

July 2024



Hand Hills Storage Project

Project Introduction

10 MW
Nameplate Capacity

20 MWh
Energy Storage

Ongoing
Community Benefits

BluEarth Renewables is committed to engaging stakeholders and community members in the decision making process for our projects and working together with honest and transparent communications. We are sending this newsletter to provide an introduction to the 10 MW Hand Hills Storage Project that would be co-located with our Hand Hills Wind Facility and located next to the existing Highland 572S Substation in Special Areas 2, Alberta.

Why Energy Storage?

Energy storage provides added flexibility, reliability, and affordability to the grid with its unique ability to capture excess energy that may otherwise be wasted. By storing energy when the price of electricity is low and discharging that energy during periods of high demand, energy storage can reduce costs for utilities and save rate-payers money. The Hand Hills Storage Project (the Project) will connect directly into Alberta's transmission system allowing the Project to provide fast-response reliability services during times of grid instability.

Why Here?

The 10 MW (20 MWh) Project is co-located with the Hand Hills Wind Facility, however it does not directly connect to the wind facility and will operate independent of one another. The location of the Project was strategically selected to minimize environmental and community impacts while maximizing interconnection efficiency by utilizing the existing Highland 572S Substation. In addition, this location was chosen based on BluEarth's familiarity with the area and existing landowner relationships.

Project Layout

The Project will consist of a battery energy storage system and associated infrastructure including inverters, collector lines, a perimeter fence and access roads.

The current project study area is approximately 3 acres (1.2 hectares), however the actual project footprint is anticipated to be smaller, as determined by the final Project layout. See the reverse page for a preliminary Project layout map. The proposed layout is subject to change based on the results of technical engineering and environmental studies, as well as the feedback from regulatory agencies and stakeholders.



Project Timeline

The Project is currently in the 'Assessment Stage' (Stage 2) of the Alberta Electric System Operator's (AESO) Connection Process, and we plan to submit a regulatory application to the Alberta Utilities Commission (AUC) in fall 2024.

Information regarding the AUC review process and how you can participate can be found through the enclosed brochure "Participating in the AUC's independent review process to consider facility applications." or by visiting www.auc.ab.ca

The earliest construction start date for the Project is anticipated to be early 2026, with commercial operation beginning in late 2026.

Project Studies

We are pursuing an extensive field study program for the Project, and our team is committed to incorporating the information obtained from field studies into the project design.

The Project has recently completed environmental field work that included sharp-tailed grouse, raptor, and burrowing owl surveys. Information from these field studies have been incorporated into the Project's design to ensure that impacts to wildlife and wildlife habitat are avoided or minimized.

Other development activities planned this year include:

- Air Quality Dispersion Modelling
- Acoustic Noise Modelling
- Emergency Response Plan Development
- Refining Engineering and Layout Design
- Meeting with the Special Areas 2 Planning and Development Board
- On-going Stakeholder Engagement

Project Safety

Safety is the highest priority for BluEarth and we are committed to ensuring that this is reflected in the design, construction and operation of the Project. During development, we will work with the local municipalities and emergency services to create a Project-specific Emergency Response Plan. The Project will be designed to meet or exceed all industry and regional safety, regulatory, and compliance codes. This includes stringent battery safety testing, spacing requirements implemented in the design, and safety equipment within the facility. During operation, the facility will be monitored 24/7/365 by BluEarth's Remote Operating Center.



Community Benefits

BluEarth is committed to giving back to the communities where we live, work, and operate.

BluEarth currently provides support to the local community through our community investment program on behalf of the Hand Hills Wind Facility. Examples of this include:

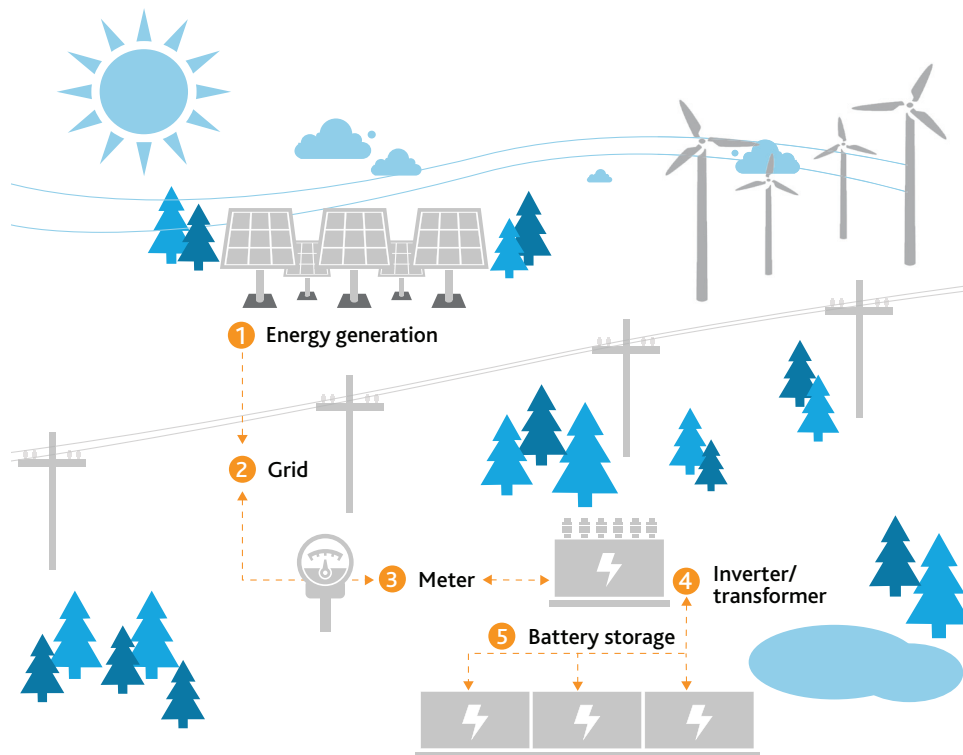
- **Scholarship Program:** We've established a local scholarship program which is awarded annually to one Grade 12 student from both Delia School and J.C. Charyk School
- **Hand Hills Lake Stampede:** We're proud to be an annual sponsor of the Hand Hills Lake Stampede for more than six years
- **Delia Fire Department:** We've committed to providing ongoing support for the local fire department

