



FIRST QUARTER 2020  
**NORTH  
AMERICAN  
NATURAL GAS**

**COMMENTARY | FIRST QUARTER 2020**

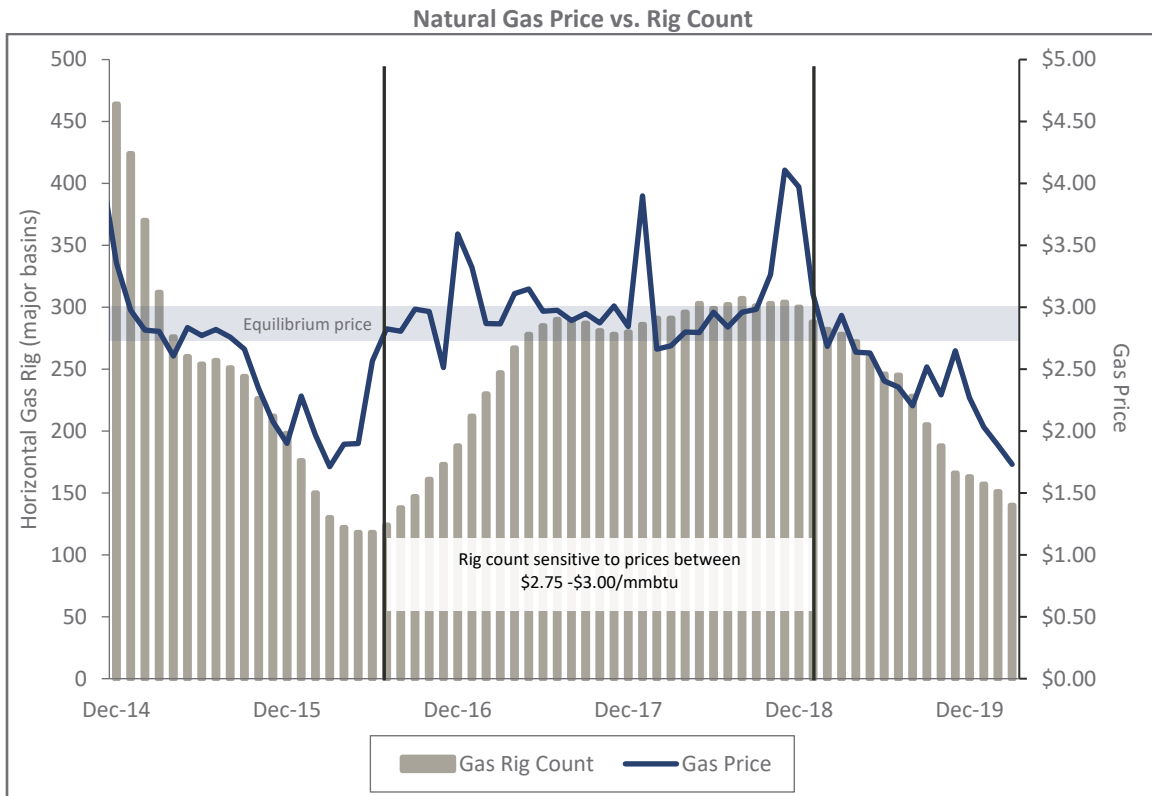
# COMMENTARY

## The Role of Capital in Determining the Cycle

As we discussed in our last letter, our natural gas thesis has been premised on the idea that the significant increase in natural gas demand and the exhaustion of low-cost drilling inventory would lead to a structural increase in natural gas prices that would support an upward revaluation of natural gas equities.

On the demand front, the thesis has played out largely as we had expected. LNG demand has increased by over 8-bcf/d, power demand has risen by roughly 5-bcf/d, and exports to Mexico have grown by nearly 3-bcf/d over the last several years. If anything, demand growth has been greater than anticipated. In addition, we expect natural gas to continue to take share from coal and oil globally given the favorable economic and environmental benefits associated with using more natural gas in the energy mix.

On the supply side of things, our thesis has not played out **yet** – but not because we are wrong about the cost of supply in dry gas basins or the depletion of low-cost drilling inventory. To the contrary, our analysis of well-level data and company financials clearly shows that natural gas companies need gas prices to be in the \$2.70-3.00 per mcf range to have enough cash flow to replace production and meet the call on shale gas supply. When prices fall below this range, drilling activity declines like clockwork, as shown below. The changes in the rig count confirm the data.



Source: SailingStone Capital Partners LLC, U.S. EIA and DrillingInfo, 2Q 2020

In addition, the increased pace of drilling in 2017-18, which has helped to create the temporary supply overhang and price weakness in 2019-20, has in fact reduced the inventory of low-cost shale gas wells more quickly than we had expected, as shown below. Over time, natural gas prices will need to move above the \$2.70-3.00 per mcf range to clear the market as the cost of supply increases. This is quite bullish long-term.

