Date	September 09, 2026
Topic	Hilamiut – Wind and Solar Resource Assessment Project Nunavut Impact Review Board

I. Project Overview

The Kitikmeot Wind and Solar Resource Assessment Project (Hilamiut) is a regional initiative designed to accelerate the development of community-scale renewable energy projects across four Kitikmeot communities: Kugluktuk, Cambridge Bay, Gjoa Haven, and Kugaaruk.

The project will collect bankable-quality wind and solar resource data, assess suitable locations for renewable energy infrastructure, evaluate opportunities to integrate renewable energy into existing diesel-powered microgrids, and develop implementation roadmaps for future renewable energy projects.

Through technical studies, community engagement, local employment and training opportunities, and education initiatives, the project aims to build the knowledge, capacity, and evidence required to support Inuit-led renewable energy development, reduce diesel dependence, lower greenhouse gas emissions, and strengthen long-term energy resilience across the Kitikmeot region.

The first phase of the project is occurring in Kugaaruk and consists of the installation and operation of temporary wind resource measurement equipment for approximately two years. The project is a scientific research and resource assessment initiative only; there is no permanent implementation of renewable energy infrastructure.

II. Project Location

The project location was chosen based on extensive engagement with the community and the Hamlet administration. The site is located within Kugaaruk municipal boundaries but doesn't have a legal description/parcel number. The site is unused. The kml file with exact site location and a site plan are included in the application.

The project site in the kml file represents a larger assessment area than the final project footprint. The exact location of the platform will be selected within this area following a visual ground stability assessment to identify the most suitable location, minimize ground disturbance, and avoid unstable terrain where practicable.

Figure 1: Hilamiut Study Site - Kugaaruk

III. Equipment Description

1. Overview

The temporary measurement station will consist of the following components:

- Ground-based LiDAR unit and mounting platform
- Two sea containers housing monitoring equipment and power systems
- Six solar photovoltaic panels, four micro wind turbines and methanol fuel cell system
- Anchoring system
- Communications equipment
- Associated cabling

Refer to the supporting documentation for photos and site plan.

2. LiDAR System

The project will deploy a portable, ground-based LiDAR (Light Detection and Ranging) system to collect high-quality wind resource data for renewable energy planning. The system uses a Class 1

eye-safe laser to remotely measure wind speed and direction at multiple heights ranging from approximately 10 metres to 300 metres above ground level.

The LiDAR unit is a compact instrument approximately one metre (3 feet) high with a footprint of approximately 0.9 m × 0.9 m (3 ft × 3 ft). It is specifically designed for year-round operation in Arctic conditions (-40°C to +50°C) and operates continuously with minimal maintenance. Manufacturer specifications and photos are attached to this application.

The LiDAR unit will be installed on a galvanized steel support platform supported by pressure treated wood footings (1 meter/3 feet high). The platform is designed to provide a stable operating surface under Arctic conditions.

3. Power Supply

The monitoring station will operate independently of the community electrical grid. Power will be supplied using:

- Six solar photovoltaic panels
- Four micro wind turbines
- Methanol fuel cell system
- Valve regulated lead acid battery system (non spillable)

Approximately 600 litres of methanol will be stored on site using ten (10) 60-litre fuel cartridges. The methanol will be stored inside a sea container within a secondary containment system.

4. Equipment Containers

Two temporary sea containers will be installed on site to house electrical and communications equipment and the power supply systems:

- One standard 20-foot sea container (8’6")
- One high-cube 20-foot sea container (9'6")

The solar panels will be installed on the high cube container, with a final height of approximately seventeen (17) feet. The micro wind turbines will be installed on the standard sea container, with a final height of approximately fifteen (15) feet.

5. Others

Conduits for Data, Communications and Power:

Above-ground conduits will house power and communication lines between the LiDAR unit and the sea cans. The conduits will remain above ground, supported on stacks of 2 × 6 lumber (approximately 2 ft long, stacked four feet high). The conduit route will be clearly marked with safety and driveway markers to improve visibility and ensure safe passage for snowmobiles and other vehicles.

