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Critical Issue Fast Path – Resource Adequacy Stage 4

Pennsylvania Senator Gene Yaw, Chairman

Senate Environmental Resources and Energy Committee

I am the chairman of the Pennsylvania Senate Environmental Resources and Energy Committee. Individually, as a Senator, I represent approximately 255,000 citizens over 4380 square miles across Bradford, Lycoming, Sullivan, Tioga, and Union counties.

The issue before the Board which I wish to comment on is Critical Issue Fast Path - Resource Adequacy as it relates to reliability of the PJM grid. It is stated repeatedly that reliability is the keystone of PJM performance. My basic question with respect to reliability is very simple: What is the source of electricity at 3 AM on a calm cold winter night or hot summer night? All other issues arise out of that simple question.

Demand for electricity is growing whether for home use, electric vehicles, high demand data centers, or just an increase in population. Policy decisions at the state and federal levels are encouraging, if not forcing, citizens to use more electricity. This is being promoted by dramatically reducing thermal generation capacity of electricity, mainly through the elimination of coal and gas as an energy source.

Pennsylvania's installed electric generation capacity represents 25% of the PJM installed capacity. As of December 31, 2022, the capacity of PJM was: Gas-47%; Coal-24%; Nuclear-18%; Hydro-5%; Oil-5%; Wind-3.0%; Solar-1.5%; Waste-0.4%. In comparison, Pennsylvania installed capacity was: Gas-49%; Coal-20%; Nuclear-19%; Oil-8.8%; Hydro- 5%; Wind-1%; Waste- 0.5%; Solar- 0.14%. In short, what happens in Pennsylvania is an important, if not critical, factor in maintaining grid reliability. Moreover, what happens in Pennsylvania can be the result of internal policy as well as real or perceived factors from outside the state.

Many federal and state policies are directing electricity production away from thermal generation towards electricity generated by wind and solar. These policies generally advocate for an end or curtailment of coal and gas as a source of thermal generation by 2040 or even as early as 2030.

With 71% of the PJM installed capacity coming from coal and gas, the proposed reductions are the equivalent of turning a cruise ship around in the Panama Canal, and this is to be accomplished in less than a decade. Since Pennsylvania's installed capacity for coal and gas is 69% of its total, the potential economic impact on Pennsylvania is enormous. The stated goals are to change almost two thirds of our energy production and replace it with production which currently represents less than 5% of our production capacity.

Policy changes have already had a significant impact on electricity generation in Pennsylvania. Over the last two decades more than 60 coal fired power plants have closed nationally. Homer City Generating Station, the largest coal fired thermal plant in the state closed taking 2000 MW capacity off the grid. Keystone Generating Station and Conemaugh Generating Station, representing another 3400 MW, are scheduled to close by 2028, but spokesmen have said if the Regional Greenhouse Gas Initiative tax is implemented in Pennsylvania closure will be moved up. The result of uncertainties in the generation market have resulted in virtually zero, that is zero, investment in new thermal generation capacity in the state since 2019. If the capacity of the three facilities mentioned above was to be replaced by wind and solar, it would require approximately 37,800 acres of solar panels or 3,600 wind turbines at a minimum to offset the loss to the grid. No such plans are under consideration in Pennsylvania. The plain fact is we are retiring thermal generation capacity and have no plan to replace the loss.

It is a fact that solar and wind electricity production is intermittent, weather dependent, and of limited duration. Thermal energy, on the other hand, is available 24 hours a day, 365 days a year, and is not dependent on weather. Even if the thermal capacity closing or likely to close in Pennsylvania is replaced by wind and solar, the power is still intermittent, weather dependent, and of limited duration leaving a significant reliability gap.

What is the source of the 3 AM power? Unfortunately, this question goes largely unaddressed. Some commentary on the issue suggests that the transmission lines need to be improved. That is akin to rearranging the deck chairs on the Titanic. Other comments suggest allowing the capacity auction to continue as status quo will eventually result in thermal generation coming or staying online. However, based on the Pennsylvania experience, such a scenario seems unlikely as evidenced by the closure of the Cheswick Generation Station on March 31, 2022, which is under demolition already.

Reliability, as we know it, cannot be achieved without addressing the issue of what is the source of 3 AM electricity. The answer lies in addressing the rapid, and often premature, closing of thermal generation facilities with replacement by intermittent, weather dependent, and limited duration sources. In the rush to so-called clean energy, there is little, if any, planning as to how this is to be accomplished without use restrictions of some sort.

Current interconnection applications before PJM are 75% wind and solar. Only about 2% are related to thermal. For Pennsylvania specifically, wind and solar account for 71% of the new generation proposals, while less than 1% is related to thermal. These facts clearly indicate that the reliability and integrity of the PJM grid is facing challenges.

I have been asked several times what it will take to get people's attention. We cannot continue blindly down the "renewable flavor of the month" without planning for replacement of thermal generation or developing a duplicate system, which is not intermittent, nor of limited duration, nor weather dependent. My answer: It will take a catastrophic event involving loss of life to get people's attention.