# 2018 in Review
## U.S. Power and Gas Weekly

**Morningstar Commodities Research**
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**Data Sources Used in This Publication**
Intercontinental Exchange
PointLogic Energy
EIA
EOX Live

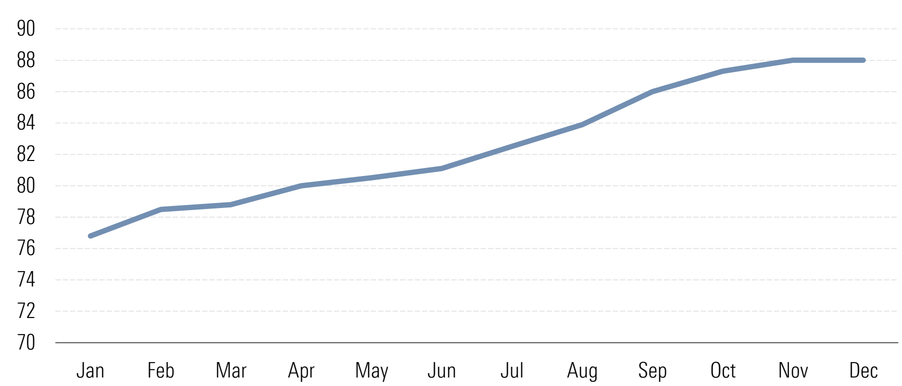
### Strong Start and Finish

This year has been bookended by colder temperatures and increased natural gas and electricity demand. The early January blizzard, dubbed the bomb cyclone, woke up a market reeling from two consecutive winters that were lackluster at best, and the recent strong start to the 2018-19 winter season brought natural gas prices to their highest point since 2014. The year also hit a milestone with new pipeline capacity out of the Marcellus/Utica helping remove constraints and expanding the reach of cheap shale gas. The United States expanded its role in the global liquefied natural gas market, increasing exports and terminal capacity in the face of an escalating trade war with China. The power sector continued to replace coal plants with natural gas and renewable generators across the country. This note provides a high-level review of events that shaped U.S. power and gas markets in 2018.

### Natural Gas Production Growth

Natural gas production had an amazing year of growth, moving from 76.8 billion cubic feet per day in January to 88 bcf/d in month-to-date December (Exhibit 1). Most of the growth came from two specific regions. Northeast production started the year at around 26 bcf/d and looks to end it at 31 bcf/d (Natural Gas Expansion Here to Stay), and the Texas Permian Basin grew 3 bcf/d in 2018, ending the year around 30 bcf/d.

**Exhibit 1** Lower 48 Supply 2018 (bcf/d)




Source: PointLogic Energy.

**Pipeline Capacity**

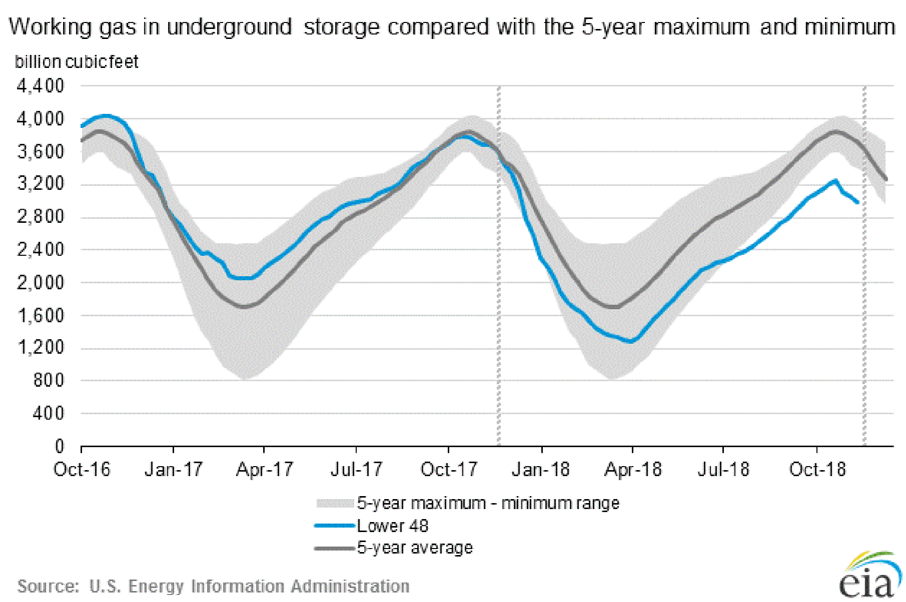
The Rover project added 1.7 bcf/d when it came into service in 2017, and pipeline capacity expansions designed to relieve congestion and provide a path to market for Northeast gas continued throughout 2018. The Marcellus/Utica production basin added 5.3 bcf/d of pipeline capacity in 2018 (Atlantic Sunrise Coming On Line). Two larger projects worth noting are Leach Xpress and the Nexus gas transmission project. Leach Xpress added 1.5 bcf/d of capacity between Pennsylvania and Kentucky, ultimately connecting to existing pipeline infrastructure in the Southeast. The Nexus project added another 1.5 bcf/d of capacity between Ohio and Michigan.

