

**VALUE FOCUS**

# Exploration & Production

**Third Quarter 2023 // Region Focus: Appalachian Basin**

## **EXECUTIVE SUMMARY**

Appalachian production fared well over the last year, particularly considering the sharp decline in the Henry Hub price. Despite the Henry Hub decline, the Appalachian rig count decline was less than that of two of the three oil-rich basins presented, largely due to Appalachia's higher production declines, which require a higher rig count to maintain production levels.



# Oil and Gas Industry Services

Mercer Capital provides business valuation and financial advisory services to companies in the energy industry.

## Services Provided

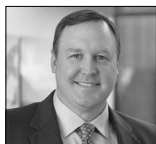
- Valuation of oil & gas companies
- Transaction advisory for acquisitions and divestitures
- Valuations for purchase accounting and impairment testing
- Fairness and solvency opinions
- Litigation support for economic damages and valuation and shareholder disputes

## Industry Segments

Mercer Capital serves the following industry segments:

- Exploration & Production
- Oil Field Services
- Midstream Operations
- Alternative Energy
- Downstream
- Retail

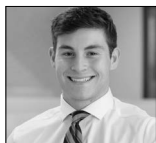
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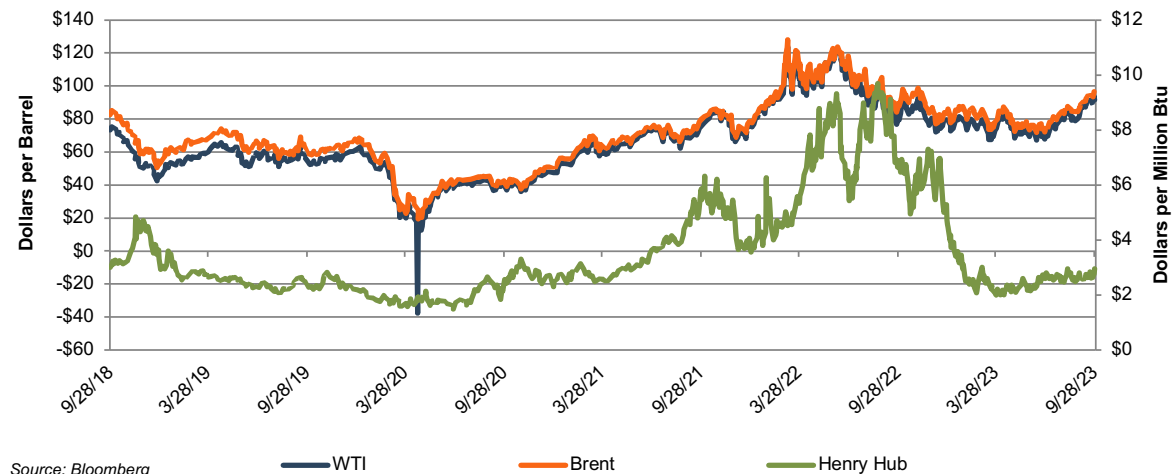
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## Oil and Gas Commodity Prices

Henry Hub natural gas front month futures prices eased downward from the September 2022 average price of \$7.62 (\$/MMBtu) to an October-November 2022 average of \$6.64 before plunging 61% over the December-January period to \$2.68. Since then, the price has varied between \$2.00 and \$3.36, with only a slight upward trend. The winter month decline resulted from unexpectedly warmer temperatures across the country that **reduced demand pressure** and slightly increased supply.

Oil prices, as benchmarked by West Texas Intermediate (WTI) and Brent Crude (Brent), showed much less volatility during the twelve-month period, generally easing from November to June before beginning a fairly steady rise through August. The WTI decreased from its twelve-month high of \$93/bbl in early November to \$68/bbl in late June before its steady recovery to nearly \$94 in late September. Brent showed a near-mirror pricing pattern, albeit at its typical slightly high prices. Starting at \$98/bbl in early November, the Brent price edged below \$72 in mid-June before an upward march to just over \$94 in late September.

### Crude Oil and Natural Gas Prices



## Macro Update

### Energy Values Take Hits....And Keep Moving Forward

Reprint of Bryce Erickson's  
**Forbes.com** column.

Originally published October 13, 2023

The famous philosopher Rocky Balboa once said: "It isn't about how hard you can hit. It's about how hard you can get hit and keep moving forward."

Amid mixed signals, Middle East conflict, rising inflation, rising interest rates, political and regulatory headwinds, and other factors the oil and gas industry continues to perform and cycle upwards. From the start of the year through October, 12th, the *S&P Oil and Gas Exploration & Production Select Industry Index* has gone up over 7%. For the past three years the index has had an annualized return of over 48%. *The S&P 500* has only a 7% annualized return itself over the past three years. It's a marked change from the decade long dry spell the industry had, particularly 2014 and 2015. In a time where numerous things could dampen demand, prices, profits, and valuations the industry continues an upward trend. In addition, some defensive posturing that the industry has taken in recent years may pay off in ways that were not immediately obvious. Capital discipline, low debt, and improved technology have helped set the stage for the current conditions which should allow oil and gas producers to keep moving forward.

