MERCER CAPITAL

BUSINESS VALUATION &
FINANCIAL ADVISORY SERVICES

VALUE FOCUS

Exploration & Production

Fourth Quarter 2019 // Region Focus: Appalachian Basin

EXECUTIVE SUMMARY

Crude prices steadily increased from $54 per barrel at the beginning of October to $61 at the close of 2019. The gradual increase in prices was fueled partly by optimistic market expectations in early 2020, and the announcement of the United States and China Phase One trade deal. In early December, OPEC announced their intent to deepen production cuts through March 2020, applying upward pressure on prices.

The fourth quarter of 2019 remained gloomy for investors in Appalachia as gas prices remained under $3 per MMbtu. Along with depressed commodity prices, pipeline regulations in New York continue to hamstring operators in the basin. The future of the Appalachia gas market is difficult to predict as the LNG market increases the United States' export capacity. The basin is safe for now, however, as the Appalachia region seems to have adequate takeaway capacity going into 2020.

MERCER CAPITAL

Oil and Gas Industry Services

Mercer Capital provides business valuation and financial advisory services to companies throughout the U.S. in the oil & gas 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:

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- Oilfield Services
- Midstream
- Refining & Marketing

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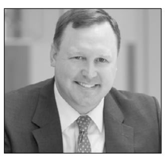

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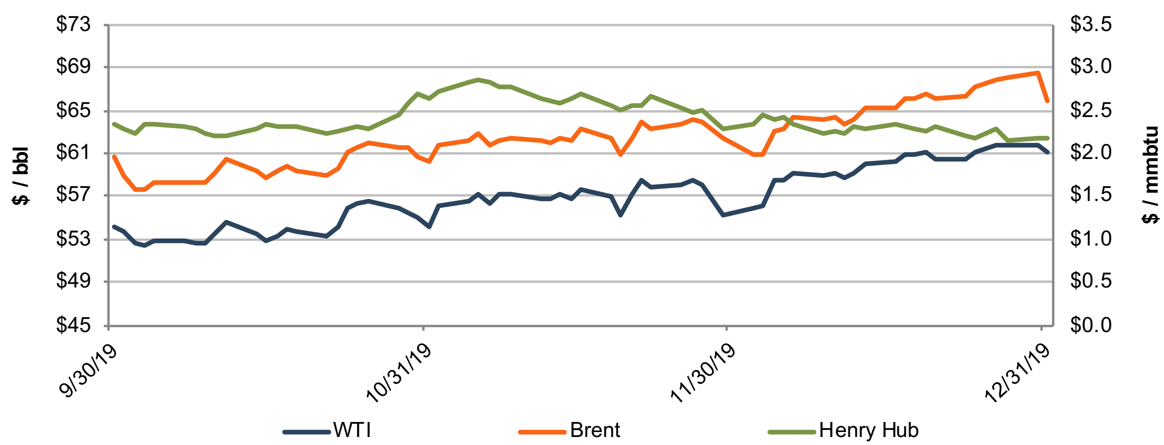
Oil and Gas Commodity Prices

Crude prices finished the year strong relative to the third quarter, with WTI closing the year a few cents above $61/bbl. Brent crude prices followed a similar path and fell just shy of the $70/bbl mark towards the end of the year. The spread between WTI and Brent is expected to diminish as additional pipeline capacity continues to come online. Despite an early run up in late October/early November, natural gas prices continued their descent in the fourth quarter. Prices remained below $3/MMbtu and finished the year just above $2/MMbtu.

Crude Oil and Natural Gas Prices



Source: Bloomberg

Macro Update

OPEC

OPEC conducted its **177th meeting** on December 5th to take note of oil market developments since its last meeting in July and to review the oil market outlook for 2020. Press reports leading up to the meeting indicated that OPEC would **extend the existing supply cuts**, helping support crude oil prices. Ultimately, the group went a step further, deepening production cuts by 0.5 million b/d. However, the cuts were not extended and only run through the end of March 2020. According to the EIA's latest Short-Term Energy Outlook (STEO), **OPEC production is expected** to fall in 2020. This is largely related to production restraint from most OPEC members amid concerns of rising oil inventories, continuing sanctions on Iran, and ongoing declines in Venezuela's crude oil production. EIA forecasts that increased non-OPEC production will **more than offset** those declines and that global liquid fuels supply will rise by 1.5 million b/d in 2020. The U.S., particularly the Permian basin, is expected to supply the majority of this growth.

U.S. – China Trade Deal Phase One

In early December, the United States and China agreed on the first phase of a trade deal. The Phase One agreement means the U.S. is suspending tariffs that were planned on **$160 billion in Chinese imports**. In addition, the U.S. halved the September tariffs from 15% to 7.5%. As a part of the Phase One deal, President Trump said **Beijing has agreed** "to many structural changes and massive purchases of Agricultural Product, Energy, and Manufactured Goods, plus much more." With regards to the trade deficit, U.S. officials signaled that China agreed to increase purchases of U.S. products and services by at least **$200 billion** over the next two years. Phase One also addressed specific concerns subject to China's intellectual property practices. President Trump explained that the U.S. and China would begin negotiations over the second phase of the trade deal rather quickly.

Interest Rates

By the end of October, the Fed had made three rate cuts in 2019 due in part to **trade policy uncertainty.** In early November, following the last round of cuts, the Fed decided to hold rates steady. After their meeting in early December, the Fed kept the federal funds rate between **1.5% and 1.75%**. The Federal Reserve remained optimistic about economic stability but emphasized that their actions will depend on future events. Long-term interest rates began to rise over the quarter from the low of 1.47% for the 10-year Treasury in September. Looking ahead to early 2020, rates are expected to remain flat with **quiet Fed activity**.

Macro Update

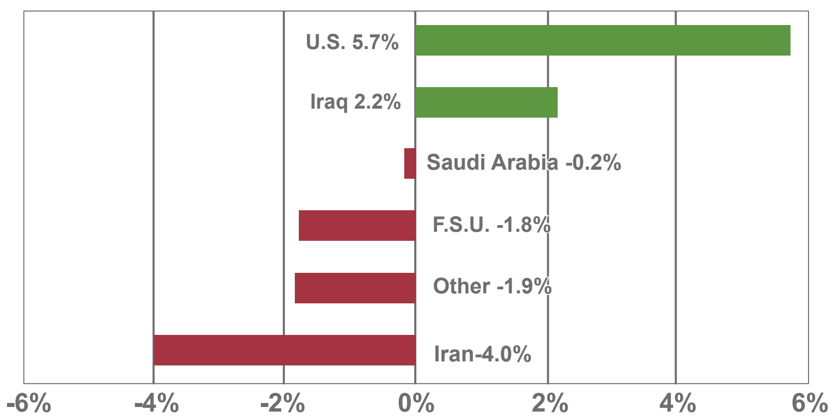
Short-Term Outlook

Beginning on January 1, 2020, the International Maritime Organization (IMO) is set to enact the Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL Convention), which lowers the maximum sulfur content of marine fuel oil used in ocean-going vessels from 3.5% to 0.5%. The implementation of MARPOL will see the **marine fuels landscape change significantly** as over 95% of the current market will be displaced.