**Gas Storage**

Another major theme this year was natural gas storage (Storage Shortage in the East; Natural Gas Storage, Will It Be Enough?). While the year started out with adequate working gas storage levels in line with the five-year average, inventories spent most of the spring and summer below the five-year average. In early July, storage levels fell below the five-year range and have remained there since (Exhibit 2).

Prices at Henry Hub, however, remained fairly subdued in the face of these bullish storage levels until weather-related demand ticked up in November. There are two reasons we believe the market underreacted to the tighter storage environment earlier in the year. One is the additional takeaway capacity out of Marcellus/Utica. Improved access to the supply region discouraged putting the molecules into storage. A second reason was market complacency about winter heating demand. Prices didn't react to additional heating demand until the strong winter start in November, which then caused prices to pop to almost $5.00/mmBtu.

**Exhibit 2** Lower 48 Working Gas in Storage



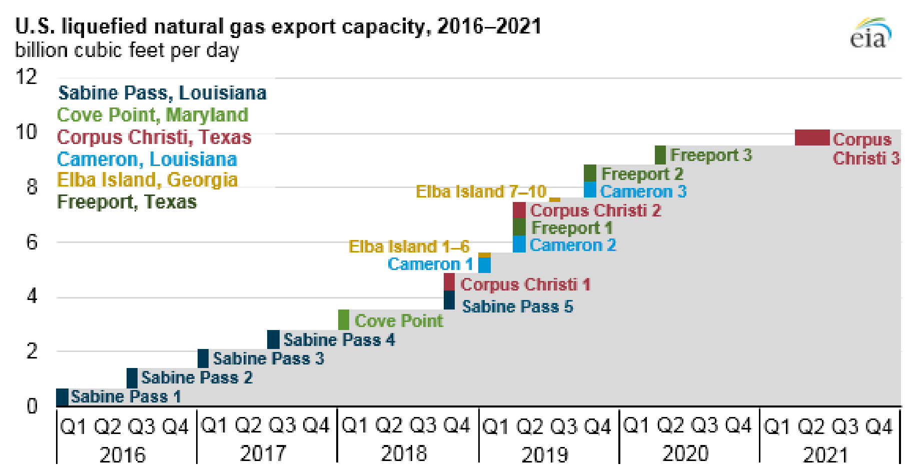

Source: EIA.

## Liquefied Natural Gas

Closely tied to the increase in natural gas production is the prospect of the U.S. becoming a major player in the global LNG market (U.S. LNG Outlook). When the U.S. began export operations in 2016, it exported around 0.5 bcf/d of natural gas. By the end of 2017, LNG helped propel the country into a net exporter for the first time, exporting an average 1.9 bcf/d. Data from the Department of Energy through the end of September 2018 show exports growing to around 2.5 bcf/d. Three export projects came on line this year. Cove Point began operation in January as the first East Coast export terminal, and Sabine Pass Train 5 and Corpus Christi Train 1 increased Cheniere Energy's growing role in the U.S. LNG market.

Although headwinds from changes and uncertainties in U.S. trade policies exist (An Escalating LNG Trade War?; President Lopez Obrador and Mexican Energy Reform), the projects under construction should bring a little more than 10 bcf/d of export capacity by 2021 (Exhibit 3). A cease-fire in the U.S.-China trade war and ongoing negotiations to reduce tariffs could help other projects in the pipeline seeking final investment decisions. As China becomes the largest importer of LNG, a resolution to the dispute will be paramount in bringing future projects to life.

**Exhibit 3** U.S. LNG Export Capacity and Projects



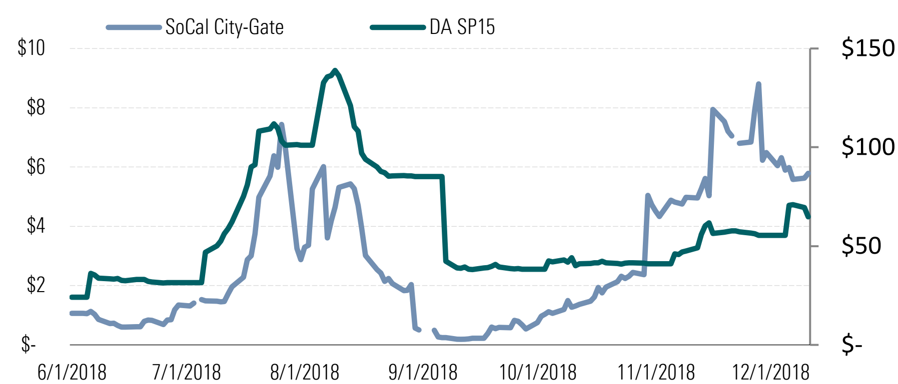

Source: EIA.

