

Crystal Energy Storage Project



Public Community Meeting

Thursday, November 2nd, 2023



About Baseload Power

- ★ Over 60+ years of combined electricity experience
- ★ Developer of zero-carbon electricity infrastructure:
 - Battery Energy Storage;
 - Renewable Electricity Generation; and
 - Public EV Charging Infrastructure
- ★ Generated over \$1.5 Billion in electricity infrastructure investment
- ★ Developed over 1,150 megawatts (MW) of electricity projects across Canada
- ★ Over 2,500 MW of electricity projects in development

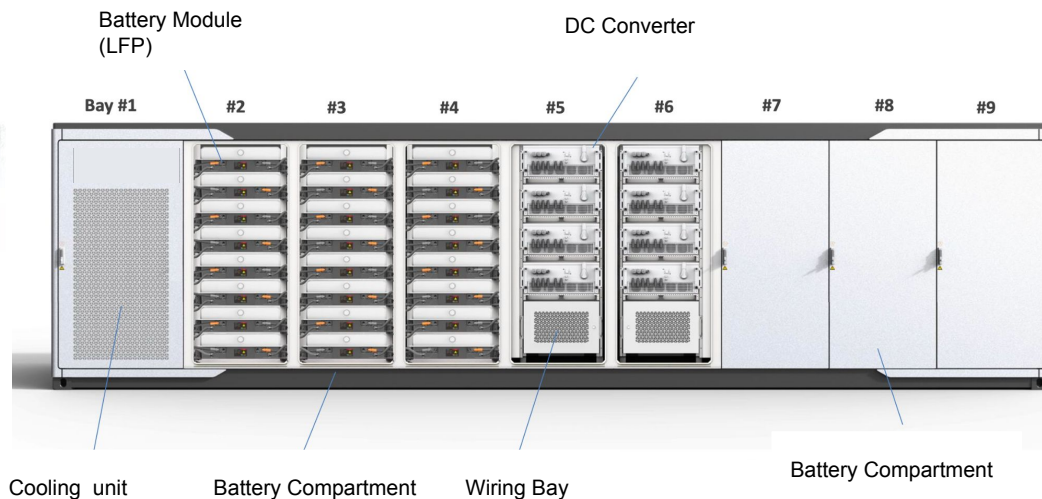
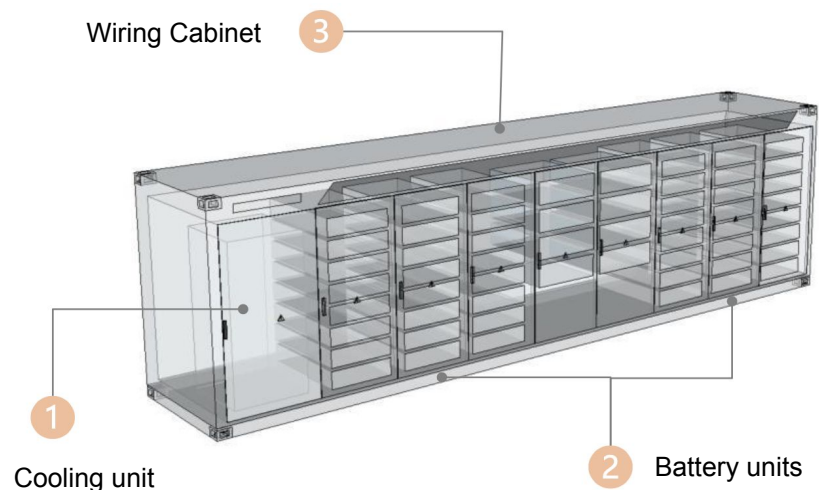


Ontario Electricity System Needs

- ★ Ontario needs 4,000 megawatts (MW) of new electrical resources by 2028 because:
 - Shutdown of the Pickering Nuclear Plant
 - Greenhouse gas (GHG) reduction and Population growth
 - The electrification of transportation and industry
- ★ Ontario has excess electricity at night time that can be stored and used during peak times
- ★ The Province, through the Independent Electricity System Operator (IESO), is procuring electrical resources through competitive bid requests for proposals ([RFP](#))
- ★ The competitive bidding process is designed to maintain a robust electricity system while securing the most cost effective resources on behalf of ratepayers

What is a Battery Energy Storage System?

