
Stepping on the Gas in California

U.S. power and gas weekly.

Morningstar Commodities Research

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Data Sources Used in This Publication

National Oceanic and Atmospheric
Administration
ICE
NGI
OPIS PointLogic

Power Prices on a Tear

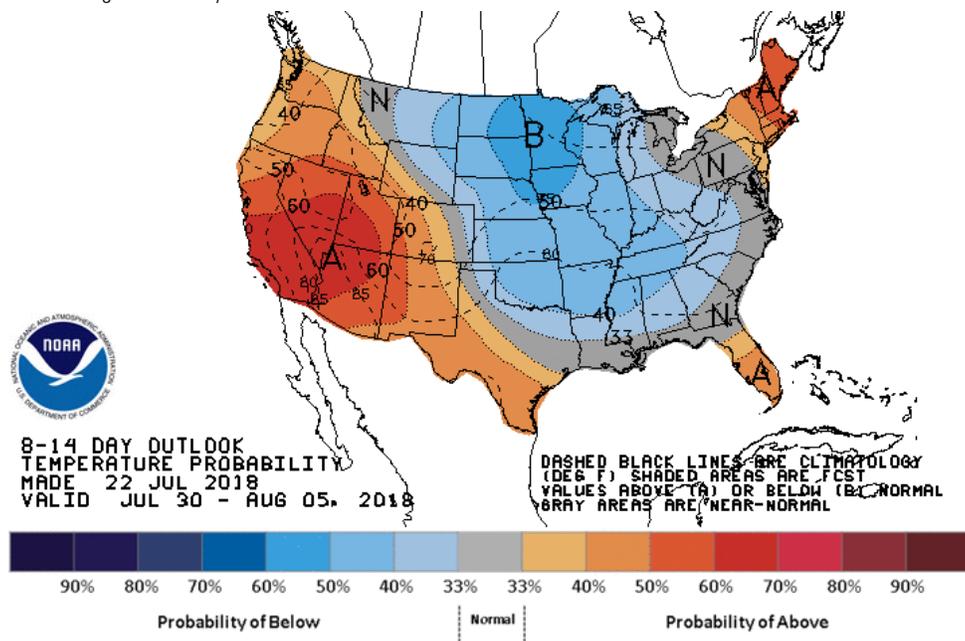
This note follows up on our analysis two weeks ago, [California Summer](#), which discussed increased power demand and the impact hotter weather was having on the California independent system operator market. Our assessment then was directionally correct, but the magnitude of the move up was understated. Day-ahead peak power prices at SP15 for July, August, and September have since moved up significantly, settling at \$88 per megawatt-hour, \$92/MWh, and \$68/MWh, respectively, on July 23. The day-ahead peak daily price settled above \$300/MWh on July 23, its highest level in four years. Concern about higher demand has even led CAISO to issue a Flex Alert, encouraging voluntary conservation. These power price hikes are tied to two factors: higher electricity demand from hotter temperatures and higher natural gas basis prices.

The Heat Remains

For the last few weeks, much of the country experienced higher-than-normal temperatures, and although the eight- to 14-day forecast shows cooler temperatures on the horizon for much of the country, large swaths of the West are not expected to experience this short-term reprieve. In fact, large sections of California are still trending warmer (Exhibit 1). The last couple of days have seen extreme weather pricing along most of the West Coast, with day-ahead prices in the Pacific Northwest at Mid-C printing \$218/MWh and SP15 printing a daily average \$377/MWh.

Similar to Texas (see [Excitement in ERCOT](#)), the demand driver is not only temperature but also dew point that, when combined, lead to higher air conditioner use. Dew points in California on the high pricing days have hovered above 60 degrees, with peaks almost hitting 75 degrees. The balance of July should see dew points between 50 and 55 degrees, with similar levels carrying over into August.

