



# Weekly E&P Update

December 12, 2023

Vol. 49

## Can Houston Meet the Challenge of CCUS?

By Steve Hendrickson  
President of Ralph E. Davis Associates



Last week, the University of Houston's [Center for Carbon Management in Energy \(CCME\)](#) hosted a symposium titled "[CCUS Commercial Deployment: What Will It Take to Make It Happen.](#)" Sponsored by the [Houston Energy Transition Initiative](#) and other partners, approximately 200 attendees gathered to explore the future of CCUS along the upper Texas coast.

**Overview of the CCUS Infrastructure White Paper** - [Charles McConnell](#), the Executive Director of CCME, presented the key findings of a recently released whitepaper titled "[CCUS Infrastructure: Preparing for Houston's Future.](#)" The paper delves into four crucial infrastructure sectors for the successful commercial-scale development of carbon storage: pipelines, storage reservoirs, electricity, and water. Electricity is vital for operating solvent-based (amine) CO2 capture facilities, and the region already relies on importing electricity. Water supplies currently suffice for initial CCUS adoption. Still, if CCUS becomes coupled with producing "blue hydrogen" from methane for more significant carbon reductions, sea-water desalination will be required for the steam reforming process. CCUS commercialization demands a substantial workforce with medium to high-level skills, robust supply chains, and capital. While the Houston region excels in these areas, CCUS projects will compete with large petrochemical and LNG projects.

**Panel 1: ADM Project Update** - This panel updated the sole active CCUS project in the US at the [ADM facility](#) in Decatur, Illinois. Key topics included plans for expanding injection via additional wells to achieve 2.5 million tons per year, the quality and extent of the Mt. Simon formation as a CO2 storage reservoir across much of Illinois, and the slow pace of Class VI injection permit approvals. It was highlighted that the EPA has only granted two permits since 2015 despite over 150 applications.

**Panel 2: CO2 Pipelines** - Pipelines have emerged as a critical constraint in CCUS project deployment. The challenge lies not in technology or project economics but in public resistance to pipelines. This resistance has a lengthy history and was exemplified during disputes over the Keystone XL and DAPL pipelines. Public opposition and uncertain and changing regulatory frameworks in certain Midwest states led to the [cancellation of Navigator's Heartland Greenway project](#), which aimed to capture CO2 from multiple ethanol manufacturers and transport it for storage in Illinois. The infrastructure whitepaper also emphasized the significance of CO2 pipeline infrastructure, as a regional hub approach is likely necessary along the Gulf Coast to transport CO2 to offshore storage locations in the future.

## 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](#)

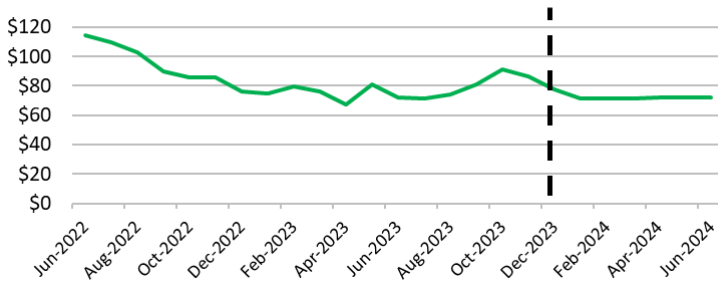
[Upcoming Events](#)

[About Us/Key Contacts](#)

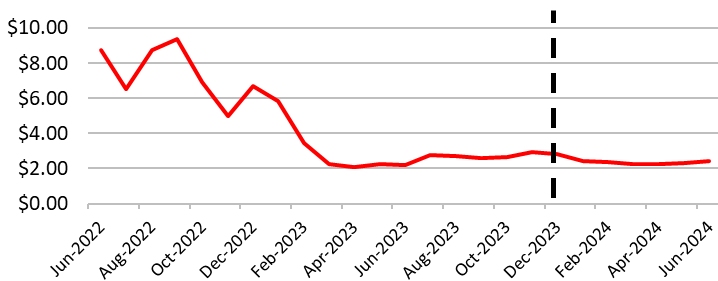


## NYMEX FUTURE PRICING

WTI Spot Pricing



HH Spot Pricing



## MONDAY'S MARKET CLOSE

**NYMEX WTI CRUDE OIL FUTURES**  
as of December 11, 2023 Close (\$/bbl)

Period	Current	WoW Change	Last Week	1 Yr Ago
2024	\$71.67	(\$1.61)	\$73.28	\$69.98
2025	\$69.29	(\$0.96)	\$70.25	\$67.65
2026	\$66.64	(\$0.45)	\$67.09	\$65.53
2027	\$64.86	\$0.11	\$64.75	\$63.48
2028	\$63.69	\$0.64	\$63.05	\$61.54

**NYMEX HH NATURAL GAS FUTURES**  
as of December 11, 2023 Close (\$/MMBtu)

Period	Current	WoW Change	Last Week	1 Yr Ago
2023	\$2.56	(\$0.32)	\$2.88	\$4.60
2024	\$3.38	(\$0.38)	\$3.76	\$4.54
2025	\$3.64	(\$0.32)	\$3.96	\$4.54
2026	\$3.65	(\$0.24)	\$3.89	\$4.52
2027	\$3.65	(\$0.18)	\$3.83	\$4.58