The EIA demonstrates the recent shifts in share of OECD Europe oil imports.

Change in Share of OECD Europe Oil Imports

2015-2018 average vs year-to-date 2019



U.S. Energy Information Administration, based on data from the International Energy Agency

These trends could continue in 2020 based on the IMO 2020 regulations. The EIA expects U.S. crude oil production to **provide approximately two-thirds** of total global liquids growth next year. It is also important to note that U.S. crude oil tends to be a light, sweet grade, which will likely see an increase in global demand due to the implementation of the IMO 2020 regulations, further tilting market share.

Macro Update

U.S. Production

In September 2019, the U.S. became a net petroleum exporter, marking the **first month ever** since monthly records began in 1973. To be exact, the U.S. exported **89,000 b/d** more crude oil and petroleum products than it imported in the month of September. Increasing U.S. crude oil production has resulted in a decrease in U.S. crude oil imports as well as the number of import sources. Despite the reversal in September, the U.S. remains a net importer of crude oil, however, and **60% of imports** come from Canada and Mexico.

The EIA expects U.S. crude oil production to average **13.2 million** b/d in 2020, an 8% increase from the 2019 level, which is lower than the growth from 2018 to 2019. According to the STEO, **slowing crude oil production** growth results from a decline in drilling rigs over the past year, which is slated to continue into 2020. Although the rig count is forecast to decline, the EIA forecasts an **increase in production** as rig efficiency and well-level productivity rises.

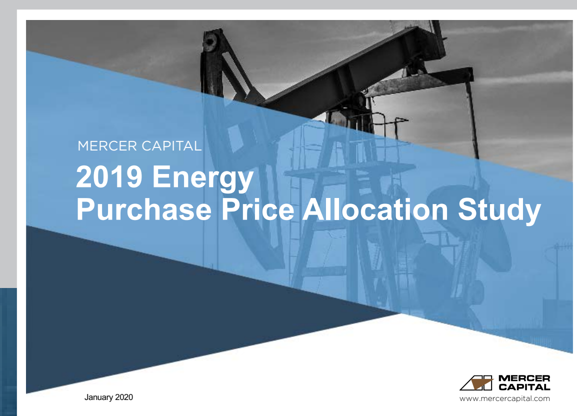
The EIA forecasts Brent spot prices to average \$61/bbl in 2020 and expects the Brent-WTI spread to average \$5.50/bbl. Their outlook reflects the expectation of **rising global oil inventories** in the beginning of 2020.

2019 Energy Purchase Price Allocation Study

Mercer Capital's 2019 Energy Purchase Price Allocation Study is a useful tool for management teams, investors, auditors, and even insurance underwriters as market participants grapple with ever-increasing market complexity. The study provides information on publicly available purchase price allocation data for four sub-sectors of the energy industry: exploration and production; midstream; oilfield services; and refining.

The 2019 Energy Purchase Price Allocation Study

- Delivers a detailed analysis and overview of valuation and accounting trends in four sub-sectors of the energy space
- Enables key users and preparers of financial statements to better understand the asset mix, valuation methods, and useful life trends in the energy space as they pertain to business combinations under ASC 805 and GAAP fair value standards under ASC 820
- Provides data and analytics for readers seeking to understand undergirding economics and deal rationale for individual transactions
- Assists in risk assessment and underwriting of assets involved in four energy sub-sectors
- Helps readers to better comprehend financial statement impacts of business combinations



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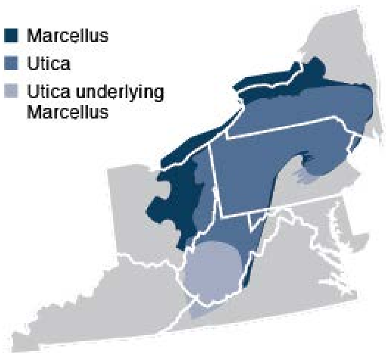
Appalachian Basin

Valuation Implications



The economics of oil and gas production varies by region. Mercer Capital focuses on trends in the Eagle Ford, Permian, Bakken, and Marcellus and Utica 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 Marcellus and Utica.

U.S. gas consumption will finish at an all-time high of 85.78 Bcf per day in 2019 and that figure will continue to grow into 2020. However, the investing atmosphere is gloomy with commodity prices consistently below $3.00 per Mcf on the NYMEX and even lower in some locations. The valuation environment is dispiriting for many investors in Appalachia. It doesn't take long to get buried in a cavalcade of adverse indicators, corporate overhauls, depressed EBITDA multiples, and state-sized swaths of uneconomic acreage. Data suggests some producers could spend the foreseeable future languishing in shareholder jail or bankruptcy court.

Despite being the largest gas field in the world, valuations in Appalachia are floundering at relative historic lows. **Mercer Capital's** group of public Appalachian gas producers' change in share price has dropped approximately 50% since last year. It's the largest collective decline of any other publicly traded U.S. basin group. Of the publicly traded Appalachian-based gas producers, some are trading at the bottom of EBITDA multiple ranges, and nearly all trade at the bottom from a price-per-flowing-barrel metric.

Pricing as of December 26, 2019

	Ticker	12/26/2019 Enterprise Value	YOY % Change in Stock Price	EBITDAX Margin	EV / EBITDAX	Daily Production (mboe/d)	Price Per Flowing Barrel
Appalachia							
Range Resources Corp	RRC	$4,396	-53.84%	-30.7%	nm	377	$11,669
EQT Corp	EQT	$7,952	-44.81%	32.5%	5.6x	685	$11,600
Cabot Oil & Gas Corp	COG	$8,265	-26.32%	67.7%	5.3x	393	$21,021
Antero Resources Corp	AR	$7,816	-70.72%	15.4%	11.3x	543	$14,403
Gulfport Energy Corp	GPOR	$2,584	-53.88%	67.7%	2.3x	234	$11,065
Southwestern Energy Co	SWN	$3,673	-35.79%	31.0%	3.4x	355	$10,333
Group Median			**-49.3%**	**31.8%**	**5.3x**	**385**	**$11,635**

Source: Bloomberg

Appalachian Basin

Valuation Implications (cont.)

Transaction activity has been quiet, as equity markets are closed, and management teams are concerned with stewardship of their existing asset base. Deals that did close were production oriented; some transacting at higher discount rates of return compared to historical norms (15% or even 20% rates of return).