#### CAPITAL DISCIPLINE AND DELEVERAGING

Oil prices have continued to be relatively strong for nearly two years now, rarely dropping below \$70, sometimes topping \$100, and averaging closer to \$80. This is a far cry from the years and years of \$50 oil (or less). However, amid that strength of sustained higher commodity prices and the corresponding profitable drilling locations, rig counts have dropped year over year according to **Baker Hughes**. A Forbes colleague **David Blackmon** wrote about this a few weeks ago. The urge to drill with every available resource remains constrained, which is not how operators behaved in past cycles. The focus on returns and value creation appears to have overruled growth, and in addition, some of this may be coming from the continually rising costs to drill and complete wells according to the latest **Dallas Fed Energy Survey**, alongside a tight labor market. Additionally, technology continues to incrementally improve and increase efficiency of recovery at the well level, which helps productivity per rig.

Another form of capital discipline has been the continual deleveraging trend. We have **written on this before**, but not in this interest rate environment. As the cost of debt capital goes up, the industry's deleveraging will have another silver lining: directing more operating profits to shareholders instead of bankers. Operating decisions at many companies will be less immune to upward interest rate pressures or refinancing risks. On top of that – bankers often require companies to hedge large portions of their production to ensure downside protection for their debt. However, the trade-off companies make is that they also often give away some (or a lot) of upside commodity price potential.

## Macro Update (cont.)

### Energy Values Take Hits....And Keep Moving Forward

Reprint of Bryce Erickson's  
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This is less of a problem when debt loads are low. Lastly on this front, bankers are not the only capital source that has been reticent to supply new money to the industry. Equity investors have desired to do more harvesting than planting in the oil and gas sector, thus there has been less capital available to aggressively pursue drilling plans.

#### HIGHER FORECASTS FOR COMMODITY PRICES

That's not to say that drilling plans do not look good right now. They do. Not only are oil prices above \$80, but the tail of the futures curve suggests prices above \$60 as far out as 2029. Fed Energy Survey participants agree – prices should be buoyant into the intermediate future. This is arguably more important to management teams as they marshal resources for long-term projects. Dan Pickering of Pickering Energy Partners thinks oil will be around \$80 in 2027 and that the **upcycle will be continuing**. Part of this is fueled by prior and continuing investments in oil and gas pipelines in the past several years and LNG infrastructure. The cheaper access to markets has helped to manage constrained or stranded supply (particularly gas). At the same time, the conceptual rationale for pricing is particularly circular. Constrained capital discipline will slow supply growth to match demand and vice versa, but there are other factors as well – more global ones on the supply-demand seesaw.

#### GLOBAL PRODUCTION

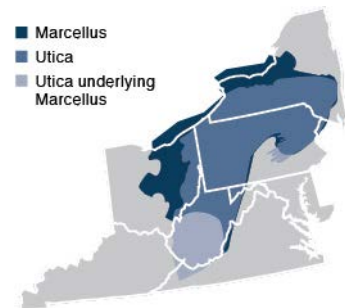
The global market is a little more unstable, but events more recent in Israel and in the Russian/Ukrainian war have had more muted effects on the global supply of oil than otherwise might be thought. While European sanctions on Russian gas appear to have been effective, Russian oil has found its way to other markets. This has helped to limit price shocks. (Side question: what might happen if Venezuela remounted its petroleum horse again?)

However, as the shale revolution matures and Tier 1 drilling locations shrink, it will get harder to maintain and grow supply compared to demand. Now this could balance out in future years as demographics age and world population potentially slows and shifts. Nonetheless, one factor that could change the equation back to a more aggressive drilling posture is that oil will probably peak again in the next 20 years. As such, exploration will come back into the conversation as fields mature and decline rates increase. Even the Biden **Administration relented** on some offshore drilling leases, albeit minimally.

What this means for energy valuations is that the upswing over the past few years does not appear to be peaking anytime soon. While there will be winners (most likely larger operators) and losers (most likely smaller operators), the sector's overall value continues to move forward.

