

ONLINE COVERAGE

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Part One: Increased Investment in U.S. E&P will Impact Generators

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The increasing investment in U.S. E&P is a trend that started in 2017 and is continuing into 2018. Generators need to be aware of this as it impacts the price of their fuel. Furthermore, due to certain trends, the impact will not necessarily be what one would expect. This is the first of a two-part series, which will highlight increased E&P activity and specific trends that will impact gas prices.

Increasing E&P Investment Activity

From the end of 2016 to the end of 2017, the number of drilling rigs outside North America only increased by 2%. This is due to OPEC production stabilization, the collapse of Venezuela's oil economy, and the fact that many offshore projects started when oil was \$100 Bbl or more, and are no longer economical at \$55 to \$60 Bbl.

However, the story in North America, especially onshore in the U.S., has been completely different. U.S. counts for both oil and gas rigs have increased by more than 40% in the same time period. The total is now over 900 active rigs. Though the percent of increase is the same, new oil rigs outnumber new gas rigs by more than four to one. Also, all of the increased oil activity has been onshore. So, it is apparent that shale oil is booming again in the U.S.

With current shale oil production costs of less than \$35 Bbl and still declining, investment dollars are flowing into U.S. E&P activities. The rig counts also indicate that capital investment activity at E&P companies with onshore interests have increased. However, though rig counts have increased dramatically, they are still only around half the level they were at the end of 2014.

This is further good news, as this helps keep drilling costs from rising too fast.

This industry boom is expected to last for several years, and many think the U.S. will almost double its current crude oil production level of approximately 9.5 million BOPD by adding another 8 million BOPD through 2025. This will make the U.S. a larger producer of crude oil than Saudi Arabia and Russia and return the country to the number one producer position last held in the 1950s.

Downward Impact on Prices will be Short-Term

One would think flooding the markets with all this oil and gas would depress prices, and it is. In fact, natural gas prices have fallen from around \$3.50 mmbtu at the end of 2016 to approximately \$2.75 mmbtu at the end of 2017. As production increases in the coming years, it is safe to assume these prices will continue to fall and that will probably be the case for the short-term.

However, for the long-term, prices will not continue to fall, due to four major trends that will likely consume all of the new gas production that is brought online and not only stabilize, but also increase natural gas prices over time. This means generators cannot count on the natural gas market to continue its current depressed state for long.

Trends Increasing Long-Term Gas Prices

There are four major trends that will consume the increased gas production in the U.S. and eventually lead to increased gas prices.

1. U.S. Demographics
2. Increasing U.S. Economic Growth Rates
3. Exporting of Crude Oil
4. LNG Terminal Investments

U.S. Demographics

Relatively inexpensive prices and increasing concern for the environment have made natural gas the fuel of choice for power generation in the U.S. While we hear continuous reports on solar and wind power, the long-term economics are often disappointing, despite the government subsidies that have made the construction of solar and wind facilities profitable.

More importantly, the climate in much of the U.S. makes the load generated by these facilities inconsistent, especially when demand is high, and insures these sources will never be more than marginal producers of power. Due to this, natural gas, which is clean, widely available and efficient at peak and off-peak operating loads, will remain the technology of choice for generation in the U.S.

As the U.S. population continues to grow, new consumers of natural gas are added. Though home heating, air-conditioning, and lighting have become increasingly efficient in recent years, these savings tend to be consumed by increased use of other increasingly popular investments, such as home electronics, home networking and automation, swimming pools, exterior lighting, and other luxury features. Also, dwelling sizes have increased over time to consume more of the efficiencies. Demand for electricity will also continue to climb as businesses increasingly rely on electronics and consumers adopt electric and hybrid vehicles.

In short, the U.S. can be expected to increase its consumption of power over the next few decades. The recent leveling of power use in the U.S. was only due to the recession, and should not be considered a long-term trend.

Increasing Rate of U.S. Economic Growth

The demand for natural gas will increase further as a result of U.S. economic and tax policies. The Trump administration has



been significantly reducing both the oversight and regulations imposed by the government. With the passage of tax reform, the economic growth rate is expected to increase to 4% or more in 2018. As businesses repatriate the \$1 million or more of cash and investments held abroad to the U.S., economic activity will increase further for several years.

The company announcements immediately following the tax reform was signed into law appear to indicate that much of the money companies will save will be invested into U.S. based facilities and assets. The impact of these economic policies will be a growth rate of 3-5% over the next three to five years.

An increased growth rate means that natural gas consumption will probably increase by 1-4% more than previously forecasted for the next several years. Furthermore, higher growth in the U.S. leads to higher growth with trading partners, notably China. This will, in turn, lead to higher demand for both crude oil and natural gas around the world.

Exporting of Crude Oil

Another major policy change that will impact prices occurred under the Obama administration (and is expected to continue with the Trump administration) is allowing the export of domestic crude oil production from the lower 48 states. Crude oil production, especially light sweet grades that cannot be used in most U.S. refineries without blending, is increasing very fast, and much of the new production is being exported.

The U.S. is now exporting around 2 million BOPD, and is expected to double exports in the next few years. In fact, the U.S. will soon surpass countries such as Kuwait and Nigeria in exports and become one of the major exporters of crude oil. These exports have been a key driver for investments in both the upstream and midstream investments, and a major contributor to the increase in natural gas supplies.

Unfortunately, it also means that U.S. refineries will no longer pay artificially low prices for light crudes, such as Eagle Ford, and will now compete with the rest of the world for much of their feedstock. With the economic growth discussed above, this will lead to higher feedstock costs and higher refined products costs, which is likely to lead to more chemical plants sourcing from natural gas plants instead of refineries, thus increasing natural gas demand further.

LNG Terminal Investments

Around the same time crude oil export bans in the U.S. were lifted, the ability to export LNG (Liquefied Natural Gas) was also granted. This ability to export, combined with the substantial growth in gas production and natural gas supply concerns around the world, has led to tremendous investment in LNG in the U.S.

The first LNG export terminal in the U.S., built by Cheniere, exported its first LNG cargo in February 2016. This facility can currently export around 18 Mtpa which, compared to the world capacity in 2016 of 340 Mtpa, is only 5% of the total market. However, there are currently 48 Mtpa of LNG terminals under construction and 53 Mtpa more in the planning stages to come online by 2023. This would be 119 Mtpa by 2023, when the entire world market is expected to be 380 Mtpa. Thus, by 2023, the U.S. will be exporting 30% of the world's LNG exports.

The current rate of LNG exports of 18 Mtpa is equivalent to 2.42 Bcf/D or 3% of the total natural gas production of 73.5 Bcf/D. Optimistic projections put U.S. natural gas production in 2023 at a little less than 110 Bcf/D. So, in 2023, the 119 Mtpa or 16 Bcf/D of LNG exports will be consuming approximately 15% of U.S. natural gas production, and this change from 3% to 15% of the natural gas supply will put significant upward pressure on natural gas prices.

Looking Ahead

On their own, each of these four trends contributes partly to an increase in natural gas prices. When combined, however, these elements have an enormous impact on the industry. Part Two of this series will address the impact of increased prices on generators and how industry leaders can plan for success despite these market conditions.