NIRB Application for Screening #126422
Solar Resource Monitoring Station

Application Type: New

Project Type: Scientific Research

Application Date: Wednesday, May 13, 2026

Period of operation: from 2026-06-23 to 2036-06-23

Project Proponent:
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Canada
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DETAILS

Non-technical project proposal description

English: Overview: Polar Knowledge Canada, in collaboration with Canmet Energy Ottawa/Natural Resources Canada, is proposing to install a solar resource monitoring station along Waterlake Rd, in northern Cambridge Bay, NU. Purpose: The purpose of the station is to track and compile meteorological and solar resource data. Very few solar resource ground station datasets exist for Canada's Arctic, so the data from this station can provide valuable insights on solar radiation variability, and can be used to improve large weather models over polar regions. The lessons learned from this station can be used to improve best practices for Arctic solar resource monitoring, and to support the integration of renewable energy in Arctic communities. Activities: A sun tracker and various meteorological sensors will be deployed along Waterlake Rd, measuring solar radiation, albedo, wind speed and direction, temperature, humidity, air pressure, snow depth, and precipitation. The system will consist of two enclosures on tripods, and a sun tracker and precipitation gauge mounted on two platforms. The equipment will be grid-powered, with Starlink connectivity. There will be two staff onsite for 2 days in July 2026 to install the equipment, and the site will be visited weekly by POLAR staff for maintenance.Timeline: The monitoring station will be deployed in July 2026, and will continue collecting data indefinitely.Results: The data and results will be published in various formats, including on a Natural Resources Canada website, conference papers, and peer reviewed articles.Impacts: The monitoring equipment is all minimally invasive. The site is within hamlet boundaries in a pre-disturbed area, so there is unlikely to be any impacts to the environment, wildlife, or people. If the project ends, the site will be fully restored to its previous condition.

French: N/A

Inuktitut: N/A

Inuinnaqtun: Havakhautinik: Hiqinirmit Atuqtakhanik MunaqhidjutikhaqIlittuqhitit: Ukiuqtaqtumi Qauhimayatuqat Kanatami, havaqatigiplugit Canmet Energy Ottawa/Nunamiittutuqat Piqutit Kanatami, iliuraiyumayut hiqinirmit atuqtakhanik munaqhivikhamik talvani Waterlake Rd, tunun'ngani Iqaluktuuttiami, Nunavut.Pityuta: Pidjutikhaa nayurvinga naunaiyariami katitirlugulu hilaup hiqinirmilu ikayuutikkut ilitturipkaidjutit. Ikitpiaqtun hiqinirmin hanaqidjutikharnik nunami nayugaingit naunairutikhangit aulayut talvani Kanatami Ukiuqtaqtuniitunik, taimaa naunairutikhangit talvannga nayugaani tunigiaqaqtun akhuurnaqtunik tautuktuuyaarutikharnik hiqinirmin aulavikhangit aallatqiinguyut, atuqtaugiaqaqtunlu ihuaqhaidjutikharnik angiyunik hilaup qanurinmangaangit ukiuqtaqtuniitunik. Ayuiqtatik haffumanga nayugaanin atuqtauyaaqtut ihuaqhiyuumigiangani nakuutqiyat atuqtauyut haffumunga Ukiuqtaqtumi hiqinikkut ikayuutikkut munaridjutit, uvvalu ikayuutikhat ilauqatigiingnikkut atuffaaqtaaqtut auladjutit Ukiuqtaqtumi nunallaat.Hulidjuhiit: Hiqinirmit naunaiyaidjut uvvalu aallatqiit hilap naunaiyautait iliuraqtauniaqtut uvani Waterlake Apqutaani, aktilaarlugit hiqinirmin uunarnia, albedo, anurip kayumiktilaanga humullu, uunarnia, atipkarnia, hilap aulania, aput itiniqhaa, uvvalu nipalungnia. Taamna auladjutikhaq piqarniaqtuq malrungnik avatingnik nappaqtirutingnik, hiqinirmilu naunairutikharnik nipalungnik ihivriudjutikharnik iliyauhimayut malrungnik qiyungnik tunngavikharnik. Tamayat aulapkaqtauniaqtut alruyaqtuutikkut, Starlink atadjutiqarlutik. Malruk havaktiik tahamaniiniaqtuk malrungni ubluni Taaqhivalirvia 2026 iliurailutik ingilrutinik, nayugaalu pulaaqtauniaqtuq havainirmi POLAR-kut havaktiinnit ihuaqhaqtauyanginni.Naunaipkutit Pivikhaqarningit: Munaridjutikkut nayugaa atuliqtauniaqtuq uvani Taaqhivalirvia 2026, aulahimaaqtumik katitirilutik naunaiyautinik tavungaraaluk.Kiuviniit: Naunaiyautit uvvalu qanurinningit titiraqtauniaqtut aallatqiinik atugakhanik, ilauyut uvani Nunamiittutuqat Piqutit Kanatami qaritauyaliqiviani, katimarjuagutini titiqqat, uvvalu havaqatimin-ihivriuqtauyut titiraqhimayut.Hulaqutit: Amirinikkut hanalrutit tamaita mikiyumik ihuirutivaktut. Inigiyauyuq haamalatkut kikligiyaini hivuani aktuqtauhimayumi nunani, taimainingani ihuilidjutiqalimanngittuq avatauyumut, uumayunut, inungnulluuniit. Havaakhaq nungutpat, nayugaa ihuaqhaqtauniaqtuq kinguani idjuhianun.