It's notable to point out that gas prices haven't fallen by the magnitude that stock prices have. So, what is happening to create such investor flight? Consider recent developments.

Corporate Wrangling

Trials are front and center for independent producers. They have been pronounced at Gulfport and EQT, where management and shareholders engaged in some tumultuous struggles this year. Gulfport had board turnover and **suspended a share repurchase program** that it had initiated earlier in 2019 (in order to switch to debt buyback program at a discount). At EQT, corporate governance has also been volatile. Toby and Derek Rice, whose eponymous company merged with EQT in November 2017, waged a **successful proxy battle** in 2019, proposing a business plan in September which included a 23% reduction in employees alongside a logistical and strategic overhaul of its drilling plan.

Throwing in a Major Towel

Trouble in Appalachia is not confined to the independents. Chevron recently announced a **$10-11 billion** write-down. More than half of its impairment is attributable to its Marcellus/Utica assets. Chevron has a large position, has been in the region since 2011, and is now mulling an exit from the play.

Cash Flow Challenges

Due in part to the lack of available capital, early projections show capex reductions of 23% in 2020. This strategy cuts both ways. It can conserve cash in the short term to allocate towards debt repayment or share buybacks, but it can also hamstring growth and production in future years, compounding problems with languishing prices.

Appalachian Basin

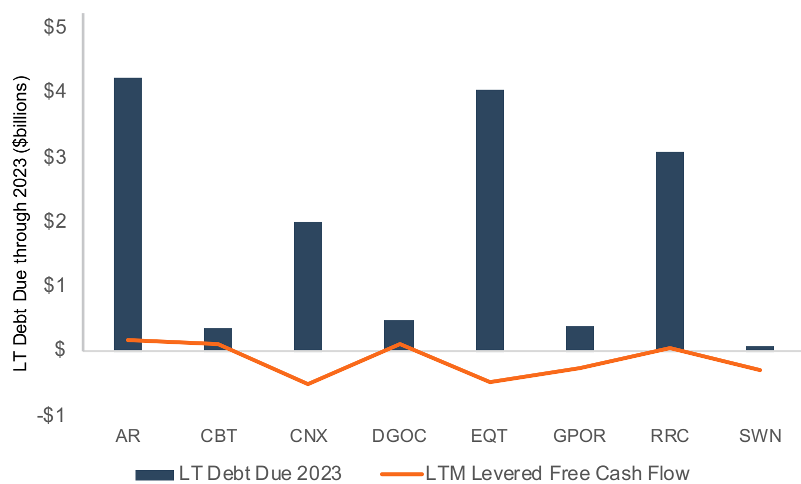
Valuation Implications (cont.)

Company	Core Area	Capex($mm) FY 2019	Capex($mm) FY 2020	% Change
Antero	Appalachia	$1,425	$1,225	-14.0%
Cabot	Appalachia	810	575	-29.0%
CNX	Appalachia	720	425	-41.0%
Range	Appalachia	736	575	-21.9%
EQT	Appalachia	1,760	1,350	-23.3%
Seneca	Appalachia	485	435	-10.3%
Total		**$5,936**	**$4,585**	**-22.8%**

Source: ShaleExperts

This is at top of mind for many producers as they grapple with how to keep investors happy and stay out of bankruptcy court. Some producers are better positioned than others in this aspect—particularly Cabot. The chart below shows the relationship between the total amount of debt principal due over the next five years as compared to trailing levered free cash flow. It shows that some companies have some real challenges in this area.

Cash Flow vs. 5-Year Debt Repayment



Source: CapIQ

Appalachian Basin

Valuation Implications (cont.)

Strangulation via Regulation

The Marcellus and Utica shale plays possess one of the best unused potential advantages in the natural gas world—its proximity to the Northeast United States. One of the biggest potential consumers of the vast gas reserves is neighbor to the Marcellus, yet so little of it makes its way to its natural customer base. Why is this? One word: regulation. For example, the Constitution pipeline, approved by FERC in 2014, has been in **regulatory purgatory** since that time in the State of New York. Fracking is banned in New York and the regional political climate is frigid towards the natural gas industry to say the least. In the meantime, New York area utilities are struggling with gas pressure shortfalls for new customers. Also, in a twist of irony, increasing appetite for natural gas in Massachusetts is being met, at least partially, by Russian (yes, Russian) imports. Thus, Appalachia's oversupply of gas continues to search for markets while the Northeast gets it from elsewhere. When a Russian LNG tanker pulls into Boston Harbor in the winter…that's a bad sign.

The near-term doesn't look prettier when examining broader economic and commodity trends. In fact, some of it is downright ugly. Supply exceeds demand, futures prices remain anemic, and huge areas of quality drilling acreage currently have minimal market value ascribed to them. These factors are putting a boot to the throat of producers and keeping valuations from getting off the ground.

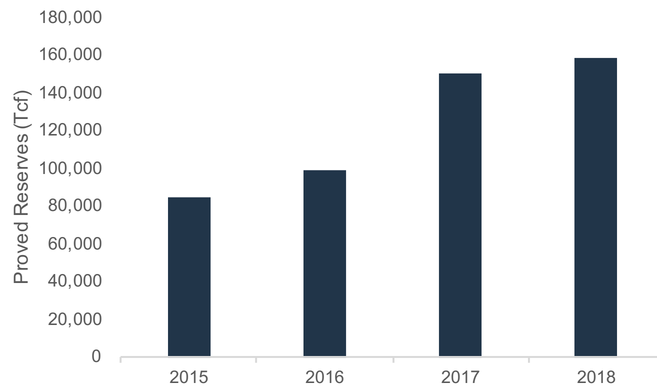
Get Production for Nothing and Reserves for Free

Dire Straits' 80's song title echoes as we consider the supply and demand imbalance right now. It can hardly be understated how much the U.S.' reserves of dry gas have been turned on its head in the past decade. Flippant investors, to the chagrin of some, now view undrilled reserves as a dime a dozen. This was unheard of not long ago. This points out the most fundamental economic driver to these low valuations – oversupply. This hamstrings acreage valuations. The EIA released its **2018 Year End Proved Reserve** report in early December. Appalachian dry gas has nearly doubled since just 2015. Even production gain metrics, which surged 48% over this same period, sit in the vapor trail of reserve growth. There is simply too much of a good thing, and it has cheapened gas for everyone else in the Marcellus' short reach (especially the consumer).

Appalachian Basin

Valuation Implications (cont.)