## U.S. Power

The U.S. power sector also had a transformative year. Although the specific themes differed across the various ISOs, the multiyear trend of coal retirements continued. For the first time in ERCOT's history (Greener in Texas; Summer ERCOT; Excitement in ERCOT; ERCOT Summer Reset), wind generation displaced coal as the number-two primary source of power. ERCOT's retirement of Monticello, Sandow 4 and 5, and Big Brown took out over 4,000 megawatts of installed capacity. Early coal retirements and higher summer demand generated concerns about reliability in ERCOT, because the retirements brought reserve margins down to 11%. As summer progressed, the grid did see some price spikes in the day-ahead and real-time markets, but ERCOT managed to ensure reliability without resorting to extreme emergency measures.

The California ISO's year has been shaped by shortages and pipeline maintenance issues starving the state's natural gas generators (Stepping on the Gas in California; Natural Gas Price Movement Hidden in the Basis). Operational restrictions between Nevada and California have kept prices at SoCal Citygate relatively high since the summer. An Enbridge pipeline explosion in British Columbia on Oct. 9 added to supply constraints across large parts of the Western U.S., pushing up basis prices at Sumas, Opal, and within California. As a result, power prices in California moved in lockstep, hitting $140/MW in early August on $5.00/mmBtu basis at SoCal Citygate (Exhibit 4). Some of the larger maintenance projects have yet to announce an end date, which should keep basis prices in Southern California elevated going into 2019.

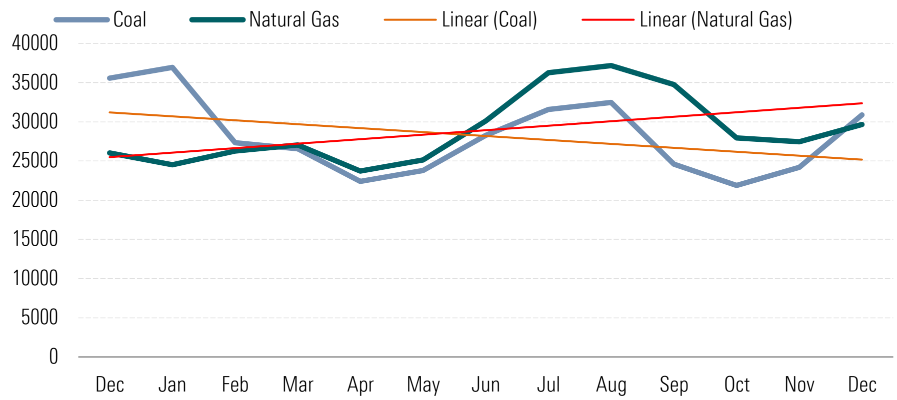
**Exhibit 4** SoCal Citygate and Day-Ahead SP15 On Peak Spot Price ($/mmBtu and $/MW)




Source: EOX Live, ICE.

In the East, PJM has started to experience the effects of a shifting supply stack (PJM, a New Coal/Gas Switching Regime?; A Shrinking Coal Backstop in PJM). While natural gas installations increased between 2016 and 2018 from 73 gigawatts to 87 GW, coal capacity declined from 60 GW to 56 GW over the same period (Exhibit 5). This year's capacity market in PJM was the first where no new combined-cycle project cleared the auction. Looking at average generation by month, the trend is clear: Natural gas generation continues to expand, and coal continues to decline. The strong start to winter in November did shift coal generation up month over month, but the monthly average remained below natural gas over that period. Although monthly coal generation in December is slightly ahead of natural gas, month-to-date totals fall short of those seen last December. With additional coal retirements expected in 2019, the trend should continue as natural gas and renewables gain market share.

**Exhibit 5** PJM Monthly Thermal Generation (MW)




Source: PJM, Morningstar.

## Looking Forward to 2019

2018 was another year of change. Supply growth in the Permian and Marcellus/Utica basins spurred downstream changes that will continue next year. Coal retirements and the addition of natural gas capacity are nationwide phenomena. New pipeline capacity in the once-constrained Northeast has provided new points of access west and south of the region, expanding the reach of Marcellus/Utica production. While pipeline constraints in the East were alleviated, operational challenges out West continue to plague demand centers and their ability to access natural gas. The future for U.S. LNG looks positive, as the sector had another record year. As the country adapts to its future role as an LNG supplier to the world, challenges around trade continue to affect decision-makers looking to expand a market in its infancy.

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