## INDUSTRY METRICS—QUICK SNAPSHOT

	Current	Last Week	WoW Change	%Change
Crude Oil Near-Month Price (\$/bbl)	\$71.43	\$73.30	(\$1.87)	(3%)
Natural Gas Near-Month Price (\$/MMBtu)	\$2.44	\$2.70	(\$0.26)	(10%)
Weekly Upstream-Deal Transaction Value (\$MM)	\$12,082.43	\$0.00	\$12,082.43	-
Weekly Number of Upstream-Deal Transactions	5	0	5	-
Current Total US Rig Count	626	625	1	0.2%
US Field Crude Oil Production (MMbbl/day)	13.1	13.2	(0.1)	(1%)
US Field Dry Natural Gas Production (Bcf/day)	110.7	111.9	(1.2)	(1%)
Commercial Crude Oil Stocks-Excluding SPR (MMbbl)	445	450	(5)	(1%)
Natural Gas Stocks-Working Gas Underground Storage (Bcf)	3,719	3,836	(117)	(3%)
Total Drilled But Uncompleted Wells (DUC-Last Month)	4,524	4,524	0	-

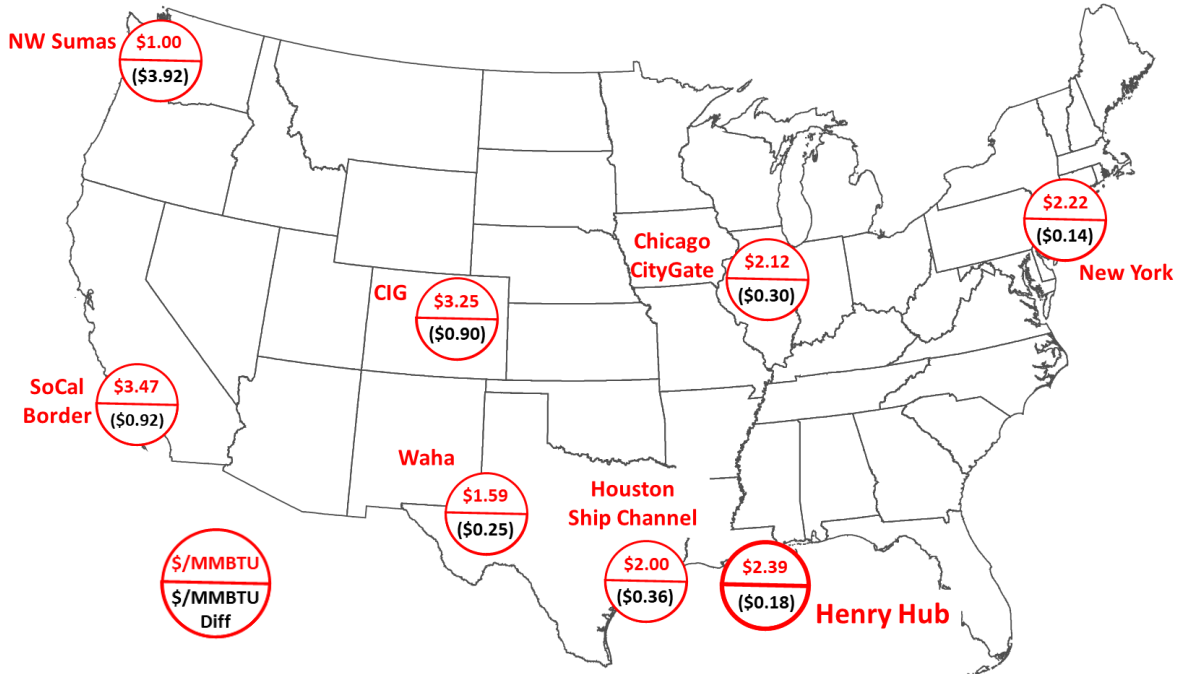
\*Source—Energy Information Administration, United States (EIA)