Personnel

Personnel on site: 2

Days on site: 2

Total Person days: 4

Operations Phase: from 2026-06-23 to 2036-06-23

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Solar Resource Monitoring Station	Researching	Municipal	Within municipal boundary of Cambridge Bay	N/A	Within municipal boundary of Cambridge Bay

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Cambridge Bay	Jason Maas	Polar Knowledge Canada	2025-02-01

Authorizations

Indicate the areas in which the project is located:

Kitikmeot

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Nunavut Research Institute	NRI Research permit	Not Yet Applied		
Nunavut Planning Commission	NPC File NO. 151050	Active		

Project transportation types

Transportation Type	Proposed Use	Length of Use
Land	Site is accessible by road. Will travel by truck to install and maintain equipment.	

Project accomodation types

Other,

Material Use

Equipment to be used (including drills, pumps, aircraft, vehicles, etc)

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Truck	1	19 ft L x 7 ft W x 7ft H	Site will be accessed by truck
Solys Gear Drive Suntracker	1	50x34x38 cm	Will track the sun and provide a mounting surface for two pyranometers, a pyrgeometer, and a pyrheliometer.
CGR4 Pyrgeometer	1	110x110x70 mm	Will detect infrared radiation
CMP22 Pyranometer	3	110x110x70 mm	Will detect global horizontal irradiance, diffuse horizontal irradiance, and albedo
CHP1 Pyrheliometer	1	31.6x4x4 cm	Will detect direct normal irradiance
Tripod	2	Base: 1.5m diameter, height: 2.5m	To serve as mounting sites for two electronics enclosures, a SR50A snow depth sensor, an CMP22 pyranometer, a BaroVUE10 barometric pressure sensor, an HMP155A humidity and temperature sensor, and an RM Young wind sensor
Geonor T-200B precipitation gauge	1	1x1x1m	To measure precipitation
SR50A Snow depth sensor	1	Diameter: 7.5cm, Length: 10.1 cm	To measure snow depth
BaroVUE10 Barometric pressure sensor	1	2.2 x 9.0 x 10.2 cm	To measure barometric pressure
HMP155A Temperature and relative humidity sensor	1	35.56 x 27.31 x 13.97 cm	To measure temperature and relative humidity
RM Young alpine wind monitor	1	38x65x20cm	To measure wind speed and direction
Electrical enclosures	2	0.5x0.45x0.3m	Will house the electrical distribution equipment (CH150 charging regulator, BP42 12V battery, CR1000X-XT datalogger).
Starlink standard kit	1	Dish: 594mm x 383mm x 39.7 mm. Router: 43.4 x 298.6 x 120.4 mm	To provide internet connectivity in order to access the sensor data remotely

