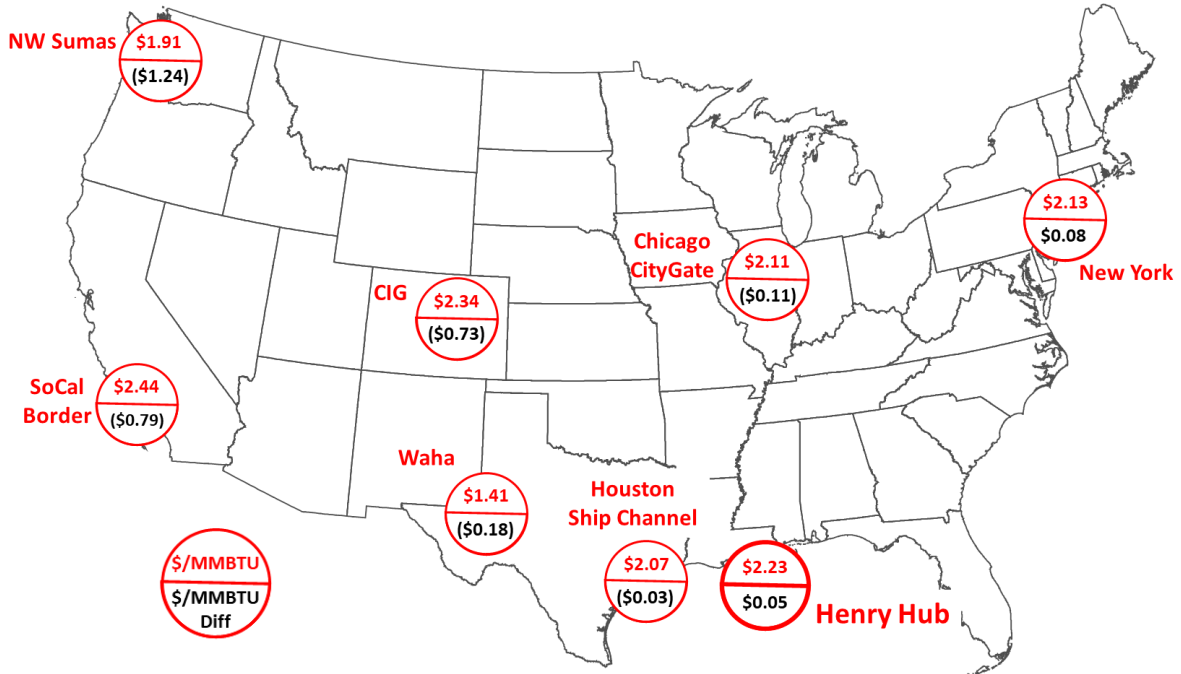
\*Source—Energy Information Administration, United States (EIA)

