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Beaverton Battery Energy Storage Project proposal: Project details and FAQs

Overview of the IESO LT1 Procurement, and the role of battery storage in Ontario's changing energy system

After more than a decade of strong supply, Ontario is entering a period of emerging electricity system needs, driven by increasing demand, the retirement of the Pickering nuclear plant, the refurbishment of other nuclear generating units, as well as expiring contracts for existing facilities.

To address these needs, the Ontario Independent Electricity System Operator (IESO) Long-Term Request for Proposals (LT1 RFP) is expected to competitively procure 2,518 MW of year-round effective capacity from dispatchable new build resources. These include new-build battery storage facilities larger than 1 MW and which can deliver a continuous amount of electricity to a connection point on a distribution system or transmission system for at least four consecutive hours.

Today, Ontario is fortunate to have an exceptionally low-carbon electricity system, thanks to the large proportion of nuclear, hydroelectric and renewable resources in our province. However, these resources tend to be inflexible, meaning they cannot easily be adjusted up or down depending on customer demand. While fossil fuel resources such as natural gas plants offer much greater flexibility, they also generate significant local air pollution as well as greenhouse gas emissions.

Battery energy storage systems can absorb excess electricity generated during times when renewable sources produce more energy than needed, and release this stored electricity when it is required. This will enable the province to make more efficient use of our existing generation supply, rather than curtailing generators and/or exporting surplus electricity to neighbouring US states during periods of low demand within the province. In the context of Ontario's growing electricity demand, energy storage can provide the necessary flexibility to balance the grid and ensure that it runs as efficiently as possible. Energy storage will help to postpone the need to build new generation capacity, and will improve the operating efficiency of new generation capacity when it does become available, thus ensuring better long-term value for Ontario ratepayers and a cleaner energy system.

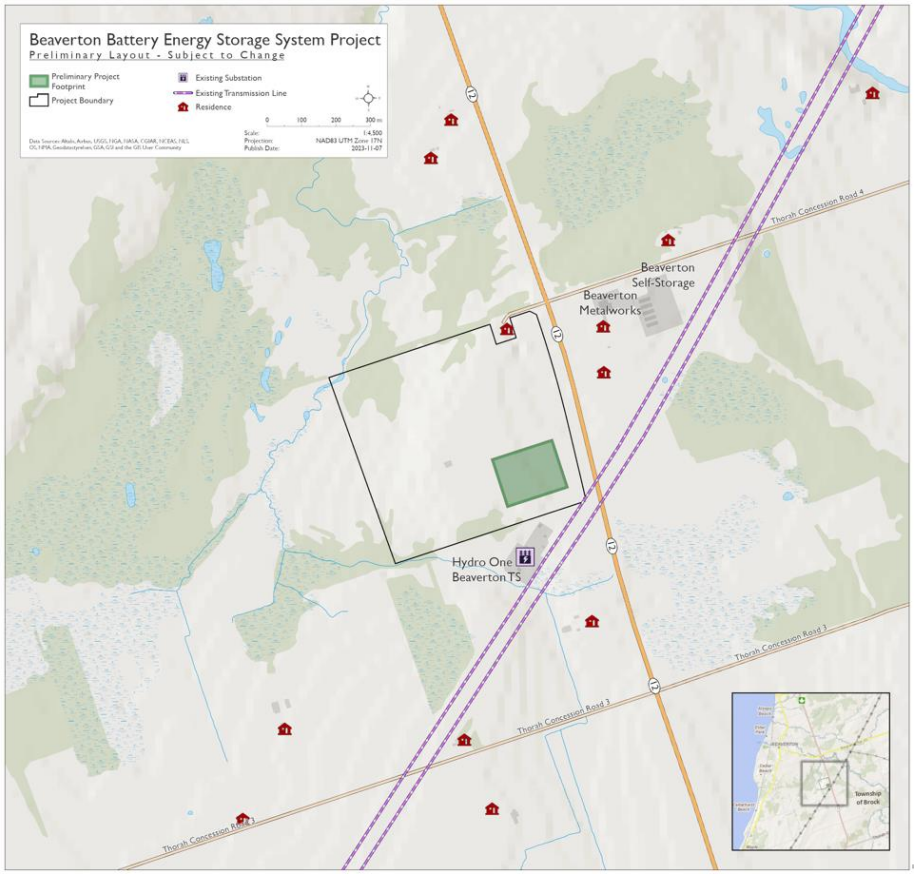
For this RFP, battery storage Projects are being proposed by a wide range of developers, in numerous locations throughout the province.

