

PJM Renewables on the Rise

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Data Sources Used in This Publication
PJM
EIA
ICE

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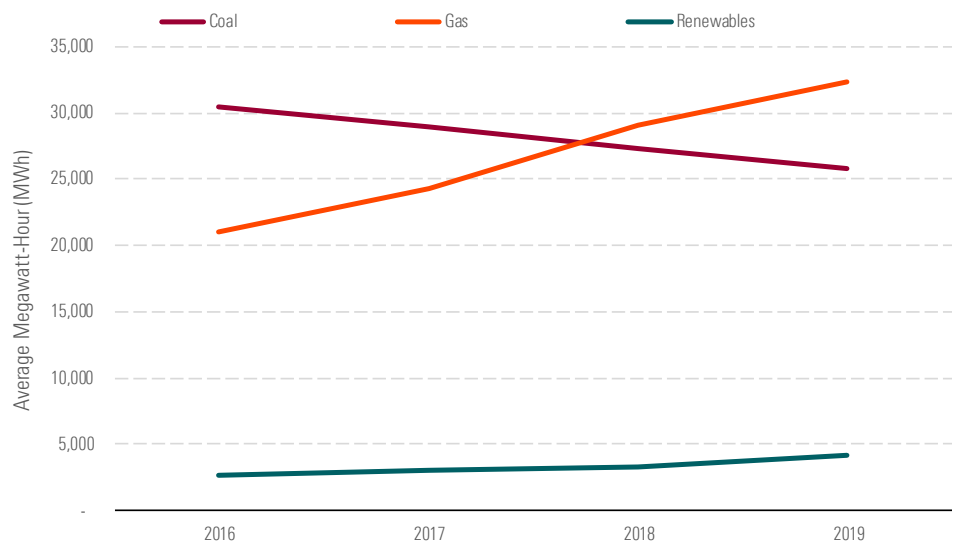
PJM Adding Serious Renewables

The story of PJM's changing generating stack over the last couple of years has been all about coal retirements and added natural gas to replace it. While other regions have seen a bigger splash of solar and wind additions, PJM's levels are starting to be more than just a token amount of the cleaner generation. This note looks at what to expect in the coming summer in PJM and what has changed since last summer.

Coal to Gas

As we have discussed previously in [PJM, a New Coal/Gas Switching Regime?](#) and [A Shrinking Coal Backstop in PJM](#), the evolution in PJM is natural gas generation displacing coal (Exhibit 1). Average coal generation dropped from over 30,000 MWh to 25,000 MWh per year between 2016 and 2019. At the same time natural gas generation increased from 21,000 MWh to 32,000 MWh per year. That has already amounted to a whopping 11,000 MWh increase in power burns. Added takeaway capacity from the Marcellus Basin and access to cheaper natural gas this summer should continue to keep power prices at bay as we have already seen in PJM this year.

Exhibit 1 PJM Average Hourly Generation by Year



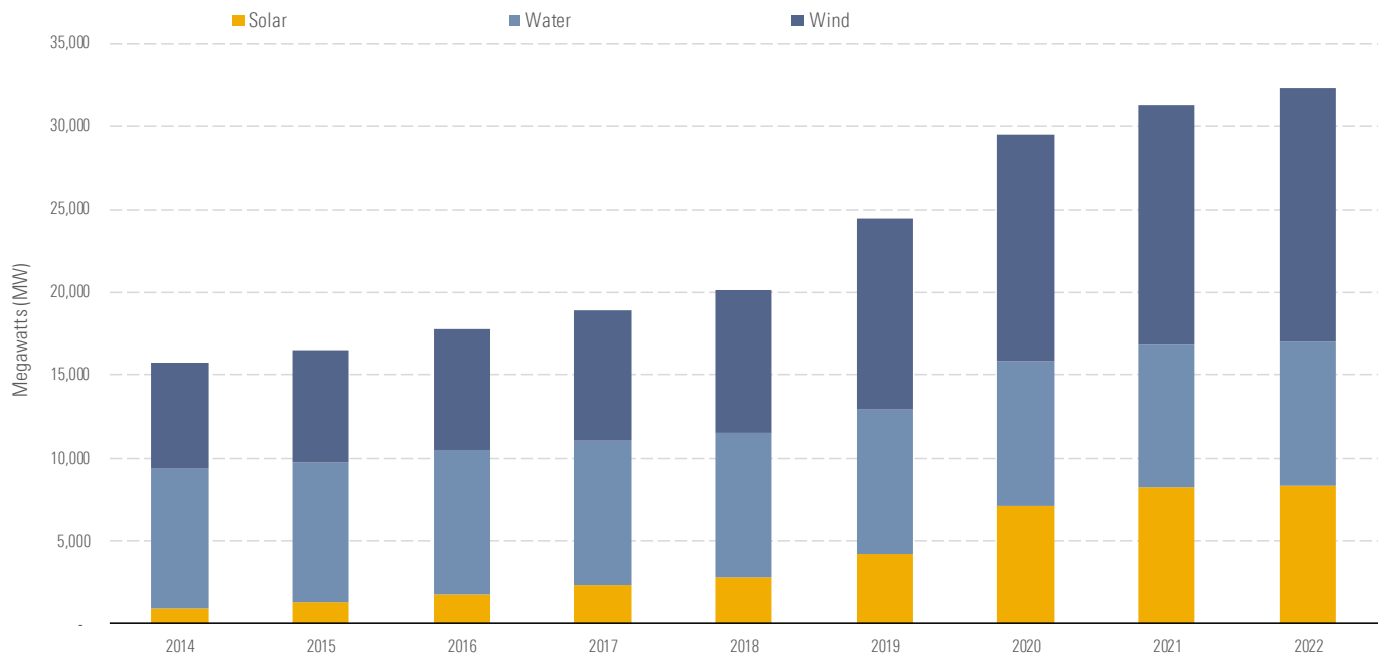
Source: Morningstar, PJM.

