

Municipal Council Support Resolution Request for Battery Energy Storage System



**Prepared for - The Municipality of
Mississippi Mills**



Mississippi
Mills

October 4, 2022



Table of Contents

1. Executive Summary
2. Introduction to Compass Energy Consulting
3. Provincial Need for Power / Capacity
4. Why Battery Storage?
5. Why Your Municipality?
6. Regulatory Oversight
7. About the Project
8. Local Benefits
9. Municipal Council Support Resolution Request
10. Appendices
 - Development Timeline
 - Safety
 - Overview of Battery Storage Systems
 - Service Commitment
 - Decommissioning

Executive Summary

Compass Renewable Energy Consulting Inc. (“Compass”) is developing a battery storage project in your municipality located at **PIN: 05103-0171 (LT) (County Road 29 and Rae Road)** and is requesting a Municipal Council Support Resolution in support of this project.

Why the request for a municipal council support resolution?

- The Independent Electricity System Operator (“IESO”) is running two procurements for new energy capacity projects in the province, the Expedited Long Term 1 Procurement in 2022 and the Long Term 1 Procurement in 2023.
- Compass is a Qualified Applicant under these procurements.
- Your municipality has been identified in an area of the province that can benefit from new electricity capacity based on the IESO guidance.
- Compass has secured a lease on behalf of **Almonte BESS Limited Partnership**, a battery storage project, located at **PIN: 05103-0171 (LT) (County Road 29 and Rae Road)** This infrastructure project will bring significant investment and local benefits including employment, lease payments and spending in the local economy.
- Compass has developed over a 100 solar projects in ON and operate eight.
- Your support will mean our project will have the best opportunity to get built in your community, as opposed to in another municipality.

Introduction to Compass Energy Consulting

Compass has been consulting and developing renewable and clean energy projects in Ontario for over 10 years. We have experience across the development lifecycle from pre-screening, contracting, construction, commissioning and operations.

10 + years Experience in Energy Development in Ontario

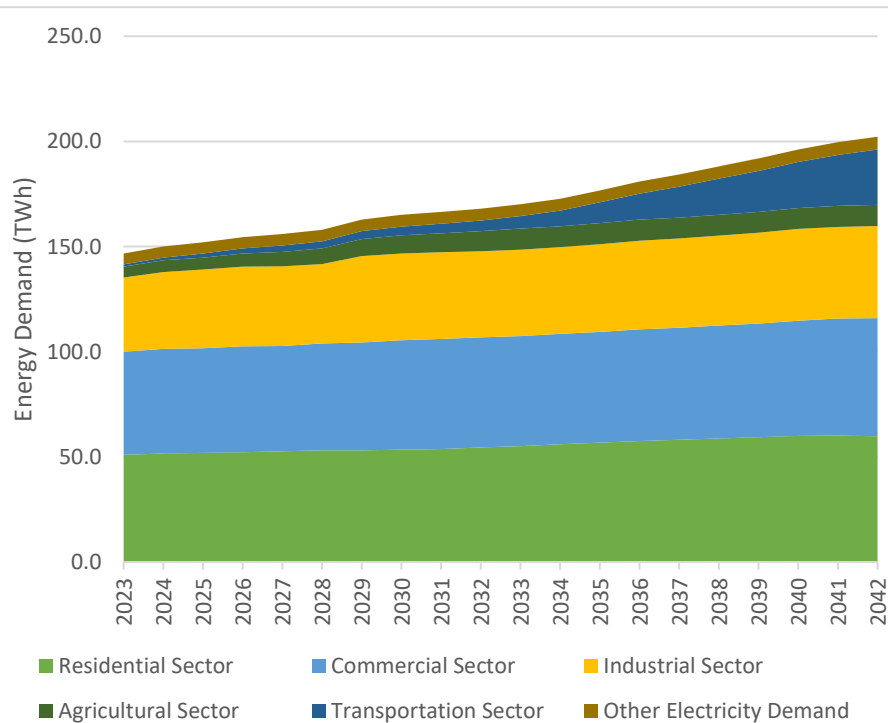
- An industry leader in renewable and clean energy development across Ontario.
- We have developed over 100 renewable energy projects in Ontario representing over 100 megawatts (MW) in the last 6 years and supported the development of over 2,000 MWs for our clients.
- Track record of success with principles that designed and launched Ontario's renewable and clean energy procurements in the public sector.
- Our projects provide clean, renewable energy to communities while offering land-owners long-term, guaranteed passive income through lease payments.