# Appalachian Basin

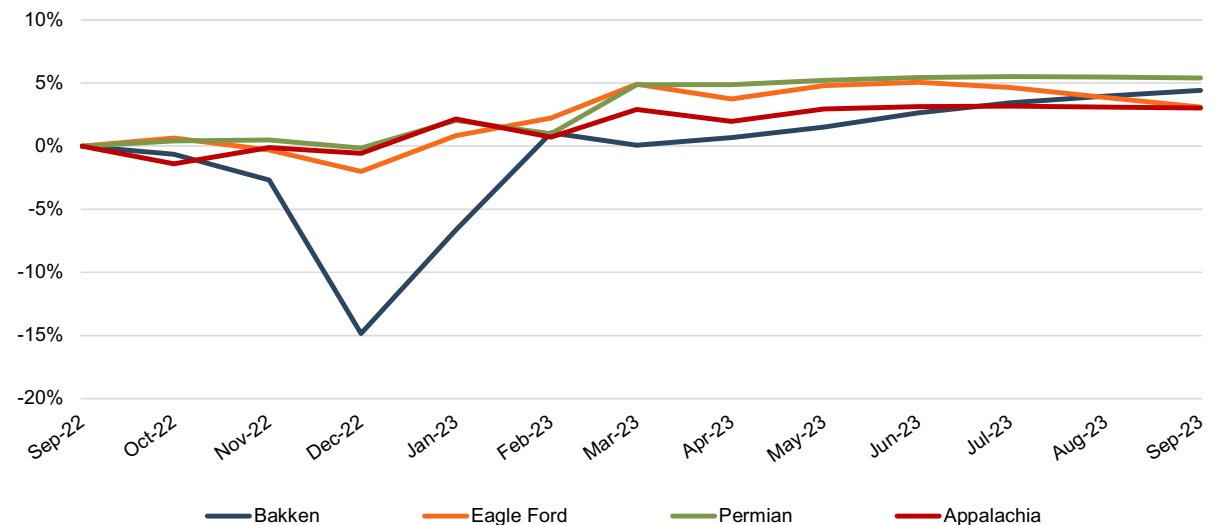
## Production and Activity Levels



The economics of oil and gas production varies by region. Mercer Capital focuses on trends in the Eagle Ford, Permian, Bakken, and Appalachia plays. The cost of producing oil and gas depends on the geological makeup of the reserve, depth of reserve, and cost to transport the raw crude to market. We can observe different costs in different regions depending on these factors. This quarter we take a closer look at the Appalachian Basin.

Estimated Appalachian production (on a barrels of oil equivalent, or “boe” basis) rose 3% year-over-year through August. The basin’s largest volume increases for the twelve-month review period occurred in December 2022 and February 2023, with monthly increases of 2% and 4%, respectively. Year-over-year production in the Eagle Ford, Permian, and Bakken increased 3%, 5%, and 4%, respectively, with little differentiation beyond the Bakken’s typical winter weather-induced interruption.

### 1-Year Change in Production

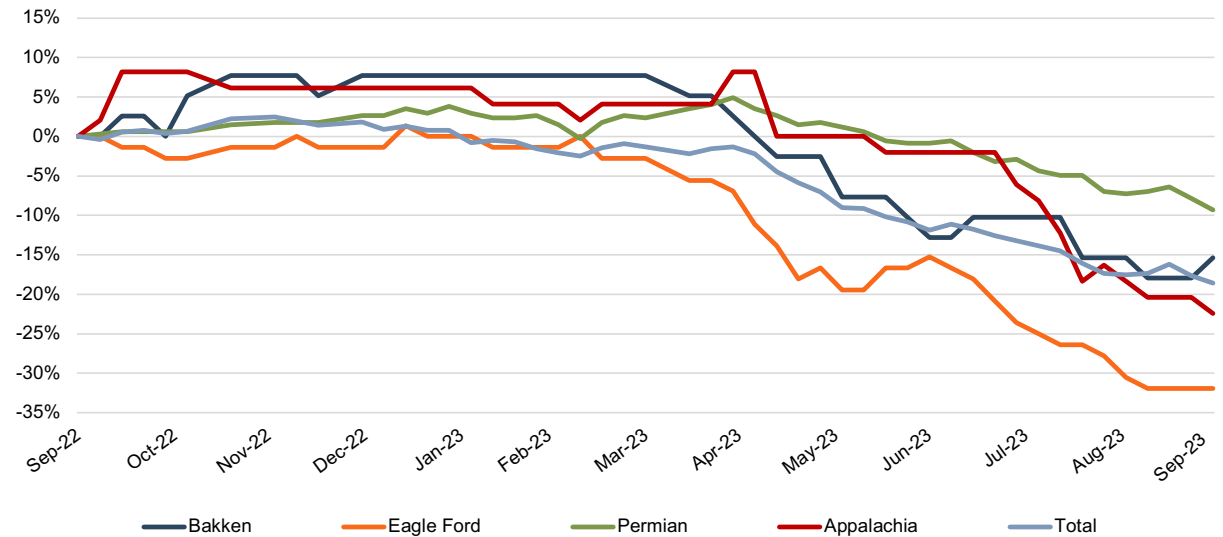


Source: Energy Information Administration

## Production and Activity Levels (cont.)

Rig counts fell markedly during the twelve-month period, with the steepest declines occurring from May to August. Through the end of September, the Eagle Ford and Appalachia posted the largest 12-month rig count declines at 32% and 22%, respectively. The lower production cost Permian posted a more modest 9% decline over the twelve-month period. The Bakken fell in between those extremes at a 15% decline.