Exhibit 1 Eight- to 14-Day Outlook

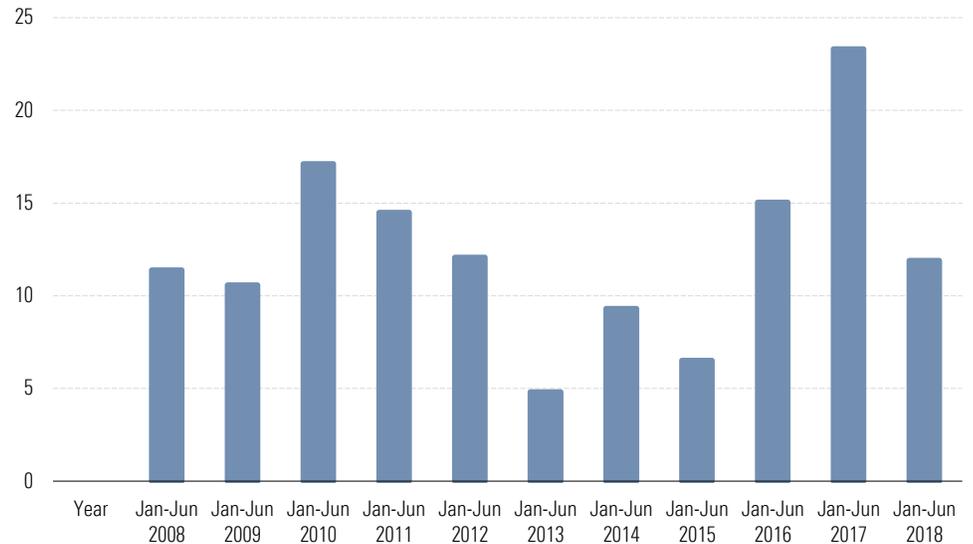


Source: NOAA

Comparing CAISO systemwide demand in 2017 and 2018, load peaked at 45,453 MW July 7, 2017, and July 2018 month-to-date load peaked at 45,931 MW on the 23rd. Day-ahead peak prices at SP15 settled last year on the month's highest demand day at \$58/MWh, settling this year on a slightly higher load at \$377/MWh. Another weather-related factor bumping up prices this summer is higher load in the overnight hours. Average loads in the evening hours have been 100 MW to 900 MW higher than July 2017 this year, depending on the specific hour. Higher overnight temperatures boost air conditioner usage, putting additional demand on the CAISO natural gas generating fleet when renewable assets produce less. Day-ahead prices this month are on track to exceed 2017 levels, and with excessive heat warnings in place, will likely settle between \$100/MWh and \$105/MWh in July. Power prices for August and September at SP15 are also up significantly, trading around \$86/MWh for August and \$65/MWh for September.

Changes in California Fundamentals

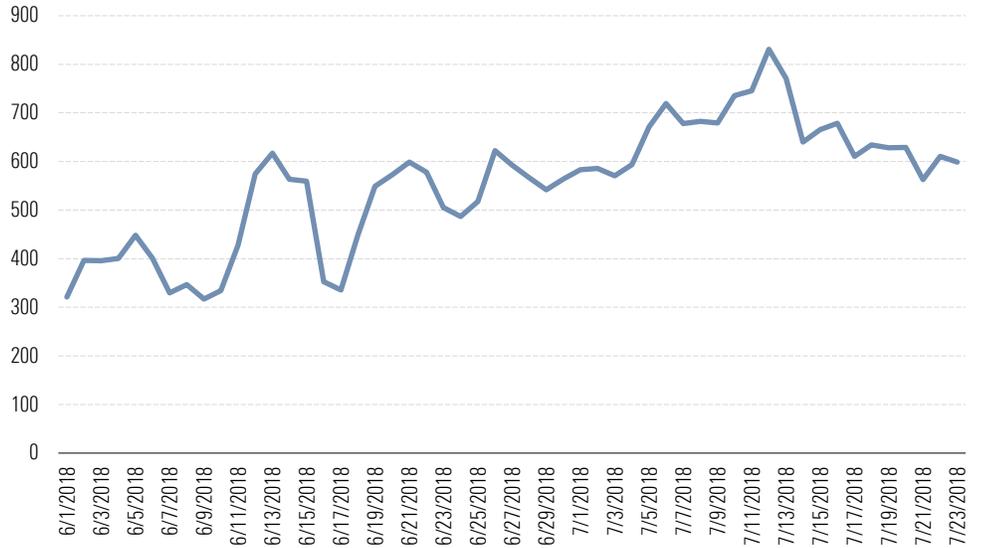
The increase in CAISO natural gas demand is inversely related to a fall in hydro generation year over year, reflecting lower snow and rainfall precipitation in California. Looking at the past 10 years, total precipitation between January and June 2018 is down about 11 inches from the same period in 2017 (Exhibit 2). Although 2018 rainfall lows are nowhere near 2013 levels, the current year does rank in the bottom half of the 10-year range. The shortfall caused by less hydro generation is typically met by increased power burn, placing the natural gas generating fleet under additional pressure.