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

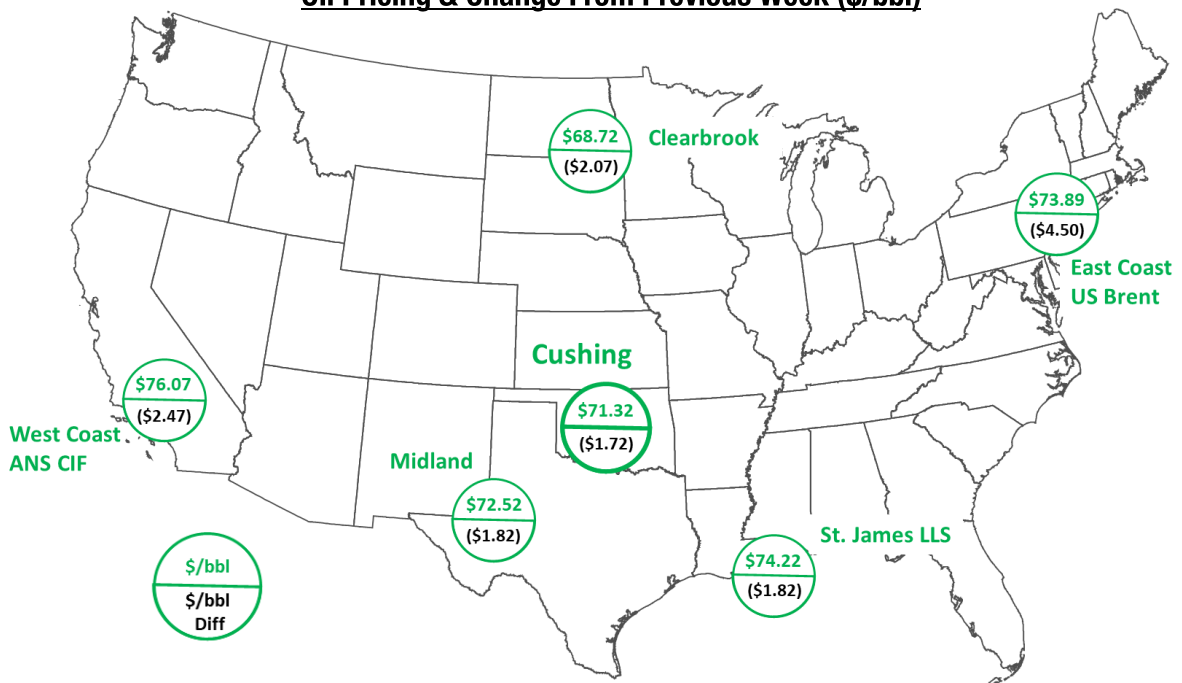


**US COMMODITY PRICES CONTINUED**

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



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



\*Source—Bloomberg LP



## **SELECTED INDUSTRY HEADLINES**

### **US Oil Production Will Keep Booming in 2024, Setting up a Possible Showdown With Saudi Arabia**

US oil production is having a blockbuster year, and 2024 could see fresh highs, putting more pressure on Saudi Arabia to regain control over crude prices.

### **OPEC+ Meeting Results Appear Supportive**

In a report sent to Rigzone recently, analysts at Standard Chartered noted that, in terms of supply and demand projections, the results of the OPEC+ meeting appear supportive “whether we use our balances or those of the main international and national agencies”.

### **Latest Oil Major Updates Paint Weaker CAPEX Picture**

The latest quarterly updates from the oil majors paint a weaker picture for annual capital expenditure for 2023.

### **Oil Falls 3%, Extends Losses After US Inflation Data**

Oil fell 3% recently, with Brent crude hitting the lowest since June after U.S. consumer prices rose in November, offering more evidence that the Federal Reserve was unlikely to pivot to interest rate cuts early next year.

### **Gas Output Booms in the Permian's Top Oil Plays**

The Permian Basin's top-producing tight oil plays -- the Wolfcamp, Spraberry and Bone Spring -- have experienced a threefold increase in associated natural gas production since 2018.

### **US Drillers Add Oil and Gas Rigs for Fourth Week in a Row**

U.S. energy firms this week added oil and natural gas rigs for a fourth week in a row for the first time since November 2022, energy services firm Baker Hughes said in its closely followed report on Dec. 8.

### **Natural Gas Prices Struggle to Make Headway (LOGIN CREDENTIALS REQUIRED)**

Natural gas futures for January settle lower in a choppy session as concerns about a mild December keeping a lid on demand offset this week's bullish storage draw reported by the EIA.

### **Supportive Storage Number Helps January Natural Gas to Small Gains Early (LOGIN CREDENTIALS REQUIRED)**

January natural gas eked out marginal gains in early trading recently as market participants weighed supportive inventory data against continued calls for mild December heating demand.

### **Nuclear Sector Must Overcome Decades of Stagnation to Meet COP28 Tripling Goal**

The global nuclear industry got a morale boost at the COP28 climate summit in Dubai after more than 20 nations vowed to triple capacity by 2050.

### **Venture Global LNG Expects Extended Start-up at Second Plant, Says CEO**

A Venture Global LNG export plant due to begin operating in 2024 will undergo a lengthy startup similar to its Calcasieu Pass LNG facility, with customers likely to receive their first cargoes in 2026 at the earliest

### **SEC Focused on Asset Retirement Obligations**

The Securities and Exchange Commission (SEC) considers carefully what it says in public, so when its senior petroleum engineer makes a rare appearance in Houston to talk with oil reserves engineers – even not as an official spokesperson – his comments merit attention.

### **Popular EPA Methane Rule Comes with Cost, Monitoring Concerns**

While climate advocates hail the EPA's newly finalized actions to reduce methane emissions, some lawyers caution that the rule's hefty price tag and monitoring response program leave it vulnerable to concerns about grid reliability and compliance challenges.





## **SELECTED RECENT TRANSACTIONS**

### **Occidental Petroleum to Expand Permian Ops With \$12 Billion Deal For CrownRock**

Occidental Petroleum said on Monday it would buy Permian basin-focused energy producer CrownRock in a cash-and-stock deal valued at \$12 billion including debt, expanding its presence in the largest U.S. oilfield.

### **Freehold Royalties to Acquire Permian Basin Interests for \$82 Million**

Freehold Royalties entered into agreements with two private sellers to acquire Permian Basin mineral and royalties interests in the Midland and Delaware basins for \$82.5 million.

### **NOG Expands Permian Presence, Enters Ohio Utica Shale With \$170 Million Acquisitions**

Northern Oil and Gas, Inc. has entered into a definitive agreement with a private party to acquire non-operated interests across approximately 3,000 net acres located primarily in Lea and Eddy Counties, New Mexico.

### **Australia's Karoon Energy to Buy Stakes in US Offshore Assets For \$720 Million**

Karoon Energy announced deals worth \$720 million recently to buy stakes in certain offshore oil and gas fields in the Gulf of Mexico from U.S.-based LLOG Exploration, in a move to diversify operations beyond Brazil and Australia.