1-Year Change in Rig Count



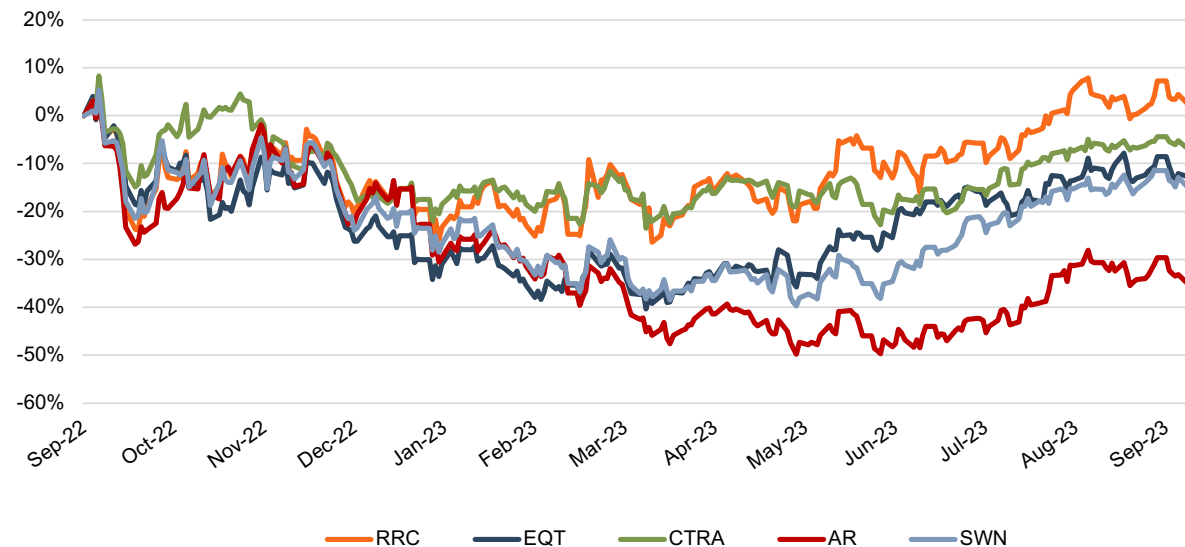
Source: Baker Hughes

## Financial Performance

The Appalachian public comp group saw markedly weak stock price performance over the past year (through September 11, 2023), with only Range Resources ending the 12-month period above its September 2022 starting price. The remaining comp group members (EQT, Coderre, Antero, and Southwestern) all posted twelve-month declines ranging from 7% for Coterra to 35% for Antero. The comp group stock prices generally followed the trend in oil prices, although the early period decline only held through March, after which a general recovery ran through the end of the review period in September. Through mid-March, the average comp group decline had reached 34%. However, the subsequent recovery in oil prices led to an average comp group price increase of nearly 32% through early September.

Range Resources' leading price performance was buoyed by its **lower average production** cost compared to the Appalachian public comp group and compared to natural gas peers as a whole. With the lowest stock price performance during the review period, Antero was impacted by commodity derivative losses, **including a \$559 million** cash payment on derivative loss settlements.

### 1-Year Change in Stock Price



Source: Capital IQ



## Market Valuations & Transaction History

In December 2022, **we wrote** about recent M&A activity in the Marcellus and Utica Shales. In a departure from our typical quarterly analysis and discussion of recent deals in the region, we focus on Exxon's \$4.9 billion acquisition of Denbury, Inc

### Transaction Overview

ExxonMobil made waves in the energy M&A markets by announcing its acquisition of Denbury, Inc. Exxon paid somewhere between Denbury's stock price and a slight premium depending on the timing and stock price fluctuations. In total, the headline value was around \$4.9 billion, according to Exxon's news release.

However, while Denbury is an energy company on the whole, it is made up of two main segments that have very different economics. First, its carbon capture utilization and storage segment (CCUS). Second, its upstream enhanced oil recovery segment. These two businesses, in many ways, represent Denbury's journey over the last several years that have one foot in the carbon future and one foot in the oily past. Neither of their business segments appears to be worth the \$4.9 billion price tag. So what did Exxon buy exactly, and how might one value it?

### Valuation Implications

A quick look at some of the overall implied metrics related to the deal reveals some oddities compared to pure-play oil companies. As to CCUS transactions, there really have not been many to compare to, and certainly not at the scale that Denbury has achieved thus far. The table on the right was compiled based on figures from the announcement and *Capital IQ* data.

Exxon / Denbury Adjusted Valuation Metrics	
Enterprise Value	\$4,900,000,000
Per Share	\$89.45
LTM EBITDA	\$861,220,000
LTM EBITDA Margin	52.4%
Denbury Q1 Daily Production (BOE)	47,655
Denbury Year-End Proven Reserves (BOE)	202,000,000
CO2 Pipeline Miles	1,300
Enterprise Value / EBITDA	5.7x
Enterprise Value / Flowing Barrel	\$102,822
Enterprise Value / Proven Reserves	\$24.26
Enterprise Value / Mile of Pipeline	\$3,769,231

## Market Valuations & Transaction History

### Valuation Implications (cont.)

Just looking at the implied values relating to upstream multiples, the flowing barrel metric jumps out as high compared to most operators, especially with an EBITDA margin below 55%. This implies a higher multiple than much larger global companies such as BP, ConocoPhillips, and Occidental Petroleum—which does not make intuitive sense.

On the other side of the equation, the value per mile of pipeline appears relatively high at first glance. This is considering management's recent **earnings call** comments about construction costs being between \$2 to \$4 million per mile, coupled with the fact that the pipelines are not fully utilized yet. There clearly is a mix of segment-made contributions that drive different elements of the overall transaction price.