Exhibit 2 California Precipitation, January-June (inches)

Source: NOAA

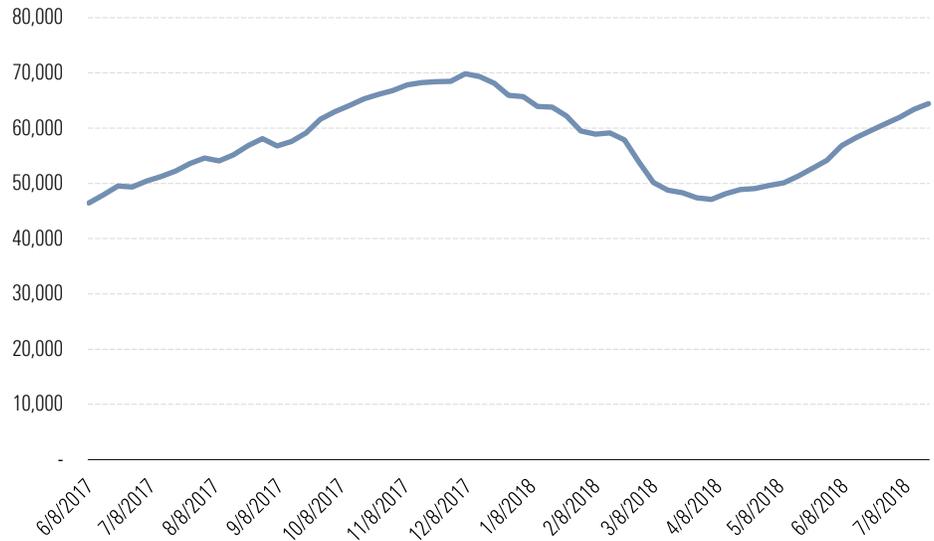
California has seen a steady increase in natural gas generation this year, with power burn rising from around 300 million cubic feet per day early in June to around 600 mmcf/d in July. Looking at the plants tracked by OPIS PointLogic Energy for July, when summer demand is highest in California, power burn is sitting at around 656 mmcf/d month to date compared with 616 mmcf/d in July 2017. Natural gas burn peaked so far this month at 830 mmcf/d. Pipeline deliveries for the power sector, which is a large number of points in California, were also up year over year, averaging around 1,600 mmcf/d compared with 1,200 mmcf/d this time last year, further highlighting the higher demand environment.

Exhibit 3 California Natural Gas Power Burn (mmcf/d)