### **WhiteHawk to Acquire Marcellus Assets For \$54 Million**

WhiteHawk Energy, LLC is acquiring additional Marcellus Shale natural gas mineral and royalty assets for a total price of \$54.0 million.

### **Acacia Research Acquires Majority Stake in Benchmark Energy**

Acacia Research Corporation today announced that it has acquired a majority interest in Benchmark Energy II, LLC.

### **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**

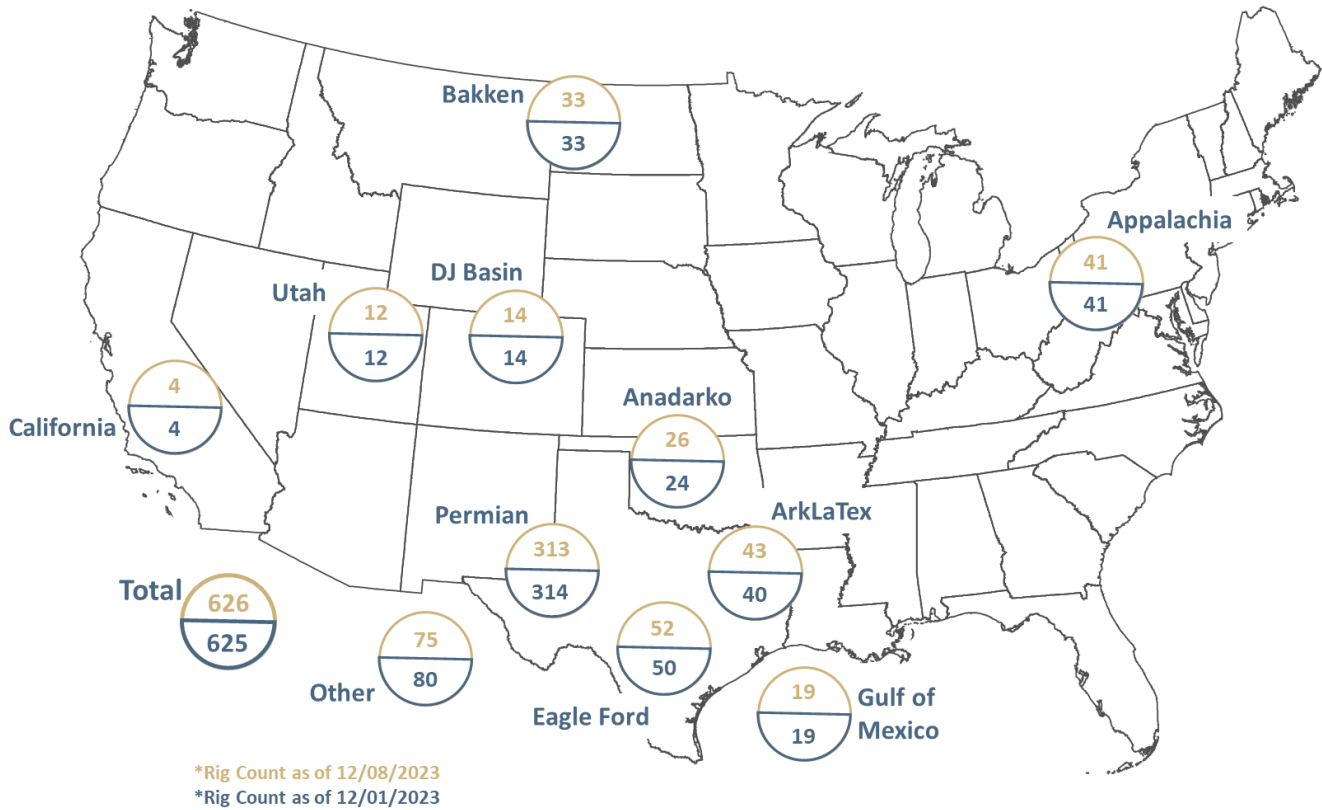
California-based Trio Petroleum Corp. has secured a four-month option with exclusivity to acquire a natural gas prospect in the Sacramento Basin, which has the potential to produce an estimated 40 billion cubic feet of gas.