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
none	hazardous	0	0	0	Kg	none
Gasoline	fuel	1	20	20	Gallons	The only fuel onsite will be in the gas tank of the truck used to access the site

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0		

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Researching	Other, Miscellaneous cardboard/plastic	1 box	Will take any cardboard/plastic waste to the landfill	n/a

Environmental Impacts:

The monitoring equipment is all minimally invasive. There is unlikely to be any impacts to the environment, wildlife, or people, since the site is on pre-disturbed land within municipal boundaries. The platforms will be designed to minimize contact with the ground. If the project ends, the site will be fully restored to its previous condition.

Additional Information

SECTION A1: Project Info

SECTION A2: Allweather Road

SECTION A3: Winter Road

SECTION B1: Project Info

SECTION B2: Exploration Activity

SECTION B3: Geosciences

SECTION B4: Drilling

SECTION B5: Stripping

SECTION B6: Underground Activity

SECTION B7: Waste Rock

SECTION B8: Stockpiles

SECTION B9: Mine Development

SECTION B10: Geology

SECTION B11: Mine

SECTION B12: Mill

SECTION C1: Pits

SECTION D1: Facility

SECTION D2: Facility Construction

SECTION D3: Facility Operation

SECTION D4: Vessel Use

SECTION E1: Offshore Survey

SECTION E2: Nearshore Survey

SECTION E3: Vessel Use

SECTION F1: Site Cleanup

SECTION G1: Well Authorization

SECTION G2: Onland Exploration

SECTION G3: Offshore Exploration

SECTION G4: Rig

SECTION H1: Vessel Use

SECTION H2: Disposal At Sea

SECTION I1: Municipal Development

Description of Existing Environment: Physical Environment

Pre-disturbed area within boundary of Cambridge Bay

Description of Existing Environment: Biological Environment

Rocky, pre-disturbed area. Moss, lichen, small herbaceous plants.

Description of Existing Environment: Socio-economic Environment

Within municipal limits of Cambridge Bay

Miscellaneous Project Information

The intent of the project is to collect solar resource data, which will be published to a public portal. There are very few solar resource ground stations in the Arctic, so this data will provide valuable insights on solar radiation variability, and can be used to improve large weather models over polar regions. The data can also be used to support renewable energy integration in Arctic communities.

Identification of Impacts and Proposed Mitigation Measures

Potential environmental impacts are very low. The monitoring equipment is non-invasive, and will be placed on the ground (no groundwork or digging required). The sensors will be collecting data on solar radiation, temperature, wind, humidity, snow depth, air pressure, and precipitation. The site will be restored to its present condition at the end of the project.

