



## **NIRB Uuktuutinga Ihivriughikhamut #125438**

### **Igluligaarjuk Midnight Sun**

**Uuktuutinga Qanurittuq:** New

**Havaap Qanurittunia:** Ikumatiit Alguyaanut Havakvik

**Uuktuutinga Ublua:** 1/17/2019 10:07:51 AM

**Period of operation:** from 0001-01-01 to 0001-01-01

**Piumayaat Angirutinga:** from 0001-01-01 to 0001-01-01

**Havauhikhaq Ikayuqtinga:** Andrew Goslett  
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# QANURITTUT

**Tukihiannaqtunik havaariya uyumayumik uqauhiuyun**

Qablunaatitut: (See documents for executive summary & brief translated summary) Chesterfield Inlet consumes 2,123 MWh per year in electricity supplied entirely by diesel generators. This costs the hamlet over \$1.5 million every year and emits 1,307 tonnes of direct greenhouse gas emissions. This does not include the fuel associated with transporting diesel to Chesterfield Inlet. Chesterfield Inlet is located along the Hudson Bay coast in the Kivalliq region and receives the highest amount of solar energy in Nunavut. This is comparable to the same solar energy much of Ontario receives which has had a booming solar industry over the last decade. The Igluligaarjuk Midnight Sun, solar and storage microGrid demonstration project aims to tap into this free solar resource to reduce the hamlet's reliance on diesel for electricity. This project will utilize 609 kW of solar modules on iSolara's patented dual position QuickTrack system paired with a 636 kWh lithium ion energy storage system to act as an independent power system on the hamlet's existing grid. This project is expected to create 15-20 local jobs during construction and 1 job for operation & maintenance over the 10 year operational lifetime of the project. Solar energy will be fed directly into the grid to provide clean energy to all residents in the community. If the solar array is producing more than the grid can handle, excess energy will be stored in the energy storage system. During the winter months when there is limited solar energy the energy storage system will remain charged and can act as a back-up in the event of a generator failure or maintenance. This demonstration project aims to prove that simple solar with storage systems can easily integrate into the existing northern electrical infrastructure and work hand-in-hand with diesel generators. The ultimate goal is to deploy these systems in all remote communities to eliminate the need for vast fuel storage systems and diesel generators.

Uiviititut: No French translation at this time - Affected community speaks English and Inuktitut

[illegible]

Inuinnaqtun: No Inuinnaqtun translation at this time - Affected community speaks English and Inuktitut

## Personnel

Personnel on site: 12

Days on site: 120

Total Person days: 1440

Operations Phase: from 2022-04-01 to 2022-09-15

Operations Phase: from 2022-09-15 to 2032-09-15

### Post-Closure Phase: from to

## Hulilukaarutit

Inigiya	Hulilukaarut Qanurittuq	Nunannga Qanurittaakhaanik	Initurlinga qanuritpa	Initurlinga utuqqarnitat unaluuniit Ingilraaqnitat Uyarannguqtut akhuurninnga	Qanitqiyauyuq qanitqiamut nunallaat kitulluuniit ahiruqtaliyainnit nuna
General Project Location (to be evaluated & confirmed) - Solar Array & Battery Storage Facility	Equipment installation	Municipal	Chesterfield Inlet is one of the oldest communities in Nunavut, with a population of almost 500. Currently, the community's electricity is supplied entirely by diesel generators. The Quliq Energy Corporation and the government of Canada are trying to reduce reliance on diesel generators and increase the usage of renewable energy resources in Nunavut. This project could supply nearly 1/3 of the community's electricity needs in clean solar energy, eliminating 200,000 litres in diesel fuel use.	The Hamlet of Chesterfield Inlet has recently been conducting site surveys around the community to identify areas of archaeological significance. The community, represented by David Kattegatsiak, has been working with iSolara to develop preliminary project site locations based on using non-archaeologically significant areas in the community.	~1km from central Chesterfield Inlet~230km from Harry Gibbons Bird Sanctuary

### Nunaliin Ilauyun, Aviktuqhimayuniitunullu Ikayuuhiarunguyun

Nunauyuq	Atia	Timiuyuq	Upluani Uqaqatigiyaungmata
Igluligaaryuk	David Kattegatsiak, Community Economic Development Officer	Hamlet of Chesterfield Inlet	2018-03-29

# Angiuttauvaktunik

Naunaiqlugu nunanga talvani havauhikhaq ittuq:

Kivalliq

## Angiuttauvaktunik

Munariniqmut Ayuittiaqtuq	Angirutinga Qanurittuq	Tadja Qanurittaakhaanik	Ublua Tuniyauyuq/Uuktuqtuq	Umikvikhaa Ublua
Nunavut Kavamanga, Qulliq Alruyaqtuqtunik Kuapuriisingat	Connection Impact Assessment will need to be completed in order to assess impact of system on Chesterfield Inlet electrical grid, existing generation sources	Not Yet Applied		
Nunavut Kavamanga, Qulliq Alruyaqtuqtunik Kuapuriisingat	Independent Power Producer agreement will have to be established between Chesterfield Inlet and QEC; Connection Authorization issued for project	Not Yet Applied		
Nunavut Kavamanga, Nunalingni Kavamatkunnilu Pivikhaqautikkut	Approval of the project by the Nunavut Planning Commission	Applied, Decision Pending		
Nunavut Kavamanga, Nunalingni Kavamatkunnilu Pivikhaqautikkut	Submission of Project plans to Safety Services Division for electrical safety approval	Not Yet Applied		
Hamlets and Municipalities	Letter of Community Support ----- The Hamlet of Chesterfield Inlet provided iSolara with a letter of community support expressing that a motion had been passed by council committing to support the Igluligaarjuk Midnight Sun project. This letter also included mention of the Hamlet and iSolara's ongoing work to develop a community engagement plan, together. The letter also identified David Kattegatsiak, the Hamlet's Economic Development Officer, as the community champion for the	Active	2018-04-19	

	project.			
Hamlets and Municipalities	Authorization to Act as Agent ----- Simeonie Sammurtok, Mayor of the Hamlet of Chesterfield Inlet, provided iSolara with a letter for Authorization to Act as Agent to contact the Quliq Energy Corporation. This letter was provided to allow iSolara to contact the QEC on behalf of the Hamlet in order to obtain information regarding the Hamlet's diesel generator's and load information.	Active	2018-04-23	
Anguhikiyiit Kanatami	NRCan CERRC Funding Request Proposal ----- Proposal has been submitted to NRCan's Clean Energy for Rural and Remote Communities program for project funding	Applied, Decision Pending		

#### Project transportation types

Transportation Type	Qanuq Atuqtauniarmangaa	Length of Use
Air	Transportation of iSolara & specialized personnel to site from Ontario	
Water	Shipping of materials	

#### Project accomodation types

Nunauyuq

Alaanut,

# Ihuaqutivaluin Atuqtauyukhan

Hanalrutit atuqtaunahuat (ukuallu ikuutat, pampiutainnik, tingmitinik, akhaluutinik, hunaluuniit)

Hanalrutit Qanurittuq	Qaffiuyut	Aktikkulaanga – Qanurittullu	Qanuq Atuqtauniarmangaa
Diesel Generator	1	4' x 4' x 4'	Small portable generator for on-site electricity generation
Boom Truck	1	35' x 15' x 18'	Materials transport
Excavator, Skid Steer	1	25' x 25' x 25'	Site excavation, preparation, moving materials

## Qanurittuq Urhuqyuaq unalu Qayangnaqtut Hunavaluit Aturninnga

Qanurittuq urhuqyuaq hunavaluit aturninnga:	Urhuqyuaq Qanurittuq	Qaffiuyut qattaryut	Qattaryuk Aktikkulaanga	Atauttimut Qaffiuyut	Ilanga	Qanuq Atuqtauniarmangaa
Diesel	fuel	25	20	500	Liters	General Construction Equipment

## Imaqmik Aturninnga

Ubluq qanuraaluk (m3)	Aturumayain imavaluin utiqtittagaani qanuq	Atulirumayain imavaluin utiqtittagani humi
0		

# Iqqakuq

## Ikkakunik Munakgiyauyunik

Havauhikhaq Hulilukaarut	Qanurittuq Iqqakut	Ihumagiyauyuq Qanuraaluktut Atuqtait	Qanuq Iqqakuurniarmangaa	Halummaqtirarnirutikhan piyutin
Equipment installation	Ikulalaaqtun iqqakuuvaluin	Dozens of skids	Wood and cardboard can be reused depending on condition, or burned for heat in the community.	Wooden skids, wooden framing/paneling, and cardboard from shipping materials can be reused depending on condition, or broken down to be burned for heat.
Equipment installation	Ikulalimanngittun iqqakuuvaluin	Up to approximately 100 garbage bags	To be reused or recycled locally if possible - otherwise sent to landfill	Small plastic materials, some wiring cuts, and other small plastic/metal materials may be reused or recycled locally if possible. Otherwise to be sent to landfill.
Camp	Anaagun (inuin anaaguin)	A few portable toilets over ~6 months	Contract local sewage disposal services to remove minor amounts of sewage from on-site portable toilets for crew of ~10-25 people over the course of 4-6 months.	Appropriate sewage treatment or disposal as per local standard

