



Winter, Ukraine War and Infrastructure Bottlenecks Roil Global Natural Gas Markets

As the heating season starts in earnest across the northern hemisphere, the volatility of global energy production, transportation and utilization – especially natural gas - has never been more apparent. A combination of positive and negative developments in the U.S. and Europe has created an air of unpredictability that shows no sign of abating. The current supply and price situation in Pennsylvania and surrounding states is better compared to most locations around the world due to current production levels and existing infrastructure, but the larger picture and long-term outlook point to the benefits that would come from a more cohesive global energy strategy.

Here are a few facts:

By far, the greatest disruption being created in global natural gas markets is Russia's war against Ukraine and the corresponding damage resulting from cutting off most natural gas supplies to European Union (EU) countries, which have traditionally relied on Russia for about 40 percent of their supply. Indicative of the frequently changing environment in Europe is the EU's mid-October consideration of a price cap on natural gas from Russia, a potential move Russia called a breach of contract with Gazprom, the country's state-owned supplier. Gazprom took the additional step of threatening to cut off all supplies to EU countries if such a price cap was imposed.

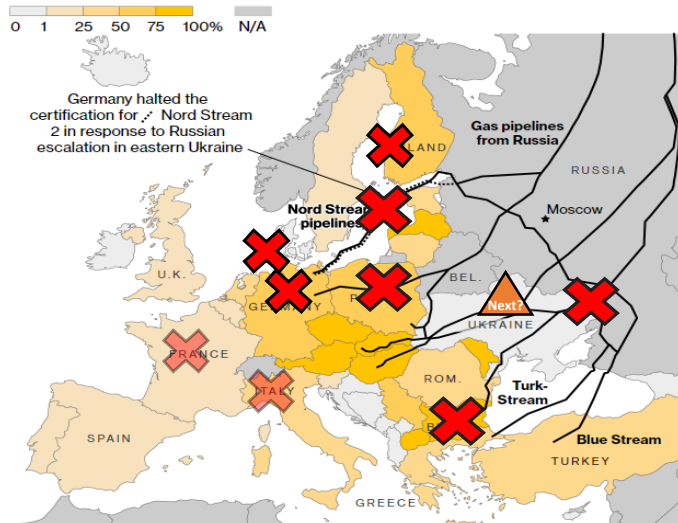
The EU's situation is further exacerbated by the late-September ruptures impacting the Nord Stream 1 pipeline, along with Qatar's announcement that it would honor its supply contracts with Asian countries this winter and not divert any natural gas supplies to EU countries. Natural gas prices recently peaked at around \$100/British thermal units (MMBTU), the equivalent of \$580/barrel of oil, and there is even greater concern about supplies and prices as Europe braces for winter.

A Supply Band-Aid from U.S. LNG

The March 2022 agreement between the U.S. and EU countries will provide some relief this year, with the planned shipment of an additional 15 billion cubic meters of liquefied natural gas (LNG) to offset short-term losses in Russian supplies. The agreement also calls for the expansion of U.S. LNG exports to 50 billion cubic meters by 2030, an ambitious goal considering the need for additional export capacity from the U.S., along with assurances from state and federal agencies for predictable regulations for pipeline and terminal construction.

According to a recent Rystad Energy analysis provided at PIOGA's recent Marcellus to Market conference by Dustin Meyer, vice president of natural gas markets for the American Petroleum Institute, the EU faces a potential supply gap of approximately 20 percent as early as next year, even with the efforts to increase U.S. exports. Looking forward to 2040, the Rystad study projects the U.S. will need to increase export capacity by 19 billion cubic feet/day to meet the demands of EU nations.