### **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



## RIG ACTIVITY BY US REGION

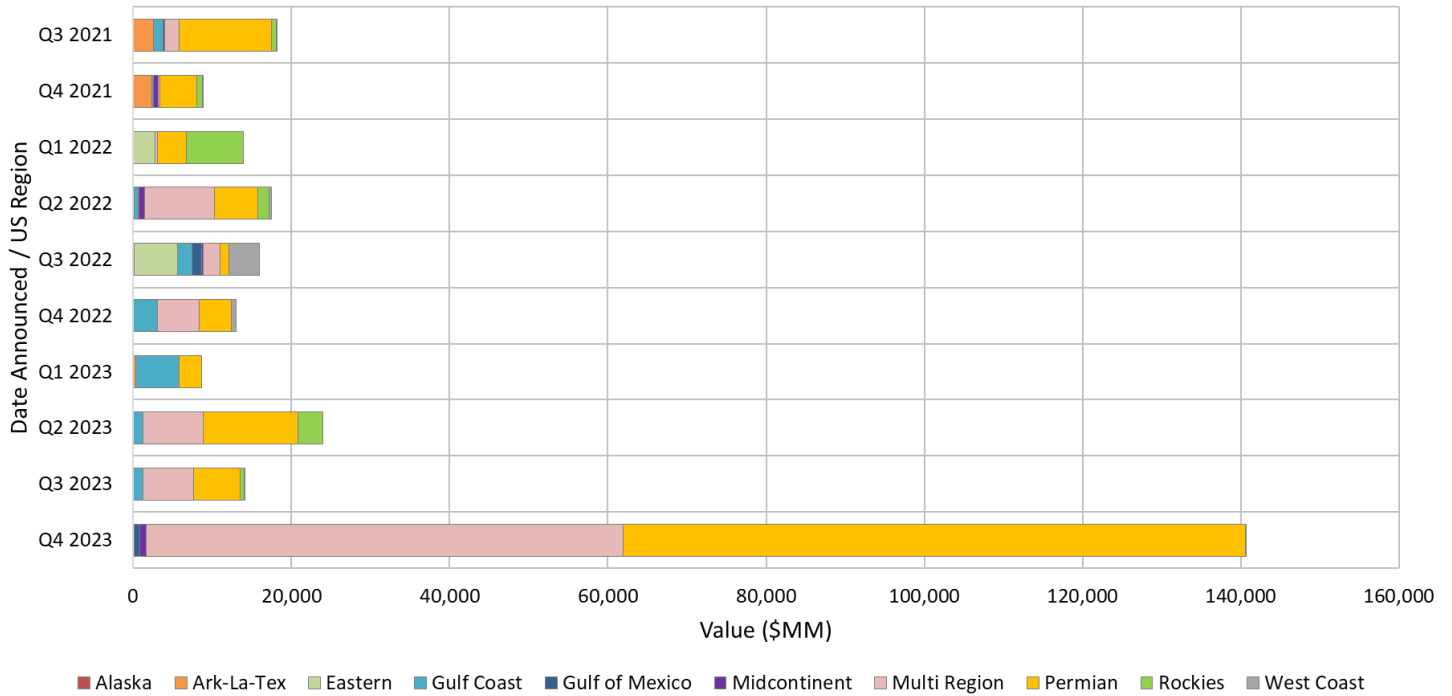


	Week Ending 12/08/2023			Week Ending 12/01/2023		Week Ending 12/09/2022
U.S. Rig Breakouts	Count	+/-	Count	+/-	Count	
Oil	503	(2)	505	(122)	625	
Gas	119	3	116	(34)	153	
Not Specified	4	0	4	2	2	
Directional	52	(2)	54	6	46	
Horizontal	559	0	559	(149)	708	
Vertical	15	3	12	(11)	26	
Land (Inc Others)	605	2	603	(155)	760	
Inland Waters	0	(1)	1	(2)	2	
Offshore	21	0	21	3	18	
<b>US Total</b>	<b>626</b>	<b>1</b>	<b>625</b>	<b>(154)</b>	<b>780</b>	

