NORTHERN ENERGY CAPITAL

Application for Land Use Permit

Wind Resource Assessment Study

Whale Cove, Nunavut

March 2024

Prepared by

Northern Energy Capital Inc.

Prepared for

Government of Nunavut
Department of Community and Government Services

NORTHERN ENERGY CAPITAL

NORTHERN ENERGY CAPITAL

Suite 502, 151 West Hastings Street
Vancouver, BC, V6B 1H4, Canada
www.northernenergycapital.com

Legal Name of Applicant:	Northern Energy Capital Inc.
Project Title:	Wind Resource Assessment Project, Whale Cove, Nunavut
Contact Information:	Kailey Wright, Project Manager Tel: (250) 686-6644, Email: kwright@northernenergycapital.com

Application for Land Use Permit

Location & description of operation:

Whale Cove, Nunavut
Latitude: 62°11'2.00" N, Longitude: 92°33'58.09" W

Northern Energy Capital (NEC) on behalf of Kivalliq Alternative Energy will conduct a preliminary renewable energy study for the community of Whale Cove, Nunavut. The community currently relies on aging diesel generators to meet the local electricity demand. The project's scope is to collect wind data that will be used to assess the feasibility of a utility-scale wind energy project in Chesterfield Inlet.

Wind data will be collected using a sonic detection and ranging (SoDAR) device. The SoDAR unit will use sound waves to measure wind speed, direction, and frequency over a 12-month period. The project will not require extensive land displacement or alteration; the SoDAR device will be placed on the ground surface with a 3.0m x 3.0m tent enclosure for the system controls to protect both wildlife and equipment and a 5.7m x 6.1 photovoltaic power supply. The SoDAR itself measures 0.5m x 0.5m x 3.0m tall. The study will consider the use of wind and battery energy storage systems, and the demand in order to effectively offset the diesel generation in the community.

See figures 1 & 2 for maps of Project Site
See figures 3-6 for images of SoDAR unit (currently in Chesterfield Inlet).
See figure 7 for diagram of Project Site and relevant measurements

Equipment that will be used:

The SoDAR unit is a compact instrument that will autonomously collect wind data over a 12-month period. Using sound waves, this equipment will monitor wind activity including wind speed, wind direction, and wind frequency. The instrument has a reduced footprint in contrast to a meteorological (met) tower and performs the same function. The equipment demands a less invasive installation as it does not require surface drilling for deep anchors.

NEC received funding through Canada's Smart Renewables and Electrification Pathways Program (SREP) for wind energy feasibility study of multiple communities and the mobility of the SoDAR unit permits this activity.

Fuel usage & storage:

Approximately 600 lbs. (6 x 100lb containers) will be used to regulate the SoDAR unit's temperature for the prevention of ice formation. Additionally, the propane will be used to power a generator to supplement the SoDAR unit's 15W power requirement. Necessary steps are being made to reduce the quantity of fuel containers stored on site. There will be a maximum of two (2) units stored on site. The remainder will be held with the local contractor off-site.

Method of waste disposal:

Waste, impact mitigation, and environmental impacts from SoDAR feasibility projects are typically very low and limited to land use displacement and construction if necessary. The project team will take all appropriate measures to ensure that waste generated during the project's assembly is contained and disposed of properly. The project will not generate any hazardous waste, and no waste is expected to result after equipment assembly and installation. Should there be waste material, all will be properly stored during construction and will be disposed of at the local landfill following the completion of installation.

Any other relevant information:

A second objective of the MWRAP program in Whale Cove is capacity building, and we are providing local opportunities focused on renewable energy alternatives. We will be employing two local individuals to help with the installation of the equipment and maintenance for the duration of the Project (12 months). We will also train people on the basics of clean energy, SoDAR operations, and how to develop a wind energy project if the wind resource proves viable. Training sessions will be given in person and by videoconference, and participants will be paid for their training time.

Conclusion

Thank you for the opportunity to apply for a land use permit. We are very excited about the future of clean energy in Canada's northern communities, and more specifically the economic, social, and environmental benefits that will become directly available to Whale Cove through the success of this feasibility study.

Kailey Wright • Project Manager, Northern Energy Capital

(250) 686-6644 • kwright@northernenergycapital.com
Suite 502, 151 West Hastings Street, Vancouver, BC V6B 1H4
250 213 8185 • northernenergycapital.com