### Carbon Capture Segment

Denbury's CCUS business represents the future of Denbury and embodies the key rationale for Exxon's interest. Denbury has touted this segment, and most of its marketing, to investors centered on this aspect of its business. Its enthusiasm is apparent as its annual report spent almost all its focus on this area of the business. CCUS does represent a synergistic operational advantage for the company because Denbury has been one of the few upstream companies focusing on older, depleted fields that have lost what the industry calls "natural drive" and thus require incremental efforts to bring oil to the surface. Denbury's solution to this challenge for a long time has been to inject its CO2 into the fields to create pressure and stimulate oil production.

However, the business model for a standalone CCUS business model is still relatively nascent, requiring hundreds of millions of dollars of investment and years before it could potentially reach cash flow sustainability separate from oil production activities. There's already much in place now with 1,300 miles of pipeline and ten onshore sequestration sites, which was attractive to Exxon. However, things like the growth of offtake agreements, Section 45Q tax incentives (which we wrote about last year), and carbon storage contracts are not expected to generate net positive income for Denbury until several years in the future.

Nonetheless, this developmental potential and strategic location in the Gulf region have significantly contributed to Denbury's stock price and Exxon's interest. How much the CCUS is contributing to Denbury's value is uncertain. But in an **interesting article** published shortly after the acquisition was announced, Hart Energy interviewed Andrew Dittmar, a Director at Enverus, who estimated that (effectively) about 62% of Denbury's value was based on their CCUS business.

## Market Valuations & Transaction History

### Enhanced Oil Recovery Segment

In the meantime, Denbury's upstream enhanced oil recovery (EOR) business has been pulling the income statement's performance along. Nearly all profits for Denbury are generated through this business line. However, compared to other public upstream companies, Denbury's profitability is comparably lower, production is smaller, and production costs are higher. This is not a recipe for high comparative valuations, certainly not over \$100 thousand per flowing barrel, which only the likes of Exxon and Chevron imply. (While we're on the topic of segments, it is not a clean comparison either since Exxon and Chevron are two integrated companies with many segments that contribute to their values too).

Denbury is primarily a regional oil producer with less than 50 thousand barrels per day of production and EBITDA margins lower than many public oil companies. To its credit, Denbury does have lower decline rates than other companies due to the maturity of the fields they produce from. However, the flip side is that it costs \$35-\$39 per barrel to produce. Those are expensive lease operating costs when many companies operate somewhere in the teens per barrel. All that said, Enverus's estimate in their Hart Energy interview was that the EOR business contributed about 38% of Denbury's value.

### Implied Valuation Metrics by Segment

If Enverus's analysis is to be applied here, that would put an adjusted value on Denbury's production at around \$39,000 per barrel and an adjusted value per pipeline mile of around \$2.3 million. Take a look at these "adjusted" figures:

Exxon / Denbury Adjusted Valuation Metrics	
Enverus Estimate - CCUS % Ratio	62.22%
Enverus Estimate - Upstream % Ratio	37.78%
Adjusted Upstream Transaction Value	\$1,851,111,111
Adjusted CCUS Transaction Value	\$3,048,888,889
Adjusted Upstream Value / Flowing Barrel	\$38,844
Adjusted CCUS Value / Mile of Pipeline	\$2,345,299
Adjusted Upstream Value / Proven Reserves	\$9.16

## Market Valuations & Transaction History

### Implied Valuation Metrics by Segment (cont.)

Under this scenario, Denbury's upstream business would potentially be slotted in with public regional upstream producers with characteristics closer to: (i) under 200 thousand barrels per day of production and (ii) EBITDAX margins under 60%. Companies like Chord Energy (a Bakken-focused producer), Callon Petroleum (a smaller Permian operator), or maybe even Enerplus (another Bakken-focused producer) come to mind. Additionally, the value per mile of pipeline drifts down to the lower end of the construction estimate range, which also appears to be more realistic. Of course, this value depends on commodity expectations, regulatory stability, and execution of Denbury's plan. Exxon appears to be optimistic about it. Whether or not Denbury's shareholders will be remains to be seen.

## Appendix A

# Selected Public Company Information

Mercer Capital tracks the performance of Exploration and Production companies across different mineral reserves in order to understand how the current pricing environment affects operators in each region. We created an index of seven groups to better understand performance trends across reserves and the industry. The current pricing multiples of each company in the index are summarized below.

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						as of 9/30/2023	
Company Name	Ticker	9/30/2023 Enterprise Value	YoY % Change in Stock Price	EBITDAX Margin	EV/ EBITDAX	Daily Production (mboe/d)	Price per Flowing Barrel*
Global Integrated							
Exxon Mobil Corp	XOM	\$488,652	34.7%	21.7%	6.1x	3,700	\$132,061
Shell PLC	SHEL	252,262	27.0%	19.5%	3.6	2,669	94,515
Chevron Corp	CVX	327,732	17.4%	24.4%	6.2	3,045	107,641
BP PLC	BP	156,200	34.4%	22.6%	3.0	2,298	67,961
Equinor ASA	EQNR	85,595	-0.1%	52.1%	1.3	1,873	45,691
Group Median			27.0%	22.6%	3.6x	2,669	\$94,515
Global E&P							
Marathon Oil Corporation	MRO	\$21,853	18.5%	68.9%	4.7x	409	\$53,421
Hess Corporation	HES	53,822	40.4%	50.7%	10.1	386	139,318
ConocoPhillips	COP	153,088	17.1%	42.3%	5.3	1,799	85,086
Occidental Petroleum Corporation	OXY	85,664	5.6%	52.9%	5.1	1,200	71,381
APA Corporation	APA	19,050	20.2%	58.6%	4.1	412	46,276
Murphy Oil Corporation	MUR	8,691	28.9%	72.9%	3.4	197	44,163
Group Median			19.3%	55.7%	4.9x	410	\$62,401