Provincial Need for Power / Capacity

Ontario's IESO, has identified the urgent need to bring 5,000+ megawatts (MW) of new projects onto the electricity grid by 2030. Energy demand is expected to grow 30% over 20 years while older generators are retiring.



Ontario's Forecast Demand Growth



Where is this supply gap coming from?

- **Provincial Growth** – residential and commercial sectors are growing, so does their electrical demand
- **Electrification of Transport** – transition from internal combustion to electric vehicles and buses
- **Agricultural Sector** – increased in greenhouse sector (food and cannabis)
- **Retirement of Generation** - the Pickering Nuclear Generating Station along with other expiring natural gas and other contracts has left a material supply gap in Ontario.

Why Battery Storage?

Battery storage projects provide flexibility to electricity systems by storing low-cost power and providing it during peak periods when the grid needs it the most. Battery storage has been procured by the IESO since 2014.

Battery Storage Project Characteristics

- **Small Footprint Size:** 1 – 5 acres
- **Secure:** Project is fenced in and locked.
- **Operations:**
 - Project is 24/7 remote monitored and controlled. Operations and maintenance contractors are locally based in Ontario.
 - Scheduled site visits occur 4 times a year.
- **Noise:** Each container or battery storage cabinet will have its own HVAC system and meet provincial sound limits.
- **Design:** Battery does not power onsite operations directly; it flows to the grid.

Look and Feel

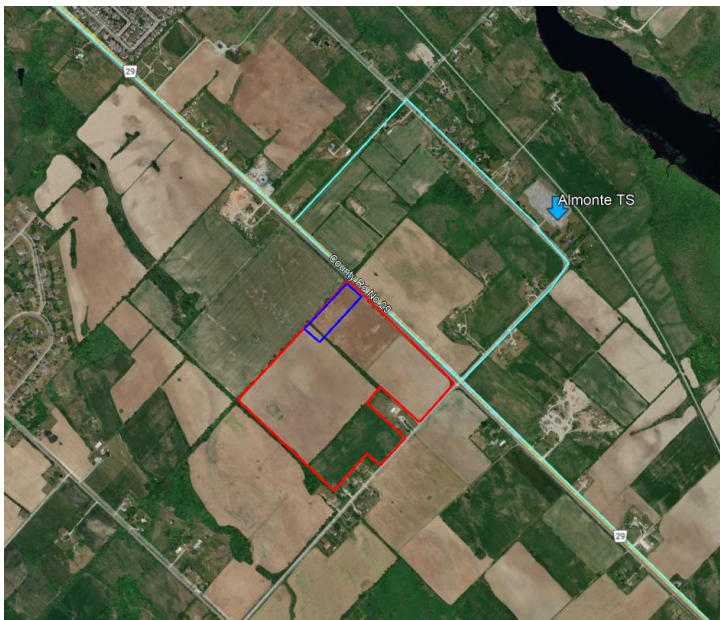
- The project will consist of painted, 40 ft containers, electrical equipment and a transformer.
- The containers will rest on a concrete pad and be interconnected.
- The containers will then connect to the transformer before going out to the grid.



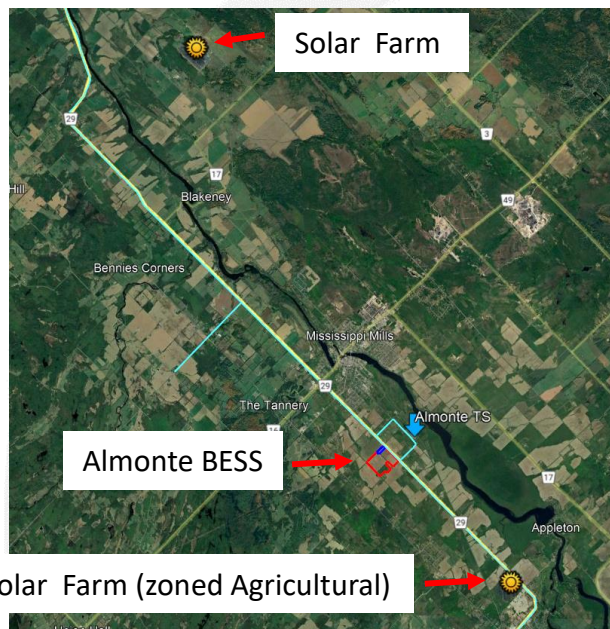
Why your municipality?