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

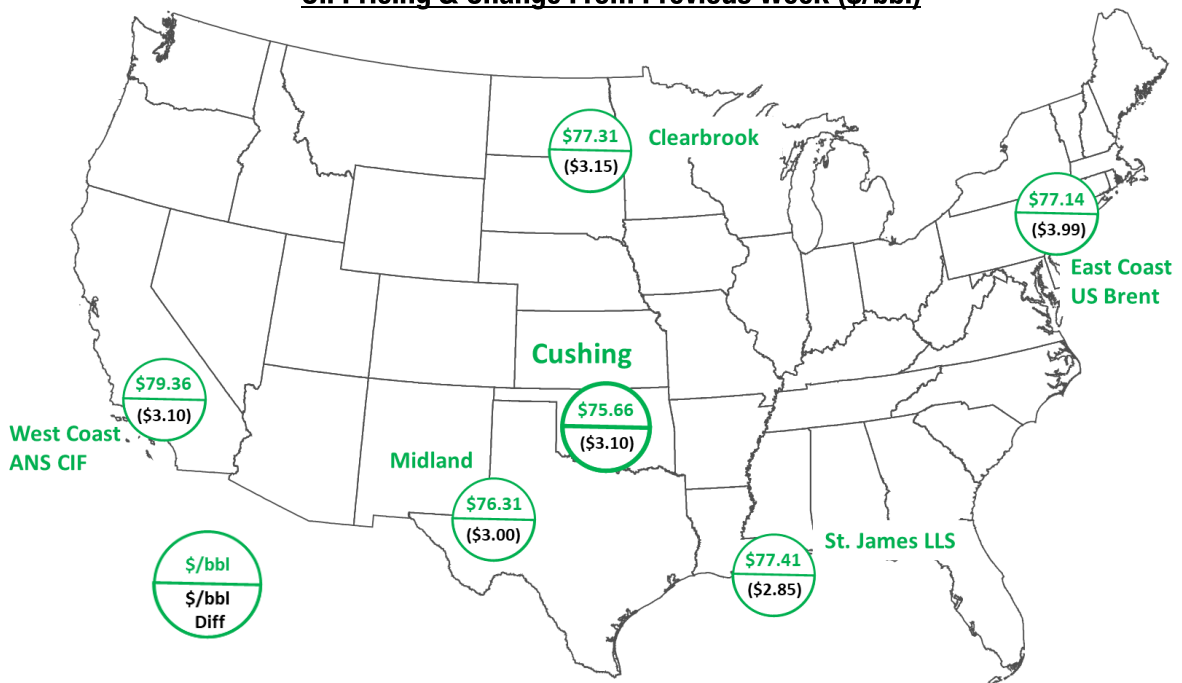


**US COMMODITY PRICES CONTINUED**

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



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



\*Source—Bloomberg LP





## **SELECTED INDUSTRY HEADLINES**

### **Crude Prices Up Over 2% On Rising U.S. Oil Demand and Lower Output (LOGIN CREDENTIALS REQUIRED)**

Oil prices mostly rose over 2% on Friday after energy firms posted positive earnings and U.S. data showed crude output was declining while fuel demand was growing.

### **Key Russian Oil Depot Damaged By Drone Attack in Crimea**

A major blaze erupts near the Russian port of Sevastopol in occupied Crimea Peninsula.

### **China's Oil Strategy Mixes Diplomacy And A Domestic Drilling Push**

China's biggest oil companies are increasing their drilling at home and signing big deals overseas, part of a push for energy security that has also led to rising trade with countries that are subject to U.S. sanctions.

### **The Brent Oil Benchmark Is About To Change Forever**

West Texas Intermediate Midland crude is about to be added to the Brent benchmark contract this June. This would be the first time a non-North Sea crude has been added to the benchmark basket.

### **Carney: New Oil & Gas Investment Is Still Needed In The Energy Transition**

Investment in new oil and gas production will still be needed in the energy transition as demand will still be there over the next few decades, Mark Carney, former governor of the Bank of Canada and the Bank of England, said in an interview with CTV on Sunday.

### **U.S. Natural Gas Withdrawals Reach Lowest Level In Seven Years**

The U.S. Energy Information Administration (EIA), the statistical and analytical agency within the U.S. Department of Energy, has outlined that less natural gas was withdrawn from storage this winter than in the last seven heating seasons.

### **Progress And Development In The Permian Basin**

An independent operator and oil and gas investment broker provides perspective on strategies and future potential of the Permian basin, including short- and long-term forecasts for E&P opportunities in West Texas.

### **U.S. Shale "Ripe" For Takeover Boom As Producers Look For New Drilling Sites**

The U.S. energy patch is ripe for a takeover boom, as oil and gas producers turn to dealmaking to find new sites to drill.

### **Are Oil And Gas Professionals Worried About AI?**

For the most part, oil and gas professionals are not worried about artificial intelligence (AI).

### **Texas Oil & Gas Industry Adds 1,500 Jobs In March**

Data released by the Bureau of Labor Statistics and Texas Workforce Commission indicated that upstream oil and natural gas employment in Texas saw growth in March, "with the sector adding 1,500 jobs", the Texas Oil & Gas Association (TXOGA) noted in an organization statement.

### **Banks And Oil Groups Place Bets On Carbon Capture Schemes**

Four companies including H&M and JPMorgan to spend a collective \$100mn on carbon removal credits by 2030.

### **As Oil Output Peaks, US Gulf Of Mexico Makes Room For Carbon Capture (LOGIN CREDENTIALS REQUIRED)**

After nearly a century, oil output in the U.S. Gulf of Mexico is heading towards its peak with new platforms providing a last hurrah as the region becomes hot spot for burying greenhouse gases.



## **SELECTED RECENT TRANSACTIONS**

### **Elk Range Royalties Announces Mineral And Royalty Acquisition In The Eagle Ford Basin**

Elk Range Royalties (“Elk Range”) is pleased to announce it has acquired certain Eagle Ford Basin mineral and royalty interests (“the Acquired Assets”) from an undisclosed private seller.

### **U.S. Energy Development Corp. Expands Footprint In Permian Basin With \$225M Investment**

U.S. Energy Development Corp., an Arlington-based exploration and production company, has acquired a 25% working interest in the Mascot Project, a stacked pay asset in core Midland Basin for \$225 million cash and other considerations, the company announced.

### **88 Energy Awarded New Alaskan North Slope Block**

88 Energy Ltd., Perth, has been awarded a new exploration block (Project Leonis) on the North Slope of Alaska, about 15km southwest of the town of Deadhorse and 25km north of the operator’s Project Phoenix block.

### **Japan’s Mitsui Buys U.S. Gas Asset In ‘Pragmatic Solution’ For Energy Transition**

Japan’s Mitsui & Co Ltd., has bought a 92% stake in an unconventional gas asset in Texas and plans to promote its gas business as a “pragmatic solution” for the energy transition, it said on Thursday.

