NEWS RELEASE

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Reliability, Fuel Supply Strong in PJM During 2018-2019 Winter

Wind Output Reaches Record Peak

(Valley Forge, Pa. – March 18, 2019) – The PJM electrical grid came through the 2018–2019 winter reliably in the face of extreme temperatures and high electricity demand.

The 2018–2019 winter provided insights into grid operation, market trends and the security of fuel supplies for the 13 states and District of Columbia that make up PJM's service area. PJM saw the following:

- Electricity was supplied by a diverse set of resources, including natural gas, coal, nuclear and renewables.
- Generator performance continued to improve, with forced outages down from previous cold weather periods.
- A break in a major natural gas pipeline occurred during winter peak operations, but did not pose a significant impact to generation.
- Pricing in PJM's reserve market during stressed conditions showed that valuable energy reserves, while adequate during these periods, were not appropriately compensated in the market, which supports the movement for price reforms.
- Wind generation in PJM reached its all-time peak of 7,808 MW on Jan. 9.

During the short but intense cold snap that impacted PJM's footprint between Jan. 28–31, forced outages were slightly higher than normal winter operations, which is typical for extreme cold periods. But overall generator performance was good, and continued to show marked improvement over the polar vortex winter of 2013–2014.

During the 2013-2014 winter, PJM faced forced generation outages of up to 22 percent. Last winter (2017–2018), the extended cold snap produced forced outages of just 12 percent. And during the recent cold weather of Jan. 30 and Jan. 31, PJM saw outages down to 8.6 percent and 10.6 percent, respectively.

The output of the diverse generation fleet was similar to that of the 2018 cold snap, with a significant increase in the percentage of natural gas, and a decrease in the percentage of coal-fired generation. More information is available in PJM's Cold Weather Operations Summary.

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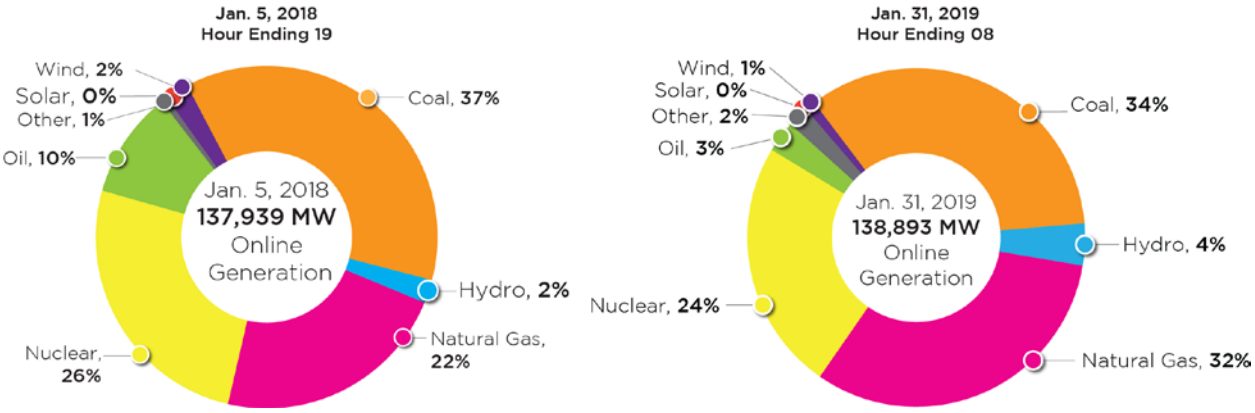

The increased percentage of contribution from gas reflects lower gas prices in 2019. The decrease in coal's percentage share can be partly attributed to the retirement of approximately 3,300 MW of coal units between Jan 1, 2018 and Feb.1, 2019.

Older generators still online but slated for retirement experienced outages of between 18 percent and 23 percent, more than those of other generators across the PJM footprint, which ranged from 7.0 percent to 10.6 percent.

Wind generation hit a record output earlier in January, and its contribution to the energy mix was also significantly above its capacity commitment.

PJM has been studying the performance of natural gas-fired generators under stress, addressing concerns raised by regulators about the increasing percentage of gas-fired generation in the PJM fleet and the ability of those plants to secure fuel supplies when the demand for natural gas for home heating is at its highest.

This winter, those gas-fired generators showed improvement over last year. During the peak demand of Jan. 31 – preliminary estimates show it to be the fourth-highest winter peak that PJM has seen – gas supply outages were 2,930 MW. That was an improvement over the 2018 cold snap, when gas generation saw 5,913 MW in supply-related outages. All fuel-supply related outages also fell by more than 50 percent.

Most natural gas-fired generation outages were due to internal plant issues, such as mechanical failures, as opposed to gas supply outages. This improvement was driven by a number of factors, including: generators "firming up" gas supply contracts, pipeline expansion projects, improved gas/electric coordination and the relatively short duration of the cold weather.

There was a force majeure issued on the Texas Eastern pipeline on Jan. 21, 2019, as a result of a pipeline rupture in Ohio. Texas Eastern was able to quickly isolate the damaged segment, and gas supply to nearby PJM generation was not interrupted by the event.

As noted after the 2018 cold snap, and reinforced this year, the price of procuring reserves does not always reflect their value. Synchronized reserves can provide power to the grid within 10 minutes, or quickly remove electricity demand, and are crucial to reliability. On Jan. 31, however, Synchronized Reserve Market prices in PJM were at or

near zero for 19 of 24 hours, suggesting that those reserves have little or no value. PJM plans to file a proposal with the Federal Energy Regulatory Commission in the near future to improve how reserve prices are formulated.

"This winter confirms what we have been seeing in PJM recently," said PJM President CEO Andrew L. Ott. "The grid is strong, diverse and reliable, and even major fuel supply disruptions can be absorbed. We will continue to analyze the dependability of the fuel-supply system to make sure we're reliable under extreme conditions, and craft appropriate market reforms to offer proper incentives to generators providing critical reserves."

PJM Interconnection, founded in 1927, ensures the reliability of the high-voltage electric power system serving 65 million people in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. PJM coordinates and directs the operation of the region's transmission grid, which includes over 84,236 miles of transmission lines; administers a competitive wholesale electricity market; and plans regional transmission expansion improvements to maintain grid reliability and relieve congestion. PJM's regional grid and market operations produce annual savings of $2.8 billion to $3.1 billion. For the latest news about PJM, visit PJM Inside Lines at insidelines.pjm.com.

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