The IESO has identified Eastern Ontario as one of the primary areas of demand growth in the province and has a “strong preference” for new resources in this area.

Almonte BESS Limited Partnership



BESS Supports Renewable Generation



- Our proposed project is located within 1km of the Almonte Transmission Station which is in a high priority area for the IESO. As well, it is adjacent to 3-phase interconnection line.
- Almonte BESS will support the development of further clean energy generation (ground-mount and/or roof-top solar) in Mississippi Mills.

Why your municipality » Environment

Battery energy storage is a key component in facilitating more renewable energy in Ontario's grid and support further decarbonization of our provincial energy system. More renewable energy will further support electrification of transport, supporting climate change goals that are consistent with the Municipality of Mississippi Mills plans.

- The Municipality of Mississippi Mills have published plans that are in line with the development of a lithium-ion BESS in your municipality. The Plans emphasize a need to reduce green house gas (GHG) emissions through renewable energy generation. Lithium-ion batteries minimize the need for natural gas peaker plants and support/compliment the ongoing development of renewable energy systems. The associated plans are –
 - Mississippi Mills Strategic Plan 2020-2023
 - *Community Value Statements - ENVIRONMENT - Ensure a clean, safe and sustainable environment*
 - Municipality of Mississippi Mills Community Official Plan
 - *4.1.2 Air Quality and Greenhouse Gas Emissions - This Plan recognizes that one component of long-term economic prosperity involves providing opportunities for increased energy generation, supply and conservation, including alternative energy systems and renewable energy systems.*
 - *The policies developed for energy, air quality and greenhouse gas emissions are as follows:*
 - 6. Increased energy supply shall be promoted by providing opportunities for energy generation facilities to accommodate current and projected needs, and the use of renewable energy systems and alternate energy systems, where feasible.*
 - 7. Alternate energy systems and renewable energy systems shall be permitted in Almonte, Pakenham Village, villages and rural settlement areas, in rural areas and agricultural areas in accordance with provincial and federal requirements. In rural areas and agricultural areas, these systems should be designed and constructed to minimize impacts on agricultural areas.*

Regulatory Oversight

Compass has made careful note of the regulatory bodies that it must engage to secure the permits and approvals.

Authorities Having Jurisdiction

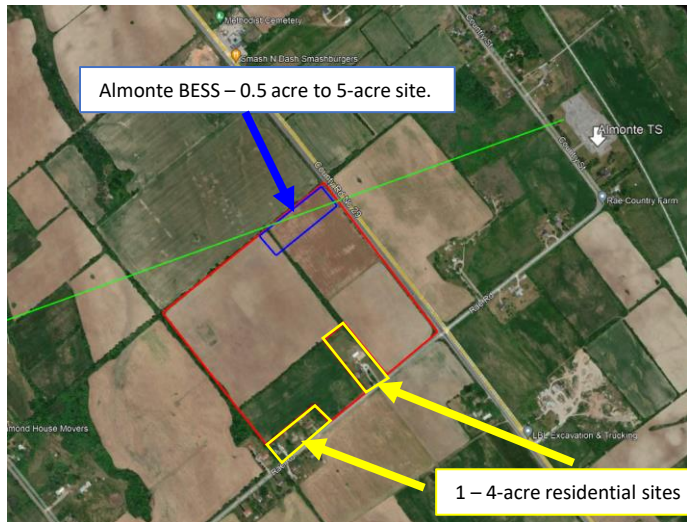
- ✓ Municipality of Mississippi Mills
- ✓ **The Mississippi Mills Fire Department**
- ✓ Hydro One
- ✓ Ontario Ministry of Energy
- ✓ Independent Electricity System Operator
- ✓ Ontario Ministry of Environment
- ✓ Local Conservation Authorities
- ✓ Electrical Safety Authority

Compass will consult with the Mississippi Mills Fire Department to ensure applicable Fire Stations have National Fire Protection Association (NFPA) compliant training.