### **Kimbell Royalty Partners, LP Announces \$143.1 Million Midland Basin Mineral and Royalty Acquisition**

Kimbell Royalty Partners, LP has entered into an agreement to acquire Midland Basin mineral and royalty assets in Texas from MB Minerals LP, a subsidiary of Sabalo Holdings LLC (backed by EnCap Investments).

### **Ovintiv To Acquire Leasehold Interest And Related Assets**

Ovintiv Inc has entered into agreements to divest its Bakken assets in North Dakota to Grayson Mill Bakken LLC, an affiliate of Grayson Mill Energy LLC.

### **Ovintiv To Acquire \$4.2B Midland Basin Assets**

Ovintiv Inc has entered into a definitive purchase agreement to acquire substantially all leasehold interest and related assets of Black Swan Oil & Gas LLC, PetroLegacy Energy II LLC, and Piedra Energy III LLC.

### **Phoenix Capital Group Has Acquired Over 560 Net Mineral Acres For A Purchase Price Exceeding \$6M**

Phoenix Capital Group Holdings, LLC, doing business as Phoenix Capital Group, is excited to announce it has acquired more than 560 net mineral acres for a purchase price that exceeds \$6 million.

### **Wedgemount Resources To Acquire Additional Texas Permian Basin Oil And Gas Assets**

Wedgemount Resources Corp., is pleased to announce that it has entered into a Purchase and Sale Agreement for the acquisition of additional oil and gas assets located in the prolific Permian Basin of west central Texas.

### **Principal Solar To Acquire Minerva-Rockdale Leases, Wells, And Assets**

Principal Solar, Inc. recently announced that it has executed a Letter of Intent to purchase a controlling working interest in the leases and oil & gas wells along with all of the assets associated with the Minerva-Rockdale Oil Field from Winchester Oil & Gas LLC.

### **Carrier Energy Partners II Sells Eagle Ford Assets**

Carrier Energy Partners II, LLC has closed on the sale of its oil and gas assets in the Eagle Ford Shale in South Texas for total cash consideration of \$145 million.

### **CPP Investments Partners With IKAV To Acquire Aera Energy**

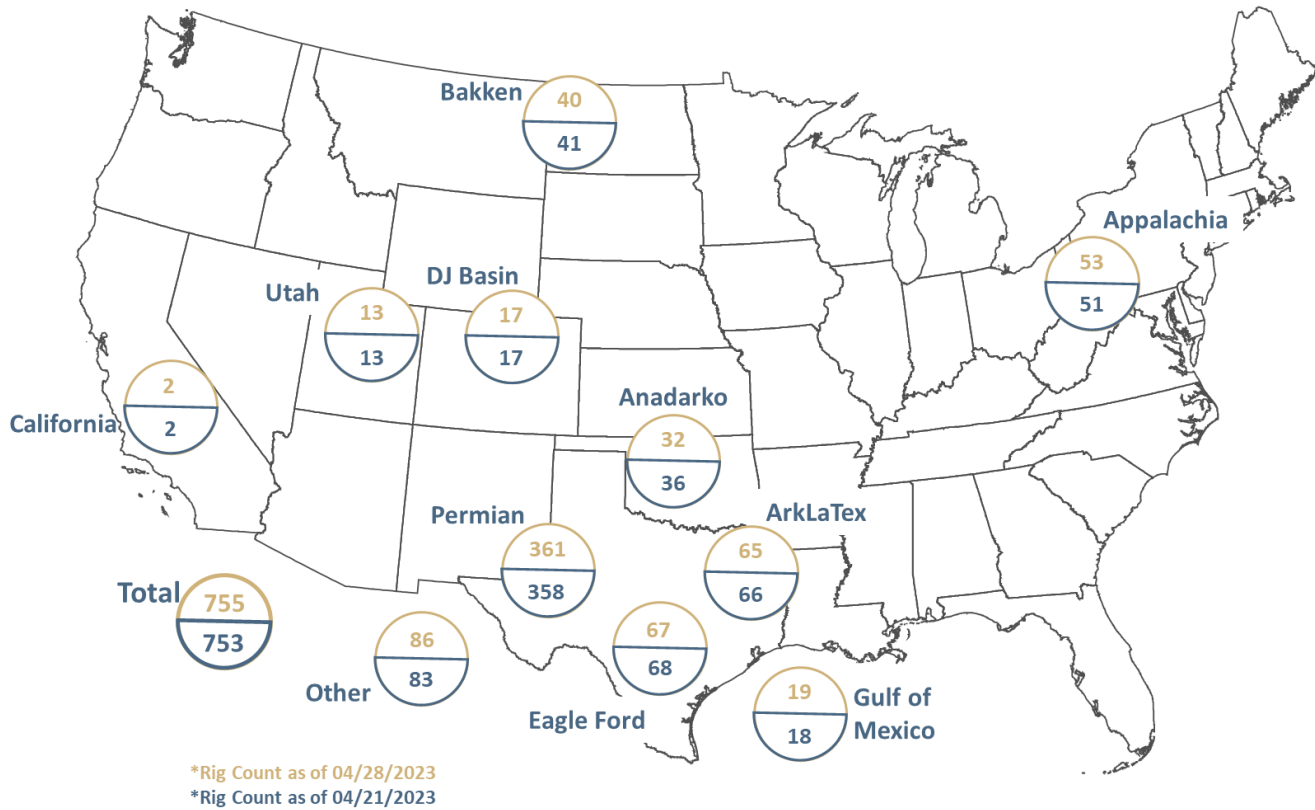
Canada Pension Plan Investment Board (CPP Investments) will partner with international asset management group IKAV to acquire California energy producer Aera Energy LLC.