### Avatiliriniqmut Ayurhautingit:

In April 2018, QEC released the QEC Energy Framework which states that 55 million liters of diesel are consumed annually for electricity generation across the territory. Diesel generators will remain the primary source for generating electricity into the future. The proposed Chesterfield Inlet project would be capable of generating 720 MWh of electricity each year, offsetting over 200,000 litres of diesel fuel use in the community, accounting for almost one third of required fuel. This would eliminate 541 tonnes in carbon dioxide emissions, 24 tonnes of criteria air contaminants, and 180 kg of volatile organic compounds, improving the local air quality in and around the community. During the construction phases of the project, there may be impacts on the local environment at the equipment installation site, as incurred by typical construction projects. Such impacts may include degradation of ground conditions, disruption of local habitat, increased noise levels, etc. These impacts will all be thoroughly investigated in the preliminary stages of the project (see additional information regarding site & environmental assessments) so that mitigation tactics will be further developed to reduce these impacts. Some mitigation methods may include: choosing the least wildlife-impactful location, using a ballasted system to eliminate ground-penetrating anchors, holding and replacing backfill and other natural materials removed from the ground, etc.

# **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**

### **Qanurittuq Ittunik Avatinga: Avatingalluanga**

During preliminary project phases, an extensive site assessment will be conducted to investigate environmental factors affecting the project and potential impacts the project could have on the local environment including: geotechnical study, review of heritage data, wildlife and plant screening, local habitat conditions study, and any natural features that could be affected by the project. The community will also be engaged throughout each stage of the project, providing input to exact location of the project and opening discussions for any concerns they may have.

### **Qanurittuq Ittunik Avatinga: Inuuhimayunut Avatinga**

During preliminary project phases, an extensive site assessment will be conducted to investigate environmental factors affecting the project and potential impacts the project could have on the local environment. In particular, local biology will be assessed including a screening of local significant wildlife and plants, migratory birds, rare species, species at risk, wildlife behaviour, water topography, and any other natural factors that may be affected by the project.

### **Qanurittuq Ittunik Avatinga: Inungit-maniliurutingit Avatinga**

The project is tentatively planned to be located on the outskirts of Chesterfield Inlet - approximately one kilometre from the community's heart (close enough for electrical grid connection). The location will be finalized with factors in mind to minimize interrupting future community development or infrastructure, like roadways, etc. The Hamlet has recently been surveying the community and surrounding areas for planning purposes and to identify areas of archaeological significance, and has been working with iSolara to identify appropriate areas for the project that will not affect any such archaeological sites.

### **Miscellaneous Project Information**

A Pre-Feasibility report has been completed by iSolara including simulations of the community's energy system in order to identify the viability of the proposed system. This report evaluated the energy needs of the community and the potential for solar power generation, paired with battery storage, in order to identify the ideal system size for the project. For construction of the solar array, some minor earth moving will be required to level site grade and/or prepare for piles to anchor the racking system. Distribution poles will likely need to be installed adjacent to the site to connect to the existing distribution system. No new road is expected to be built, but access laneways/driveways will be built from existing roads onto the project site. The overall area of the site would encompass approximately 4 acres of land, but much of which is open space between solar array racking. A fence may be constructed around the site if it is determined that access must be restricted to the entire array.

### **Naunaiyainiq ukuninnga Ayurhaulingit unalu Piumayaat Iikikliyuumiutinahuarutit**

During construction, the community will be impacted by increased heavy equipment operation near the community

including increased noise levels. The community will also be affected through the presence of construction crews requiring accommodation and services, which will provide economic benefit to the community's businesses. Excess materials from shipping equipment (skids, wood, cardboard) may also be provided to the community to be reused, or burned for heat in the case of safely combustible materials. During operation of the system, less diesel fuel will need to be imported to the community and burned for electricity, improving the local air quality and reducing the volume of fuel deliveries. Although project operation is specified as ending in 2032, equipment lifetime will last longer and the system will continue to be able to operate in reasonable capacity thereafter.

### **Tamatkiumayunik Ihuikgutivaktunik**

Due to the reduction in diesel fuel usage for electricity generation this project would cause, there would be a decrease in local air contaminants and in GHG emissions. This would be a factor contributing to reduced impact of the community on global warming and overall environmental health and sustainability. Implementing this type of a system for all similar communities in Nunavut would greatly improve the territory's energy usage profile and reduce its contribution to global warming and environmental pollutants.