Description of the proposed Beaverton Battery Energy Storage Project

The Beaverton BESS Project would provide 80 MW of battery storage capacity for a 4-hour duration (320 MWh total). The Project would be located on approximately 4 acres of previously cultivated land adjacent to the Hydro One Beaverton Transmission Station, north of Thorah Concession Rd. 3 and west of Highway 12.

The battery energy storage site would consist of an access road and rows of modular containers, each containing battery cells, inverters, transformers, and other electrical components. The modular steel containers would rest on foundations and almost all the electrical wiring and communication cabling will be buried underground. The site area would be surrounded by a fence and safety signage.

The layout of the infrastructure within the Project boundary remains to be confirmed, and will be determined through additional engineering studies, equipment procurement, and environmental studies. The Project will connect to the existing 230-kV transmission line located on the site.



Above: Location of the proposed Beaverton BESS Project

Why is this Project being proposed here?

Our proposed site is located immediately adjacent to Hydro One's Beaverton transmission station and a high voltage transmission line, meaning our Project would be optimally integrated with existing grid infrastructure. We anticipate significant value for Ontario's electricity system in having a large-scale BESS located in this area – Durham is one of the fastest-growing regions in Canada[1], and this Project would help to support local load growth and reliability while making the most efficient use of the existing grid, rather than building new generation and transmission lines.

Is this type of development allowed within the Greenbelt?

Yes. In general, both new infrastructure development and expansion of existing infrastructure are permitted within Ontario's Greenbelt, provided they meet all required environmental approvals. Ontario's Greenbelt policy framework provides detailed guidance on appropriate infrastructure planning and investments to support and accommodate forecasted growth in a manner that is integrated with land use planning and environmental protection.

ABO is confident that this Project would be well aligned with the overarching objectives of Ontario's Greenbelt policy. By making optimal use of existing grid infrastructure and avoiding the construction of new overhead transmission wires and associated Right-of-Way corridors, this Project would help to protect against the loss and fragmentation of the agricultural land base and support agriculture as the predominant land use, and would help to avoid adverse impacts to the natural heritage and water resource systems that sustain ecological and human health. By enabling more efficient use of Ontario's existing low-carbon electricity supply and avoiding the use of natural gas generation, while at the same time improving the reliability and flexibility of the province's energy system, this Project would help to both build resilience to and mitigate climate change

Would this Project be built on prime agricultural land?

The approximately 4 acres (1.6 hectares) of farmland that the Project would take up is classified as Class 2 (moderate crop limitations/moderate conservation practices required), meaning that it is considered prime agricultural land. We anticipate that approximately 50-60 acres of the remaining cultivated area of the site would continue to be available for farming once the Project is operating, and have discussed this with the current tenant. The remaining parcel area is forested and is unsuitable for cultivation.

ABO is deeply mindful of the value and importance of Ontario's farmland, and we have designed this Project to enable the most efficient use of existing infrastructure: Batteries will help to avoid the over-building of new electricity generation, and by siting the facility directly adjacent to the existing Hydro One substation, we have sought to limit landscape or other impacts associated with building new transmission lines. A Project location further away from the existing transmission infrastructure would require building new overhead wires and an associated Right-of-Way through neighbouring farms and woodlands, with significant environmental, agricultural and visual impacts.

[1] "Demographics and Statistics", Invest Durham (2021)

What is the role of the municipality vs. the provincial government in approving this Project? Is a Municipal Support Resolution required?