### **Riley Permian Announces New Mexico Yeso Trend Acquisition**

Riley Exploration Permian, Inc. recently announced that it has entered into a definitive purchase agreement to acquire oil and gas assets from Pecos Oil & Gas, LLC, an affiliate of Cibolo Energy Partners LLC, for cash consideration of \$330 million.



## RIG ACTIVITY BY US REGION

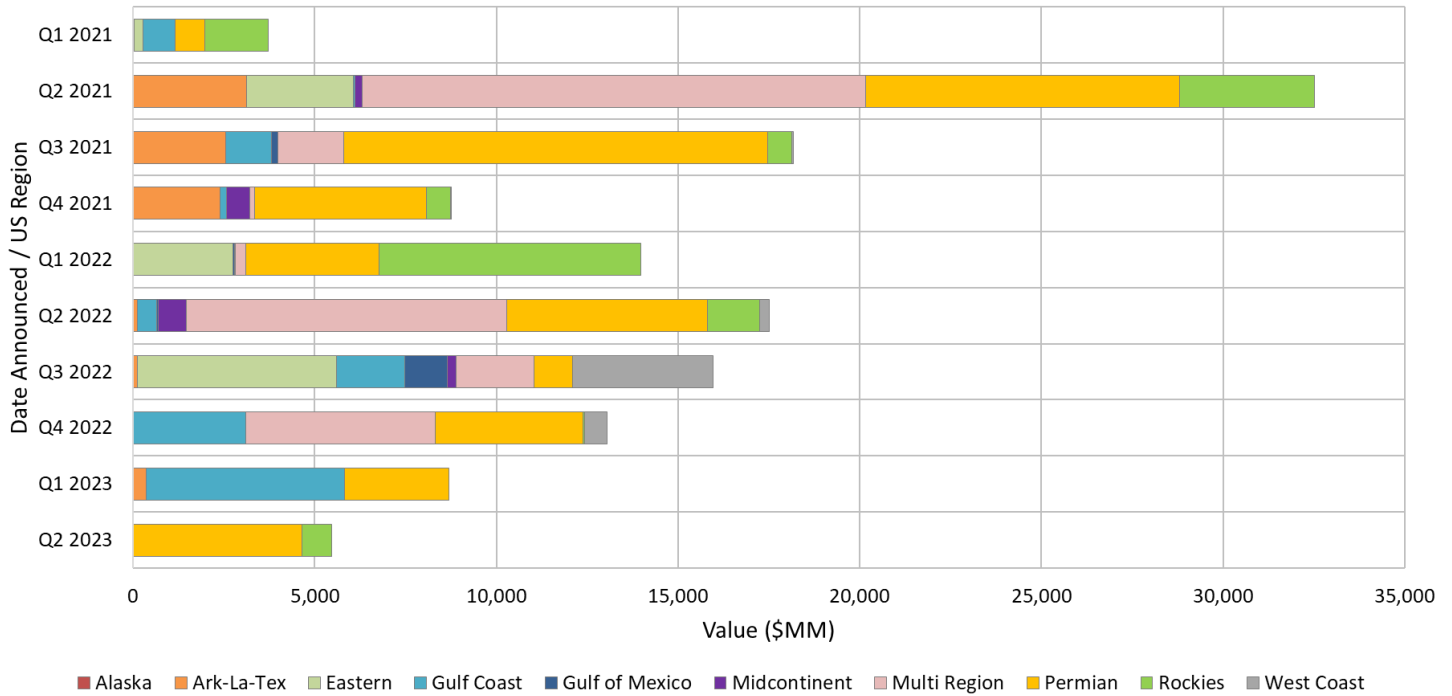


	Week Ending 04/28/2023			Week Ending 04/21/2023		Week Ending 04/29/2022
U.S. Rig Breakouts	Count	+/-	Count	+/-	Count	
Oil	591	0	591	39	552	
Gas	161	2	159	17	144	
Not Specified	3	0	3	1	2	
Directional	47	(1)	48	17	30	
Horizontal	685	(2)	687	42	643	
Vertical	23	5	18	(2)	25	
Land (Inc Others)	733	1	732	49	684	
Inland Waters	2	1	1	2	0	
Offshore	20	0	20	6	14	
<b>US Total</b>	<b>755</b>	<b>2</b>	<b>753</b>	<b>57</b>	<b>698</b>	