Source: OPIS PointLogic Energy

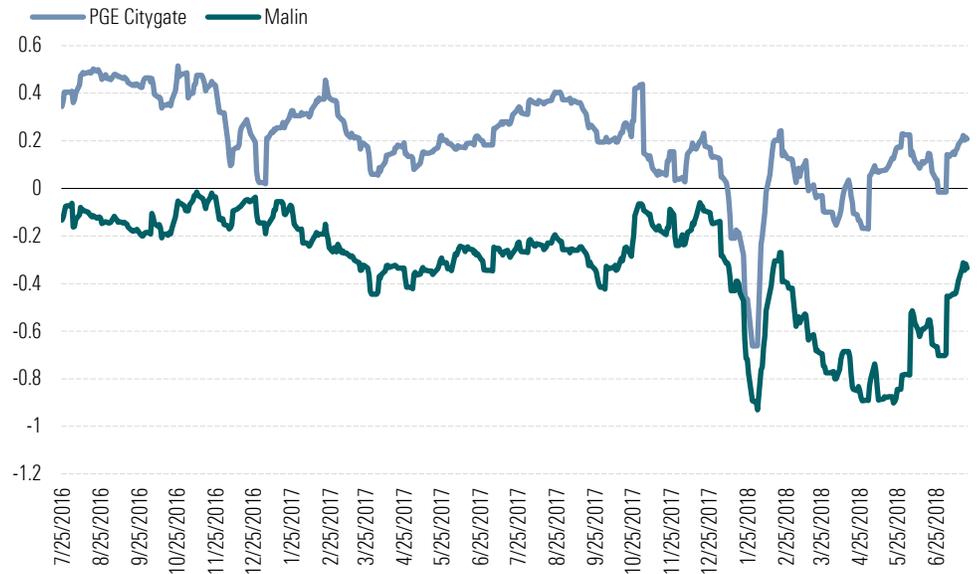
In the face of increased demand, California natural gas storage levels remain resilient. During the week ending July 19, 2018 storage levels were reported at 64.4 bcf/d compared with 52.2 bcf/d at this point last year (Exhibit 4). Day-over-day changes to storage in-state, however, imply that some generators are pulling gas out of storage. In the short term, more natural gas may be pulled from existing inventories as maintenance work continues on pipelines feeding the state. Specifically, maintenance on the El Paso & Transwestern Interconnect at Topock Station will limit capacity in August, as will unplanned maintenance on the Baja Path for the California Gas Transmission System at L-300.

Exhibit 4 California Natural Gas Inventory (mmcf/d)

Source: OPIIS PointLogic Energy

California Natural Gas Prices

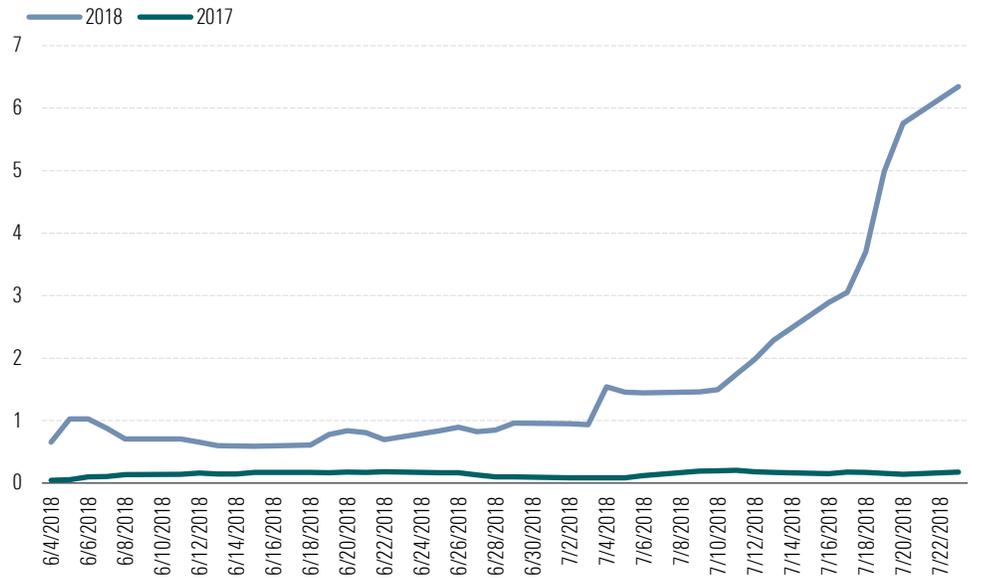
Looking at basis future prices at PG&E Citygate and Malin, in Northern California, we see a trading range between negative \$0.40 per million British thermal units and \$0.20/mmBtu (Exhibit 5). Although this trading range shows considerable volatility, these natural gas hubs have remained somewhat immune to what is happening in Southern California. The geographic disconnect between Northern and Southern California carries over into the natural gas daily market, where the price for natural gas in Northern California remains between \$2.40/mmBtu and \$3.25/mmBtu. Implied heat rates at NP15 using PGE Citygate and Mid-C using Malin gas were 14.2 and 16.5, respectively, on July 23, indicating a disconnect between natural gas and power prices. This is likely because more of the natural gas infrastructure is concentrated in the southern portion of the state, which would explain lower Northern California prices.