Source: Capital IQ

- Price per Flowing Barrel is EV/ daily production (\$/boe/d). Market data per Capital IQ. Daily Production based on Q3 2023 estimates per Capital IQ as available
- Companies included in the Guideline Group are not meant to be an exhaustive list. The selected companies' market caps exceed \$1 billion and/or revenues exceed \$500 million.
- We review 10-K's and annual reports from guideline companies to ensure companies continue to operate in the regions and groups we have identified.

Appendix A

## Selected Public Company Information

						as of 9/30/2023	
Company Name	Ticker	9/30/2023 Enterprise Value	YoY % Change in Stock Price	EBITDAX Margin	EV/ EBITDAX	Daily Production (mboe/d)	Price per Flowing Barrel*
<b>Bakken</b>							
Chord Energy Corporation	CHRD	\$6,911	18.5%	68.7%	2.7x	171	\$40,511
Enerplus Corporation	ERF	3,893	24.0%	71.9%	3.0	99	39,409
<b>Group Median</b>			<b>21.3%</b>	<b>70.30%</b>	<b>2.8x</b>	<b>135</b>	<b>\$39,960</b>
<b>Appalachia</b>							
Range Resources Corporation	RRC	\$9,256	28.3%	66.9%	3.4x	353	\$26,210
EQT Corporation	EQT	20,184	-0.4%	74.9%	3.0	958	21,071
Coterra Energy Inc	CTRA	21,777	3.6%	73.3%	3.9	645	33,762
Antero Resources Corporation	AR	9,362	-16.9%	42.5%	3.3	567	16,517
Southwestern Energy Company	SWN	11,114	5.4%	61.8%	1.6	773	14,373
<b>Group Median</b>			<b>3.6%</b>	<b>66.9%</b>	<b>3.3x</b>	<b>645</b>	<b>\$21,071</b>
<b>Permian Basin</b>							
Diamondback Energy, Inc.	FANG	\$35,070	28.6%	80.8%	5.5x	446	\$78,547
Permian Resources Corporation	PR	9,160	105.3%	77.9%	4.6	170	54,007
Callon Petroleum Company	CPE	4,931	11.7%	67.8%	2.7	102	48,549
Vital Energy, Inc.	VTLE	2,702	-11.8%	75.3%	2.4	94	28,867
Pioneer Natural Resources Company	PXD	58,611	6.0%	49.8%	5.8	716	81,848
<b>Group Median</b>			<b>11.7%</b>	<b>75.3%</b>	<b>4.6x</b>	<b>170</b>	<b>\$54,007</b>

Source: Capital IQ

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<b>Eagle Ford</b>							
EOG Resources, Inc.	EOG	\$72,857	13.5%	59.4%	4.9x	981	\$74,293
Magnolia Oil & Gas Corporation	MGY	4,195	15.6%	74.6%	4.0	82	51,302
SilverBow Resources, Inc.	SBOW	1,631	33.1%	101.9%	2.3	57	28,394
<b>Group Median</b>			<b>15.6%</b>	<b>74.6%</b>	<b>4.0x</b>	<b>82</b>	<b>\$51,302</b>
<b>OVERALL MEDIAN</b>			<b>17.9%</b>	<b>64.4%</b>	<b>3.7x</b>	<b>507</b>	<b>\$49,925</b>

Source: Capital IQ

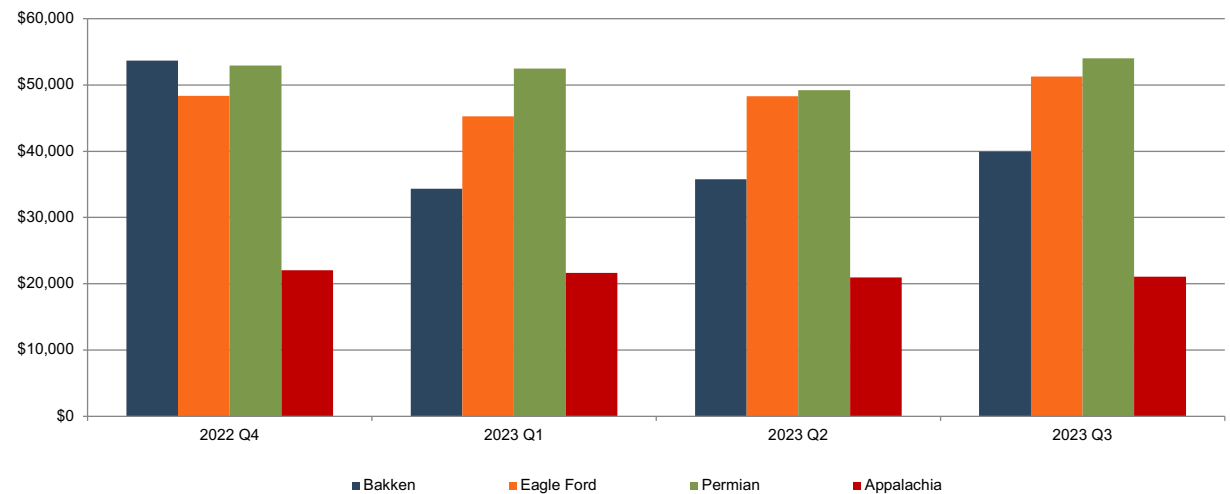
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## Appendix A