Appalachia (PA, WV, OH) Proved Reserves

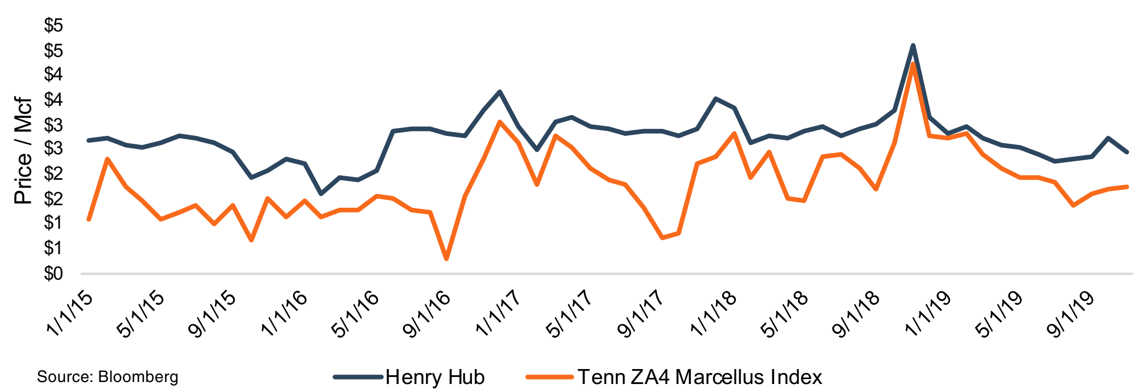


Source: EIA

Gas Price Limbo

Even years out, NYMEX gas futures look so flat, it can hardly be called a curve. Like a frantic swimmer getting pulled by undertow, producers struggle to breathe in this environment. To make matters worse, Appalachia's regional market constraints make its supply and demand even more imbalanced, leading to consistently wide pricing differentials. What little midstream capacity does come online gets filled too fast to influence pricing power. This has been and remains an Achilles heel for Appalachia.

Natural Gas Prices / Mcf



Source: Bloomberg

Appalachian Basin

Valuation Implications (cont.)

Acreage Values Battling Irrelevancy

At these prices, there are hundreds of thousands of Marcellus and Utica acres that are simply uneconomic. According to a **recent analysis by Antero Resources**, nearly half (45%) of needed gas supply in the next four years is currently non-economic at strip prices below $2.48. While that price point doesn't appear sustainable in the long run, it illustrates why values are so gaunt when it comes to acreage and undrilled reserves. Another way to look at this is to examine companies' enterprise values as compared to the PV10 values of their proved reserves (including undeveloped reserves), a standardized industry metric.

Company	Ticker	Current EV	FY 2018 PV10	EV / PV10
Antero	AR	$7,756	$10,478	74%
Cabot	COG	8,350	10,649	78%
CNX	CNX	5,275	6,172	85%
Diversified Gas & Oil PLC	DGOC	1,191	1,600	74%
EQT Corporation	EQT	7,913	18,436	43%
Gulfport Energy Corporation	GPOR	2,625	3,407	77%
Range Resources Corporation	RRC	4,379	13,713	32%
Southwestern Energy Company	SWN	3,685	6,524	56%

In $millions

Source: CapIQ

Appalachian Basin

Valuation Implications (cont.)

None of the companies get very close to a ratio of 1:1. Some companies are trading around production reserve values only. Future drilling inventory does not appear to be particularly valuable in the market's view at this juncture.

Intrinsically, Appalachia remains one of the most strategically important gas plays in North America. Eventually, amid all the obstacles it faces, it has arguably the most potential of any shale gas field and could develop into one of the most profitable shale gas fields in the world for decades to come.

Retrenching

These challenges are certainly testing the mettle of Appalachian producers. Producers' intense focus on cash flow has multiple long-term benefits. First, it strengthens balance sheets and makes bankruptcy a more remote concern. Second, the limitations on production growth set a course towards price correction. Third, if and when prices do drift upward, more and more acres become economic. Companies are optimistic about their future. It is notable that Appalachian shareholder returns are manifesting themselves mostly in the form of share buybacks as opposed to dividends. That demonstrates companies believe they are intrinsically undervalued. Remember, the geology and hydrocarbons are there, the question is how cheaply they can be produced. Possibly the most challenging gas environment has forced Appalachian producers to have among the lowest development and operating costs anywhere. Therefore, if producers can survive this, then they can survive and thrive almost anywhere. That's good, because in the future this gas will have places to go.

Oversupply Doesn't Mean Lack of Demand

One constant positive for Appalachian producers is that the demand is strong and growing. Platts Analytics estimates that around **80 Tcf** of new supply is needed in the U.S. through 2023. Appalachia is expected to supply 38% of that figure. Even with all of the associated gas produced in the Permian right now (which also has logistics issues) it's not enough. Gas will flow into the Gulf Coast and Appalachia will help lead the way. Globally, natural gas is the **only fossil fuel** expected to grow in global demand all the way through 2035.

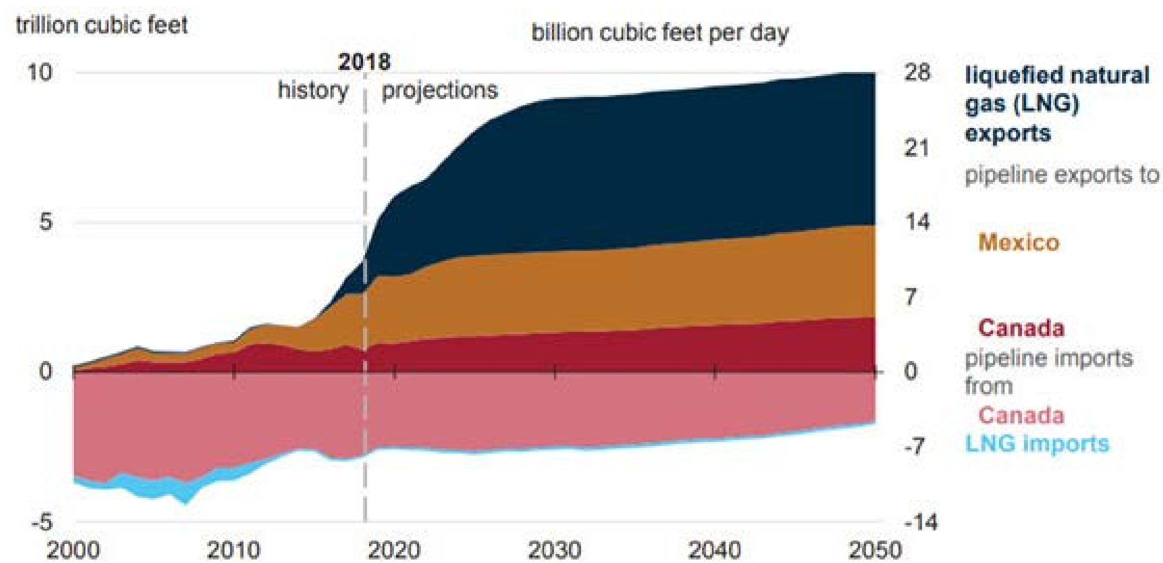
Appalachian Basin

Valuation Implications (cont.)