PJM Adding Renewables

While the headline story is all-natural gas, both solar and wind generation are growing in PJM. Combined renewables generation nearly broke 5,000 MWh on average in 2018 (green line in Exhibit 1).

Most other generation sources remain flat. Both solar and wind capacities are expanding rapidly in the next couple of years after relatively modest growth since 2014 (Exhibit 2). At current cost levels--even with natural gas prices as cheap as they are--we see a strong likelihood of further solar and wind buildout in the region.

Exhibit 2 PJM Renewable Capacity 2014-22

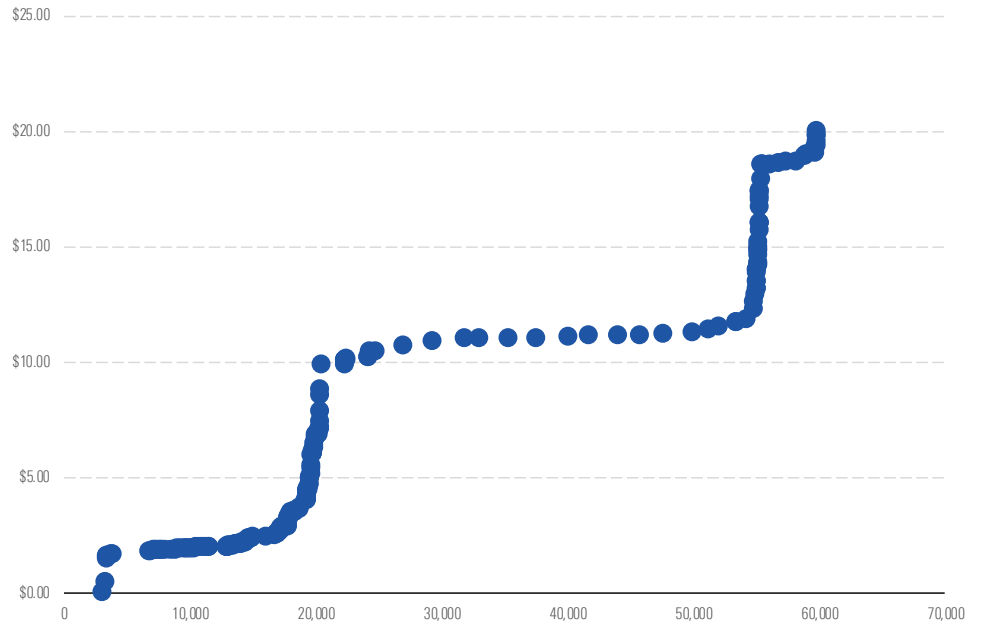


Source: Morningstar. Data as of Sept. 7, 2018.