# Selected Public Company Information

The following graph depicts the median of EV/production multiples, also known as price per flowing barrel, from Q4 2022 through Q3 2023.

Price per Flowing Barrel



Source: Capital IQ

Price per Flowing Barrel is EV/ daily production (\$/boe/d)

This is simply a graphic depiction of median figures of our selected public companies for each region. This should be interpreted solely in the context of relative valuation between the various basins over time. Capital IQ aggregates this raw data, and Mercer Capital does not represent or warrant these figures as indicative of valuation multiples attributable to E&P companies or other interests.

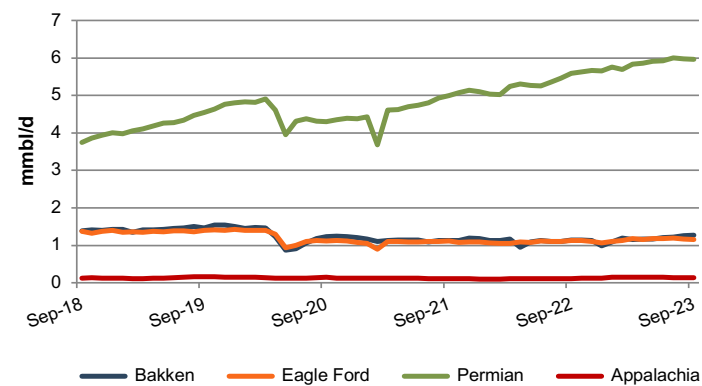


## Appendix B

# Production

### Daily Production of Crude Oil

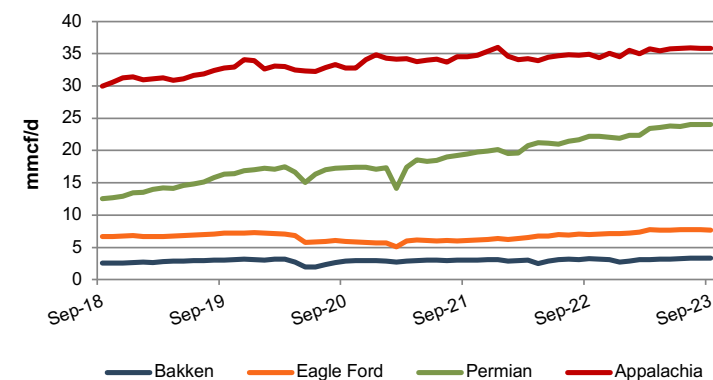
Oil production in the Appalachian basins increased by 19.3% over the last year, followed by increases of 10.2% in the Bakken, 6.7% in the Permian, and 2.7% in the Eagle Ford.



Source: EIA

### Daily Production of Natural Gas

The Eagle Ford led the analyzed regions in natural gas production growth at 9.4% over the last year, followed by growth of 8.3% in the Permian, 4.6% in the Bakken, and 2.6% in the Appalachian basins over the same period.