Exports and the LNG Market

The enduring upside for valuations in Appalachia is capitalizing on what's already in motion: U.S. domination of the worldwide LNG market. It's not there today, but it is on its way. Between 2017 and 2027, LNG export capacity in the U.S. will have grown tenfold from around 3 Bcf per day to approximately 34 Bcf per day. Price relief for producers could be just a tanker away. Wallowing at $2.50 per Mcf domestically is tough; selling LNG to end markets at up to $9.00 per Mcf is much easier. Global prices are expected to average around $7.00 per Mcf going forward. How does the U.S. fit in this global market? Well, worldwide LNG production growth is flagging, just in time for the U.S. to fill the gap.

Natural Gas Trade (Reference Cost)



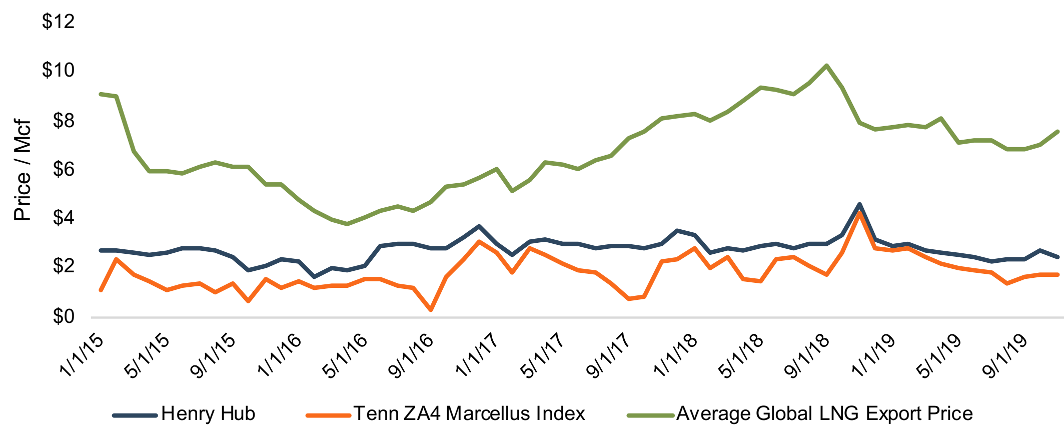
U.S. Energy Information Administration

Appalachian Basin

Valuation Implications (cont.)

The Chinese will need energy to engage in any trade wars and American LNG producers will likely supply it over the next 30 years. The U.S. will make up **67% of the growth** in global LNG exports through 2024 and China will be the biggest buyer. Looking again at the Appalachian pricing chart overlaid with historical LNG export prices, the opportunity becomes clear.

Natural Gas Prices / Mcf



Source: Bloomberg

A drawback is that compared to the gas basins more proximate to the Gulf Coast, Appalachia has fewer LNG export options. The Elba Island LNG facility is operational, and Cove Point has some capacity, but this pales in comparison to Gulf Coast capacity. At the same time there are other demand sources, such as Mexico, that will keep overall gas export demand high. Those factors should allow Marcellus and Utica producers more latitude to meet regional demand for east coast population centers. Even if pipeline constraints remain at a minimum, perhaps a tanker with U.S. gas pulls into Boston Harbor instead of Russian one.

One potential wildcard is the possibility of a renewable energy breakthrough. There is certainly a strong sustained desire by many people for this option. However, economically, there are just no alternative sources that can fill the gap in time to meet domestic and international energy and electricity demand. The gap filler is natural gas, and the basin with long-term solutions is primed to be Appalachia. This is the intrinsic valuation premise keeping long-term investors on board.

Market Valuations & Transaction History

It was a quiet year for M&A in Appalachia, as only a handful of transactions occurred. Surging associated gas production in places like the Permian and Bakken have kept a lid on gas prices, which have largely remained between $2 and $3/mmbtu for the year. Near-term expectations aren't much better, with futures prices below $3 through 2029. Management teams were likely preoccupied with various corporate and capital structure issues instead of changes to the underlying reserve base. However, a bright spot is the **easing of takeaway constraints** that previously plagued the region.

A table detailing E&P transaction activity in Appalachia during 2019 is shown below. Overall, deal count and average deal size declined **relative to 2018**. Diversified Gas & Oil's acquisition of HG Energy II was the only non-royalty transaction of meaningful size during the year. Cabot **recently announced** a $256 million divestiture of its 20% interest in NextEra Energy's Meade Pipeline, though that transaction is not included in the E&P transactions listed below.

Transactions in the Appalachian Basin

Announced Date	Buyer	Seller	Deal Value ($MM)	$ / Acre	$ / Boepd
10/21/19	Undisclosed Buyer	Range Resources Corp[1]	$150	$10,714	$94,737
7/19/19	Undisclosed Buyer	Range Resources Corp	34	1,700	nm
7/19/19	Lime Rock Partners, Franco-Nevada Corporation	Range Resources Corp[1]	600	10,714	94,737
4/3/19	Pin Oak Energy Partners	Royal Dutch Shell, SWEPI LP	na	nm	nm
3/28/19	Diversified Gas & Oil	HG Energy II LLC	400	nm	20,690
Median			**$275**	**$10,714**	**$94,737**
Average			**$296**	**$7,710**	**$70,054**

Source: Shale Experts

1Reflects Range Resources ORRI transaction. Acreage multiple based on normalized 1/8th royalty acres.

Market Valuations & Transaction History (cont.)

Range Resources ORRI Sales

Range Resources was the most active market participant in the basin with two overriding royalty interest (ORRI) sales and the sale of **20,000 non-producing acres in Pennsylvania**. The company intends to use the proceeds to pay down debt, offsetting much of the lost cash flow from the assets with decreased interest expense. The company also announced a **$100 million** share repurchase program.

Diversified Gas & Oil Acquisition of Unconventional Assets from HG Energy II

Diversified Gas & Oil acquired **107 gross producing wells** and related surface rights from HG Energy II. The acquisition is consistent with the company's strategy of buying mature, low-decline PDP assets in Appalachia. However, the transaction does represent somewhat of a departure from the company's historical focus on conventional (non-shale) assets. Management indicated that the transaction would be accretive on various per-share metrics including earnings and free cash flow.

Operators Focused on Changes to Corporate and Capital Structure Rather than Asset Base

While it has been a quiet year in Appalachia on the M&A front, it was a tumultuous year for management teams and board members.

Toby and Derek Rice's proxy battle for control of EQT made headlines during the first half of the year. The Rice brothers cited EQT's poor operational performance after its acquisition of Rice Energy as a reason to shake up management and the board. The brothers proposed a **business plan** which they indicated would generate an estimated incremental $400-600 million of pre-tax cash flow and unlock shareholder value. They **succeeded in July,** with Toby Rice replacing Robert McNally as President and CEO of EQT. An organizational streamlining was **announced in September**, which included a 23% reduction in employees.