Exhibit 5 PG&E Citygate and Malin Spot Month Price (\$/mmBtu)

Source: ICE

Southern California is where natural gas and power activity has been the most exciting. Social Citygate basis prices have been on a steady climb from the start of the month, moving roughly from \$1/mmBtu to \$6.345/mmBtu (Exhibit 6). Comparing prices today to last year, the difference could not be more apparent. In 2017, Social Citygate basis prices traded in a significantly tighter \$0.05/mmBtu to \$0.18/mmBtu range. The move in spot month contracts although significant, fails to show the magnitude of the change in the basis markets. Social Citygate dailies have been pricing between \$3/mmBtu and a little shy of \$40/mmBtu. Using the prints from July 23, the implied heat rate for SP15 was a little over 9.5, which is surprisingly not an unusual heat rate. This example goes a long way in demonstrating the impact higher natural gas prices are having on electricity in Southern California.

Exhibit 6 Social Citygate (\$/mmbtu)



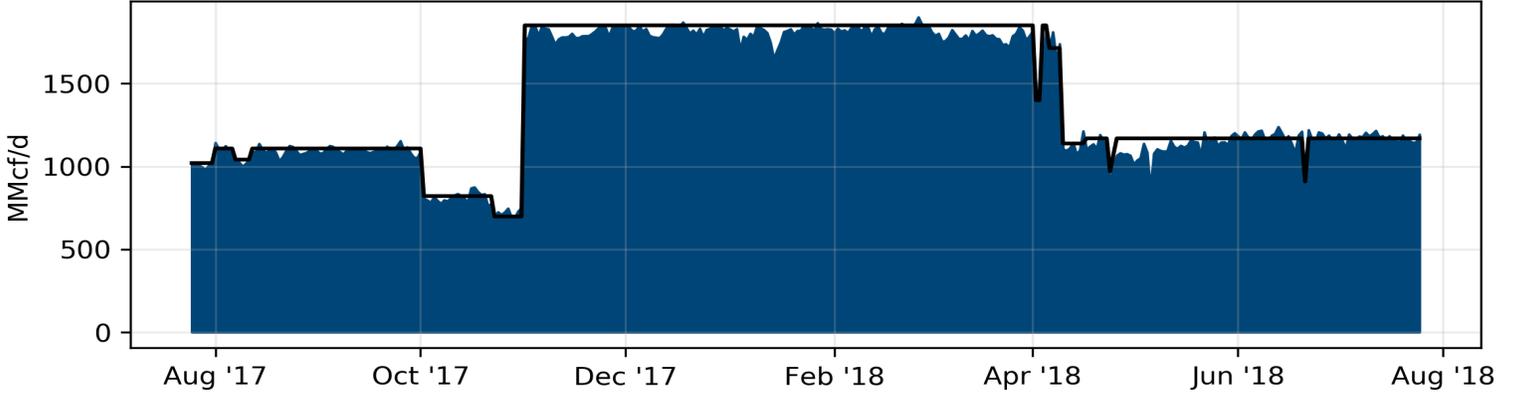
Source: ICE

Conclusion

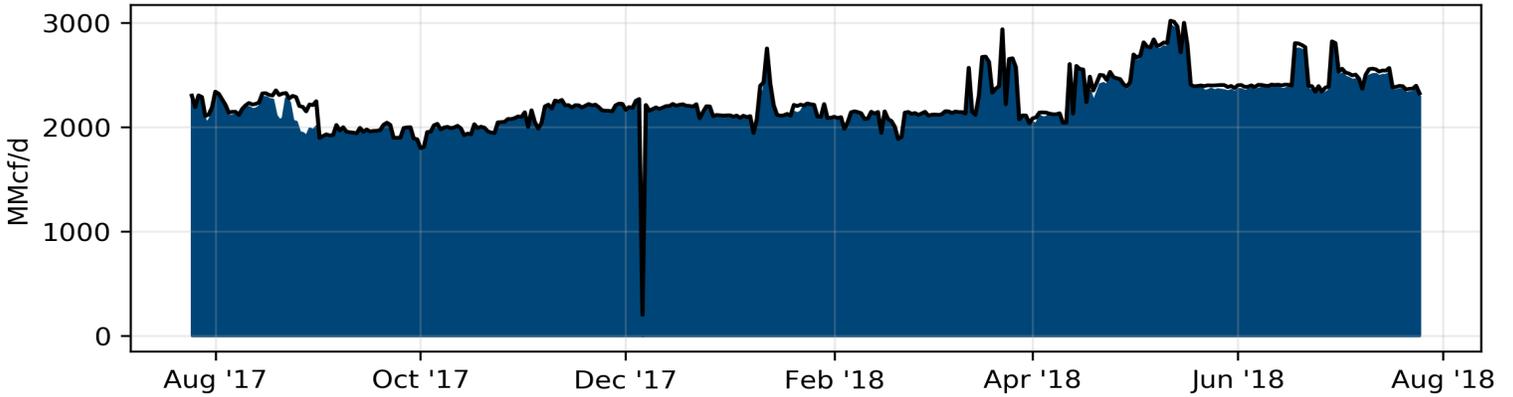
CAISO has experienced an exceptionally volatile summer, and all signs are pointing at more to come. The heat is expected to stay and natural gas prices in Southern California have hit historically high points for this season. Although the \$377/MWh print seemed extreme, when compared to the gas daily on the 23rd, a 9.5 heat rate is not anything unusual. Until temperatures fall, and the risk of natural gas shortages dissipate, prices will likely remain high. Looking at the California Gas Transmission maintenance schedule, outages and capacity limitations will continue through the summer, and any delays or new maintenance projects will keep natural gas prices high. Coupled with the potential for unplanned outages due to extreme weather, the likelihood of more extreme pricing in Southern California is greater. ■■