Remaining Economic Inventory<sup>(1)</sup> by Play and Breakeven Gas Price

Region	< \$2.50	\$2.50 to \$3.00	> \$3.00	Total
NE Marcellus	308	816	2,367	3,491
SW Marcellus	1422	2,296	2,248	5,966
Utica	-	-	3,476	3,476
<b>Total Appalachia</b>	<b>1,730</b>	<b>3,112</b>	<b>8,091</b>	<b>12,933</b>
Haynesville	-	879	1,225	2,104
<b>Total Core</b>	<b>1,730</b>	<b>3,991</b>	<b>9,316</b>	<b>15,037</b>
<i>% of Total</i>	<i>12%</i>	<i>27%</i>	<i>62%</i>	<i>100%</i>

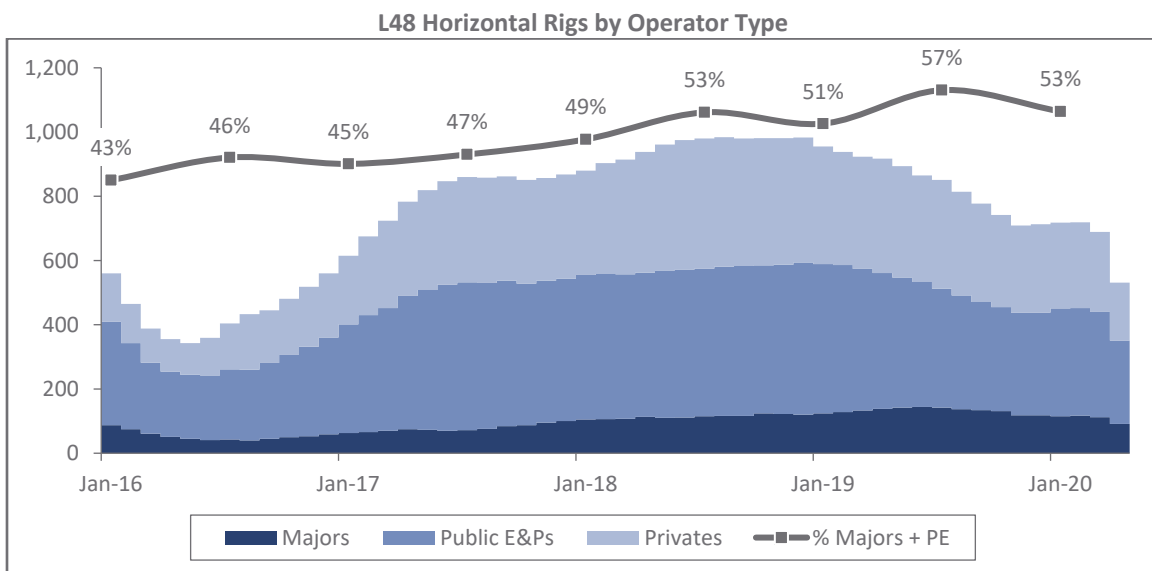
(1) Inventory counts normalized to 10,000' lateral length.  
 Source: SailingStone Capital Partners LLC, 2Q 2020

So, where were we wrong? The short answer is capital. After conducting post-mortems on our basin supply models, it is clear that we underestimated drilling activity (as opposed to well productivity) and supply growth in a few basins: the Permian and STACK/SCOOP oil plays and the Utica and Haynesville shale gas plays.

Our underlying assumption was that capital invested would approximate the cash flows generated. While this is a reasonable assumption across the cycle, it can lead to underestimates of drilling activity and supply growth during periods when the capital markets are open. This was the case in 2013-14, when the public equity and the high yield markets supported a significant increase in drilling activity that led to the downturn in 2015.

After the 2015 downturn, we had assumed that E&P companies would focus more on generating free cash flow and less on growing production. Furthermore, we expected the public equity and high yield markets to remain relatively closed given the number of bankruptcies and near-death experiences that occurred during the previous cycle.