We look forward to establishing additional community investment initiatives on behalf of the Hand Hills Storage Project. In addition, the Project will provide direct and indirect benefits to the community through employment, increased sales and use tax revenue, and diversifying the energy generation portfolio in the region.

Did you know?

Storage provides reliability and stability to electricity systems by storing surplus energy during off-peak periods of high supply or low usage and providing electricity during critical peak periods.

How does an Energy Storage Facility work?



1. Energy is generated from sources including wind, solar, natural gas, hydro, nuclear, etc.
2. This energy enters the grid.
3. The electricity is constantly metered and monitored.
4. If there's more energy supply than demand, energy from the grid is converted from alternating current (AC) to direct current (DC) for storage in the battery system.
5. The energy is stored and a management system runs continuously to monitor and control the flow of energy and optimize how batteries are charged/discharged. BluEarth's Remote Operating Center monitors the status of the storage facility and determines when to charge, store, and discharge energy as required by the electrical grid. When electricity is needed, it flows through the power conversion system (PCS) where it is converted from DC back to AC for distribution, and use in homes and offices.

BluEarth Renewables brings together extraordinary people with the power to change the future™ by delivering renewable energy to the power grid every day. We are a leading, independent, power producer that acquires, develops, builds, owns, and operates wind, hydro, solar and storage facilities across North America. Our portfolio includes over 1 GW_{AC} (gross) in operation, under construction and contracted pre-construction, and over 7 GW of high-quality development projects that are actively being advanced.

Visit: www.blueearthrenewables.com
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Frequently Asked Questions

Hand Hills Storage Project

What is energy storage?

Energy storage is the concept of capturing and retaining energy at one point in time, so that it can be used at another point in time. Energy storage provides reliability and stability to electricity systems by storing surplus energy during off-peak periods of high supply or low usage and providing electricity during critical peak periods.

What are the benefits of energy storage?

Energy storage helps balance supply and demand on the electrical grid and can provide the following benefits:

- **Cost Savings:** Increases the efficiency and capabilities of existing electricity generation and transmission networks.
- **Reliability:** Improves grid reliability by providing backup power during grid disruptions and other emergencies.
- **Flexibility:** Energy storage can inject or extract electricity from the grid to exactly match demand patterns. This pairs well with renewable generation sources such as wind and solar.
- **Lower Environmental Impacts:** Relying on energy storage to regulate the electrical grid allows all generating facilities to operate more efficiently, which can reduce fuel consumption from conventional gas fired facilities.

How much energy will be stored and for how long?

BluEarth is currently proposing a 10 MW storage project, with a targeted storage duration of two hours. That equates to energy storage capacity of approximately 20 MWh, which is enough to power approximately 5,000 homes in Alberta for two hours.

How many battery containers would there be?

The exact number of battery containers is still being determined and is contingent on the supplier and site layout. Our preliminary estimates assume six containers. The proposed battery structures are similar to a sea can, and the dimensions are roughly 8 meters long x 2.5 meters tall x 3.5 meters wide.

How long do storage batteries last?

Batteries used in energy storage last approximately 20 years, or 7,300 cycles of charging. As the battery ages, the performance will gradually decline with time and based on the frequency with which it charges, similar to batteries used in everyday electronics such as your smartphone. To compensate for this aging process, batteries can be replaced or additional batteries can be added to a storage project in order to maintain overall storage capacity.

What happens to the facility and batteries once they are retired?

Once the storage facility has reached the end of its usable life, the facility will be decommissioned. Decommissioning includes de-energizing the facility, removing all above ground equipment and structures, and restoring the land to its prior condition. At the end of a battery's useful life, up to 95% of the battery can be recycled for use in new batteries.

Are battery storage facilities noisy?

The Project will be required to meet the noise regulations of the province, which is 40 dBA at night and 50 dBA in the daytime. The final layout configuration will be determined by evaluating predicted noise levels at nearby receptors in order to ensure the project complies with the prescribed limits.

If you have additional questions, please reach out to our Project Team at 1-844-214-2578 or projects@bluearth.ca.



Proposed Location
Hand Hills Storage Project