Natural Gas Important Points

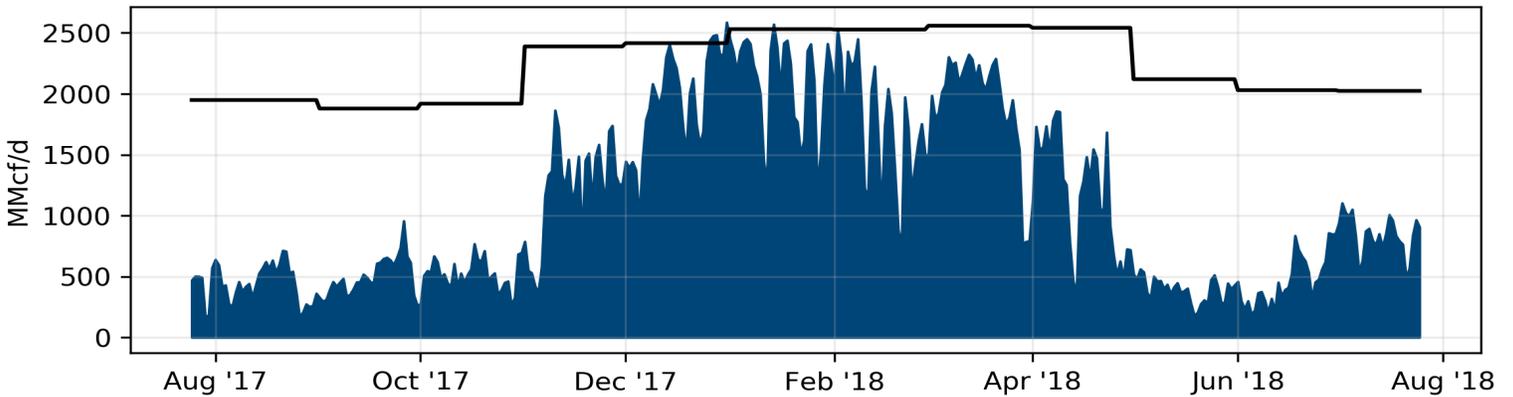
Algonquin: Stony point Compressor



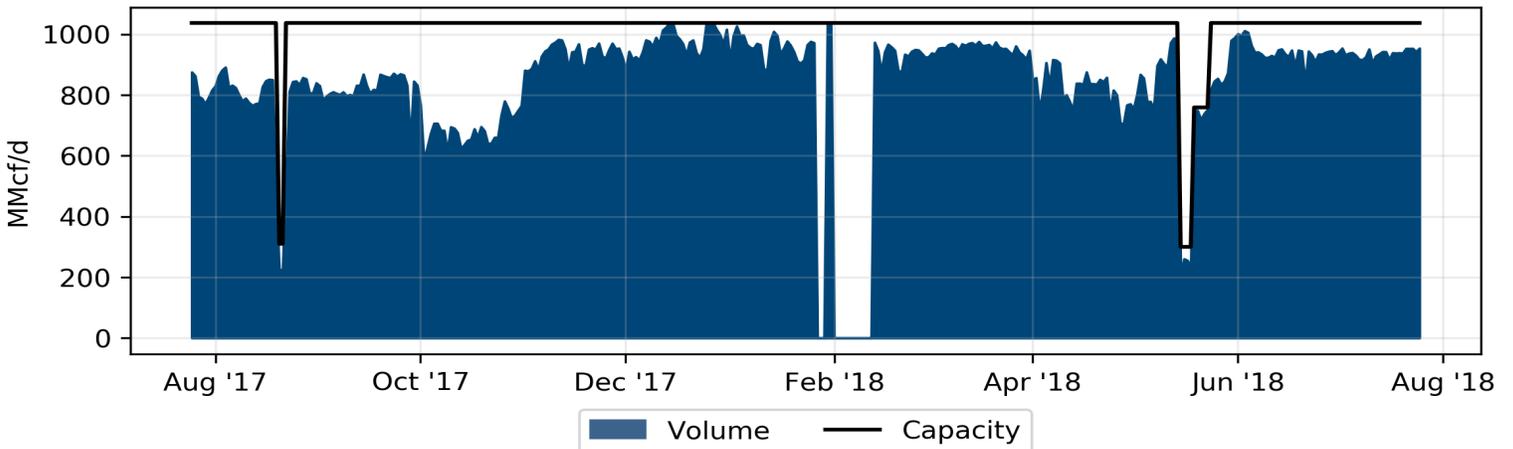
Transcontinental: Leidy Line Station 505



