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May 12th, 2023

Ms. Lesley Gallinger
President & Chief Executive Officer
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1600-120 Adelaide Street West
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Re: IESO December 15, 2022 Reports – Commentary & Response

Bedrock Energy Corp. ("Bedrock") is a qualified IESO RFP applicant, hoping and planning on filing an unsolicited proposal ("USP") application for its project with the IESO in 2023. The Bedrock Management Team consists of experienced North American energy experts who share in the work and business of developing long-duration compressed air energy storage ("CAES") facilities in Ontario. The first of its facilities in Bayfield, ON is anticipated to reach 500 MW with a commercial operation in 2027.

Bedrock has reviewed the IESO Reports and would respectfully offer the following observations.

Timing

Since June of 2021, the IESO has recognized the need for immediate action on enhancing the supply of electricity capacity in Ontario. With the Pickering nuclear station reaching its end of life in 2024 – 2026, 3,000MW of nuclear supply will be decommissioned before 2027 and needs to be replaced through a variety of battery and other supply options and alternatives. The IESO is wisely seeking additional power supplies, first through its E-LT1 and LT1 RFP opportunities in the expectation that the anticipated supply gap will be filled. Other RFPs and sourcing via contracts are planned. Bedrock respectfully believes the supply situation in Ontario is about to become critical at and around peak times.

Load Growth Forecast

A difficult measure to determine years in advance will be these anticipated supply requirements of a growing power grid. Presently, the IESO is forecasting a 2% annual load growth, or effectively, the equivalent of a new Pickering power plant every five (5) years, which requires considerable lead time and planning. Bedrock does not possess the forecasting expertise that the IESO has available, but would offer its collective industry experience, observations and voice to the IESO and the Ministry of Energy that several factors ought not to be underestimated in planning for the future load growth on the Ontario grid. Some of these are well known and include:

- Retirements and outages of current generation facilities, some permanent, some temporary – which may be a challenge to predict with certainty for re-contracting and system reliability purposes.
- The clear, predictable, and direct impact of the federal carbon tax on shifting ratepayer/customer behaviors up to and beyond the forecast periods in the reports.
- Significant, mandatory shift to EVs, charging times and impacts on local utility distribution systems.
- Shift to off-gas, off-propane space heating energy to ground and air heat pumps, reduced natural gas consumption, and growing reliance on electricity in winter, eventually creating winter peaks as the IESO predicts.
- Unforeseen nuclear equipment issues affecting refurbishment timelines and costs.

- Potential energy conservation efficiencies are aimed to reduce demand and offset new loads.
- Efficiencies and advances in refrigeration technologies cannot be relied upon for offsetting concurrent load growth, as has been a factor in the past two decades.
- Lower CapEx and OpEx costs of wind, solar and storage contributing to lower power system generation costs and needed flexibility/changes in supply mix.
- Extreme climate change and catastrophic weather events affecting utility deliveries.

Bedrock believes that each of these factors is worthy of careful consideration as they are appropriately canvassed to some extent throughout the December 15, 2022 Reports. What is also of critical importance is the need to ensure that the IESO is planning in its 'No Regrets' forecasts for an insurance-type supply back-up in case more than a few of the above factors are layered on top of each other and not staggered, thus causing a deeper supply gap or riskier power availability situation. Underinvestment causing supply shortages should not be tolerated by an advanced jurisdiction such as Ontario, acting prudently.

Long Duration Storage

Bedrock presumes the IESO is well aware of the costs of short-duration battery storage but may be less attuned to the costs and benefits of long-duration energy storage ("LDES"). This comment period offers a valuable opportunity to respond to the suggestion that battery storage technologies are actually ready for construction and connection, but that LDES should wait to be added to the mix until the mid-2030s or later, and in the limited amounts as the IESO is suggesting and forecasting.

Bedrock respectfully would advocate that batteries are needed and so are LDES capabilities – in time for the decommissioning of Pickering. Ontarians have already run their summer peaks recently in full-out generation mode, which means all of its generation fleet was on deck and running for days, with the good fortune of no unplanned outages. The removal of Pickering makes this capability of meeting peak supply a serious new challenge, not just in summer but also in winter as the green transition continues. We believe the IESO knows this risk.

Through the IESO's own *Reliability Outlook: July 2022 to December 2023* report, it is abundantly clear that while Ontario may avoid power losses during the summer peak this year, it will only be able to do so through increased energy imports and through denying planned outages to ensure adequate supply. These resource adequacy challenges will continue to compound as Ontario approaches and passes the 2026 Pickering shutdown threshold. The ability to secure LDES would positively contribute to the IESO's ability to manage those future planned outages, so as to avoid the risk of forced outages as a result of delayed maintenance of aging generation equipment. By incorporating LDES systems into the overall power mix, the IESO will enjoy a measure of flexibility that by its own estimations, it absolutely needs to ensure reliability.

Surrounding jurisdictions MISO and PJM cannot be counted on for deliveries or power trading over the interties in times of shortage. These jurisdictions have their own constraints and limitations, which are well known to those participating in NERC, especially on hot summer days. Manitoba does not have robust TX connections to aid Ontario, nor does Quebec have excess power resources forecasted. Ontario must have its own available power supplies planned as it has traditionally. As of this writing, it is not clear to Bedrock how this balance and planned surplus will ultimately be addressed, except to say that there are some confusing messages floating around about Ontario's green grid being supported by another generation of natural gas-fired plants, once Pickering is decommissioned.

Signed by:

Evan Tummillo
Director, Research and External Relations