- ★ Batteries include individual Lithium-ion-phosphate (LFP) battery modules, grouped together in purpose built outdoor rated and safety certified containers and deployed onsite with associated inverters and transformers that are connected to the high voltage utility electrical grid system



Battery Safety Features

Pressure Release Panels

Allows off gasses to escape quickly and for any potential fire to burn out faster

Air Cooled Venting

To add additional cooling to the system and allows off gasses to escape quickly and for any potential fire to burn out faster

Multicriteria Smoke and Heat detectors

Tied into overall fire management system that detects heat and off gasses well in advance of any failures

Exterior Steel Walls

With fiberglass insulation for more optimal cooling and fire containment

Internal Insulation Walls

For more optimal cooling and fire containment

Cooling Unit, Aux Sensors and Relays

To keep the system cool and pass information back to the fire management system



Attributes and Benefits of Battery Energy Storage

- ★ DOES NOT generate electricity or create any new electrons
- ★ DOES NOT create GHG or air pollution unlike natural gas generation
- ★ Proven to be very cost competitive with natural gas generation
- ★ Will SAVE Ontario's electricity consumers money because battery will:
 - charge with surplus night-time power vs. selling surplus to NY and Quebec at a loss
 - discharge during peak-times vs. buying power from NY and Quebec at premium prices
- ★ MINIMIZES the need for new local and regional power lines

Crystal Valley Energy Storage Project (the “Project”)

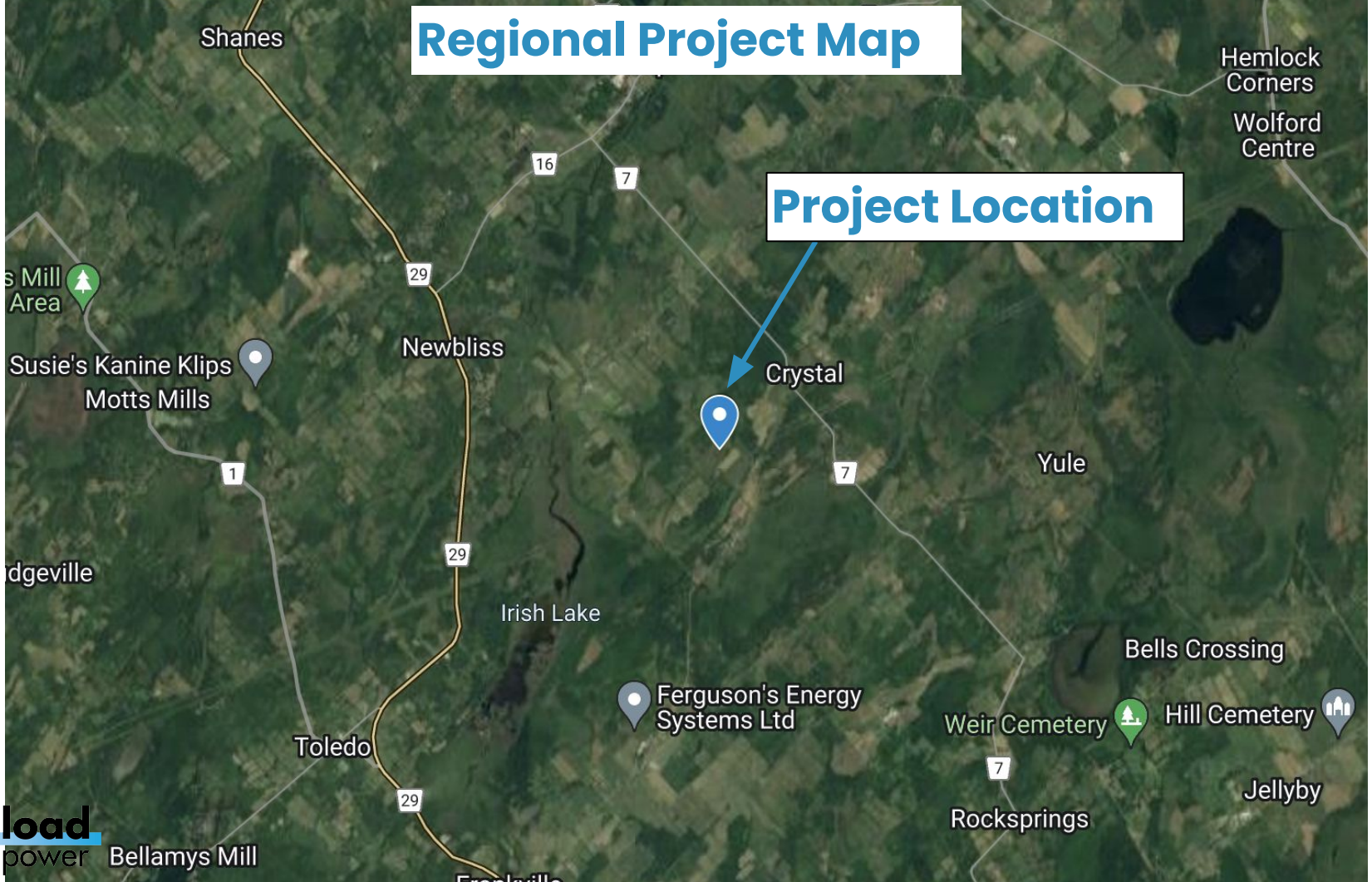
- ★ The Project is a battery energy storage system rated up to 300 megawatts for 4 hours
- ★ The Project Site is on Kinch St. and the total footprint is approximately 25 acres
- ★ Location strategically maximizes setbacks from existing and future residences (~900 metres)
- ★ The Project is located on rural land and looks to avoid environmentally sensitive areas
- ★ The IESO confirmed that the Project’s location will provide reliability and flexibility for the grid