Texas Eastern: Lambertville Compressor

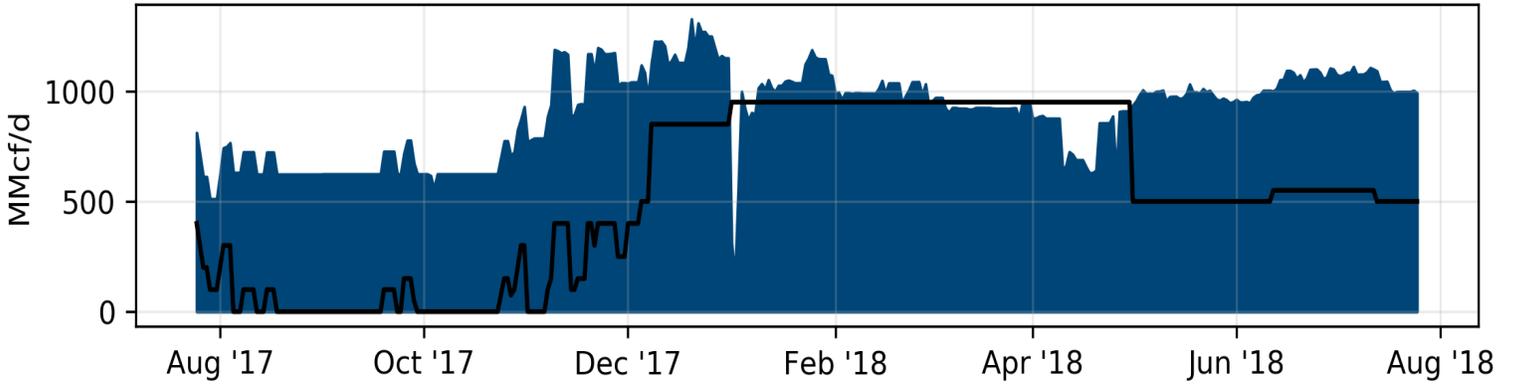


Millennium: Wagner West Compressor

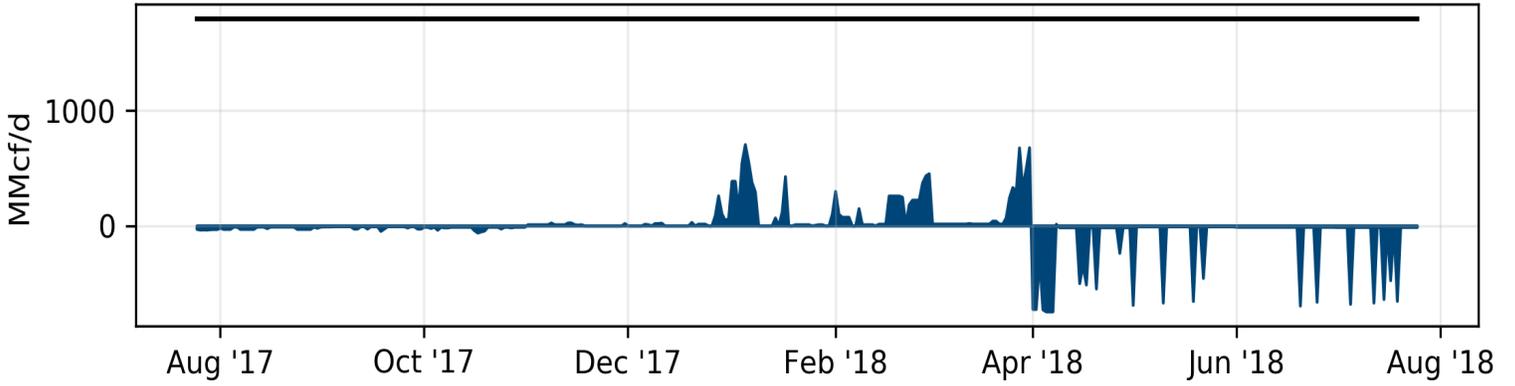


■ Volume — Capacity

