Atura Power

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Napanee Battery Energy Storage System – Frequently Asked Questions

Below are some frequently asked questions and answers about the Napanee Battery Energy Storage System (BESS). If you have a question that is not shown below, please send us an email at energystorage@napaneebess.ca and a project representative will respond to your inquiry.

Who is Napanee BESS Inc.?

Napanee BESS Inc. is a joint venture between Atura Power (an Ontario Power Generation subsidiary) and Ameresco Canada Inc. formed specifically for this project.

Why is Napanee BESS Inc. making this BESS facility?

After years of strong supply, Ontario is entering a period of growing electricity system demand (a predicted energy supply gap) and actions are needed to ensure the continued reliability of the electricity grid.

To close this gap and meet the projected demand, the Independent Electricity System Operator (IESO) is moving forward with a procurement process to meet short-term, medium-term, and long-term energy needs while maintaining the province's focus on cost-effective reliability.

What is causing the energy supply gap in Ontario?

Ontario's electricity sector is undergoing a period of significant transformation. New decarbonization policies coupled with rapid growth in the mining, greenhouse and industrial sectors are accelerating electricity demand across the province and heightening needs in certain regions.

The IESO's most recent Annual Planning Outlook (APO) reflects these trends. It projects a steady rise in electricity demand that highlights the strengths of Ontario's communities and economy to navigate the challenges of the pandemic, pursue electrification and support economic growth.

How does battery energy storage work?

When more energy is generated from sources such as natural gas, wind, solar, hydro, nuclear, etc. than is needed, energy from the grid is converted and stored in the battery system. When the electricity is needed, it is converted for distribution through the grid.

What is the BESS's proposed storage capacity?

The project may ultimately be contracted to provide 500 megawatts (MW) of power storage and up to four hours of 500 MW electricity output available during periods of high electricity grid demand.

Currently, phase 1 of the project has been awarded a contract by the IESO for a 250 MW BESS facility (contracted capacity), which will include supporting components such as a transformer station and tap line. Although phase 1 has a contracted capacity of 250 MW representing the maximum power to be discharged by the facility, the design capacity of the BESS units to be installed will have a name plate capacity of 265 MW. Feasibility studies are currently underway for phase 2, which includes an additional 250 MW of potential contracted power storage capacity.

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Why put in all this effort to only produce four hours of electricity?

IESO has determined that four hours of committed resources is needed to meet expected peak capacity needs.

Is there a potential to expand the project and implement a phase 3?

There is no plan for a phase 3 at this time.

What is the lifespan of the batteries and what happens at the end of their lives?

The lifespan is 20+ years. The batteries will be returned to the manufacturer for recycling or recycled locally into new battery products.

Are other BESS facilities being operated elsewhere in Ontario or Canada?

There is currently energy storage installed in four provinces in Canada: Ontario, Alberta, Saskatchewan and PEI. The are several additional projects slotted for development in these provinces in the coming years, as well as in New Brunswick and Nova Scotia. In Ontario there are 200+ MW of storage installed behind the meter (BTM). BTM is power that can be consumed without having to pass through a meter or the electricity grid to be used. This power is used for industrial facilities.

Does Napanee BESS Inc. currently operate any other BESS facilities?

No, Napanee BESS Inc. does not currently operate any other BESS facilities. However, the two entities that have combined to form a joint venture for the project have experience in power generation. Atura Power owns and operates Ontario's largest fleet of combined-cycle gas turbine powerplants, with 2,715 MW of capacity across four facilities. Ameresco has as portfolio of over 890 MW in storage capacity.

How big are the battery structures and how many will there be?

Each battery container unit is 29 ft long x 5 ft wide x 9 ft high. There would be 284 battery container units following the completion of phase 1.

What is the risk of a fire at Napanee BESS?

The risk of a fire at Napanee BESS is low, as fires at a large battery facility are rare.

Thermal runaway is a term used for the rapid uncontrolled release of heat energy from a battery cell into a condition where the battery creates more heat than it can effectively dissipate. This causes a chain reaction that heats up neighbouring cells which can result in battery fire and explosion hazard.

No matter the battery chemistry or cell design, cell failures can be initiated by electrical, thermal or mechanical abuse or internal defects. Stationary batteries have additional safeguards/protections compared to other applications of lithium-ion batteries (e.g., cars, cell phones, toys).

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What methods of fire protection will be used?

The equipment selected for the project has demonstrated that a fire in one module would not spread beyond the initiating module, and destructive unit-level tests showed that the units are capable of safely failing without propagating to other neighboring units. Design of the BESS facility will minimize fire propagation risk by incorporating spacing between battery units and providing on-site firewater.