Additional Project Attributes

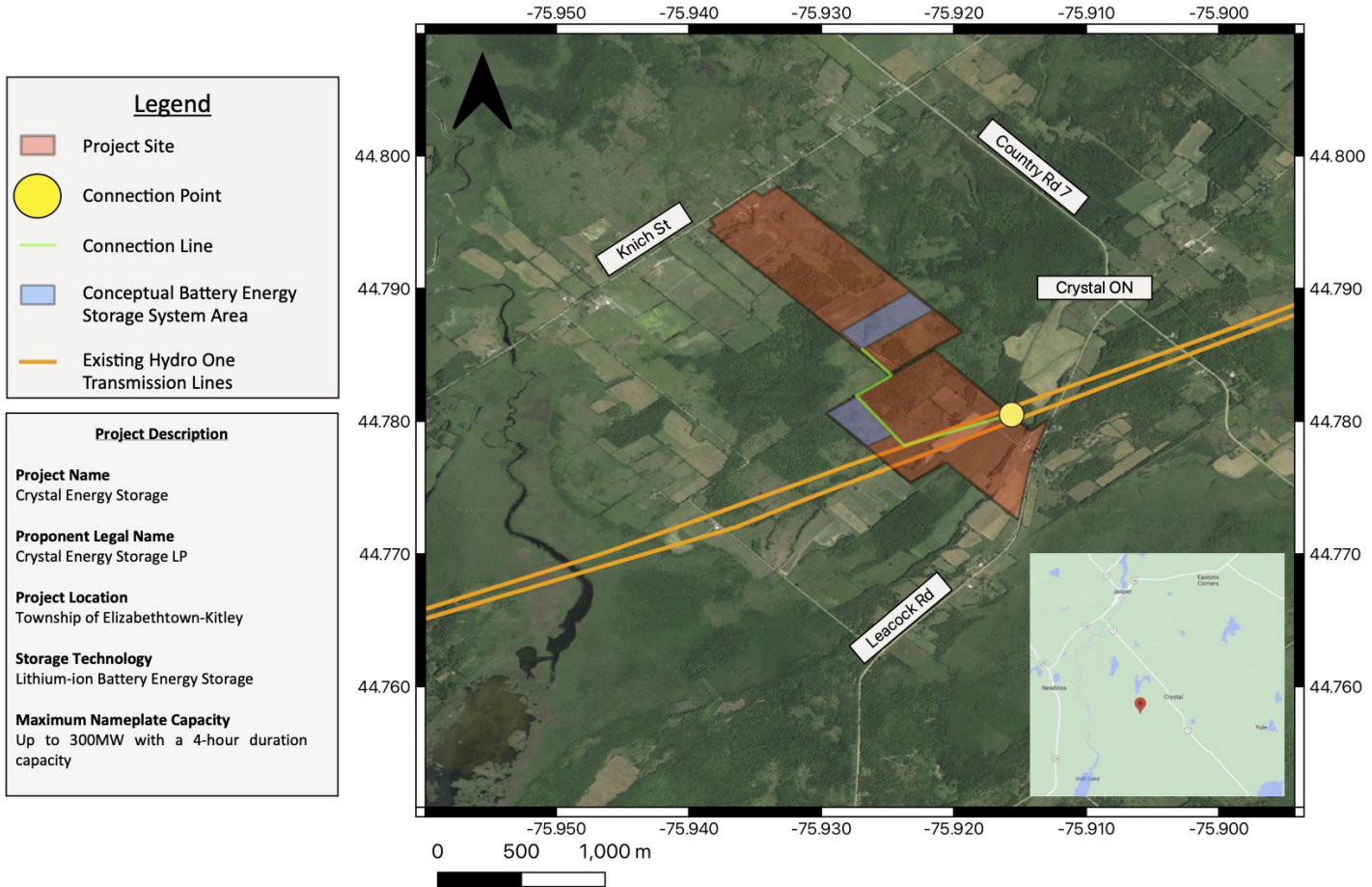
- ★ Very close to the existing Hydro One Transmission Lines - No need to build new transmission lines across the Township
- ★ Sited in a remote area on the Project Site to keep the Project hidden from sightlines from homes and roads
- ★ Project plans to use existing property entrance off of Kinch St.
- ★ The Project plans to utilize existing farm road on the property