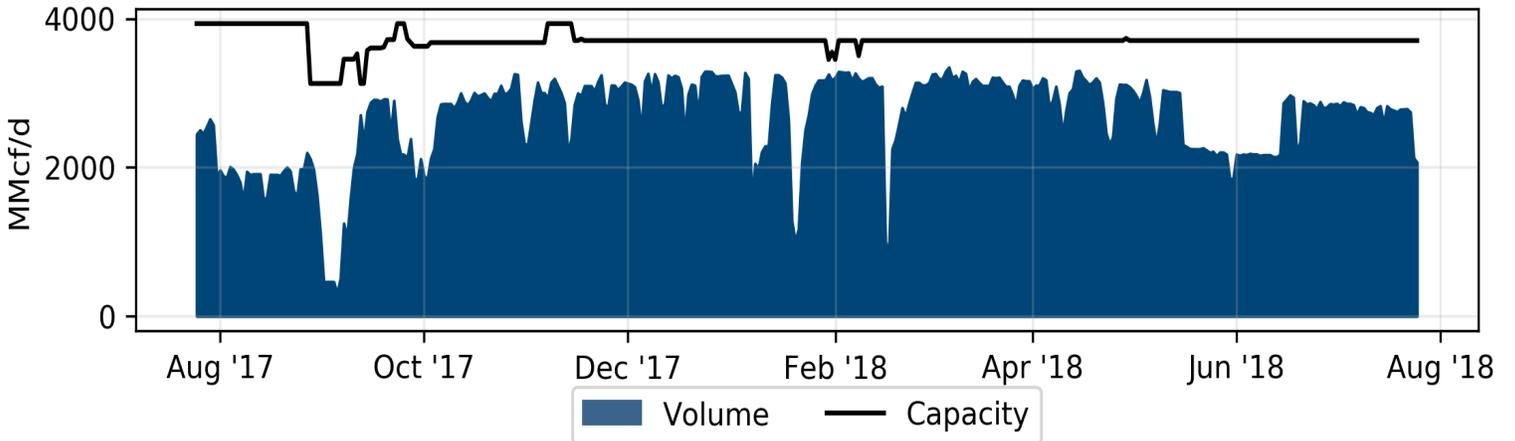
Columbia Gas Trans: Braxton-Stonewall



LNG: Cove Point



LNG: Sabine



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