The battery system being selected for this project is from a Tier 1 supplier, meaning that they have:

- Demonstrated a well thought-through safety philosophy;
- Selected a battery chemistry which is more resistant to thermal runaways and fires;
- Designed the battery management system to monitor control and optimize performance of each battery module including disconnecting battery modules in the event of abnormal conditions; and
- Designed BESS units to incorporate layers of protection to prevent the initiation and propagation of fires and prevention/protection against explosions.

The system will be designed and tested to meet the latest standards (e.g., the National Fire Protection Association's Standard for the Installation of Energy Storage Systems (NFPA 855), Underwriters Laboratories' (UL's) Safety Standards for Energy Storage Systems and Standard for Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems (UL9540 and UL9540a, respectively), etc.) which includes standards related to preventing, detecting, responding to, minimizing consequences of, and controlling fire. The Napanee BESS is being designed and built to meet these standards as well as the required building, fire, and electrical codes and recommendations from the insurance industry.

Napanee BESS Inc. will undertake pre-incident planning with the local fire department to develop plans to respond to fires/explosions or other emergency conditions. The planning will incorporate site-specific information, the NFPA855, UL9540a test results, manufacturers' recommendations, and learnings from other jurisdictions. These will provide an understanding of the hazards and an emergency management plan to ensure first responder and public safety.

How will stray voltage from the battery cells be prevented?

Stray voltage is a low-level electrical current or shock (typically under 10 volts) that usually results from an improperly grounded, or in some cases ungrounded, electrical distribution system. While potential exists for stray voltage in residential areas, it is most commonly found at agricultural operations and is often attributed to poor grounding of the wiring system in an environment where the presence of water increases conductivity.

The Napanee BESS will be designed with the appropriate grounding for a facility connected to the grid as with Napanee Generating Station, Lennox Generating Station and Lennox Transmission Station. The Napanee BESS will have its own grounding grid and may be directly grounded with the other electrical facilities.

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How will leakage from the battery cells be prevented?

Generally, lithium-ion cells will not leak electrolyte or any other chemical material in normal conditions. The battery cells are hermetically sealed and are about the size of half a tissue box. The battery cells are housed within larger battery modules, and multiple modules are housed within a battery enclosure. The enclosures typically have their own containment for liquid coolant (typically water/glycol).

Detection systems will detect abnormal conditions within the cell (e.g., leakage of electrolyte or electrolyte off-gas) and place the battery in a safe state for troubleshooting.

Will there be an increase in noise level due to BESS construction and operation?

Typical noise disturbances associated with construction projects are expected during construction of the BESS.

The operation of the BESS is expected to slightly increase the noise levels in the area. Preliminary noise modeling is being undertaken to support the design process. The completion of the Environmental Activity and Sector Registry (EASR) process for noise and compliance with provincial noise guidelines will be required for the project to move forward.

What are the potential impacts to air quality due to this project?

There are no air emissions associated with the operation of the BESS. Standard Environmental Management Practices will be applied during construction.

Will there be visual impacts due to the battery structures?

Existing and new earth berms have been included in the project design to minimize visual impacts of the project. Conceptual renderings will be developed to provide a sense of what the project will look like once completed.

Will lights from the BESS be visible to neighbouring properties?

The lighting will be designed to minimise off-site visibility.

Will the project affect property access and traffic?

The project will use the existing entrance to the site.

A detailed traffic study including the potential impacts to local traffic will be undertaken as part of the permitting process. The project team will work with the Ministry of Transportation to determine what is required to ensure safe access to the site with minimal effect to local traffic.

What is a Class Environmental Assessment and why is one being undertaken?

A Class Environmental Assessment (EA) is a standardized planning process for classes or groups of activities. It applies to projects that have predictable environmental effects that can be readily managed.

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While the BESS facility does not require an EA, the transmission facilities for the Napanee BESS Project trigger the need for a screening under the Class EA for Minor Transmission Facilities.

What level of assessment is being undertaken for the Class EA?

The Class EA for Minor Transmission Facilities has two levels of assessment – a Full Class EA Process and a Class EA Screening Process.

Napanee BESS Inc. is moving forward with the Screening Process as the transmission facilities for the Napanee BESS are expected to have minimal environmental effects.

The Screening Process requires projects to be screened against 16 criteria to determine if the project has the potential to negatively affect the local environment or community. If the potential impacts of the project cannot be mitigated, the project will be subject to the Full Class EA Process.

How long will the construction of all project components take?

Construction of the BESS is estimated to take approximately one year to complete.

I have more questions. Who can I speak to about this project?

Comments and questions about the project can be sent to energystorage@napaneebess.ca at any time. A project representative will respond to your inquiry.