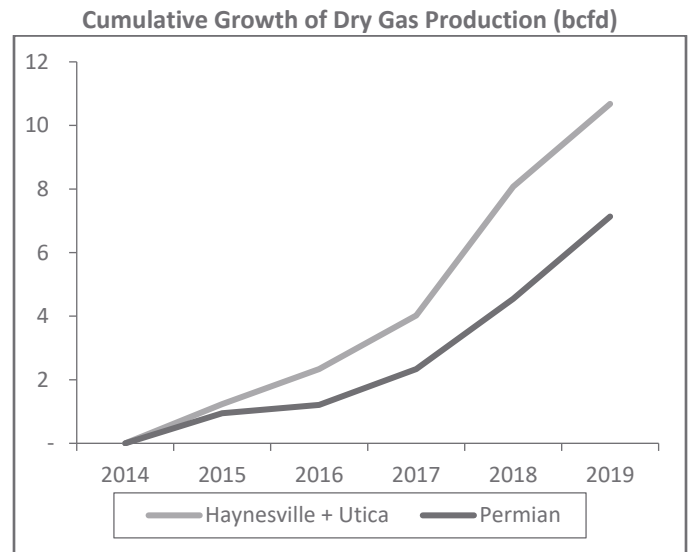
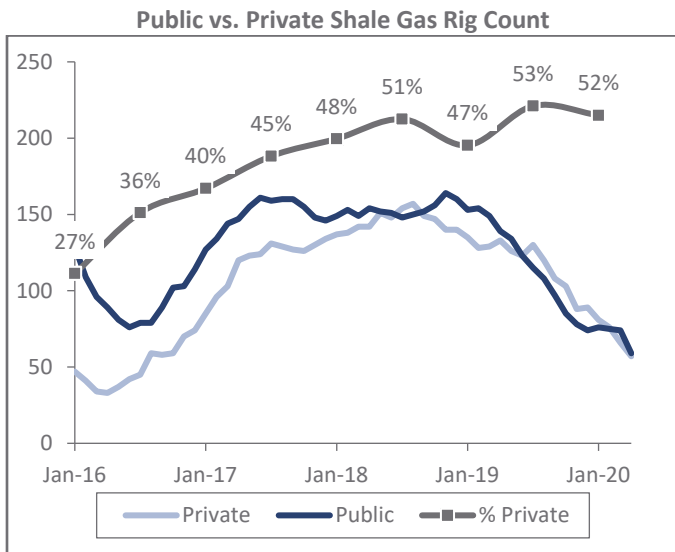
We were right about the first assumption, but only as it applied to the publicly traded E&P companies, which, in aggregate, spent less than the cash flow they generated. What we were surprised by was the ramp up in drilling activity by the integrated oil companies and the private equity (PE)-backed E&P companies. The reason why this activity was so surprising to us was that we generally assumed that both groups were more returns-focused than the publicly traded E&P companies. Clearly this isn't the case.



Source: DrillingInfo, 2Q 2020

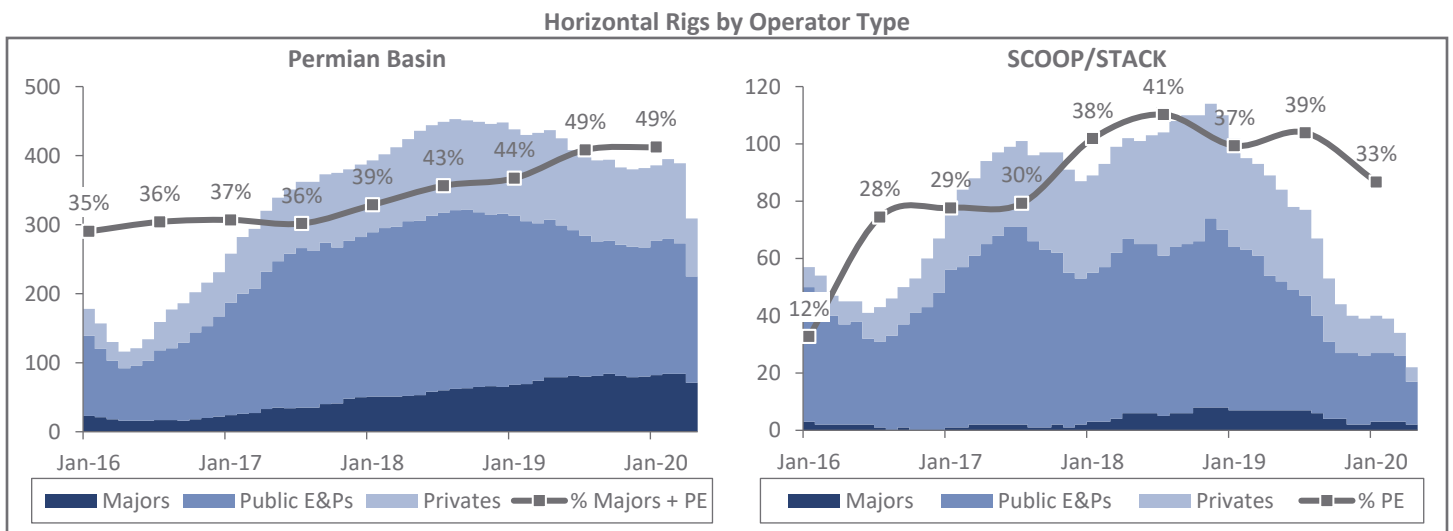
The integrated oil companies dramatically increased their presence in the Permian Basin while the PE-backed companies increased their activity, quite frankly, anywhere where they could. A significant portion of the increase in PE-backed activity was in higher-cost basins, such as the Utica Shale, the Haynesville Shale, and the STACK/SCOOP plays in Oklahoma, which many publicly traded companies exited after the 2015 downturn.

While the publicly traded E&P companies have been much more disciplined since 2015, the reality is that the integrated oil companies and PE-backed E&P companies effectively took their place in chasing volumes over returns. The scale has been material too. PE-backed drilling activity, for instance, has increased from less than 20% of total gas drilling in 2014 to over 50% today. What's more, PE-backed companies represent roughly 75% of drilling activity in higher-cost basins such as the Haynesville and Utica Shale plays. Production growth from these two basins has been greater than the growth in associated gas supply from the Permian Basin.