ABO is requesting that the Township of Brock Council provide a declaration of municipal support for the Project as part of the bid submission to the LT1 RFP process. This Resolution is a mandatory requirement of the RFP. The Resolution could technically be provided after the bid submission deadline, however the Project would be extremely unlikely to be competitive in the RFP without the rated criteria points that would be awarded for a Resolution achieved prior to bid submission (8% of the total evaluated bid is based on achieving a Resolution prior to bid submission).

It also important to emphasize that, while it is a requirement of the Project approval, the Resolution from the Township Council would not supersede any applicable permits or approvals that would be required for the Project to move forward.

This proposed Project would be subject to, at minimum, the following provincial environmental approvals and permits, in accordance with the Ontario Environmental Assessment Act:

- Registration through the Air Emissions Environmental Activity and Sector Registry (AE EASR),
- Environmental Compliance Approval (ECA) for stormwater runoff,
- Class Environmental Assessment (EA) for Minor Transmission Facilities

ABO Wind commissioned Morrison-Hershfield to undertake an extensive program of monitoring and environmental assessment of the site throughout 2023, and we have now collected enough data to begin the required environmental permitting processes in 2024, should the Project be successful in the IESO LT1 RFP process.

In summary, the IESO will evaluate developers' bids in the LT1 RFP and award contracts to the lowest-cost projects, with consideration for rated criteria (municipal support and Indigenous community ownership). These projects will require both a Municipal Support Resolution, and compliance with the aforementioned provincial environmental permitting requirements, in order to reach commercial operation.

What would happen to this Project at the end of its contract? Would there be hazardous waste from the batteries, and if so, how would it be safely managed?

There are two options once the Project reached the end of its 20-year contract term: Firstly, it is possible that there would be an opportunity to extend the contract term, in which case the BESS would be fully refurbished and maintained into the future. This would require additional environmental assessment and permitting, and would be contingent on the Township's continued approval of the Project. If the Project's contract were not extended, the batteries and all other equipment and structural elements would be removed and recycled, where possible, when the facility is decommissioned. ABO's land use agreement with the landowner stipulates that the site be returned to its former condition at the conclusion of the contract term. All structural materials and other equipment would be completely removed, and the soil would be fully rehabilitated and replanted.

Almost all materials including foundations, fencing, cabling, etc. could be recycled or re-used. It is important to note that battery materials are extremely valuable, and there is already a thriving battery recycling industry in Ontario.

ABO's proposed Project has been designed based on a Lithium-iron-phosphate (LFP) battery technology, a type of lithium-ion battery considered to have particularly low environmental and health risks. LFP batteries contain various materials, including lithium, iron, phosphate, and other elements. These materials are not inherently hazardous. However, they can pose some risks if not properly managed during the end-of-life phase.

If our proposal is successful in the RFP, ABO would work with the Township of Brock to develop a detailed end-of-life management and site reclamation plan to ensure that all materials used at the site, both structural and BESS units themselves, would be safely recycled or disposed of in compliance with all relevant regulations and industry best practices, and we would ensure that sufficient resources were committed and made available for this work to be completed. This Plan would be regularly updated over the course of the 20-year contract term.

What are the fire safety risks associated with BESS technology, and how will these be managed?

Our engagement with the Township of Brock community thus far has made clear that the fire safety of this proposed Project is of critical importance. We take this feedback extremely seriously, and will work to ensure that all community members' concerns are properly addressed going forward. ABO has recently met with the Township of Brock Fire Chief to discuss our Project proposal. If our proposal is successful in the RFP, we would work with the Township of Brock and the local fire department to develop a detailed Emergency Response Plan, and we would ensure that training be provided to service members so that they are familiar with the specific safety features of the installations and know how to respond to incidents effectively, and that service members have all the tools and resources they would need in the event of an emergency at the site.

Fire incidence and propagation is, unfortunately, a risk with any electrical infrastructure, such as the adjacent Hydro One Beaverton Transmission Station. However, for utility-scale battery systems, these risks can be substantially reduced through facility design, battery unit spacing, proper maintenance, and the use of state-of-the-art fire monitoring and suppression systems.