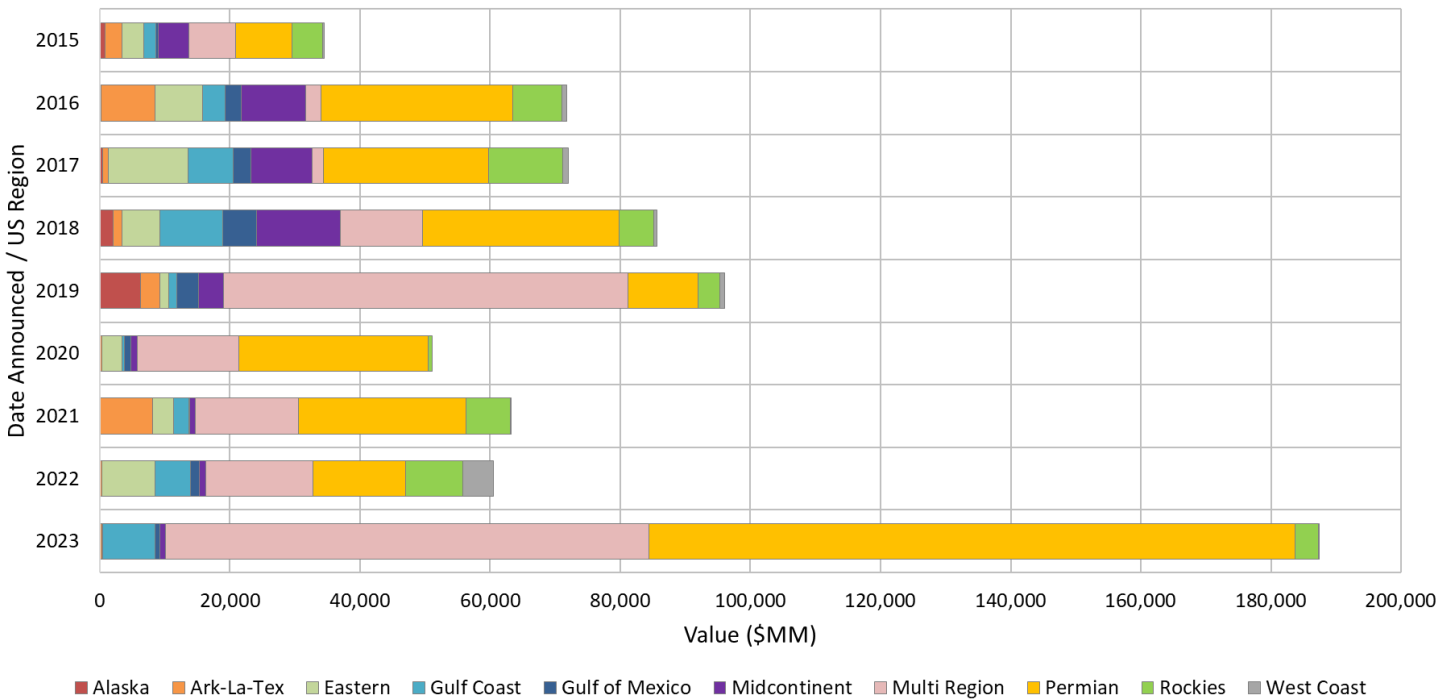
\*Source—Baker Hughes Weekly Rig Counts



## DEAL VALUE BY US REGION (BY QUARTER)



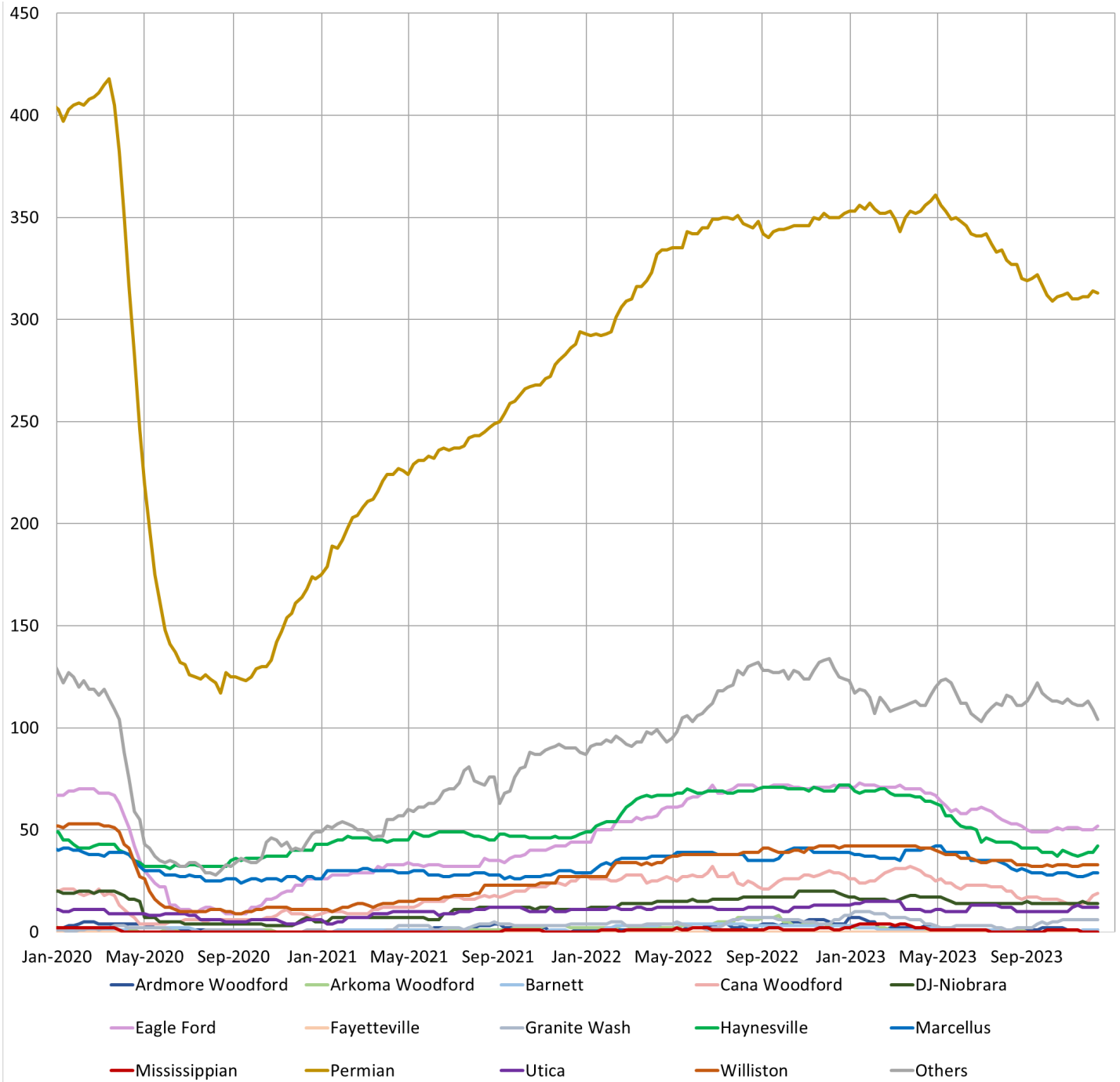
## DEAL VALUE BY US REGION (BY YEAR)