Source: SailingStone Capital Partners LLC, DrillingInfo, 2Q 2020

The rapid growth in associated gas production hasn't been helpful either. While associated gas isn't the reason for the downturn in the natural gas market, as we have explained in previous letters and white papers, the call on shale gas would have been greater without it. And, the major oil companies and private equity funds have played a significant role in the growth of associated gas volumes as well.



Source: SailingStone Capital Partners LLC, DrillingInfo, 2Q 2020

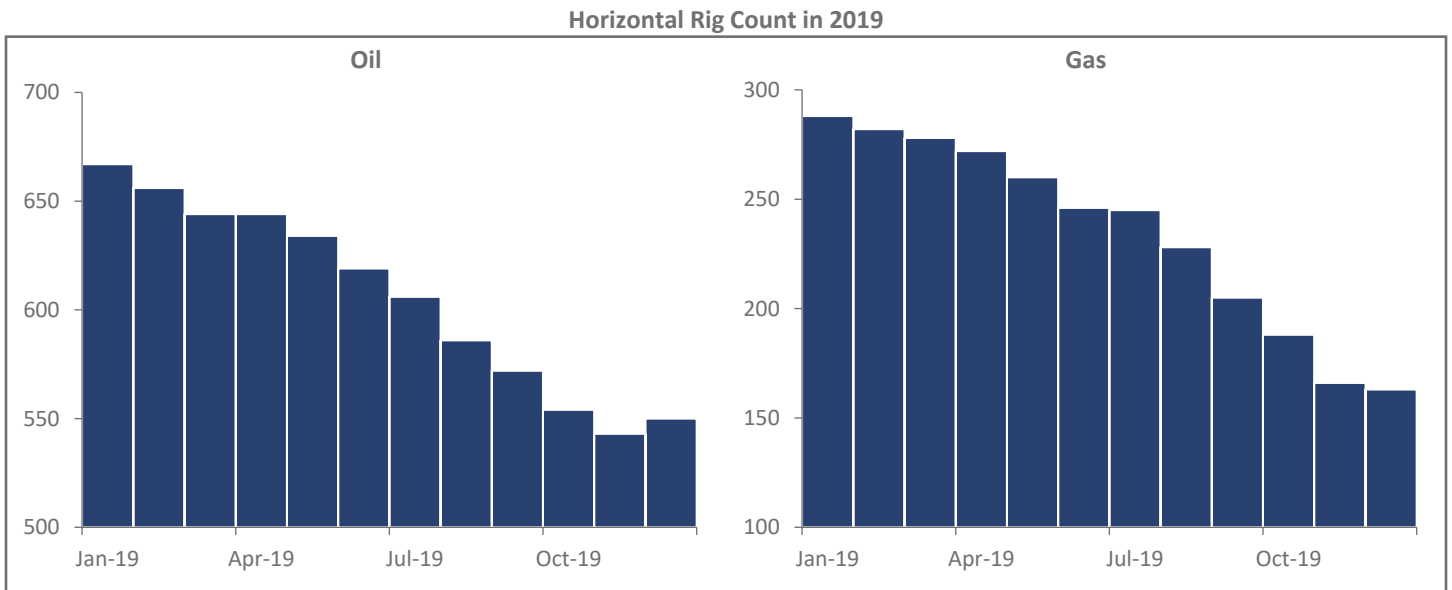
As a result, natural gas supply increased more than we had originally anticipated in 2018/19 due to the higher-than-expected level of spending by private equity and the integrated oil companies, as opposed to a meaningful improvement in well productivity. In 2018, natural gas production increased by 10.7-bcf/d, with 61% of that growth driven by increased associated gas production and 39% coming from higher output from the Utica and Haynesville Shale plays. In 2019, supply rose by an additional 7.6-bcf/d, with 71% coming from growth in associated gas and 28% from continued increase in production from the Utica and Haynesville Shale basins.

The cyclical increase in supply, which is not sustainable, has temporarily masked the continued structural improvement in the natural gas market. This has confused most investors.