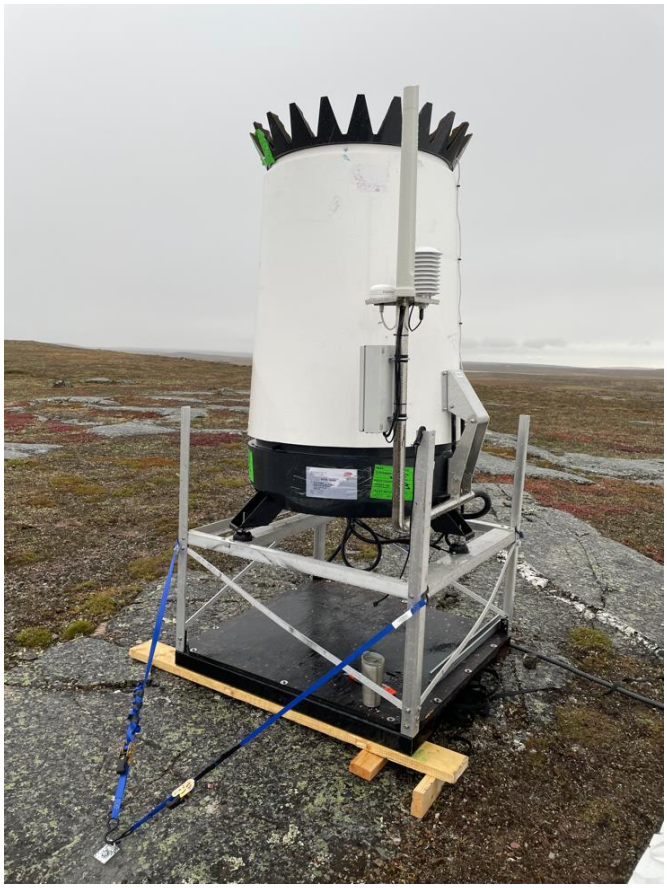
Suite 502, 151 West Hastings Street
Vancouver, BC, V6B 1H4, Canada
www.northernenergycapital.com

Figure 1: Bird's-eye view of Project site

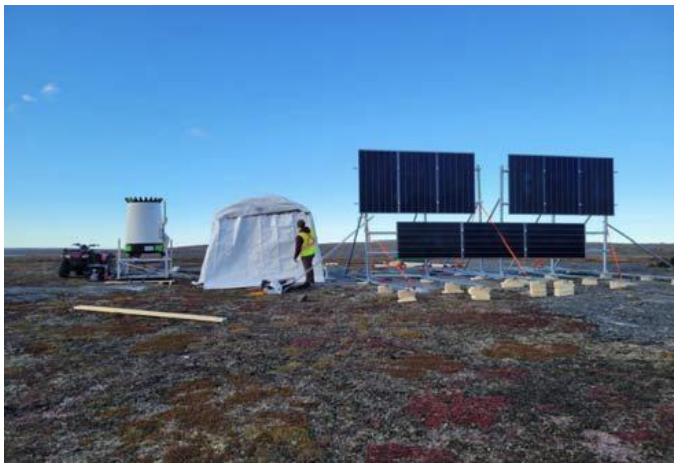
Figure 2: View of distance from Project site to Whale Cove Airport (5.84 km)

Suite 502, 151 West Hastings Street
Vancouver, BC, V6B 1H4, Canada
www.northernenergycapital.com

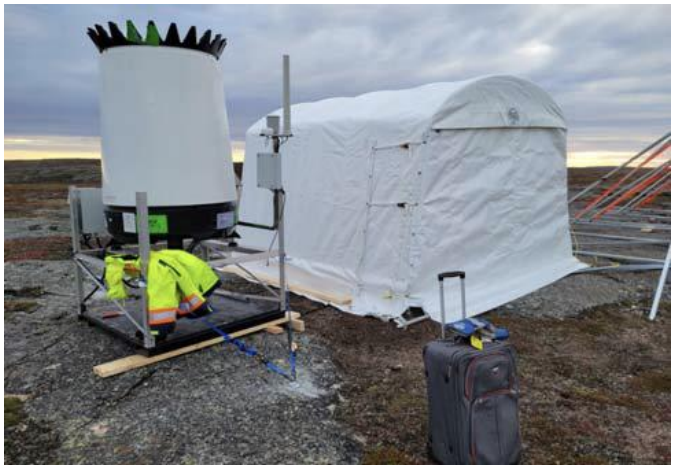
Figures 3-6: SoDAR Equipment Gallery



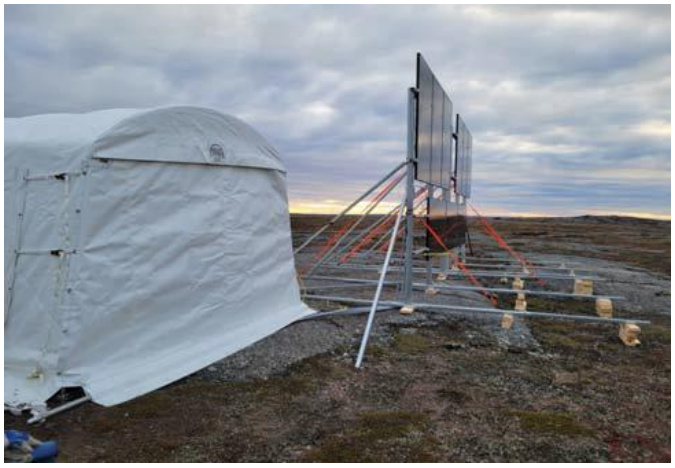
SoDAR Equipment.



Site Profile - SoDAR (left), Tent (middle), Solar Power Supply (right).



SoDAR (left), Tent (right).



Tent (left), Solar Power Supply (right).

Suite 502, 151 West Hastings Street
Vancouver, BC, V6B 1H4, Canada
www.northernenergycapital.com

Figure 7: SoDAR Site Plan – Whale Cove, Nunavut