Anchoring System:

Certain equipment will require anchoring to ensure stability under site-specific conditions. The final anchoring method will be selected based on ground conditions and may include plate anchors or rock anchors, as appropriate.

IV. Construction Activities – September 2026

1. Construction Activities

Construction activities will take place in September 2026, upon the arrival of the barge in the community, and consist primarily of:

- Delivery of equipment and site preparation
- Placement of sea containers
- Installation of the LiDAR system, solar panels and micro wind turbines
- Installation of temporary anchoring systems
- Equipment commissioning

Construction activities will use existing access routes to minimize disturbance. A backhoe and loader will be used for installation. Disturbance will be limited to the temporary project footprint.

2. Environmental Protection During Construction

Construction activities will follow standard environmental protection procedures, including:

- Spill prevention and response
- Fuel (methanol) handling procedures
- Wildlife awareness
- Waste management
- Site housekeeping
- Emergency response procedures

V. Operations and Maintenance - October 2026-October 2028

The monitoring station will operate continuously for approximately two years following installation. During operation, the monitoring station will function autonomously and require only periodic site visits for inspection and maintenance. A trained local technician will be hired for the duration of the project. Routine activities may include:

- Equipment inspections
- Fuel replacement (approximately every two months)
- Snow removal (if required)

- Minor maintenance and troubleshooting when required.

Site visits are anticipated approximately once per month for routine inspections and emptying the water collection bucket. An additional visit may be required during the winter, depending on exhaust-water accumulation and site conditions.

VI. Closure and Site Restoration – October 2028

At the completion of the measurement campaign, all temporary infrastructure will be removed from the site. Following equipment removal, the site will be restored as closely as practical to its pre-project condition. Any disturbed areas will be stabilized, and all waste materials will be removed from the site for appropriate disposal.

VII. Community Engagement

The Hamlet Council of Kugaaruk expressed strong support to the initiative and passed Council Motion #2024-05-23-10 on May 23, 2024. Please refer to the Letter of Support attached to this document.

Community engagement was completed in Kugaaruk in November 2025. The project team met with:

- Elders
- Hamlet Council
- Senior Administrative Officer (SAO) and the Hamlet Land Planner
- Hamlet Energy Committee
- Hunters and Trappers Organization (HTO)
- Kitikmeot Inuit Association representatives
- Community members through a public open house

The engagement process sought community input on project objectives, potential site locations, environmental considerations, and future renewable energy opportunities. Community feedback directly influenced the final site selection. The selected site avoids important drinking water sources, remains within municipal boundaries, provides year-round access, minimizes interference with community activities, and is located outside known harvesting, archaeological, and culturally significant areas. Overall, community feedback demonstrated strong support for the project.

VIII. Environmental Considerations

1. Land Disturbance

The temporary project footprint is approximately 45 m × 35 m. Construction and operation activities are expected to result in only minor, temporary ground disturbance.

2. Water Resources

No water withdrawals are required. No wastewater will be generated. The project has been intentionally located away from community drinking water sources.

3. Noise

Construction noise will be temporary and limited to installation activities. Operational noise from the micro wind turbines is expected to be minimal. The turbine design includes vibration-dampening features within the tail assembly to prevent tail vibration, which is a common source of noise in small wind turbines, thus minimizing potential acoustic effects on the surrounding environment.

4. Fuel Storage

The project will utilize a methanol fuel cell with approximately 600 litres of fuel stored on site in sealed manufacturer-approved cartridges. Cartridges will be stored within a secondary containment system. Fuel handling procedures will follow the project Spill Prevention and Response Plan.

5. Waste Management

The project will generate very little waste during operations. Construction waste will be removed from the site and disposed of at approved facilities. All temporary infrastructure will be removed at the end of the project. Empty fuel cartridges will be disposed of like regular plastic.

IX. Personnel

Construction Phase	Number of workers: 3 Duration: 1 week
Operation and Maintenance Phase	Number of workers: 1 Duration: biweekly/monthly
Closure Phase	Number of workers: 3 Duration: 1 week

X. Closure

Should you have questions regarding this report, please do not hesitate to contact the undersigned.

Regards,

Tom Rutherdale

President, Aurora Energy Solutions