



WILL US NATURAL GAS LEAD THE RECOVERY IN ENERGY?

By Alex Dewar, Raad Alkadiri, Rebecca Fitz, and Jamie Webster

AMID THE DEEPEST CRISIS to face the oil and gas industry in recent memory, US natural gas seems poised for a rapid recovery. While the price of crude oil is widely expected to remain depressed for years to come, US natural gas prices appear to have the potential to rise rapidly.

Henry Hub futures contracts for early 2021 have been trading at around \$3 per million British thermal units (mmbtu), nearly double the 25-year low reached in early April. Some analysts have even predicted that Henry Hub prices will reach \$4/mmbtu or more by 2022. On the back of these bullish price forecasts, equity prices of some leading US gas producers have risen by more than 50% since early March, making them among the best-performing stocks in the US since the outbreak of COVID-19.

Appearances can be deceiving, however. We see several fundamental constraints to sustained US natural gas price increases, and we think that the oversupply of US gas could materially worsen by 2021. Furthermore, many structural challenges to US gas

market growth remain in the medium to long term. Rather than counting on higher gas prices to improve financial performance, US gas producers need to find ways to strengthen their competitiveness—even in a sustained low-price environment.

Widely Different Outlooks

Predictions of a US natural gas market recovery are grounded on expectations of a sharp decline in oil output in the US following the oil price collapse, which would reduce production of associated gas. This outcome would help the sector tackle the deep supply glut in US natural gas that has recently kept gas prices at historically low levels.

Although onshore associated gas production is down 8% since early March, the decline is far too small to bring balance to the oversupplied US market, which began 2020 with a surplus of 2 billion cubic feet per day (BCF/D) of natural gas. At the same time, the ongoing effects of COVID-19 containment measures and the resulting US

economic downturn in gas demand are only now becoming clear.

A scenario-based assessment of US gas market supply and demand balances indicates that the future of the market is uncertain at least through 2021. At one end of the spectrum of possibilities, a combination of a rapid decline in associated gas production and a fast V-shape recovery spurring demand could leave the market with a shortfall of 8 BCF/D by 2021. At the other end, however, a more modest production decline coupled with a U-shape recovery would result in a surplus of 4 BCF/D by 2021. (See Exhibit 1.) While the future direction of the gas market is hard to read, three key structural factors suggest that the latter outlook is the more likely.

First, the impact of an economic downturn on natural gas demand may be greater than anticipated over a longer period. Demand in the industrial sector is quite vulnerable to weakened economic activity. In the past two US recessions—in 2001 and 2009—the drop in industrial consumption of natural gas ranged from 5% to 8%. And in both instances, the recovery in gas demand did not occur until 18 months after the start of the downturn. Already, the current eco-

nomie contraction appears to be much worse than either of those two downturns.

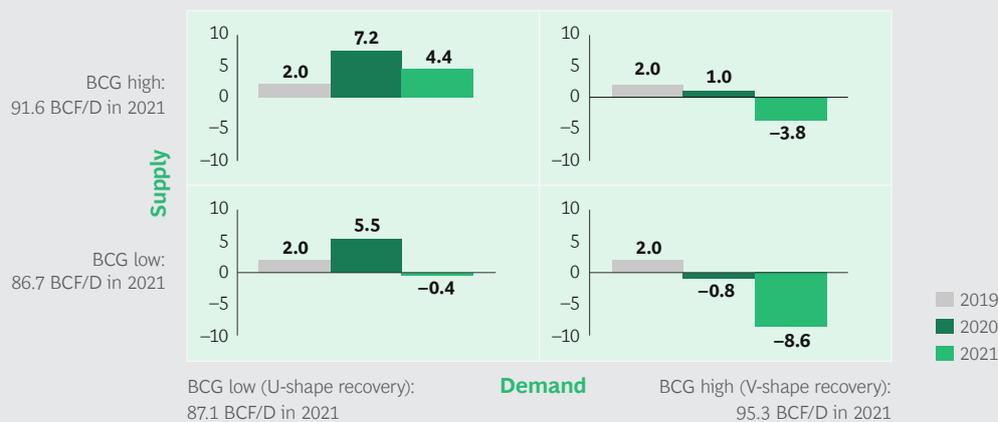
Demand for natural gas in the power generation sector may be more resilient, given that gas-fired generation capacity is set to increase by 12 gigawatts through 2021. Nevertheless, overall demand for natural gas in the power sector is likely to be lower. (See Exhibit 2.) In March and April, daily power consumption in the US was down by more than 10% from pre-COVID-19 levels, with some forecasts suggesting that it might not return to pre-pandemic levels for several years. Furthermore, a rise in natural gas prices may trigger fuel switching in power generation from gas back to coal—particularly above \$3/mmbtu, at which point a wide range of coal capacity is likely to be more cost competitive.