**As Capital Flows Reverse, the Cyclical Outlook Improves**

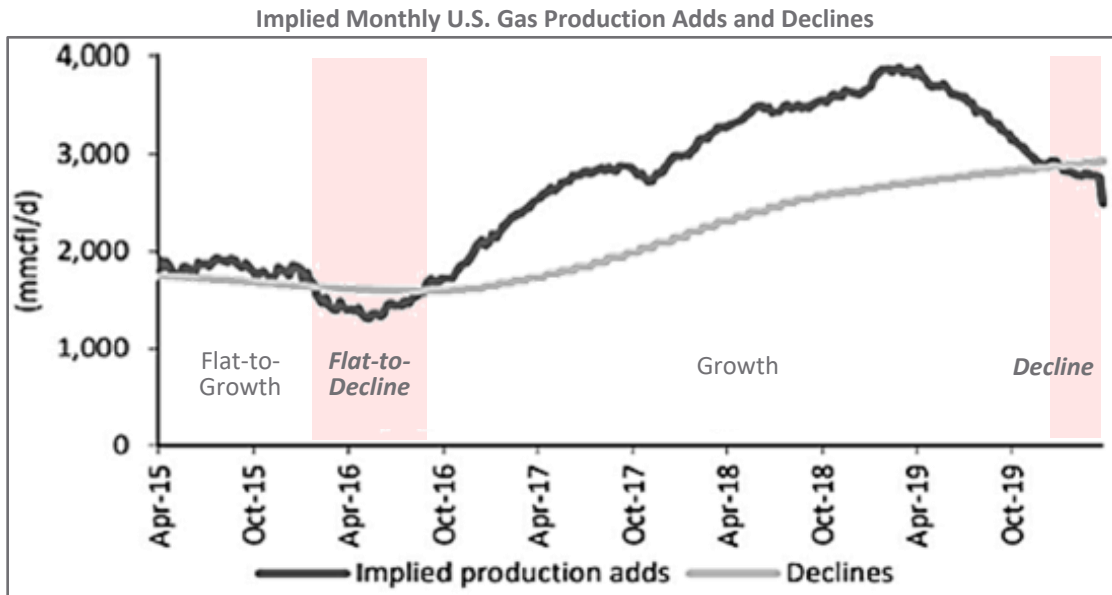
While we have been wrong about the trajectory, we do not believe that we are wrong about the drivers that will lead to a meaningful improvement in the natural gas market. Demand growth remains strong, the growth in associated gas production is slowing on a secular and cyclical basis, and the inventory of low-cost shale gas drilling locations is being exhausted. The rush of capital has only delayed the timing of the secular improvement.

However, capital flows are cyclical, driven in large part by human behavior. Capital comes in when times are good, and capital flees when times are bad – just the opposite of what should happen. In the same way that capital inflows dampened the cyclical outlook for natural gas in 2019-20, capital outflows are now improving the cyclical outlook. In 2019, prior to the current economic downturn, oil drilling fell by 20% and natural gas drilling activity declined by 45%.



Source: DrillingInfo, 2Q 2020

As a result, production began to decline in several basins by late 2019. The chart below shows that total natural gas production in the U.S. began to decline by late 2019 as production added from new wells fell below underlying depletion of existing wells.



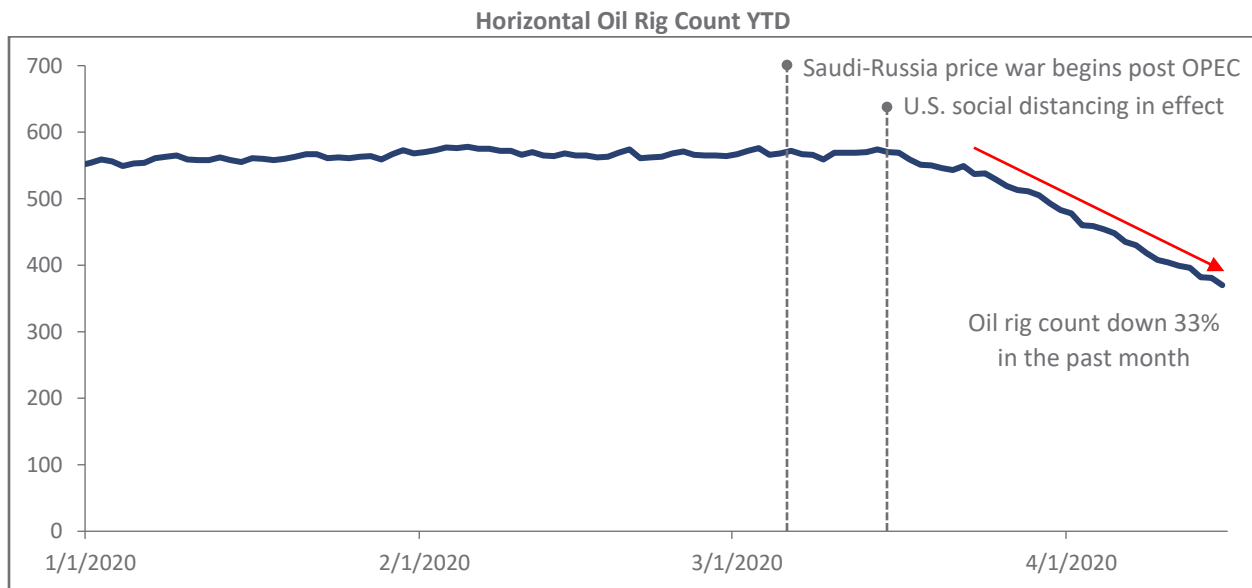
Source: Desjardin, 2Q 2020

While capital inflows have temporarily offset the secular improvement in the natural gas market, the cyclical outlook for natural gas has improved dramatically due to the significant decline in drilling activity. In fact, we believe that the cyclical outlook for natural gas hasn't been this favorable in 10 years. And that was before the recent collapse in the oil market.