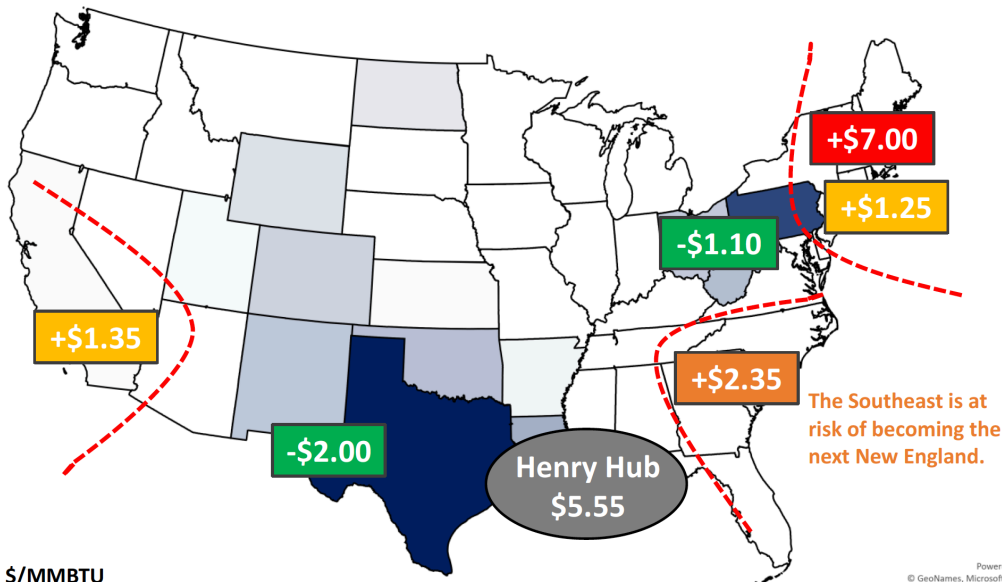
Share of natural gas coming from Russia, 2020



The reduction in natural gas exports from Russia to European Union countries, which show no sign of abating as winter begins, is depicted starkly in this map, courtesy of the American Petroleum Institute.

Sources: Eurostat, U.S. Energy Information Administration, Austria's Ministry of Climate Protection. Note: Data for 2020 are not available for the U.K. and Bosnia-Herzegovina, 2019 data are shown in those countries. Norway imported 10 million cubic meters of gas from Russia in 2020, but as a net exporter is not dependent on Russian imports.

New US infrastructure constraints are emerging



All prices in \$/MMBTU

This map, courtesy of the American Petroleum Institute, reflects the Henry Hub benchmark and regional pricing differentials from late September 2022. The growing price increase in the southeast U.S. clearly shows need for new infrastructure from the Appalachian Basin. The blue and gray shaded states indicate those with the most natural gas production.

Appalachian Infrastructure: No Particular Place to Go

It bears repeating to emphasize that the weakest link in supplying affordable natural gas to domestic markets and feeding planned LNG terminals to meet foreign demand in 2022 is the lack of takeaway infrastructure from the Appalachian Basin. Forward prices in late September for New England states with insufficient pipelines from the basin were about \$7.00/MMBTU higher than the Henry Hub price of \$5.55/MMBTU, and those in the southeast look to be steadily increasing, at \$2.35/MMBTU above the Henry Hub benchmark. With demand expected to increase in those states, the delays in completing the Mountain Valley Pipeline and far-from-certain success of new pipelines could cause prices to jump in the growing southeast in the future.

Production and Storage

A positive note in the current natural gas environment is the current and anticipated production levels in the U.S. and the states of Ohio, Pennsylvania and West Virginia, the country's biggest producing region, extracting about 35 Billion cubic feet (Bcf)/day. The U.S. Energy Information Administration (EIA) projects total U.S. production of 99.6 Bcf/day in 2023, a slight increase over 2022 levels. EIA also expects the amount of natural gas in storage as the injection season ends this fall will be approximately six percent below the five-year average between 2017-2021.

The Facts

A combination of factors, including European instability, global pandemic recovery and national politics – to name just a few – have collided to make for a more volatile and expensive winter heating season this year. They again point to the need for common-sense and forward-thinking policies in the U.S. that recognize the vital role oil and natural gas play in providing reliable and affordable domestic energy.



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