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



## RIG ACTIVITY BY US REGION

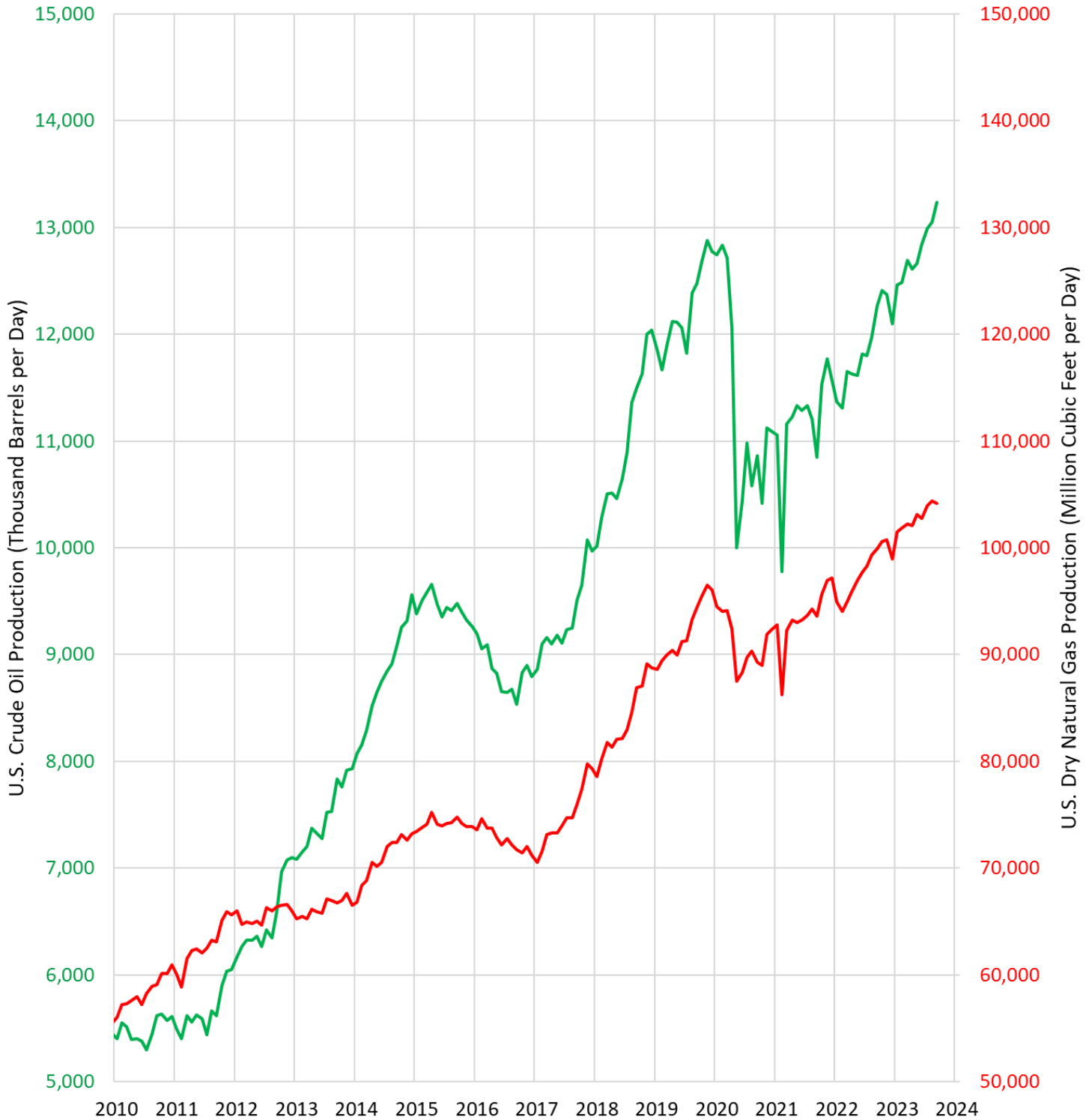


\*Source—Baker Hughes Weekly Rig Counts





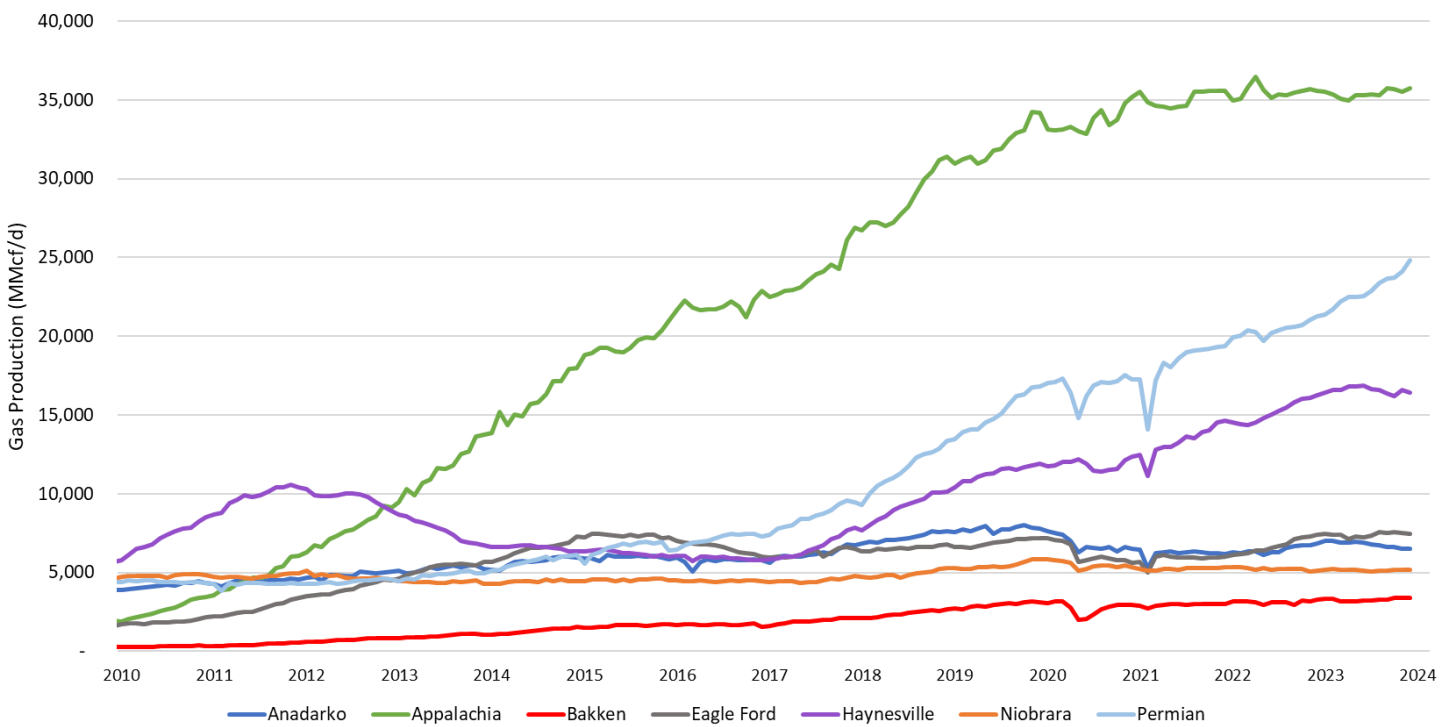
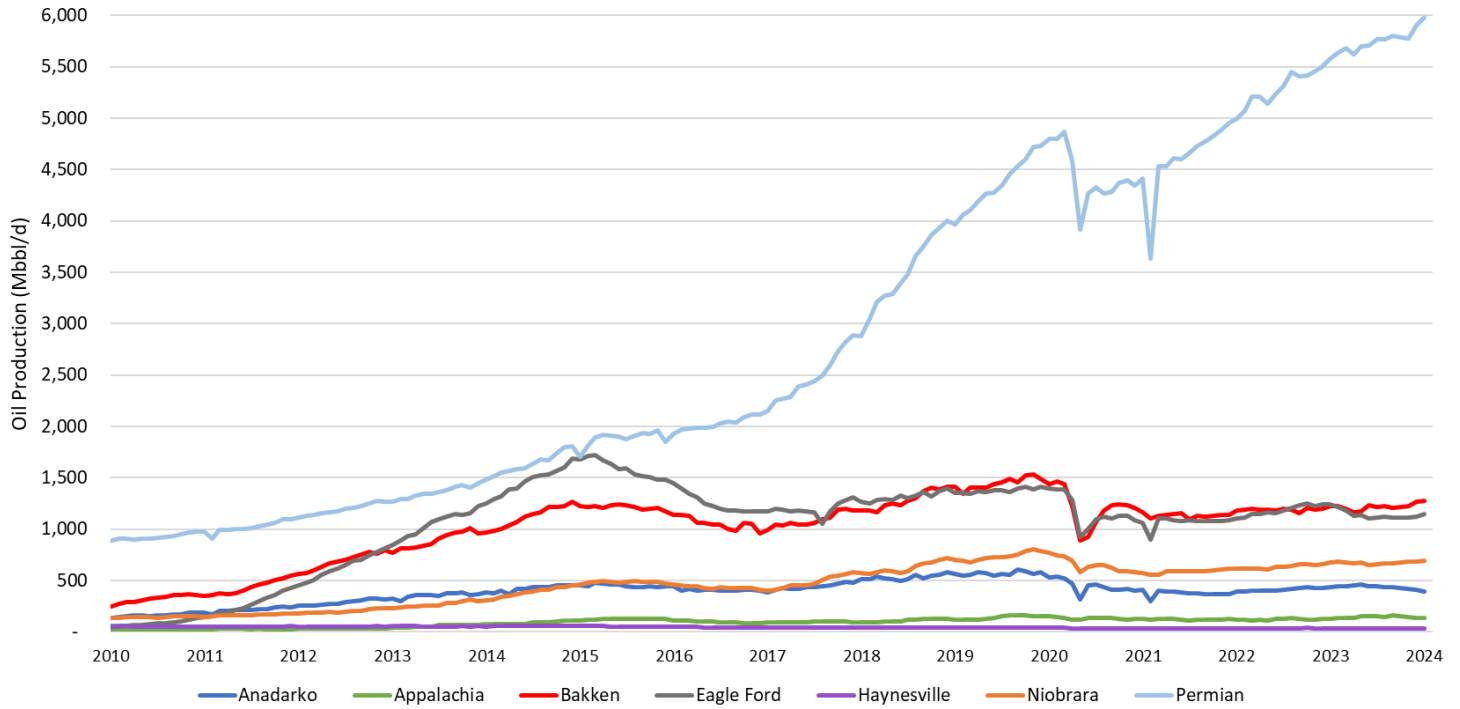
**US DAILY CRUDE (MMbbl) & DRY NATURAL GAS PRODUCTION (MMcf)**



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



## HISTORICAL PRODUCTION OF SELECTED US SHALE REGIONS



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



## **UPCOMING EVENTS**

### **December 2023**

<a href="#">Hart Energy—Hall of Fame Awards</a>	December 5	Houston, TX
<a href="#">SPE—Unpacking ESG and Its Drivers</a>	December 6	Houston, TX

### **January 2024**

<a href="#">Paul “Bear” Bryant Awards</a>	January 10	Houston, TX
<a href="#">IPAA—Private Capital Conference</a>	January 17	Houston, TX

### **February 2024**

<a href="#">NAPE Summit</a>	February 7-9	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.