**The Great Shale Oil Restructuring = The Great Shale Gas Renaissance**

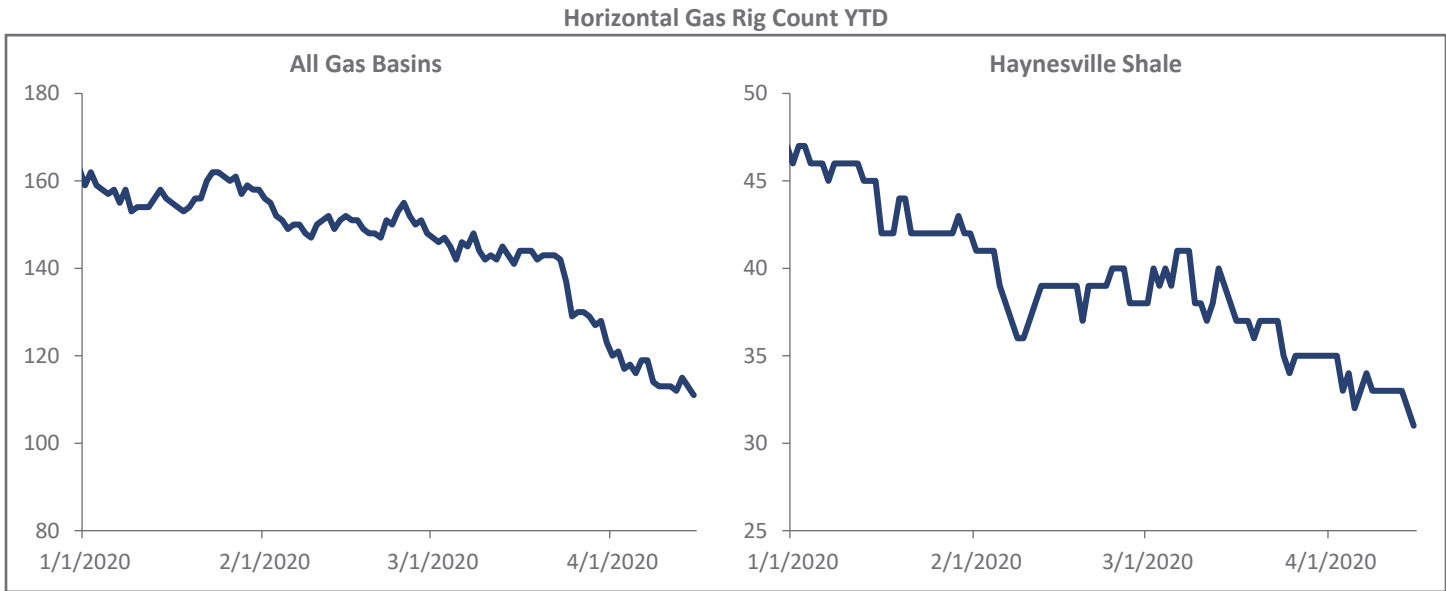
The COVID-19 pandemic and economic downturn have resulted in a collapse in oil demand and prices since oil is primarily used as a transportation fuel. Given the sharp selloff in prices at the wellhead (which are below WTI spot prices) and the uncertain outlook, most companies, including the integrated oil companies, are significantly reducing their drilling activity. Many will be forced to shut-in existing wells, too.

After declining by 20% in 2019, the oil rig count has fallen by another 33% so far this year. Drilling activity in the Permian has declined by 27% already and higher-cost plays, such as the STACK/SCOOP, have seen even larger declines. Based on initial estimates, it is expected that the rig count in the U.S. will fall by as much as 60-70% in 2020.