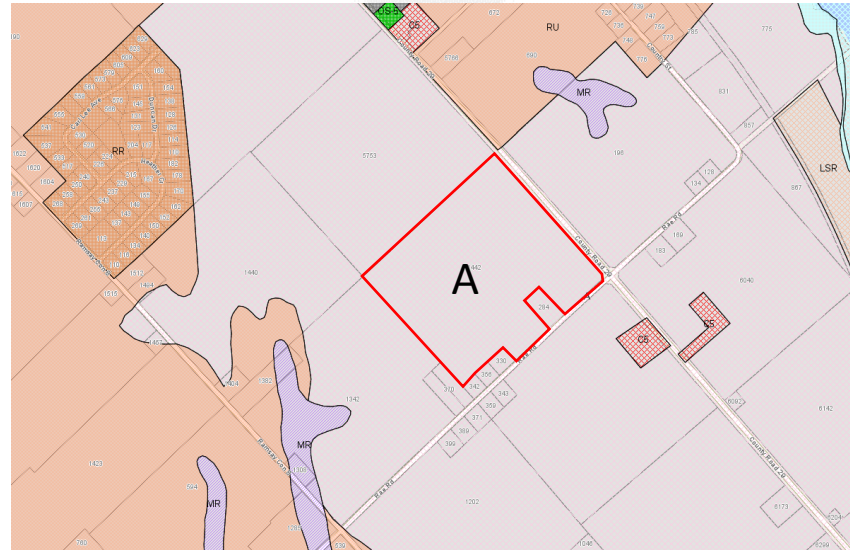
About The Project

The project will be located at **PIN: 05103-0171 (LT) (County Road 29 and Rae Road)** . It will take advantage of the Hydro One powerlines that run Southwest – Northwest through the property.

Almonte BESS Limited Partnership



Zoning



- Zoning of the property is Agricultural (A).
- Solar farms in Mississippi Mills have been developed on Agricultural zoned land.

Local Benefits

Local benefits associated with the project are key infrastructure within the Municipality to provide power to meet growing demand, provide additional revenues for landowners, property taxes for the Municipality of Mississippi Mills and economic activity within the city.

Local Benefits

- **Employment** - High skill, 'green' collar jobs in construction – civil works, mechanical installation, electrical connection, landscaping.
- **Financial** – Property tax benefits, diversified income stream for rural landowners, especially on underutilized land.
- **Industrial Growth and Diversification** - Needed energy capacity allows for increased development in your municipality.
- **Natural Gas and Transmission Line Offset** - Distributed energy provides electrical grid support, intelligence, and resilience.

Municipal Council Support Resolution

Compass, on behalf of Almonte BESS Limited Partnership is requesting a municipal council support resolution to support this project in obtaining rated criteria points in the IESO procurement.

Why provide a municipal council support resolution?

- The IESO's Expedited and Long Term I procurements provide rated criteria points for Municipal Council Support Resolutions, which will help ensure your municipality benefits from the investment in a battery storage project.
- The Municipality of Mississippi Mills is a priority area of growing electrical demand and requires additional supply resources during peak demand times that will be provided for by this battery storage project.
- Almonte BESS will provide economic and tax benefits to the Municipality of Mississippi Mills for 20 plus years.
- Almonte BESS supports a variety of your municipal environmental plans and objectives by supporting greater adoption of renewable energy.
- Almonte BESS needs the council support resolution passed before December 2022 to allow us to prepare our full proposal in advance of the IESO submission date of December 20, 2022.