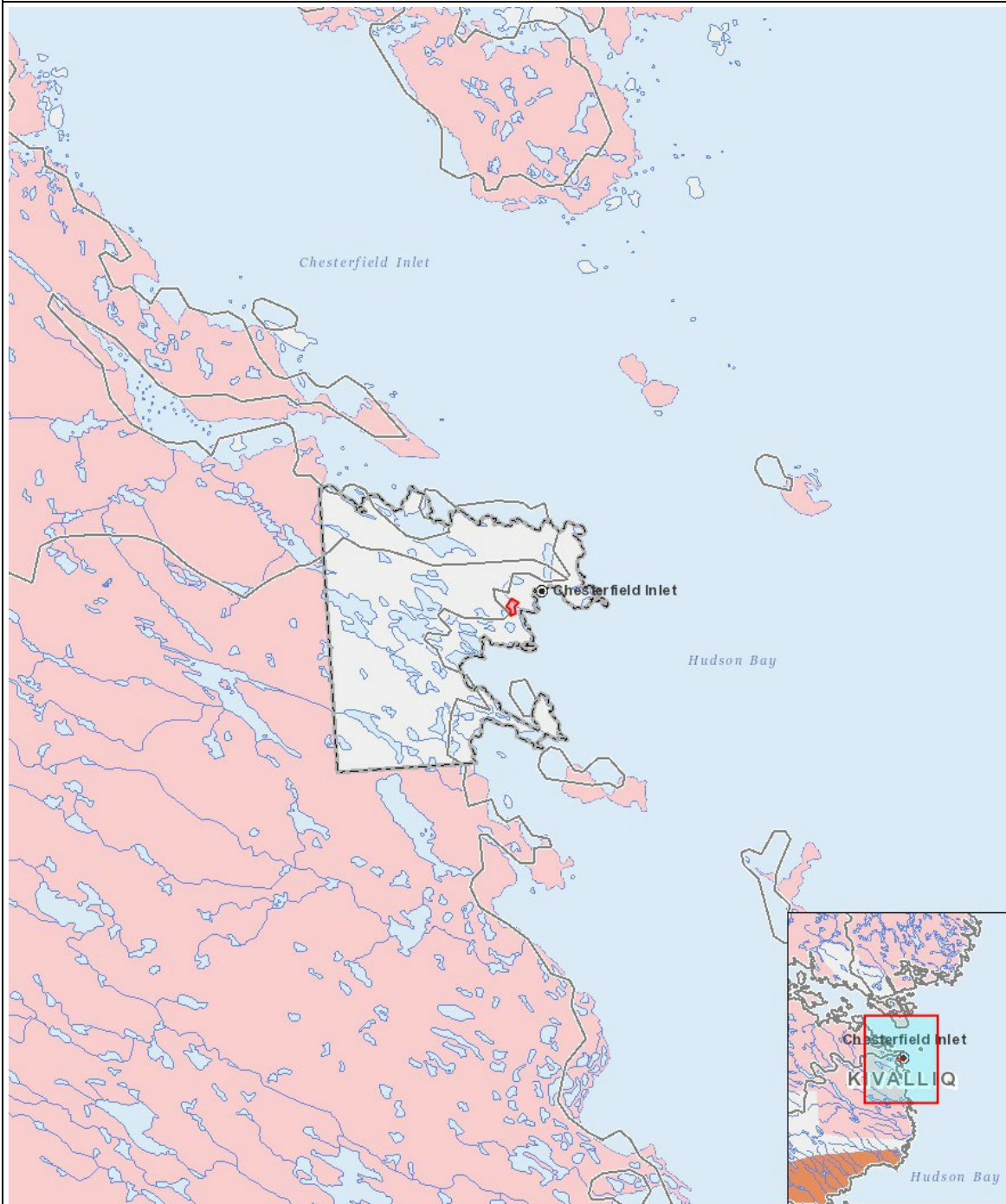
## Impacts

### Ilitariyauniq Avatiliriniqmut Ayurhautingit

		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
Havakvinga																										
Equipment installation		-	-	-	-	-	-	-	-	-	-	N	N		-	-	-	-	-		N	-	-	-	-	-
Aulapkaininnga																										
Equipment installation		-	-	-	-	-	-	-	-	-	-	P	-		-	-	-	-	-		P	-	-	-	-	-
Piiqtauniq																										
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	-

(P = Nakuuyuq, N = Nakuungittut unalu mikhilimaittuq, M = Nakuungittut unalu mikhittaaqtuq, U = Naluyauyuq)

## Havaariyauyukhamut Nayugaa



### List of Project Geometries

- |           |   |
|-----------|---|
| 1 polygon | General Project Location (to be evaluated & confirmed) - Solar Array & Battery Storage Facility |
|-----------|---|