Gulfport Energy, which has been **targeted by activist investor Firefly Value Partners**, announced a **$400 million** stock repurchase program in January 2019. However, the company suspended the program in November, citing **"current market conditions and a weak near-term gas price outlook."** The same press release also announced that the

Market Valuations & Transaction History (cont.)

company reduced its headcount by 13%, two board members were stepping down, and the chairman of the board would not seek re-election at the next shareholder meeting.

Diversified Gas & Oil Company **announced a novel financing** transaction that may pave the way for other E&Ps looking for creative ways to fund operations. The company created a special purpose vehicle that issued non-recourse, asset-backed securities collateralized by a working interest in the company's PDP assets. The company plans to utilize the proceeds from the financing to pay down borrowings on its existing revolving credit facility.

Antero Resource's midstream affiliate, Antero Midstream (AM), **completed one of the more complicated MLP simplifications** earlier in 2019. In June, after Warburg Pincus divested its remaining ownership interest in the company, Warburg's **two board members** resigned, reducing Antero's board to just seven directors. In December, **Antero announced** a $750 million to $1 billion asset sale program, which the company kicked off by selling $100 million of AM shares back to the midstream affiliate. Management indicated that future asset sales could consist of "lease acreage, minerals, producing properties, hedge restructuring or sale of AM shares to Antero Midstream." As management teams work to fix capital structures through potential asset sales, 2020 might be a more active year for transactions in the basin.

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.

					as of 12/31/2019		
Company Name	**Ticker**	**12/31/2019 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	$349,815	2.33%	13.6%	9.9x	3,963	$88,260
Royal Dutch Shell PLC	RDS/A	$312,178	1.22%	18.7%	4.6x	3,664	$85,211
Chevron Corp	CVX	$254,081	10.77%	24.1%	7.2x	3,076	$82,588
BP PLC	BP	$185,057	-0.47%	10.3%	6.4x	3,798	$48,727
Equinor ASA	EQNR	$78,039	-5.95%	39.9%	2.8x	2,114	$36,923
Group Median			**1.22%**	**18.7%**	**6.4x**	**3,664**	**$82,588**
Global E&P							
Marathon Oil Corp	MRO	$15,432	-5.30%	70.5%	4.1x	418	$36,960
Hess Corp	HES	$26,935	64.96%	51.1%	8.2x	298	$90,241
ConocoPhillips	COP	$79,072	4.30%	48.3%	4.7x	1,314	$60,168
Occidental Petroleum Corp	OXY	$95,445	-32.86%	39.3%	12.9x	953	$100,125
Noble Energy Inc	NBL	$20,205	32.41%	24.4%	18.4x	360	$56,144
Apache Corp	APA	$20,279	-2.51%	51.8%	6.0x	461	$43,979
Murphy Oil Corp	MUR	$7,482	14.58%	74.7%	3.6x	182	$41,177
Group Median			**4.30%**	**51.1%**	**6.0x**	**418**	**$56,144**

Source: Bloomberg L.P.

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

Company Name	Ticker	12/31/2019 Enterprise Value	YoY % Change in Stock Price	EBITDAX Margin	EV/ EBITDAX (as of 12/31/2019)	Daily Production (mboe/d) (as of 12/31/2019)	Price per Flowing Barrel* (as of 12/31/2019)
North American E&P							
Encana Corp	ECA	$14,262	-18.86%	51.5%	3.7x	566	$25,206
Devon Energy Corp	DVN	$13,158	15.22%	45.8%	3.5x	448	$29,341
QEP Resources Inc	QEP	$3,122	-20.07%	-36.9%	nm	88	$35,601
WPX Energy Inc	WPX	$8,005	21.06%	78.7%	4.3x	166	$48,195
Chesapeake Energy Corp	CHK	$12,655	-60.69%	26.4%	5.3x	488	$25,918
Group Median			**-18.86%**	**45.8%**	**4.0x**	**448**	**$29,341**
Bakken							
Continental Resources Inc/OK	CLR	$18,648	-14.66%	72.1%	5.7x	334	$55,905
Whiting Petroleum Corp	WLL	$3,595	-67.65%	61.4%	3.5x	126	$28,641
Oasis Petroleum Inc	OAS	$4,051	-41.05%	43.3%	4.4x	87	$46,467
Group Median			**-41.05%**	**61.4%**	**4.4x**	**126**	**$46,467**

Source: Bloomberg L.P.

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

Company Name	Ticker	12/31/2019 Enterprise Value	YoY % Change in Stock Price	EBITDAX Margin	EV/ EBITDAX	Daily Production (mboe/d)	Price per Flowing Barrel*
					as of 12/31/2019		
Appalachia							
Range Resources Corp	RRC	$4,406	-49.32%	-30.7%	nm	376	$11,703
EQT Corp	EQT	$8,005	-42.30%	32.5%	5.7x	685	$11,678
Cabot Oil & Gas Corp	COG	$8,277	-22.10%	67.7%	5.3x	393	$21,088
Antero Resources Corp	AR	$7,804	-69.65%	15.4%	11.3x	543	$14,381
Gulfport Energy Corp	GPOR	$2,567	-53.59%	67.9%	2.3x	234	$10,990
Southwestern Energy Co	SWN	$3,711	-29.03%	31.0%	3.4x	355	$10,439
Group Median			**-45.81%**	**31.8%**	**5.3x**	**384**	**$11,691**
Permian Basin							
Concho Resources Inc	CXO	$22,044	-14.81%	52.4%	9.6x	326	$67,579
Parsley Energy Inc	PE	$8,355	18.34%	76.8%	5.9x	146	$57,328
Diamondback Energy Inc	FANG	$21,018	0.17%	74.0%	8.1x	282	$74,583
Jagged Peak Energy Inc	JAG	$2,558	-6.91%	69.6%	6.7x	40	$64,372
Centennial Resource Development Inc/DE	CDEV	$2,301	-58.08%	71.2%	3.6x	75	$30,741
Callon Petroleum Co	CPE	$3,162	-25.58%	75.6%	6.6x	44	$71,183
Laredo Petroleum Inc	LPI	$1,648	-20.72%	22.5%	9.2x	78	$21,108
Pioneer Natural Resources Co	PXD	$27,247	15.09%	30.5%	9.8x	343	$79,546
Cimarex Energy Co	XEC	$7,661	-14.86%	65.5%	5.0x	272	$28,119
Group Median			**-14.81%**	**69.6%**	**6.7x**	**146**	**$64,372**

Source: Bloomberg L.P.