Thank you

Contact

James Marzotto

Associate Director, Development

Compass Renewable Energy Consulting

192 Spadina Ave., Suite 404, Toronto, ON, M5T 2C2

Email: james@compassenergyconsulting.ca

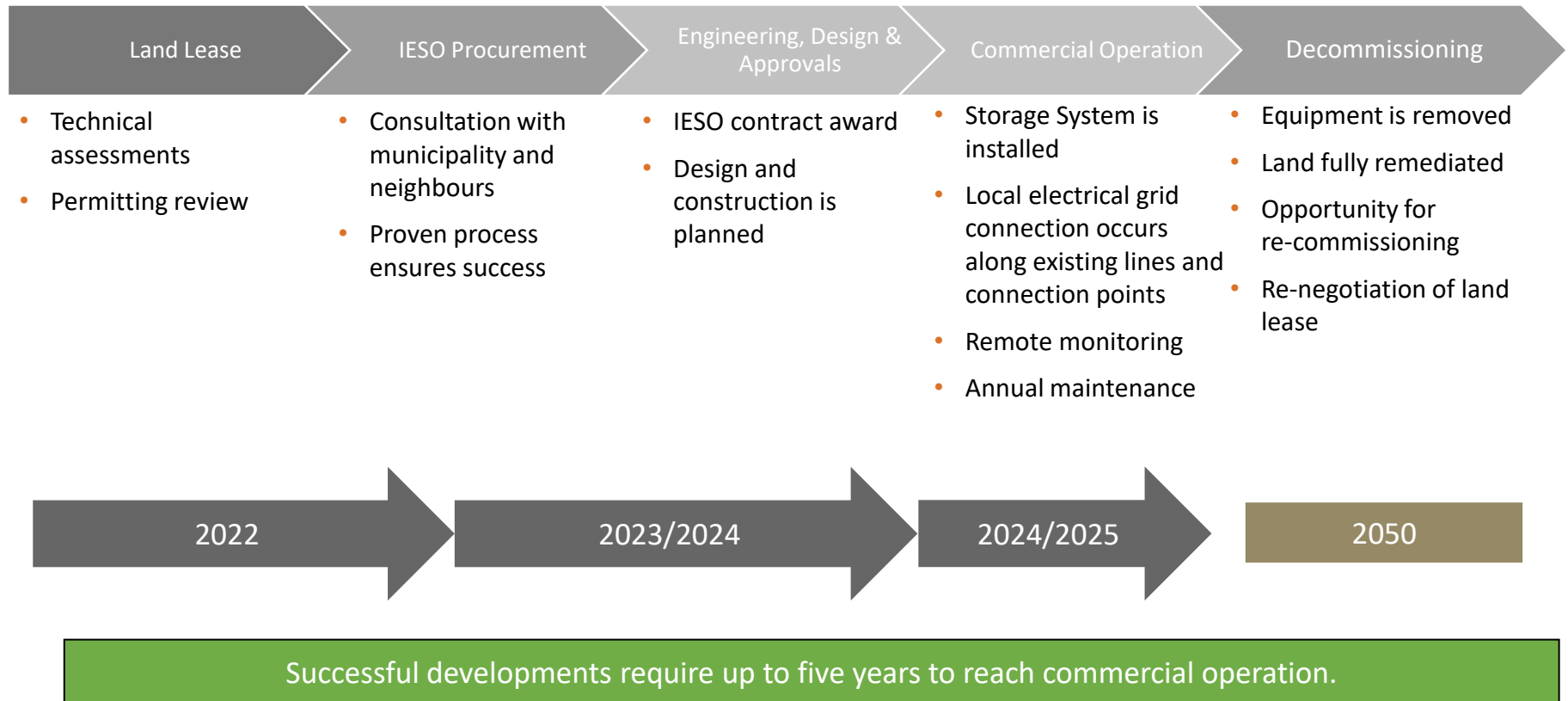
Phone: 1-905-650-3682



Appendices

1. Development Timeline
2. Safety
3. Overview of Battery Storage Systems
4. Service Commitment
5. Decommissioning

1. Development Timeline



2. Safety - BESS Safety Systems

Battery energy storage systems are subject to a number of third-party standards to ensure safe operation and prevent damage to the BESS and land.

Codes and Standards that apply to BESS

- National Building Code
- National Fire Code Canada
- Underwriters Laboratories of Canada
- NECB 2017 National Energy Code of Canada for Buildings
- ULC (Underwriters Laboratories of Canada)
- UL 1741 Standard for Inverters, Converters, Controllers, and Interconnections
- UL 1973 Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER)
- UL 9540 Standard for Energy Storage Systems and Equipment
- UL 9540A (Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems)

2. BESS Safety Questions and Answers

Question	Answer
What if there is a fire in the BESS?	BESS enclosures have built in fire suppression system (FSS) solutions. The FSS system is composed of smoke detectors, gas detectors and aerosols, whose main function is to prevent fire spread in time when any open flame signal or gas signal appears in the battery system and sent out fire signal to EMS system. BESS are certified to UL 9540 and 9540 A standards to prevent fire spread and suppression at the cell and the BESS system level. The selected battery chemistry LFP releases less gas during thermal runaway meaning less possibility of a fire.
Can the batteries leak and impact the ground / ground water?	<p>These BESS do not use lead acid batteries, and therefore do not leak.</p> <p>Mechanical failures include physical damage could create heat or a fire. Hazards associated with lithium-ion battery energy storage systems are centered on the flammable organic electrolyte and its highly reactive electrodes. However, if the batteries are punctured, there is a risk of electrolyte to be exposed to air, which will result in chemical reaction, leading to thermal runaway and combustion.</p> <p>Other potentially hazardous wastes would include fire residue, fire debris, fire extinguishing agents leading to contamination of soil and underground water via leaching, burying, dissolution, infiltration and run off. The management of these risks starts at the cell level, with selection of battery chemistry, and compliance with local AHJs and global certifications. This is where UL9540A certification becomes critical to BESS projects. Any other hazardous leaks will be contained in the enclosure.</p>
What other assurances that BESS meet these standards?	BESS systems are subject to third party certification to ensure they comply with all of the required codes and standards. For example, QPS Evaluation Services performs an assessment on the sites to ensure compliance with relevant codes.