Regional Project Map

Project Location



Detailed Project Map



Local Benefits of the Project

- ★ Provides multiple financial benefits to the Municipality over a minimum of 20 years, including:
 - Recurring community benefit payments
 - Increased tax revenues
 - Use of local materials, equipment and labour wherever possible and local service industries
- ★ Helps to improve local electricity quality, reliability and security
- ★ Road use agreement to upgrade and maintain Municipal roads used by the Project
- ★ Uses much less land and has a much smaller impact vs. other electricity resource options

Environmental Approval Process

- ★ Battery projects are classified as electrical transmission infrastructure not electricity generation
- ★ Due to this classification, they are subject to the Ministry of the Environment, Conservation and Parks' Class Environmental Assessment for Minor Transmission Facilities ("Class EA")
- ★ This is the same process as what is required for Hydro One transmission lines and substations
- ★ The Class EA is an environmental assessment process under the Ontario Environmental Assessment Act for projects that have predictable and manageable environmental effects
- ★ The Class EA assesses a range of environmental factors and should there be an unexpected result, further studies are undertaken and mitigation measures are implemented

Permits and Approvals

- ★ Municipality has control over the Project through zoning and site plan control
- ★ Municipal process would ONLY begin if the Project is awarded a contract by the IESO
- ★ The Project must meet Provincial noise regulations and obtain all approvals associated with stormwater management, entry permits and the Conservation Authority
- ★ The Project will need to obtain an Energy Storage license from the Ontario Energy Board
- ★ There are no Federal permits associated with the Project

Operational Noise Mitigation

- ★ Batteries generate noise primarily from the cooling systems, inverters and transformers
- ★ The Project is subject to complying with Provincial noise limits as set out in the Ministry of the Environment, Conservation and Parks' Noise Guideline - NPC-300 for its entire operational life
- ★ Noise regulations under the NPC-300 are the strictest in rural areas, requiring the night-time ambient noise at a noise receptor in a rural area to be no greater than 40 decibels
- ★ The Project cannot be built and operated without adhering to the NPC-300 guidelines
- ★ The Project is setback ~900 metres from existing and potential future homes to ensure that the requirements of NPC-300 will be met
- ★ Additional noise attenuation measures such as berms, noise walls may be built if required

Fire Safety Measures – Part 1

- ★ Batteries must meet multiple fire safety standards including:
 - US National Fire Protection Standard 855; and
 - UL9540/UL9530A, and UL1973
- ★ Battery containers are designed, built and tested to prevent the spread of fire to neighbouring battery containers
- ★ The Project layout incorporates spacing between battery containers to prevent the spread of fire
- ★ Lithium-ion Phosphate (LFP) batteries are updated battery technology that has a significantly lower risk of fire compared to older battery technology

Fire Safety Measures – Part 2

- ★ Battery facilities are designed with a centralized 24/7 fire monitoring and management system
- ★ Fire system monitors every individual battery module for safe operating conditions including temperature, off-gassing and smoke
- ★ Based on monitoring conditions, the fire system will:
 - Automatically turn off battery containers and all surrounding battery containers
 - Increase cooling levels by activating all remote and onsite temperature controlling mechanisms for all surrounding battery containers
 - Send communication of potential issue to the closest first responders
- ★ Current best practices are to not use water and other fire retardants to extinguish a battery fire