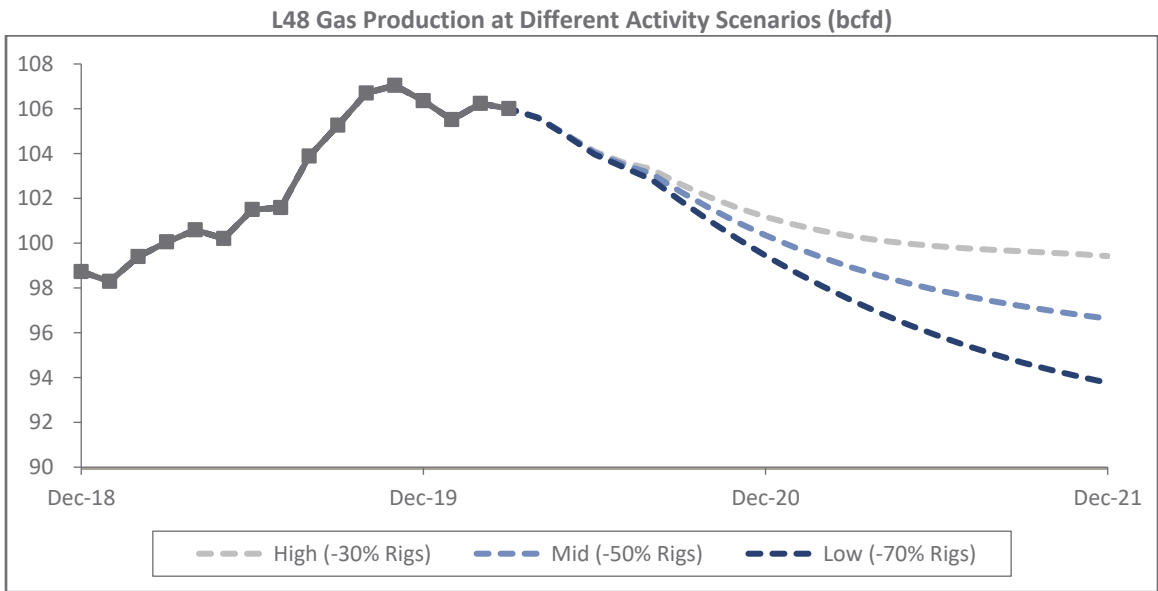
Source: DrillingInfo, 2Q 2020

In addition, the natural gas rig count has continued to decline with spot prices below \$2 per mcf. So far this year, drilling activity has declined by 32% after falling 45% last year. Similar to oil, higher-cost plays have been more impacted. In the Haynesville Shale, for instance, the rig count has declined by more than 30% this year after falling just 20% in 2019. Since mid-2019, completion crews in the Haynesville Shale have declined by two-thirds.



Source: DrillingInfo, 2Q 2020

We have updated our basin supply models to try to quantify the potential supply impact of the decline in drilling activity. If we assume that the oil rig count declines by 50%, we would expect natural gas production to decline by roughly 6-bcf/d, or 5.6%, in 2020 and 4-bcf/d, or 3.7%, in 2021. If the rig count declines by 70%, natural gas supply could drop by approximately 7-bcf/d, or 6.5%, in 2020 and 6-bcf/d, or 5.7%, in 2021. In our forecast, we assume that the natural gas rig count remains flat at the current level. In addition, we have not included the potential impact of well shut-ins in this analysis even though they are likely for some period of time. Shut-ins would obviously increase the projected decline in natural gas production.



Source: SailingStone Capital Partners LLC, DrillingInfo, U.S. EIA, 2Q 2020



Since natural gas demand will be far less impacted by the economic downturn than oil demand and since it is used primarily to generate power and heat, production declines of this magnitude are likely to result in a significant increase in natural gas prices over the next several months and years. In fact, this is probably the most favorable cyclical backdrop for natural gas since 2001.

More importantly, the magnitude of the downturn in the oil market, and the impact that it will have on shale oil companies, which sit at the high end of the global cost curve, will have a lasting effect on the shale oil industry, as we discussed in our [recent white paper](#). Banks will be less willing to lend, private equity will have less capital, and the cost of capital for most shale oil companies will increase substantially going forward. As a result, there will likely be fewer shale oil companies, and those companies that do survive will likely make fewer long-term growth commitments. In short, shale oil production growth is likely going to be much lower in the future even when oil prices do recover.

Natural gas should emerge as one of the biggest beneficiaries of the latest energy crisis – along with OPEC. In the same way that the unpredictable behavior of private equity and the integrated oil companies delayed the realization of the ongoing structural improvement in the natural gas market, the COVID-19 pandemic and its impact on the shale oil industry is now accelerating the transition to a much more normal and favorable natural gas market.

The structural improvement in the natural gas market that has been masked by the cyclical downturns in 2015 and 2019 should become more obvious to investors as natural gas prices move higher and as the low-cost producers begin to generate significant free cash flow and attractive returns for shareholders. We haven't been this excited about the prospects for natural gas companies in a very long time – and we have been bullish for a while.

#### **A Few Words on ESG**

We believe that the increased investor focus on ESG issues is a very positive development. As longer-term investors in the natural resource sector, we have always incorporated environmental, safety, and governance issues in our investment process and in our assessment of risk.

We believe that active managers play a critical role in assessing the performance of companies and sectors from an ESG perspective. Too many investors rely on simple screens and outsourced providers to help assess what are complex ESG issues. A more thoughtful and nuanced approach is needed.

As it relates to the natural resource sector, many investors have chosen to divest fossil fuels and other commodity producers altogether. We believe that this approach is also overly simplistic and potentially counterproductive. The reality is that in order to meet the growing demand for energy and do so in a more environmentally-sound way, significant investments will need to be made in the producers of commodities such as natural gas, copper, lithium, and other minerals. Increased supply of these commodities is necessary to support the continued transition away from coal and oil and toward natural gas and renewables.

Natural gas and renewables have played an important role in reducing CO<sub>2</sub> emissions in the U.S. by displacing coal and oil, and this will need to continue globally in order to reduce the emissions of CO<sub>2</sub> and other pollutants, such as SO<sub>x</sub>, NO<sub>x</sub>, and mercury. ESG-focused investors should focus as much on investment going forward as they have divestment in the past. We suspect that the discussion will evolve when the sector outperforms the broader markets and the cost related to excluding natural resources in portfolios becomes more obvious than it has been over the last several years.

Over time, the ESG focus should evolve so that capital is being provided to those companies that provide the commodities that are needed to support the energy transition in the most capital-efficient and environmentally friendly way, by reducing methane emissions, minimizing their industrial footprint, maintaining positive community relations, and promoting sound safety and governance practices. ETFs will have a hard time doing the work that is required on the ground and at production facilities to meet the evolving standards that should be required by investors who care more about ESG issues than simply checking a box.