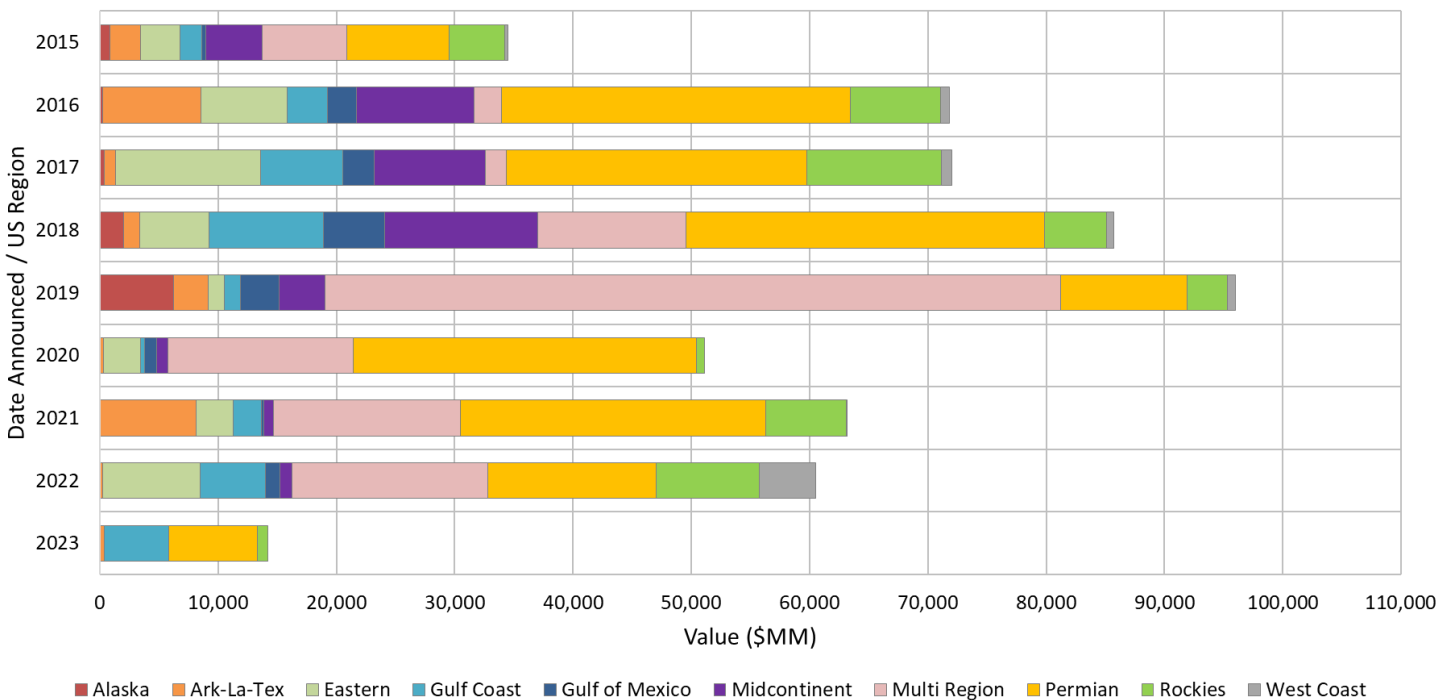
\*Source—Baker Hughes Weekly Rig Counts



## DEAL VALUE BY US