The Supply Stack Shift

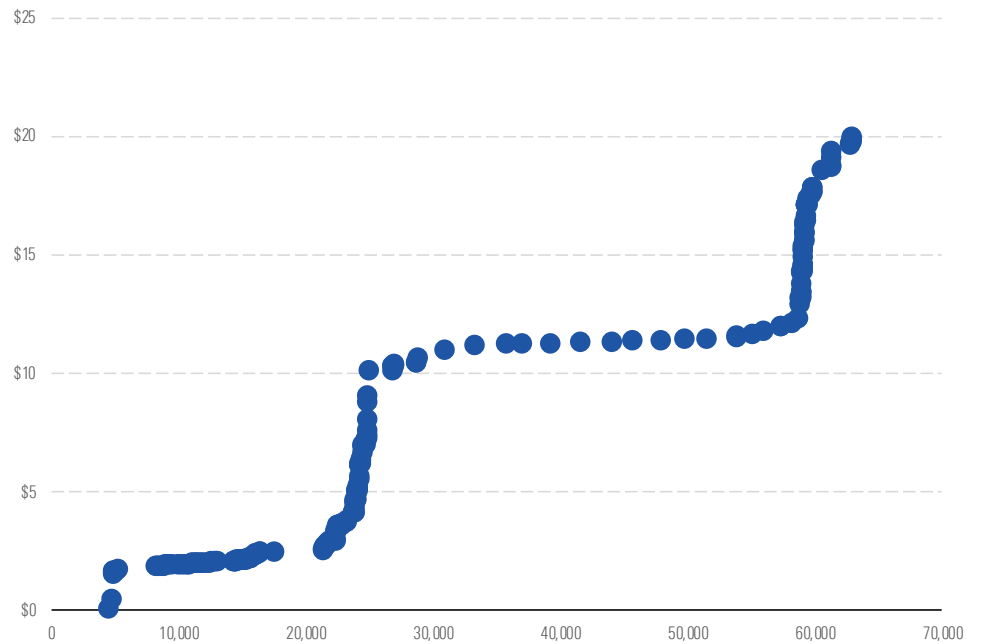
This increase in renewable generation and continued state support to retain nuclear units in the region extends PJM's ability to handle over 60,000 MW of load at the sub-\$20/MWh marginal price range. Looking at the 2018 supply stack versus projected 2019 summer in exhibits 3 and 4 we see the growth of wind and solar over last year to extend the lower price stack this summer. Between nuclear, wind, and solar the supply stack is still not setting the marginal price just yet, but it will be something to look out for as early as 2020.

Exhibit 3 PJM 2018 Lower Supply Stack



Source: Morningstar, EIA, PJM.

Exhibit 4 PJM 2019 Lower Supply Stack



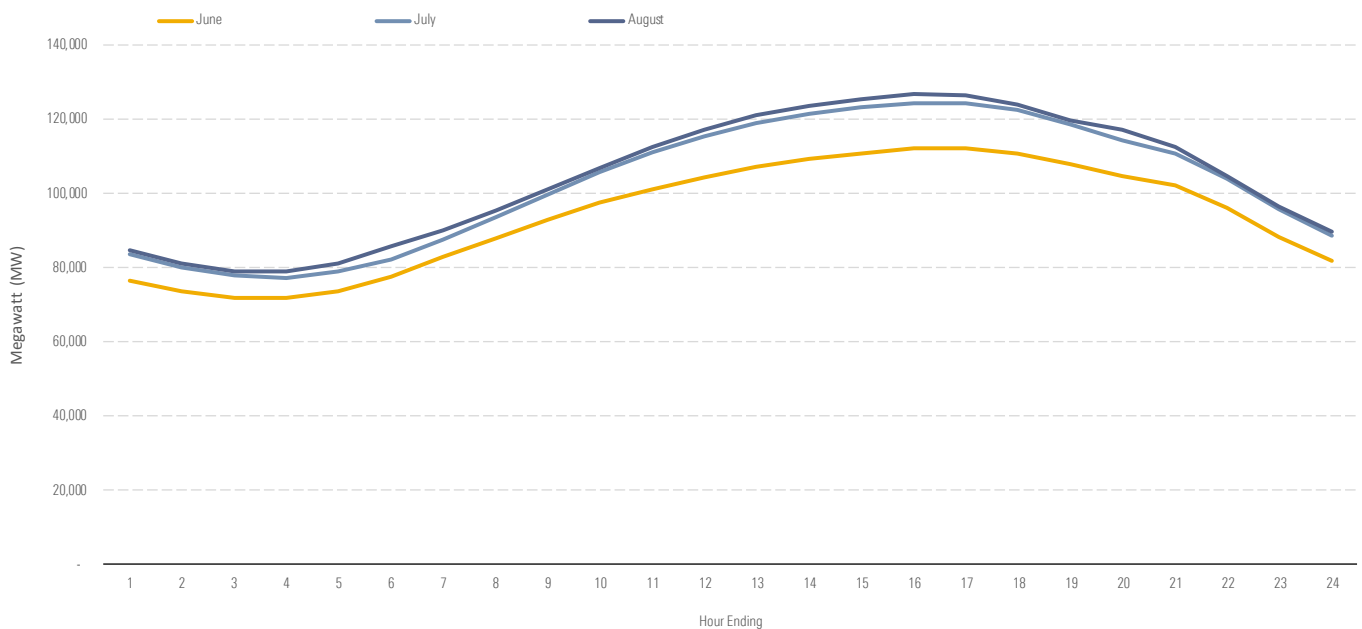
Source: Morningstar, EIA, PJM.