Second, a global supply glut of liquefied natural gas (LNG) is likely to limit growth of US gas exports. Although LNG export capacity in the US continues to increase, utilization rates at liquefaction plants seem set to remain low as LNG spot prices at key international trading hubs remain depressed.

In an oversupplied global LNG market, US LNG cargo cancellations are likely to per-

EXHIBIT 1 | A Supply Surplus Is Likely Through 2020, but the 2021 Balance Is Highly Uncertain

BCG US natural gas supply-demand balance scenarios (BCF/D)

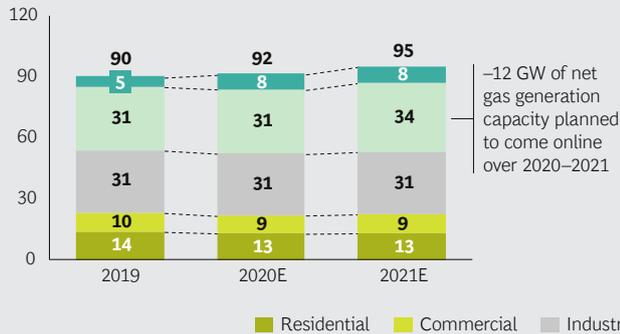


Sources: US Energy Information Administration; BCG analysis.
Note: The high supply + U-shape demand and low supply + V-shape demand are hypothetical extremes; price signals and physical storage limitations would likely smooth out the supply-demand balances in both of these cases. The figures for 2021 are BCG projections. BCF/D = billions of cubic feet per day.

EXHIBIT 2 | Power and Industry Sectors Are Highly Exposed to the Shape of Economic Recovery

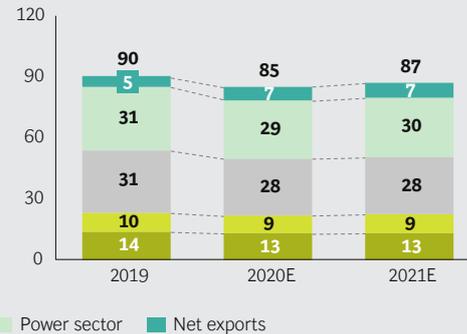
V-shape recovery: Demand grows modestly in 2020, followed in 2021 by a surge in power generation demand

US gas demand in V-shape recovery (BCF/D)



U-shape recovery: Economic downturn depresses demand across all sectors in 2020 and dampens recovery in 2021

US gas demand in U-shape recovery (BCF/D)



Sources: US Energy Information Administration Short-Term Energy Outlook (EIA STEO), April 7, 2020 release; BCG analysis.

Note: The V-shape scenario is based on US EIA STEO in 2020 and BCG analysis in 2021; the U-shape scenario is based on BCG analysis. BCF/D = billions of cubic feet per day; GW = gigawatts.

sist, owing to the flexibility and pricing structure of US LNG contracts. In recent months, US LNG spot price netbacks (sales revenue minus variable costs) to both Europe and Northeast Asia have been less than $-\$1/\text{mmbtu}$. This situation has triggered contract cancellations amounting to more than half of US export capacity in July. (See Exhibit 3.) Going forward, this pricing structure can also provide a natural brake on potential Henry Hub price increases, since too rapid an increase over LNG spot prices in Europe and Asia would likely limit US exports.

Third, US dry gas producers are likely to respond quickly to any price increases by increasing the supply of natural gas. Even before the recent recovery in Henry Hub prices, producers in the Appalachia basin had issued guidance indicating that they expected to see stable to growing production from the region in 2020. Since March, the number of wells drilled in Appalachia has increased by nearly 20%, and the number of applications submitted for permits to drill in the Haynesville shale basin has also risen.