Fire Safety Measures – Part 3

- ★ Managing a battery fire relies on known fire management technology, procedures, knowledge, training and skills
- ★ Detailed plans will be prepared for the Project including:
 - Hazard Mitigation Analysis, Fire Risk Assessment, Fire Protection Design and Emergency Response Plan including first responder integration, education, training and awareness
- ★ Ongoing fire system testing and first responder training will be conducted throughout the Project's operational life
- ★ Global insurance companies provide insurance coverage for battery projects as they are comfortable with the technology and the safety features incorporated into the technology

Groundwater Management

- ★ Given the Project Site is being farmed and there are no large outcroppings of rock, rock blasting is not expected during the construction of the Project
- ★ Stormwater Management Plan will be created to manage and mitigate any run-off and groundwater impacts
- ★ Containment systems will be incorporated into transformer foundations in the same manner as Hydro One employs for its substations
- ★ Strategically, the Project is located ~900 metres from the closest home which acts as an additional natural barrier to protect groundwater
- ★ Current best practices are to not use foam and other fire suppression chemicals to extinguish a battery fire, further protecting groundwater

Decommissioning

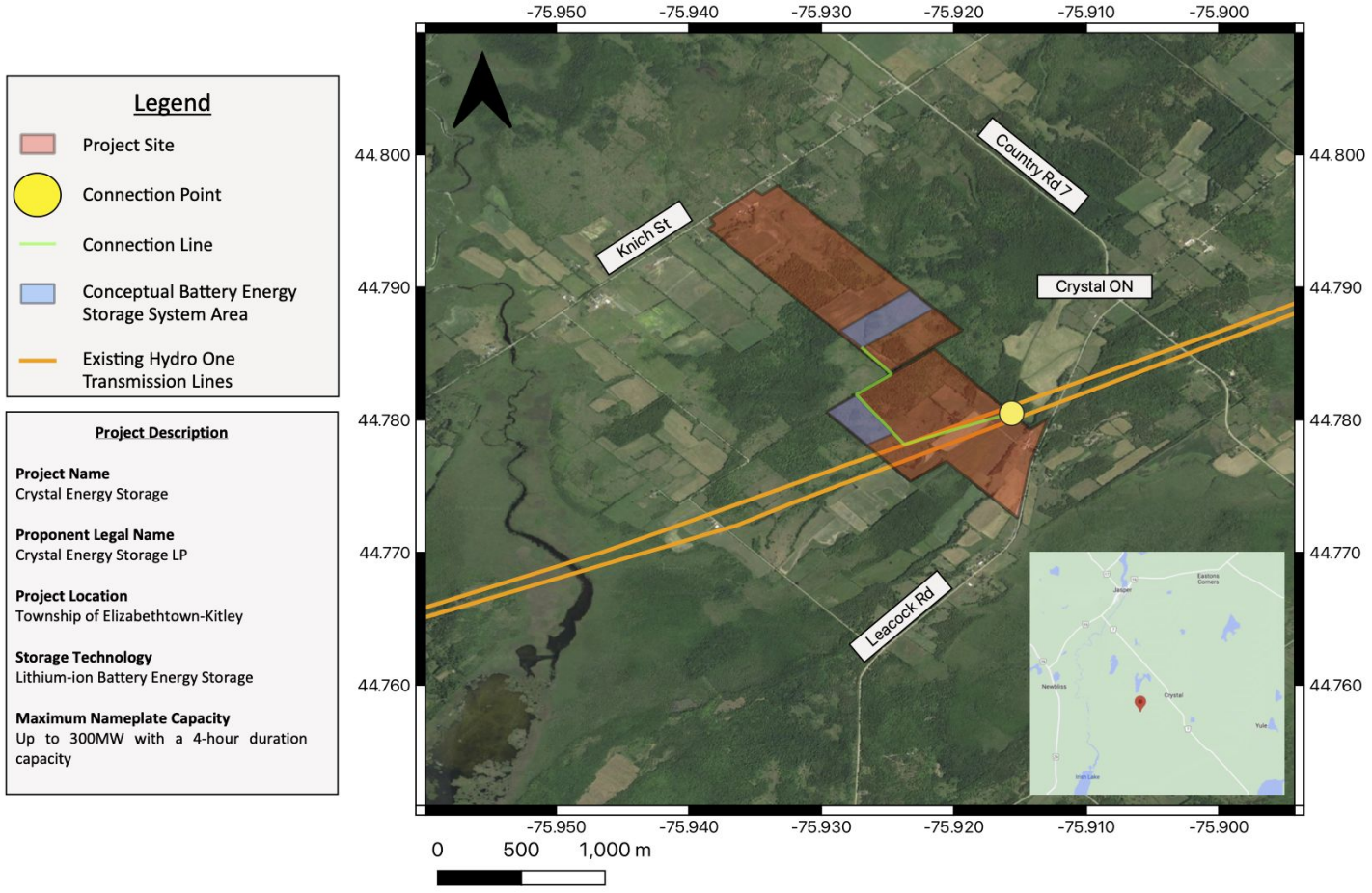
- ★ If the Project is awarded a contract under the IESO RFP, the term of the contract is 20 years
- ★ Once operational the Project will become part of the critical electrical infrastructure for the Province and the IESO will most likely look to extend the original contract beyond 20 years
- ★ In our agreements with landowners, at the end of the Project we are obligated to remove all equipment and restore the land to its original condition
- ★ At end of the Project, the battery and other equipment will continue to have significant value (multiple millions of dollars) and will be used or repurposed in other projects or uses
- ★ Batteries and equipment that cannot be repurposed will be recycled at facilities located in Ontario
- ★ Decommissioning Plan will be created in consultation with the municipality