Given the importance of tackling environmental issues sooner rather than later, and the role that natural gas will have to play in order to reduce CO<sub>2</sub> emissions globally, we believe that investors should focus increasingly on the investments that are required to accelerate the energy transition and the optimal way to do so from an ESG perspective. This will be the focus of our next white paper.



## STRATEGY UPDATE

While the cyclical environments in 2013-14 and 2016-17 were favorable, the magnitude of the expected decline in production, as well as the lasting impact that the current energy crisis will have on supply going forward, will likely make this cyclical upturn unique in terms of both magnitude and duration.

Nonetheless, given the learnings over the last few years, and the volatility in public marks, we will be watching capital flows and drilling activity closely. If our models suggest that production growth is accelerating too much, we will return the capital irrespective of valuations.

We believe that an opportunistic approach to calling and returning capital is particularly useful in the natural resource sector given the impact that capital can have on the cycle and public marks. As stocks move back toward net asset value, given the improvement in both commodity and company-specific fundamentals, we will begin returning capital to investors – unless an unsustainable increase in drilling activity causes us to return capital sooner. Given our current view of the markets, we anticipate beginning to return capital over the next 12-24 months and would expect all capital to be returned no later than by the end of 2022.

## OUTLOOK

Over the next few years, we believe that \$2.70-3.00/mcf gas will be required to balance the market, albeit with quite a bit of volatility/cyclicality. We expect that prices will oscillate between cash costs, at roughly \$2.00/mcf, in an oversupplied market and the marginal cost of supply in a more normal market.

Our view has been that natural gas prices will need to increase above \$3.00/mcf after 2021-22 due to the depletion of low-cost shale gas inventory and the increasing call on shale gas as associated gas production growth begins to slow. Given the magnitude of the expected decline in associated gas production, the timing of the secular improvement in natural gas prices has been pulled forward. In the next few years, higher prices will be required to incentivize drilling in non-core parts of the Haynesville Shale, Marcellus Shale, and Utica Shale plays.

Long-term natural gas price expectations appear to be radically disconnected from the fundamental outlook, grounded by the decline in gas prices over the last decade. This disconnect has created an unusually attractive investment opportunity for those investors who can see through the short-term volatility.

In our view, the best way to take advantage of the dislocations in the natural gas market is to invest in the few companies that (1) can create value in a low price environment, and (2) have the largest undeveloped acreage positions in lowest-cost shale plays. While the public markets are currently assigning very little value to undeveloped acreage, recent private marks and project-level returns, as highlighted in our past letters, suggest that the acreage is worth quite a bit in a normal commodity price environment. Furthermore, the value of undeveloped acreage is much more sensitive to changes in long-term price expectations than price assumptions over the next few years. As such, these companies have the greatest leverage to rising long-term prices, and the least amount of downside risk associated with any near-term weakness in natural gas prices. It is unusual for Tier 1 assets to be so cheap.

With many natural gas stocks now discounting long-term prices of around \$2.00-2.25/mcf, we believe that the downside risk related to declining price expectations is quite limited. Offsetting concerns regarding low spot prices has been the reduction in costs and the continued improvement in capital efficiency for companies in core parts of the Marcellus and Montney shale plays. As a result, NAV growth is still expected to average in the 10-20% per annum range going forward in a normal price environment. Though the negative returns from beta have temporarily overwhelmed the positive returns related to value creation, we believe that will change as value creation compounds over time and as the outlook for natural gas fundamentals continues to improve.

From an investment perspective, we are focused on the few natural gas projects in North America that we think can generate reasonable returns at prices well below \$2.70-3.00/mcf. Those include the Deep Basin of Alberta, the Montney Shale in British Columbia, and the Marcellus Shale in Pennsylvania and West Virginia. We believe that reinvestment in select projects within these basins will allow some companies to create value even during cyclical downturns in the commodity. This growth in net asset value should help to reduce the near-term price-related downside risk and help bridge the gap to the period when natural gas demand grows more meaningfully. By growing net asset value, maintaining strong financial flexibility, and owning long-dated drilling

inventory, these companies are well positioned to both benefit from the expected increase in natural gas prices and withstand any interim downturns.

Overall, the outlook for the strategy is unusually positive, in our view. Demand growth has remained robust, associated gas production is declining materially, and drilling activity in high-cost shale gas basins has finally corrected. At the same time, valuations in the public market have become much more attractive with most natural gas stocks trading at a large discount to our estimates of PDP value at the depressed futures strip. As such, we do not believe that natural gas equities reflect the improvement in fundamentals and the growth in net asset value that is likely to occur over the next several years. In our opinion, the public equity market continues to undervalue the ability of low-cost producers to reinvest at high rates of return and is likely far too pessimistic about the longer-term outlook for natural gas prices.

Best Regards,

A handwritten signature in black ink that reads "MacKenzie Davis". The signature is fluid and cursive, with a long horizontal stroke at the end.

MacKenzie Davis, CFA

A handwritten signature in black ink that reads "Ken Settles". The signature is cursive and somewhat stylized, with a prominent loop at the end.

Ken Settles, CFA

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