Cumulative Effects

N/A

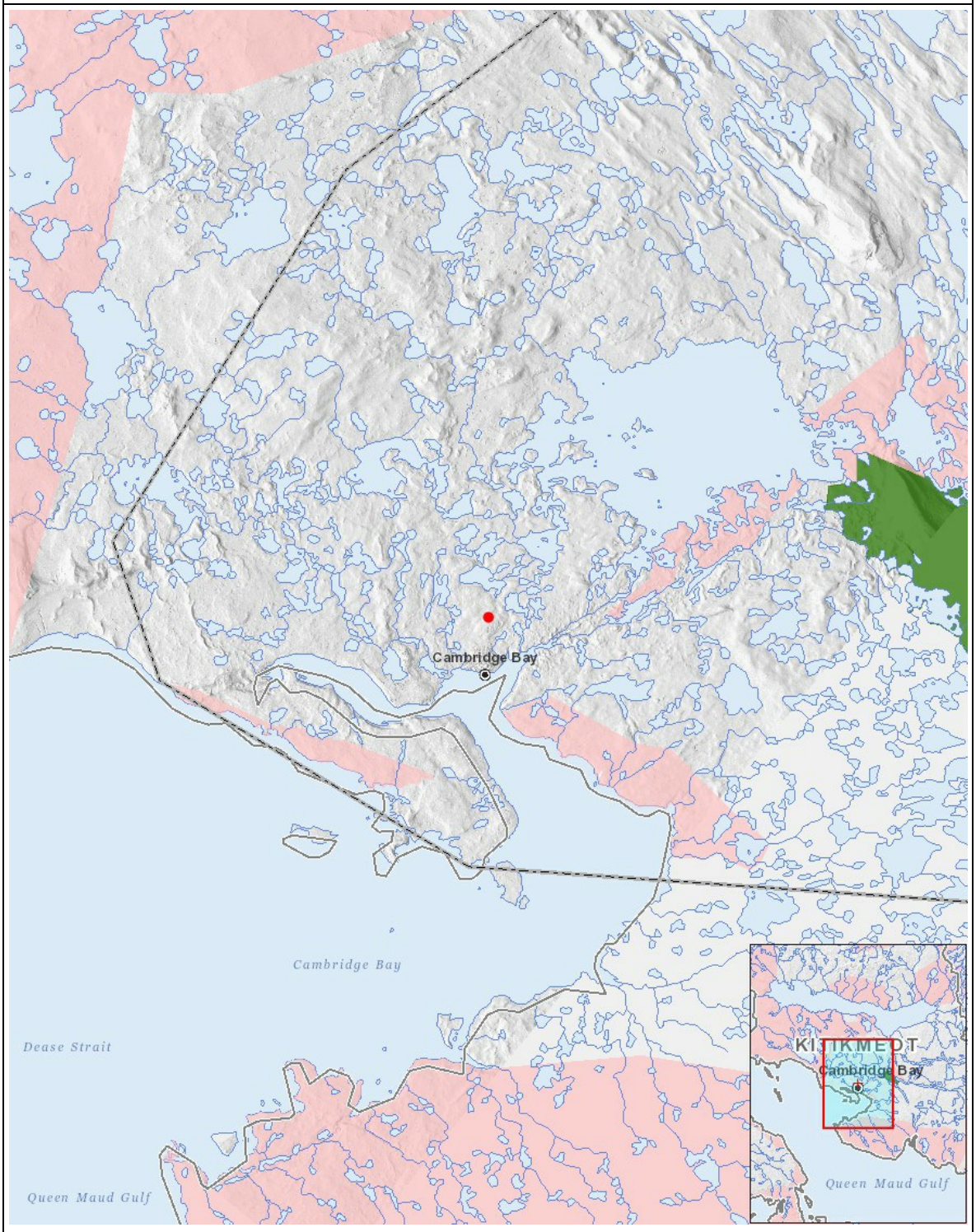
Impacts

Identification of Environmental Impacts

	PHYSICAL	Designated environmental areas	Ground stability	Permafrost	Hydrology / Limnology	Water quality	Climate conditions	Eskers and other unique or fragile landscapes	Surface and bedrock geology	Sediment and soil quality	Tidal processes and bathymetry	Air quality	Noise levels	BIOLOGICAL	Vegetation	Wildlife, including habitat and migration patterns	Birds, including habitat and migration patterns	Aquatic species, incl. habitat and migration/spawning	Wildlife protected areas	SOCIO-ECONOMIC	Archaeological and cultural historic sites	Employment	Community wellness	Community infrastructure	Human health
Construction																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-
Operation																									
Researching		-	-	-	-	-	-	-	-	-	-	-	-		M	-	-	-	-		-	-	-	-	-
Decommissioning																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-

(P = Positive, N = Negative and non-mitigatable, M = Negative and mitigatable, U = Unknown)

Project Location



List of Project Geometries

1	point	Solar Resource Monitoring Station