<i>Potential Impacts</i>	<i>Mitigation Measures During Construction and Operations</i>
Air Quality During Construction	<ul style="list-style-type: none"> • Emissions associated with Project construction activities are primarily dust and equipment exhaust, which will be localized and will be relatively short duration with a negligible effect on the surrounding airshed • A dust management plan will be in place and a non-chloride dust control (e.g. water) will be used where needed
Construction Noise	<ul style="list-style-type: none"> • Construction will take place during normal business hours and not during 8:00PM-7:00AM • All equipment will be maintained in good working order with muffler devices, where appropriate • The Project will comply with the Municipality's Noise By-Law
Natural Environment During Construction and Operations	<ul style="list-style-type: none"> • Standard mitigation will be used to protect migratory bird habitat, reptile habitat, and to manage wildlife encounters • Standard erosion and sediment control measures used to mitigate potential negative effects to adjacent drains • Stormwater management will be implemented and will comply with Ontario Water Resources Act (OWRA)

Potential Impacts	Mitigation Measures During Construction and Operations
Visual Impact	<ul style="list-style-type: none"> • The Project has been strategically sited to be in a remote portion of the Project Site to minimize the visual impact • The Project will be designed and built to include visual barriers where appropriate, which may include berms, alternative fencing and/or vegetation
Public Safety	<ul style="list-style-type: none"> • The Project will comply with the Occupational Health and Safety Act and only use licensed contractors and operators • The Project Site will be fully fenced and appropriate security measures will be put in place • A detailed emergency response and fire management plan will be developed in consultation with the local fire department. Any required equipment and training will be provided
Environmental Contamination	<ul style="list-style-type: none"> • Battery storage systems are designed and built with a containment capture tray for more than 100% of the standard water and glycol coolant that may be used to control battery temperature • Project will be designed and built to include containment structures around transformers, which are the same as those used by Hydro One at their substations
Electromagnetic fields	<ul style="list-style-type: none"> • Operation of the battery has the potential to generate electromagnetic fields similar to the fields generated by the existing electricity transmission system • Any electromagnetic field created by the battery would be contained with 80 feet of the battery system

<i>Potential Impacts</i>	<i>Mitigation Measures During Construction and Operations</i>
Traffic Disruption	<ul style="list-style-type: none"> • A traffic management plan will be implemented prior to construction in consultation with the Municipality
Agricultural Land	<ul style="list-style-type: none"> • Most official plans include provisions that allow electrical utility related infrastructure to be located in any zone • The Project, if approved, will connect to the Hydro One grid and act as critical electrical infrastructure for the Province for a very long period of time (20+ years) • The IESO's RFP for energy storage resources does not prohibit such projects from being located on agricultural land, which is different than previous RFPs for solar energy resources • The footprint of the Project is very small, especially considering the total size of the property • Farming operations will continue on the land that is not being used by the Project • The Municipality of Lakeshore, Municipality of Chatham Kent, Greater Napanee, Enniskillen Township, Township of Cramahe and others have provided support resolutions for projects on agricultural land

Questions



THANK YOU FOR YOUR TIME AND ATTENTION



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