Overview of fire safety of Grid-scale battery energy storage systems (BESS):

BESS are designed with a range of fire safety features to ensure that they are safe and pose minimal risks to the surrounding community. These safety features are implemented to prevent, detect, and mitigate fire-related incidents:

<u>Prevention</u>

- **Enclosure and Separation**: This BESS installation would consist of solid steel enclosures that house the battery modules, inverters, and other components. These enclosures are designed to contain any potential fire within the system and prevent the spread of flames and smoke.

- **Location:** The BESS units themselves would be located more than 400 meters from any residence, place of business, or building where people or livestock would ordinarily be present.

- **Safety Standards and Regulations:** The BESS would be designed and installed in compliance with local fire safety standards and regulations. BESS systems themselves are rigorously tested to ensure compliance with the Underwriters Laboratories (UL) 9540: Energy Storage System (ESS) Requirements, and the systems must be installed in compliance with the National Fire Protection Association (NFPA) Standard for the Installation of Stationary Energy Storage Systems.

- **Thermal Management**: BESS systems are equipped with advanced thermal management systems to maintain the operating temperature of the batteries at a constant level.

- **Thermal Barriers:** BESS systems are equipped with thermal barriers to separate different sections of the BESS, reducing the potential for heat transfer between sections and mitigating the risk of fire spread within the system.

Detection

- This proposed Project would be equipped with sophisticated fire detection systems to immediately identify early signs of overheating, short circuits, or other potential fire hazards. These systems trigger alarms and automatic fire suppression mechanisms.

- In addition to automatic fire detection systems, the BESS would also incorporate remote real-time monitoring from an operations team, with control capabilities to detect and address any issues promptly. Remote monitoring allows operators to shut down the system or take other actions in response to abnormal conditions.

Suppression

- This proposed BESS would also integrate state-of-the-art fire suppression technology, including automated fire extinguishing agents or suppression gases, to quickly extinguish any fires. These systems are designed to minimize the impact of a fire and protect adjacent structures and personnel.

Would this Project have any negative impact on local air and water quality?

Battery storage does not leach any chemicals or produce air emissions or other pollution of any kind during normal operating conditions. The BESS would be designed, constructed and operated in accordance with the highest health and safety standards. The individual battery units would be completely sealed steel containers, each equipped with state-of-the-art monitoring equipment and safety systems that would immediately detect any abnormalities in voltage or temperature and automatically shut the unit down as a safety precaution.

ABO Wind has confirmed with the Lake Simcoe Regional Conservation Authority that the proposed Project location would be outside of the regulated area and thus not subject to LSRCA permitting requirements. However, if our Project is successful in the RFP we would continue to engage with LSRCA and other conservation stakeholders to ensure that the Project design avoids any adverse impacts to the Lake Simcoe watershed and local ecosystems.

How many local jobs will be created by the battery storage facility, and what types of jobs are expected?

While it is difficult to give an exact figure, we can be confident that dozens of full-time equivalent jobs would be created for this Project during the development and construction phases, including: Civil construction workers for site preparation and foundation work, Electricians for electrical system installation; Welders and fabricators for structural components; Heavy equipment operators; Project managers and supervisors; and Health and safety professionals. ABO has a local inclusion policy that provides preferential scoring for qualified local vendors and candidates. Realistically, opportunities for long-term employment associated with this Project once it is fully operational would be limited.

Given the limited long-term employment opportunities associated with this Project, what kinds of benefit will it bring to the community?

The Project would provide employment and contracts for local goods and service providers during the development and construction phases. ABO Wind has a Local Inclusion Policy that provides preferential consideration for vendors and individuals located in closer proximity to the Project. The Project would also provide long-term property tax revenue for the Township of Brock. By strengthening local transmission system capacity, the Project could also help to facilitate more economic growth in region, improving local power quality and reliability for the benefit of industry looking to locate or expand operations here.

ABO Wind pledges to create a lasting positive impact in the communities where we develop our renewable energy and energy storage developments. If the proposed Project moves forward, ABO Wind commits to working with the Township of Brock Council and local stakeholders to establish a local community benefit fund to be used for initiatives that generate positive social experiences in the region.

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