3. Overview

Compass Energy Development Activity

- In response to this need Compass Energy is actively developing energy storage projects across Ontario.

Energy Storage Project Size

- Energy storage projects range in size from 20MW's to 300MW's.
 - For every 20MW's, 1 acre of land is needed.

Technology

- The technology is lithium-ion battery energy storage systems. The components are like that of an electric vehicle or computer tablet. Other components include electrical transformers and powerlines like those found at a utility transmission station.
 - **Examples** - Though relatively new to Ontario, energy storage projects are common today in the United States, Europe and Australia. Examples of Ontario BESS pilot projects are included in this presentation.
- **Non-emitting** - The historical solution to meet peak demand has been "gas peaker plants". The province is moving towards a less carbon intense electrical grid. Unlike gas peaker plants, energy storage systems are "non-emitting" energy resources that can help meet Ontario's peak energy demand.

Battery Energy Storage Systems – Lithium-Ion Technology Examples

Project Name	Project Size (MW)	Project Status	Project Address	Project Geolocation
Ameresco Canada – “Project A”	2	Announced	Newmarket, Canada	Latitude: 44° 3' 22.529" N Longitude: 79° 27' 42.149" W
Parry Energy Storage, LP	2	Contracted	5 Elliot House Rd., Seguin, Ontario, P2A 0B2, Canada	Latitude: 45° 18' 9.828" N Longitude: 79° 56' 43.692" W
RES Amphora Ontario	4	Operational	Queen Street Strathroy, Canada	Latitude: 42° 57' 15.85" N Longitude: 81° 36' 43.816" W
Elmira Energy Storage, LP	2	Contracted	50 Martin’s Lane, Elmira, Ontario N3B 2A1, Canada	Latitude: 43° 36' 13.129" N Longitude: 80° 32' 50.395" W
Owen Sound Regulation Services	25	Under Construction	Owen Sound, Ontario, Canada	Latitude: 44° 34' 26.256" N Longitude: 80° 55' 23.772" W
Source: https://gateway.eme.nrc.ca/en/es/demo_projects?wbdisable=true				

4. Service Commitment

We believe in the importance of transparency when communicating with all stakeholders and tying our success to their success.

System Design Consultation

- Design adapted to site requirements and local building by-laws
- Layout review and consultation with landowner
- Engineered construction plan accepted by local building department
- Long-term, dependable designs

Risk Mitigation & Minimal System Impact

- Scheduled Operation & Maintenance
- System insurance and liability insurance. Building owner named as 3rd party insured
- Physical security measures, and live performance monitoring

Updates & Transparency

- Compass provides monthly project updates during the development and construction of the project
- Clarity for landlords to understand project progress



5. Decommissioning

BESS facilities have an expected lifespan of 20 + years, or more, with equipment replacement and repowering. At the time of decommissioning, the installed components will be removed and reused/recycled, where possible, and the site restored. All removal of equipment will be done in accordance with the applicable regulations and manufacturer recommendations. **The below summarizes the decommissioning procedure that would be enacted at end of project life .**

BESS - Disconnect all above ground wirings. Remove all BESS enclosures and support structures.

Medium Voltage (MV) Stations, Substation – Disconnect and remove all electrical equipment. Remove inverter and associated equipment. Remove high-voltage substation transformer. Remove concrete foundations for MV Stations and substation components.

Access roads and other components – Consult with the City to determine if access roads should be left in place for their continued use. If roads are to be removed, the aggregate materials will be excavated by a backhoe/front-end loader, along with any underlying geotextile fabric. Compacted areas restored.

Underground cables - Underground electrical lines running between inverters and the substation will be removed. All foundation materials removed.