REGION (BY QUARTER)



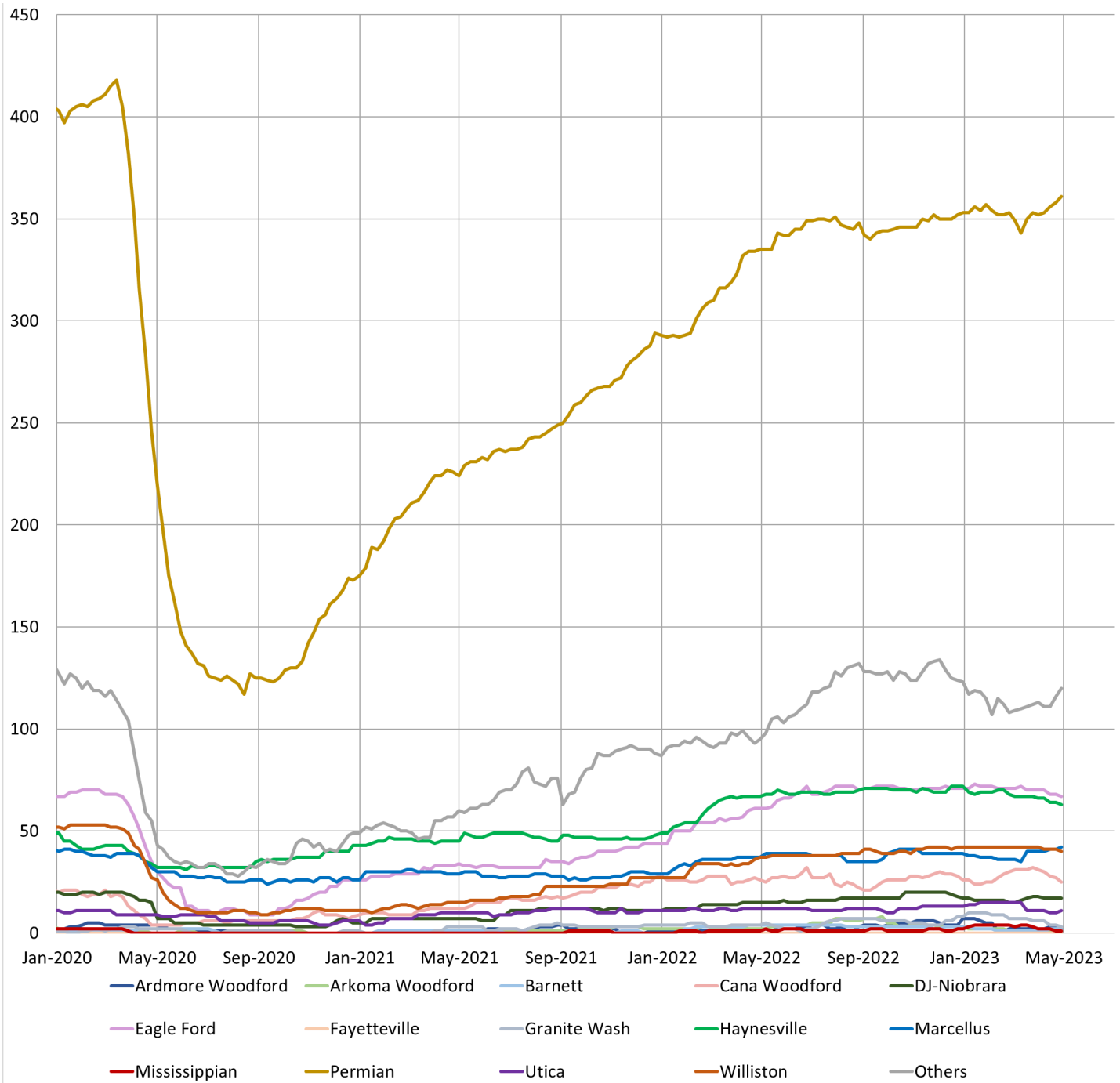
## DEAL VALUE BY US REGION (BY YEAR)



