

ERCOT Generation Changes

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Data Sources Used in This Publication
ERCOT

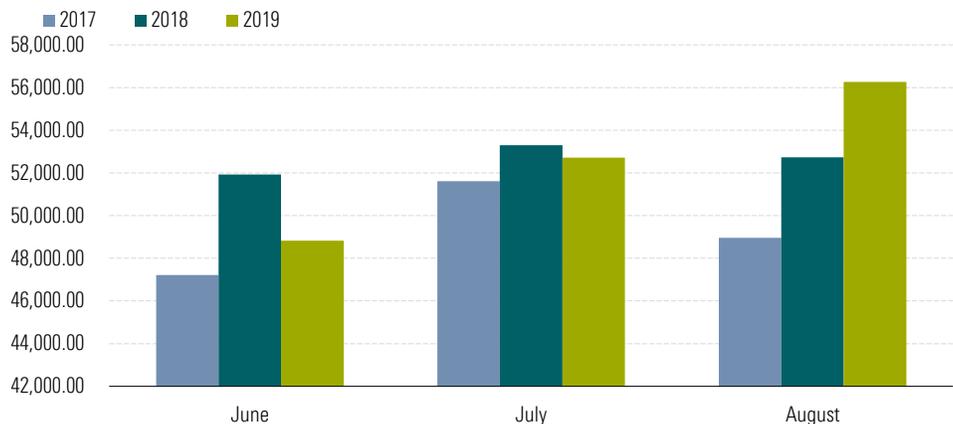
ERCOT Fuel Mix Report

ERCOT's generation mix has gone through significant changes over the last few years as base load coal generation has slowly been replaced by natural gas and wind. This past summer, the grid saw exceptionally high demand. Day-ahead power prices settled above \$1,000/megawatt on 25 hours this season, highlighting the increased demand this year and the growing concerns about ERCOT's reserve margins. With fuel mix data now available through August, this note looks at how generation has changed in the peak ERCOT summer months.

Strong Demand

Overall summer demand in ERCOT was about flat with 2018, with the three-month average down 0.1% (Exhibit 1). The three-month average for 2018 came in at 52,651 MW, slightly above the 2019 average of 52,600 MW. June demand came in almost 6% below the same month last year, while July demand was down 1% year over year. The biggest change was in August, where demand was up 7% year over year.

Exhibit 1 ERCOT Load (MW)



Source: ERCOT.

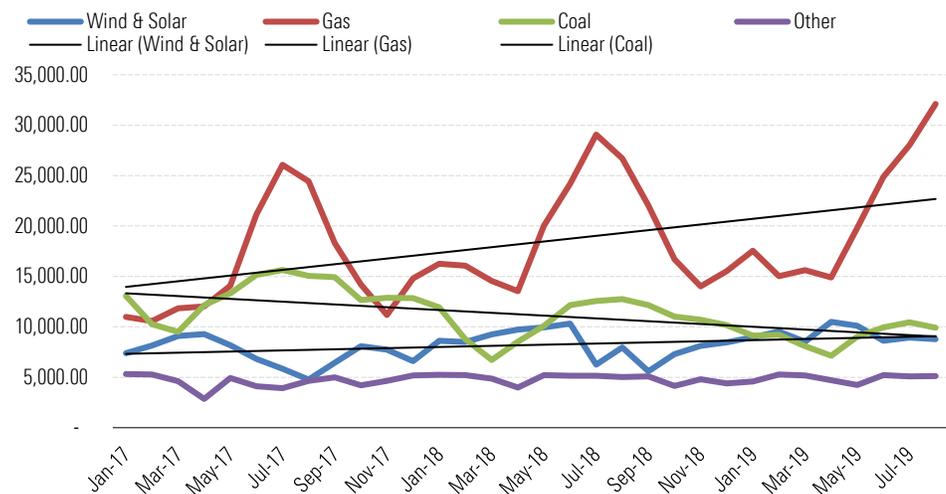
Averaging demand hides some very notable differences in the demand picture year over year. While June hasn't seen any days with load above 70,000 MW going back to 2017, July and August were noticeably different. July 2018 saw 11 days with load above 70,000 MW, while August 2018 had zero days above the threshold. This past season, the number of days with load above 70,000 MW was 22, with July seeing 4 and August experiencing 18. The peak load day was also higher this season than it

was last year. In 2018, ERCOT saw a peak load on July 19 with demand reaching 73,194 MW, which was lower than the 2019 year-to-date peak of 74,517 seen Aug. 12.

Generation Changes

Looking at the generation stack for the peak summer months going back to 2017, we can see the continued expansion of renewable and natural gas generators (Exhibit 2). The average wind and solar generation for June, July, and August grew from around 5,500 MW in 2017 to 8,800 MW in 2019. Natural gas generation for the same three months went from an average 23,000 MW in 2017 to 28,000 MW this year. These changes occurred as coal generation declined from an average 15,000 MW in 2017 to slightly over 10,000 MW.

Exhibit 2 ERCOT Generation Fuel Mix by Monthly Average (MW)



Source: ERCOT.

While wind generation has seen significant growth, it still represents only a small portion of ERCOT's overall stack, so the story this season appears to be more about natural gas. This was most evident in August, when natural gas generation jumped to a monthly average of 32,000 MW, which was 4,000 MW higher than the month before. July 2018, which was the high demand month last year, saw a monthly average of 29,000 MW. The grid's greater reliance on natural gas isn't a surprise, especially as coal retirements have changed the makeup of the base load stack, and as wind generation can fluctuate in significant ways.

This is clearly noticeable when we look at the days where load exceeded 70,000 MW. In those cases, the average daily renewable generation fluctuated between 4,000 MW and 12,000 MW, with even greater ranges demonstrated when looking intraday. Conversely, natural gas generation was much tighter, generating between 30,000 MW and 36,000 MW on average. The certainty that natural gas generation provides the markets explains its higher utilization this year, especially as load was historically high this summer. This greater reliance on natural gas also explains the higher power prices in August, which saw

a \$129/MW monthly average. The high demand days pushed prices in the superpeak hours even higher, settling several hours above \$1,000/MW in August. For comparison, July had a monthly power price average of \$29/MW.

Conclusion

Comparing summer generation deployment between years for ERCOT helps highlight structural changes that are often hard to see. While the three-month average load was pretty flat with last year, we saw significant differences on a month-by-month basis. The high demand in August compared with the prior month and the same month last year pushed power prices higher, and natural gas generation was leaned on more this season than in past years. The high demand and concerns about reliability contributed to the high price environment, essentially incentivizing all units to be available. While wind generation has changed the way that ERCOT's grid is managed, the cues for the market still appear to be driven by natural gas, and the need for natural gas to ensure system reliability was most clear this August. While the shift to a more renewable generation stack is underway, natural gas is still king in Texas.

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