

Specific energy storage applications canada

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The last three years have seen utility-scale energy storage systems proliferate in Canada like never before. A recent white paper published by Energy Storage Canada, the nation's leading industry organisation for all things energy storage, concluded that anywhere between 8,000 MW to 12,000 MW of energy storage potential would optimally support the net-zero transition of the Canadian electricity supply mix by 2035. In addition to helping jurisdictions meet their net-zero goals, energy storage is key to increasing grid reliability, efficiency and resiliency.

Ontario is Canada's most populous province with more than one third of the country's population. The province has approximately 38,193 MW of installed capacity,[1] with summer peaks that range from 21,000 MW to a historical high of 27,005 MW.[2] In Ontario, the Independent Electricity System Operator (IESO) is responsible for managing the electricity sector. The IESO delivers key services including managing the power system in real-time, planning for the province's future energy needs and enabling conservation. The IESO takes direction from the Minister of Energy, which is generally issued by way of letter.

After at least a decade of surplus energy and relatively flat demand, the IESO now predicts a steady average increase of net energy demand of two per cent year-on-year, culminating in a 208 TWh demand in 2043, for a total increase of 60 TWh and summer peaks forecast to reach 31,500 MW.[3] Driven by electrification of certain sectors of the economy, increased economic activity, population growth and the retirement and refurbishment of Ontario's nuclear facilities, which provide more than half of Ontario's baseload power, the IESO predicts a capacity shortfall in the mid-2020s.

The IESO initiated the Long Term 1 RFP (LT1) on the heels of ELT1. The LT1 is intended to procure competitively up to 2,518 MW of year-round capacity services, of which 1,600 MW are targeted to be procured from energy storage facilities, and 918 MW are from natural gas facilities. The target for natural gas facilities includes the leftover capacity from ELT1. The bid submission deadline was 12 December 2023 with contract awards expected to be announced in May 2024. The IESO is currently seeking comments on the design of Long Term 2 RFP (LT2), which is expected to focus on energy (MWh) rather than capacity, to compliment the additional storage capacity that is coming online from ELT1 and LT1.

Utility-scale storage is increasing in the rest of Canada as well, especially when considered in relative terms to

the current assets online in each province.

300-400 MW by 2030, of which 300 MW will be centralised and up to 100 MW will be connected to the distribution system or behind-the-meter

2023 procurement for 50 MW, and a further 100 MW by 2035

480 MW by 2032 (under certain planning scenarios)

Figure 1: provincial energy storage targets.

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