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

Company Name	Ticker	12/31/2019 Enterprise Value	YoY % Change in Stock Price	EBITDAX Margin	as of 12/31/2019 EV/ EBITDAX	as of 12/31/2019 Daily Production (mboe/d)	as of 12/31/2019 Price per Flowing Barrel*
Eagle Ford							
EOG Resources Inc	EOG	$53,192	-3.96%	49.6%	6.3x	817	$65,097
Magnolia Oil & Gas Corp	MGY	$3,489	12.22%	73.1%	5.0x	68	$51,271
SilverBow Resources Inc	SBOW	$600	-58.12%	72.6%	2.7x	39	$15,491
Penn Virginia Corp	PVAC	$1,013	-43.86%	73.9%	3.0x	28	$36,501
Group Median			**-23.91%**	**72.6%**	**3.0x**	**67**	**$43,886**
OVERALL MEDIAN			**-14.66%**	**51.3%**	**5.5x**	**338**	**$43,979**

Source: Bloomberg L.P.

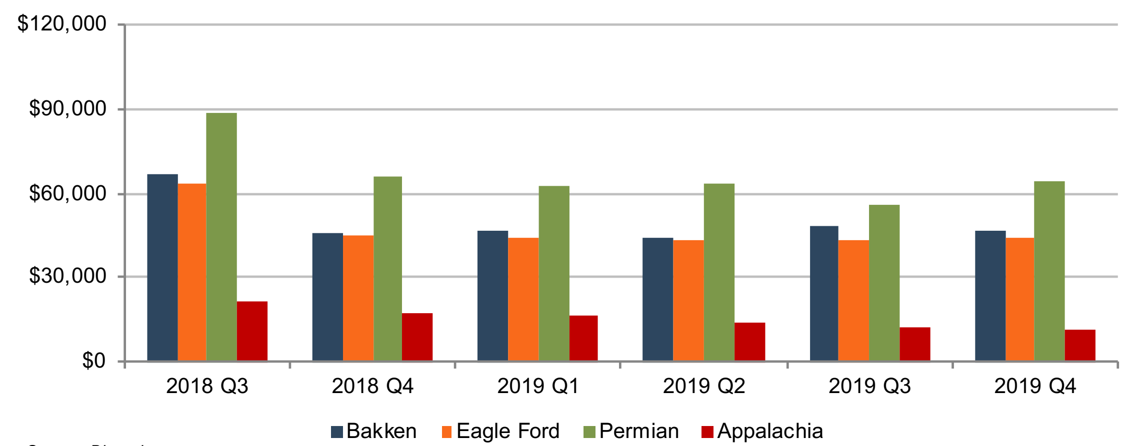
- Price per Flowing Barrel is EV/daily production ($/boe/d)
- We review 10-K's and annual reports from guideline companies to ensure companies continue to operate in the regions and groups we have identified.

Appendix A

Selected Public Company Information

The following graph depicts the median of EV/production multiples, also known as price per flowing barrel, at the end of the past six quarters. As has been the case for some time now, operators in the Permian continue to lead the other regions in terms of valuation. The Permian saw an increase (16%) in its price per flowing barrel in the fourth quarter. The Eagle Ford was the only other basin covered that saw an increase (2%) in its price per flowing barrel, with Appalachia and Bakken both declining 3%. Low commodity prices have negatively impacted operators regardless of region, as all four basins have seen a decline in price per flowing barrel in the range of 31% to 46% since Q3 2018.

Price per Flowing Barrel



Source: Bloomberg

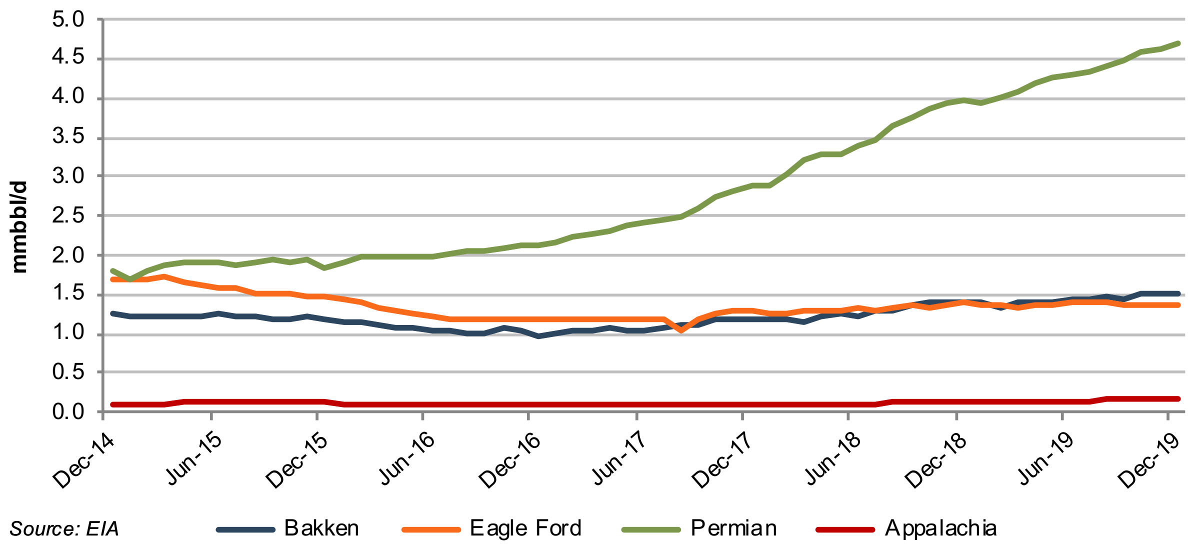
- Price per Flowing Barrel is EV/ daily production ($/boe/d)
- This is simply a graphic depiction of median figures of our selected public companies for each region. This should be interpreted solely in the context of relative valuation between the various basins over time. Bloomberg aggregates this 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

Despite being far from a focal point, Appalachia crude production increased 37.4% over the past year. Permian crude oil production increased 17.8% despite its significant size as it continues to dominate other basins. On the other hand, the Eagle Ford experienced negative production growth of 2.5% over the year.

