



HB 1112

Matthew Richwine

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Public Service Commission - Energy Storage Devices - Acquisition

Economic Matters Committee

March 7th, 2024

Dear Chair Wilson, Vice Chair Crosby, and Members of the Economic Matters Committee:

My name is Matthew Richwine from Telos Energy, and I am providing testimony related to HB 1112 at the invitation of Delegate Charkoudian. I am a power systems engineer and Founding Partner of Telos Energy, a firm that provides engineering and economic analysis of electric power generation and transmission systems across North America.

When a power plant announces its intention to shut down, the system operator, PJM, is required to perform an analysis of the grid to determine the impact of the plant shutdown on the reliability of the grid. After PJM released its deactivation analysis for the Brandon Shores plant, Telos Energy was approached by the GridLab organization to conduct an independent analysis of the reliability impacts of the Brandon Shores deactivation. The objectives of the analysis were to mirror the analysis that PJM performed and to extend it by identifying alternative options to enable Brandon Shores to retire as close to its June 2025 target date as possible while meeting the same reliability criteria that PJM uses.

To conduct the analysis, we first replicated the analysis that PJM performed using the same industry-standard software tools used by PJM and started with the same grid models, which were provided by PJM. The models of the grid are extremely complex, including representation of many thousands of lines, transformers, generators, and other elements of the grid spinning the eastern half of the US. In consultation with the PJM Special Studies team, we benchmarked our results against PJM's and found that our results identified essentially the same risks – or violations of the transmission planning criteria – after the retirement of Brandon Shores and before applying the transmission reinforcements.

Next, our analysis explored other options for reinforcing the grid in the absence of Brandon Shores and identified an alternative portfolio of reinforcements that satisfied the reliability criteria. This alternative portfolio included:

- The same transmission reinforcements that PJM had identified and approved with a prioritization of the reinforcements for voltage support. These reinforcements typically have a

shorter construction timeline than reinforcements like the construction of new 230kV and 500kV transmission lines.

- The additional upgrade of several short 115kV/138kV transmission line sections, a relatively minor set of upgrades from a cost and construction standpoint.
- The addition of a new battery energy storage asset interconnected at Brandon Shores, a 600MW-800MW 4-hour asset with a 20-year design life.
- Retaining two of the four units of the nearby Wagner power plant until all transmission reinforcements recommended by PJM are completed.

Our analysis found that this alternative portfolio is technically feasible in that it meets the reliability criteria set forth by PJM, including consideration of proxy scenarios intended to represent periods of particularly high grid stress like a winter storm event. Our analysis also found that the alternative portfolio provides a net economic benefit relative to the approved portfolio if it advances the shutdown of Brandon Shores, which PJM estimates would be on Dec 31, 2028, by as little as one year, assuming a reliability must-run (RMR) payment of \$250MM/year. Further, the savings from the alternative portfolio grow substantially if the RMR is extended due to unanticipated construction delays of the new, large 230kV and 500kV transmission line projects.

Our analysis shows an alternative portfolio that combines transmission upgrades with the application of new battery energy storage technology is worthy of further consideration. I urge a favorable report on HB 1112.