Source: EIA

Source: EIA

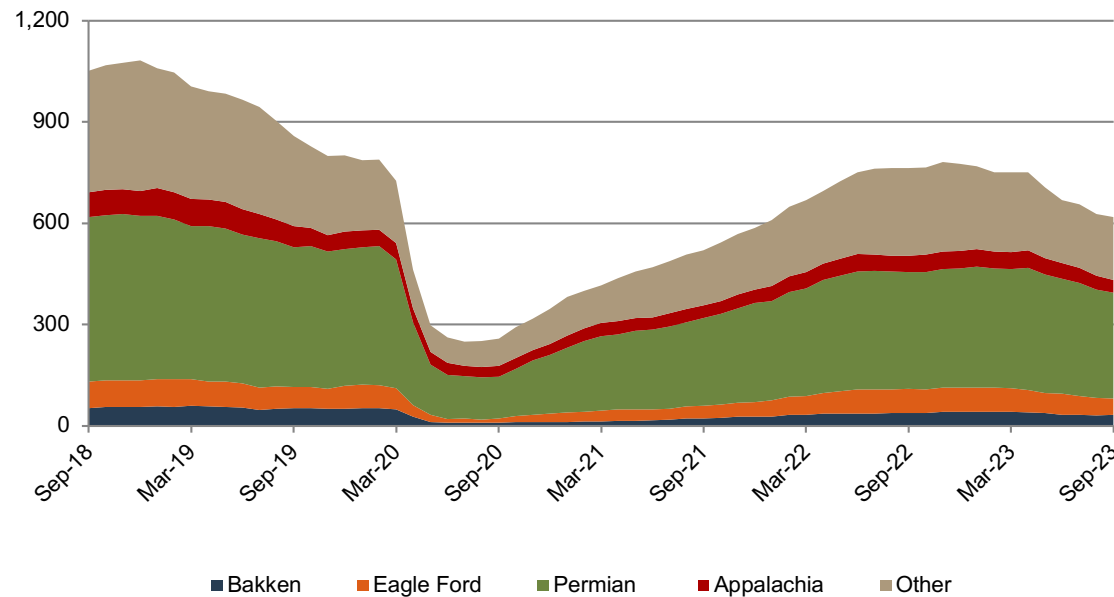
## Appendix C

# Rig Count

**Baker Hughes** collects and publishes information regarding active drilling rigs in the U.S. and internationally. The number of active rigs is a key indicator of demand for oilfield services & equipment. Factors influencing rig counts include energy prices, investment climate, technological changes, regulatory activity, weather, and seasonality.

The number of active rigs in the U.S. during September 2023 was 618, which represents a 19.0% decrease from 763 in September 2022. The number of active rigs represents the lowest point since January 2022 which had 610 active rigs. Year-over-year, the rig count in the Eagle Ford experienced a decrease of 31.9%, from 72 to 49, representing the largest decrease of the regions analyzed. Following, the Appalachian, Bakken, and Permian basins had decreases of 22.4%, 15.4%, and 9.3%, respectively.

**Rig Count by Region**

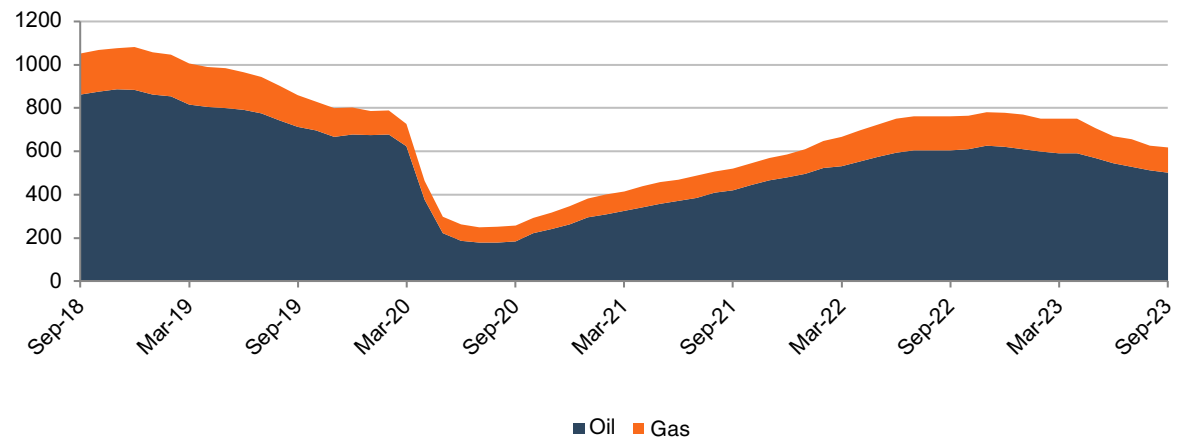


Source: Baker Hughes

## Appendix C

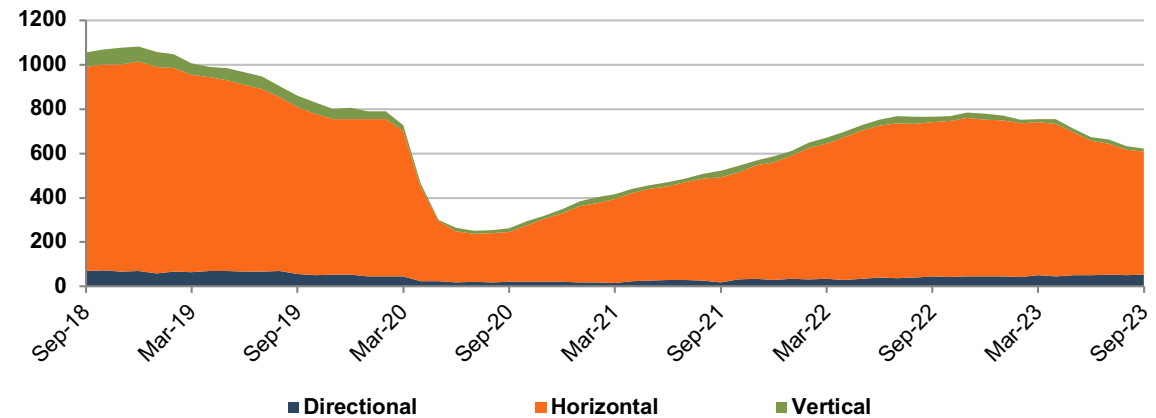
# Rig Count

U.S. Rig Count by Oil vs. Natural Gas



Source: Baker Hughes

U.S. Rig Count by Trajectory



Source: Baker Hughes



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