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January 21, 2022

PJM Board of Managers
Mr. Mark Takahashi, Chairman
Mr. Manu Asthana, President and CEO
PJM Interconnection, LLC
2750 Monroe Boulevard
Audubon, PA 19403

RE: Analysis Of Renewables Integration

Dear Mr. Takahashi, Mr. Asthana, and the PJM Board of Managers :

I am writing about the analysis reflected in PJM's white paper "Renewable Integration in PJM: Frameworks for Analysis, December 15, 2021." We appreciate the analysis that PJM has undertaken to identify the challenges associated with the expansion of renewable energy within the PJM footprint combined with other trends, especially the retirement of coal-fired generation and other resources that are needed to maintain reliability and balance the intermittency of renewables. We commend PJM's foresight for undertaking this analysis.

As we understand it, the next phase of the study will include additional sensitivities. As one of those sensitivities, we strongly urge PJM to assume the retirement of the PJM coal fleet, currently some 50,000 megawatts (MW). We have suggested this assumption twice before. The first was at last July's Operating Committee meeting when you last presented your fuel security analysis which included only announced coal retirements. The second time was at the Markets and Reliability Committee meeting in December where you presented the white paper. While steps should be taken to minimize coal retirements, we still believe this is a useful what-if assumption for sensitivity analysis that would provide greater insight into the challenges that PJM could face.

Renewables Are Likely To Be More Than 50 Percent

Considering utility carbon reduction goals and other policy objectives such as the Administration's 2035 grid decarbonization goal, the "accelerated" scenario (50 percent of PJM's energy from renewables, or 110,000 MW of wind and solar, by 2050) is a plausible scenario for testing sensitivities at the present time, especially an all-coal-retirement assumption. That said, a 50 percent assumption is all but certain to understate the amount of renewables capacity that will be added in the future if tax credits for renewables are extended by Congress. For example, we estimate that the ten-year tax credit extensions in the Build Back Better Act would result in an almost doubling of solar capacity nationwide by 2031 because utility-scale solar projects would qualify for a production tax credit for the first time ever

and developers would be able to monetize these tax credits by receiving a direct payment of cash from the Treasury Department. We also estimate the tax credit extensions could lead to the retirement of an additional 70,000 MW of coal-fired capacity, which represents one-third of the existing coal fleet.

We are opposed to another extension (for the 25th time) of tax credits for wind and solar because they are unnecessary and expensive. However, if they are extended by Congress, we urge PJM to evaluate a scenario with an even more aggressive expansion of renewable energy and by a date much earlier than 2050.

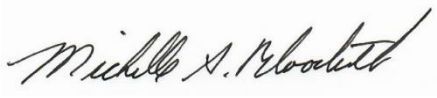
PJM Balancing Resources Could Be Inadequate

PJM's white paper indicates that "an additional 78 percent nameplate capacity on top of the forecast peak load was required to satisfy the 1-in-10-year Loss of Load Expectation (LOLE)" in the 50 percent renewables case. Using PJM's projected peak load of 155,000 MW in 2036 as a proxy for 2050 implies that more than 275,000 MW of installed capacity (155,000 MW x 1.78) would be needed to satisfy the 1-in-10 LOLE criterion. Subtracting 120,000 MW of renewables expected by 2050 would mean that 155,000 MW (275,000 MW minus 120,000 MW) of balancing (non-renewable) resources would be needed. (Note that we round numbers in this letter for the sake of simplicity.)

PJM currently has 182,000 MW of balancing resources. Therefore, the loss of any more than 27,000 MW of balancing resources (182,000 MW minus 155,000 MW) would lead to a violation of the LOLE criterion. For example, the loss of only slightly more than half of the existing PJM coal fleet would cause a LOLE violation, unless the loss is offset by adding other balancing resources. Moreover, the net loss of more than 27,000 MW of any combination of balancing resources (coal, nuclear, and/or gas) would cause a LOLE violation.

Last, it seems logical that a greater-than-50-percent penetration of renewables would necessitate additional nameplate capacity even greater than 78 percent (i.e., even greater than 275,000 MW). We would be interested in PJM's views on whether this logic is correct.

Sincerely,



Michelle Bloodworth
President and CEO

Copy to:
Mr. Dave Anders
Director, Stakeholder Affairs
PJM Interconnection, LLC