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



## RIG ACTIVITY BY US REGION

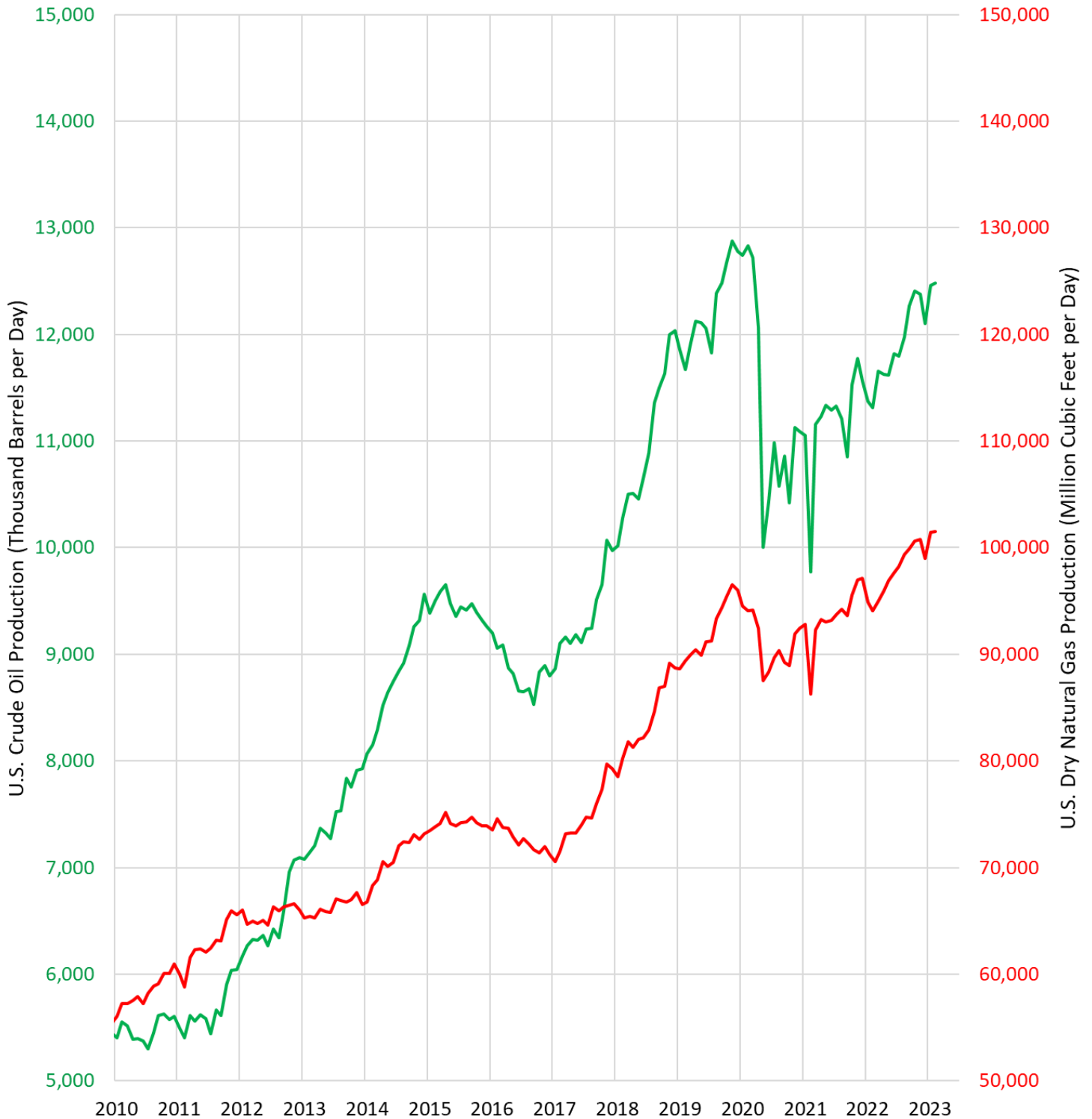


\*Source—Baker Hughes Weekly Rig Counts





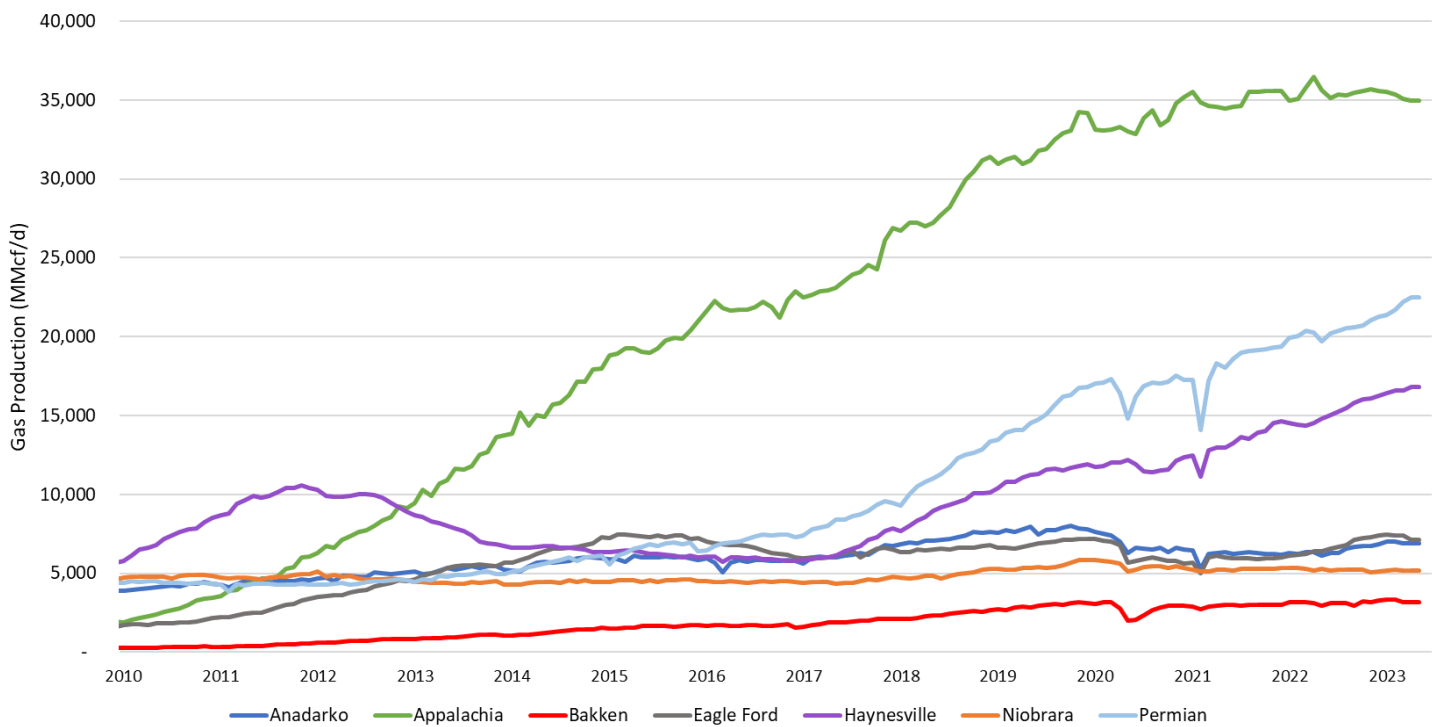
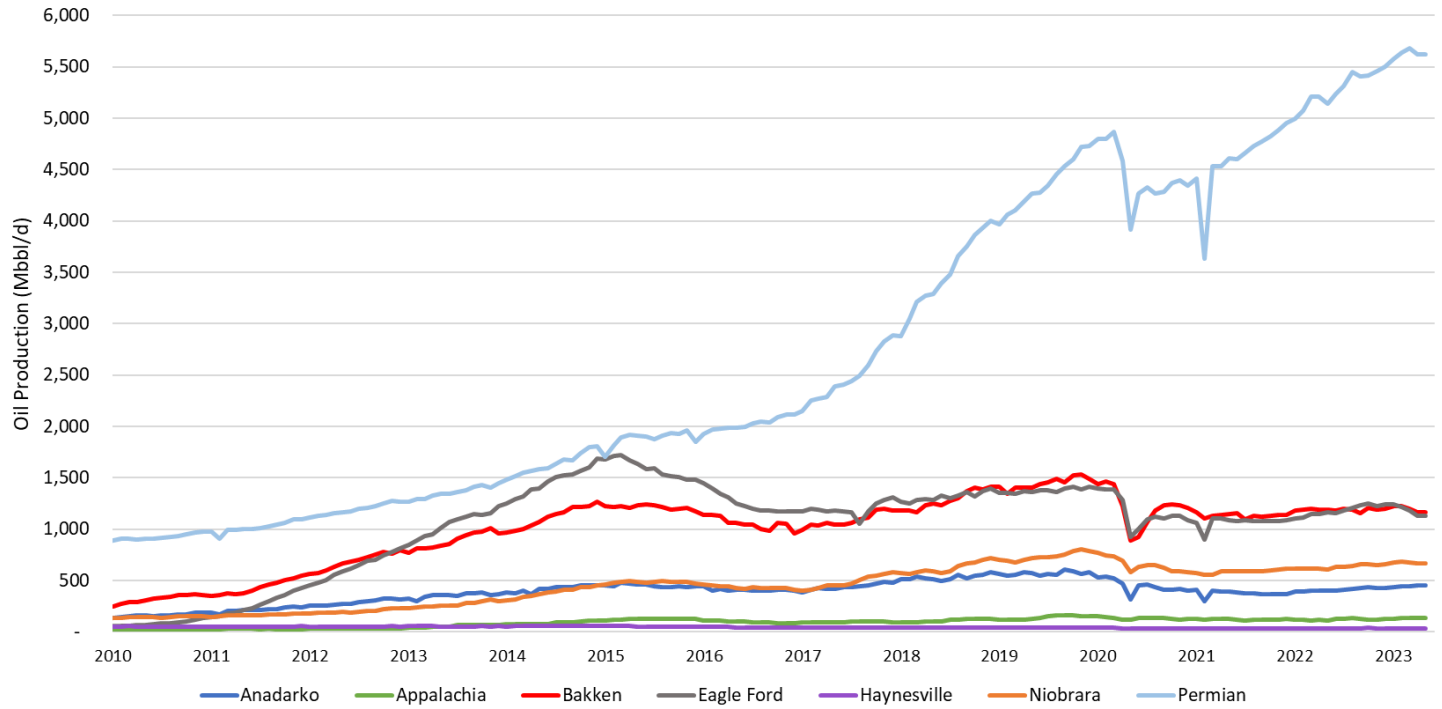
**US DAILY CRUDE (MMbbl) & DRY NATURAL GAS PRODUCTION (MMcf)**



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



## HISTORICAL PRODUCTION OF SELECTED US SHALE REGIONS



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



## **UPCOMING EVENTS**

### **May 2023**

#### **Offshore Technology Conference 2023**

May 1-4 Houston, TX

#### **Her Justice Annual Photography Auction + Benefit**

May 9 New York, NY

#### **Salesforce For Energy (with Opportune)**

May 10 Denver, CO

#### **Energy Valuation Conference**

May 11 Houston, TX

#### **Allegro User Conference**

May 11-12 Houston, TX

#### **North American Petroleum Accounting Conference**

May 18-19 Dallas, TX

#### **DUG Permian Basin & Eagle Force Conference & Exhibition**

May 22-24 Fort Worth, TX

### **June 2023**

#### **Society Of Petroleum Evaluation Engineers (SPEE) Annual Meeting**

June 17-20 Newport, RI

#### **Telluride Executive Series**

June 27-19 Telluride, CO

### **July 2023**

#### **Banff Energy Summit**

July 12-14 Banff, Alberta, Canada

### **August 2023**

#### **Banff Energy Summit**

July 12-14 Banff, Alberta, Canada

\*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.