Demand Levels

Exhibit 5 shows the average demand profiles seen last year in PJM. Baseload levels out at around 71,000 MW. With the lower range of the supply stack only able to reach just over 60,000 MW the ability of wind, solar, and nuclear to set price in the sub-\$20 price range (as seen commonly in SPP and ERCOT) is still not on the cards for PJM. Although, with greater natural gas takeaway and the addition of renewables to shift marginal price opportunities for high demand price spikes will be lower this summer in PJM.

Current forecasts are not pointing to a blazing hot record-breaking summer in PJM but do show plenty of demand in the northeast. NOAA's March monthly degree day forecast for the summer raised CDDs to 628 from February's 622 estimate. This will be close to the 30-year average of 630 CDD for Jun-August. Overall, unless weather models start adding significantly more degree days the price outlook is bearish given the shifts in the supply stack.

Exhibit 5 2018 Average Summer Month Demand Profiles



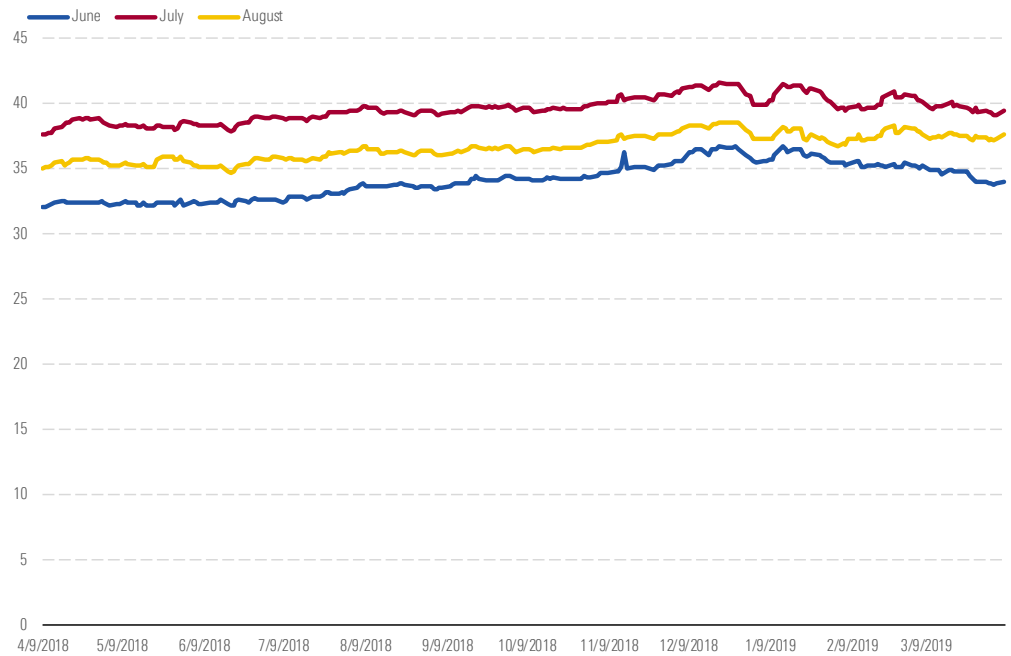
Source: Morningstar. Data as of Sept. 7, 2018.

PJM Summer Prices

Current contracts for PJM West Hub are trading in line with last year's settles. With June, July, and August for 2019 on peak settling around \$35/MWh, \$40/MWh and \$38/MWh, respectively (Exhibit 6). However last year's lingering April winter elevated prices through the spring. This year the monthly on-peak price has struggled to top \$30 since January. While additional summer demand will shift market prices higher, current on-peak monthly settlements have been a combined \$46 under last year for the

January-April contracts so far. In fact, every month has so far settled lower than last year and this trend should continue into the summer contract months.

Exhibit 6 ICE Summer Contract Settles



Source: Morningstar, ICE.

PJM Summer

Overall, market prices are trading in line with where last year's summer strip settled. Given the bearish shifts in the capacity market, PJM summer prices appear to be slightly overpriced. There are bearish drivers in the demand outlook due to added renewable and more efficient natural gas displacements that have continued since last year. PJM should stay sub-\$40/MWh for the summer and if anything, drive closer to a \$30/MWh price level. ■■

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