Owing to the recent negative performance of the US shale sector, it seems reasonable

to ask whether operators have the financial capacity to deliver any further growth. Despite past challenges and current high debt levels, multiple shale gas operators have successfully issued debt since March. Most dry gas producers have already reduced costs to break even when the Henry Hub price is in the low $\$2/\text{mmbtu}$ range. As a result, shale gas producers are likely to be able to respond to sustained price increases by growing production.

In light of the impact of the preceding three factors on the supply-demand balance for gas, it is hard to imagine a significant gas price increase above the structural break-even prices of dry gas producers. Producers and investors therefore should not rely on higher prices alone to improve the natural gas sector's fortunes. Instead, they need to focus on adopting structural changes to continue reducing costs and strengthening competitiveness.

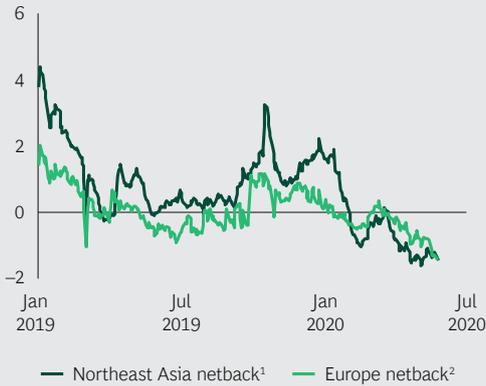
Recommendations for Gas Players

Against this backdrop, US gas producers need to be prepared for continued market volatility and to guard against the possibility of a sustained low-price environment. In-

EXHIBIT 3 | US Gas Exports May Be Hampered by the Global LNG Supply Glut

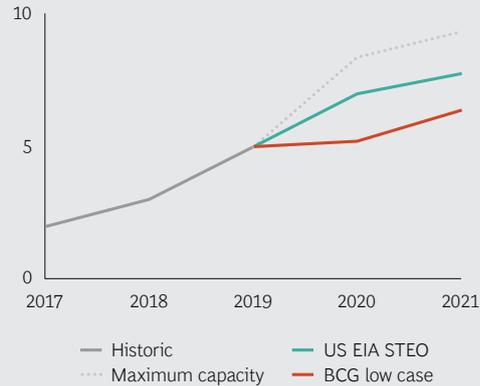
US LNG netbacks are now negative

2019–present estimated US GOM netbacks (\$/1 million BTU)



US LNG export utilization is likely to remain low, as the global market remains oversupplied

Projected LNG exports (BCF/D)



Sources: US Energy Information Administration; Argus; Bloomberg; press reports; BCG analysis.

Note: BCF/D = billions of cubic feet per day; EIA STEO = Energy Information Administration Short-Term Energy Outlook; GOM = Gulf of Mexico; LNG = liquefied natural gas.

¹Calculated as Northeast Asia spot – [(1.15 × Henry Hub) + shipping costs].

²Calculated as Title Transfer Facility – [(1.15 × Henry Hub) + shipping costs].

Increased hedging of natural gas production is likely to help in the coming months, and more significant steps to cut cycle times will help improve sustained production flexibility. Operators should also revisit their commercial and midstream integration strategies to build greater resilience and capture incremental margin opportunities. Although many producers have divested from midstream assets and streamlined their marketing operations to cut costs, greater gas market volatility in the future is likely to provide more opportunities for value creation through midstream participation.

Above all, gas producers must continue to focus on reducing their break-even costs. Operators should build on workflow and capital efficiency improvements that have delivered recent cost improvements. Beyond that, the deployment of digital technologies offers significant potential to further improve productivity. Indeed, the use of AI and machine learning to optimize well design for commercial performance, together with better integration of big data into drilling operations, has already shown that it can deliver the next wave of productivity gains.

For midstream and downstream players, managing the new market environment will be a critical challenge. The upending of previous assumptions about the pace and distribution of US gas production growth may in turn raise doubts about investment and commercial plans based on those assumptions. Building capabilities and assembling the right mix of assets to manage market volatility will be even more important going forward.

SO FAR, US natural gas has seemed to be a bright spot for the global oil and gas industry. Given the high level of continued market uncertainty and the likelihood of further market volatility, however, significant caution is warranted. US natural gas may help to support the industry as it weathers its current crisis, but it is unlikely to be its savior.

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