Daily Production of Crude Oil



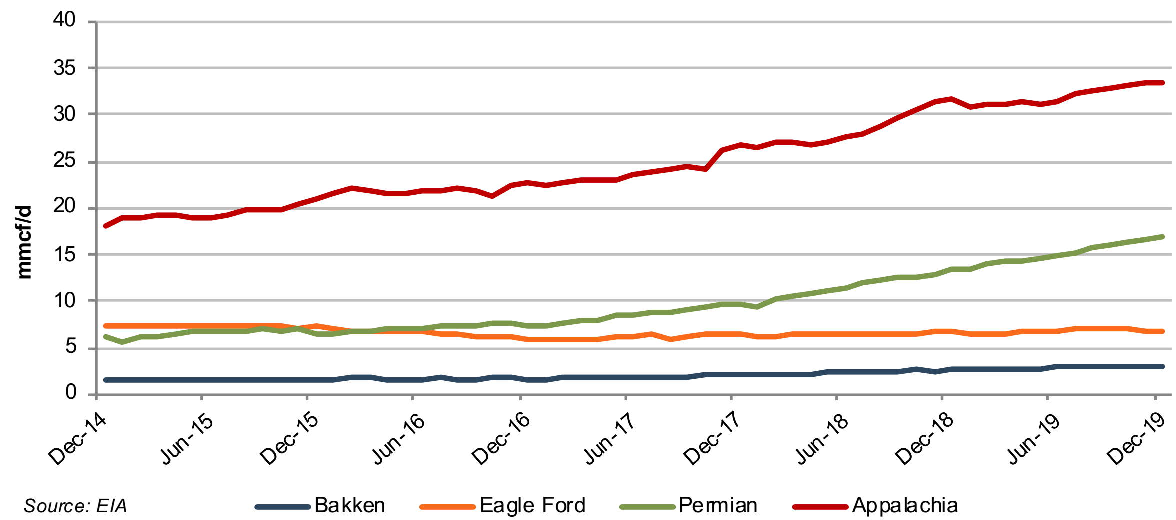
Source: EIA

Appendix B

Production

Natural gas production in the Appalachia has increased 5.8% over the last year, whereas Permian production has grown 25.1% in the same time frame. Growth in the Eagle Ford was mild at 1.2% year-over-year, and growth in the Bakken was 16%. Growth in the last six months was dominated by the Permian at 13.8%, followed by the Bakken and Appalachia at 7.4% and 6.3%, respectively. The Eagle Ford natural gas growth followed a similar trend as its crude production and declined by 1% since June.

Daily Production of Natural Gas



Source: EIA

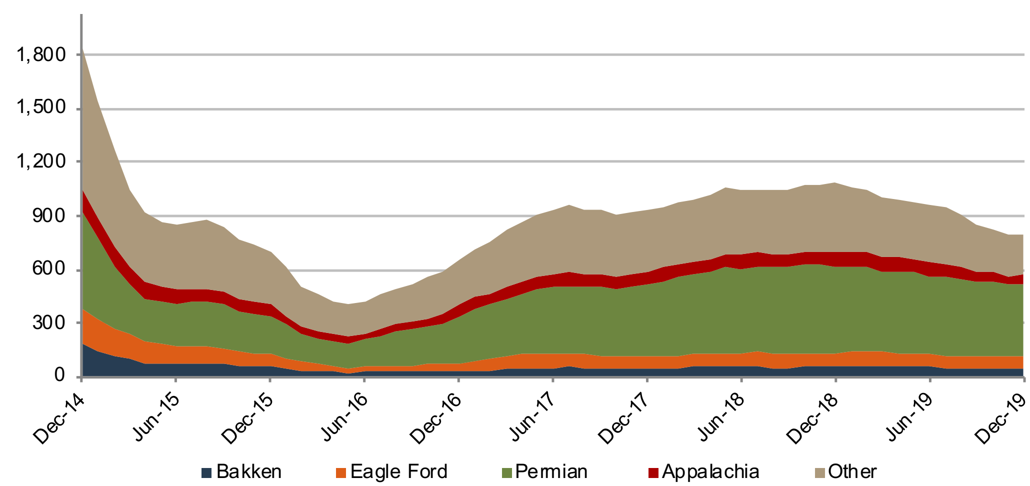
Appendix B

Rig Count

Baker Hughes collects and publishes information regarding active drilling rigs in the United States 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 United States as of December 31, 2019 stood at 802, a 6.6% decrease from September 30, and a 25.9% decline from December 2018. The rig count in the Appalachia at the decreased from 74 to 52 rigs in 2019 as E&P operators focused on not overrunning their capex budgets to appease investors.

Rig Count by Region



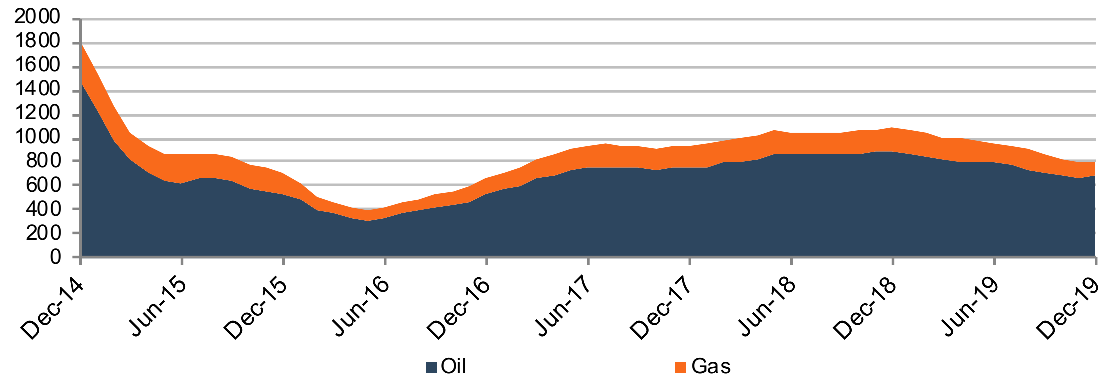
Source: Baker Hughes

[1] Calculations based on monthly crude oil and gas production and EIA drilling report by region.

Appendix B

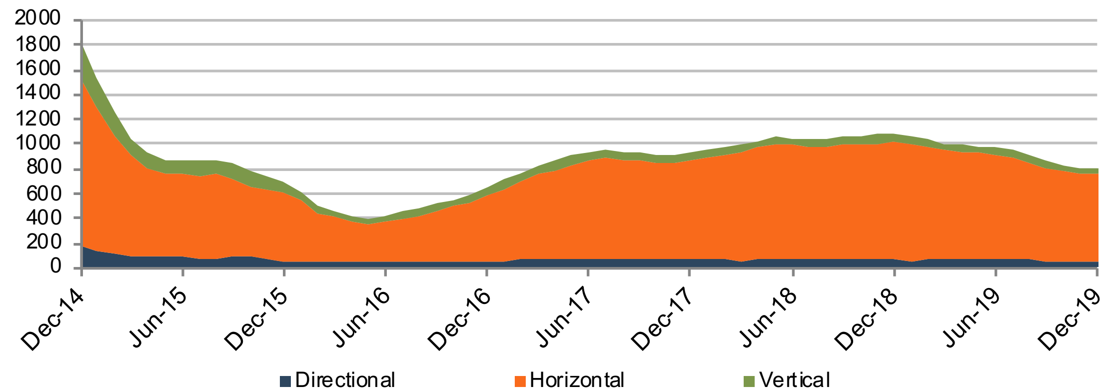
Rig Count

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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