



NIRB Application for Screening #125438

Igluligaarjuk Midnight Sun

Application Type: New

Project Type: Power Plant

Application Date: 1/17/2019 10:07:51 AM

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

Proposed Authorization: from 0001-01-01 to 0001-01-01

Project Proponent: Andrew Goslett
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DETAILS

Non-technical project proposal description

English: (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.

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

Inuktitut: (See documents for translated summary - NOTE: text below & attached document will convert to Inuktitut using nunacom font style in Microsoft Word)w[loZ3J4 s8kxf yei6xe4hbs?oxJ5 ckwosizi5 kNK5 x?toEpf5 vtmpq5w[loZJ4 skxf5 yei3j5 xm gdxefzk5 smdtQN/bz gCiz yei3j5 smdtzxcg3bsN/6g5 bEs6 wmdtz r?ousb3k5, dt[iXaJ6 kNK7u5, u4OQxyJN3g6BxmMfk5 xg3bsJNg6 sfkz xglxDi3lt4 sJxl1j5. •rg5: wysl3 yei3j5 smdt WoEctQg5 BxmMf w[loZJ2u5 xeXoxd2lA bN nN/sJ6 •hN: bN nN/sJ6 xgC/6g6 ^))smd]b kNj5 x4gxli yei4j6 wysD8 yei3j5 smdtmDwozli b[?wN6sli mD1i wMslA csl3g6 nF4 smdt gdxcf4. •vk6: bN nN/sJ6 kNo1i5 nN/pblt4 Wxi4bsf2li !%-@) kMo1i nNpbDNg5xeymN/6g6. xby6 s2ll4]b6 nNM/6g6 xs]Miz xm nNQxciz do5 srsi xs]MDNI4]bzi xgwNstlA. •]h6: bN gCzJ6 xe4hbsJ6 cspdp2lt4 xJ6Nqg6 yei3j5 smdtk5 xJNqgZ/3m5xbsyaDNg6 mNsJ6 wfmdtj5 xm nNctp[lt4 bfoz s3hxl1i wfmdti5 vS/bgk5. •Ni: mNsJ6 xe4hbsJ6 wi4nz s?i winz b[?i mN wfmdtQmsJ6 mN w[loZJ1u5

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

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
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

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Chesterfield Inlet	David Kattegatsiak, Community Economic Development Officer	Hamlet of Chesterfield Inlet	2018-03-29

Authorizations

Indicate the areas in which the project is located:

Kivalliq

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Government of Nunavut, Qulliq Energy Corporation	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		
Government of Nunavut, Qulliq Energy Corporation	Independent Power Producer agreement will have to be established between Chesterfield Inlet and QEC; Connection Authorization issued for project	Not Yet Applied		
Government of Nunavut, Community and Government Services	Approval of the project by the Nunavut Planning Commission	Applied, Decision Pending		
Government of Nunavut, Community and Government Services	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 project.	Active	2018-04-19	

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	
Natural Resources Canada	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	Proposed Use	Length of Use
Air	Transportation of iSolara & specialized personnel to site from Ontario	
Water	Shipping of materials	

Project accomodation types

Community

Other,

Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
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

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Diesel	fuel	25	20	500	Liters	General Construction Equipment

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
Equipment installation	Combustible wastes	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	Non-Combustible wastes	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	Sewage (human waste)	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

Environmental Impacts:

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

Description of Existing Environment: Physical Environment

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.

Description of Existing Environment: Biological Environment

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.

Description of Existing Environment: Socio-economic Environment

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.

Identification of Impacts and Proposed Mitigation Measures

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.

Cumulative Effects

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.

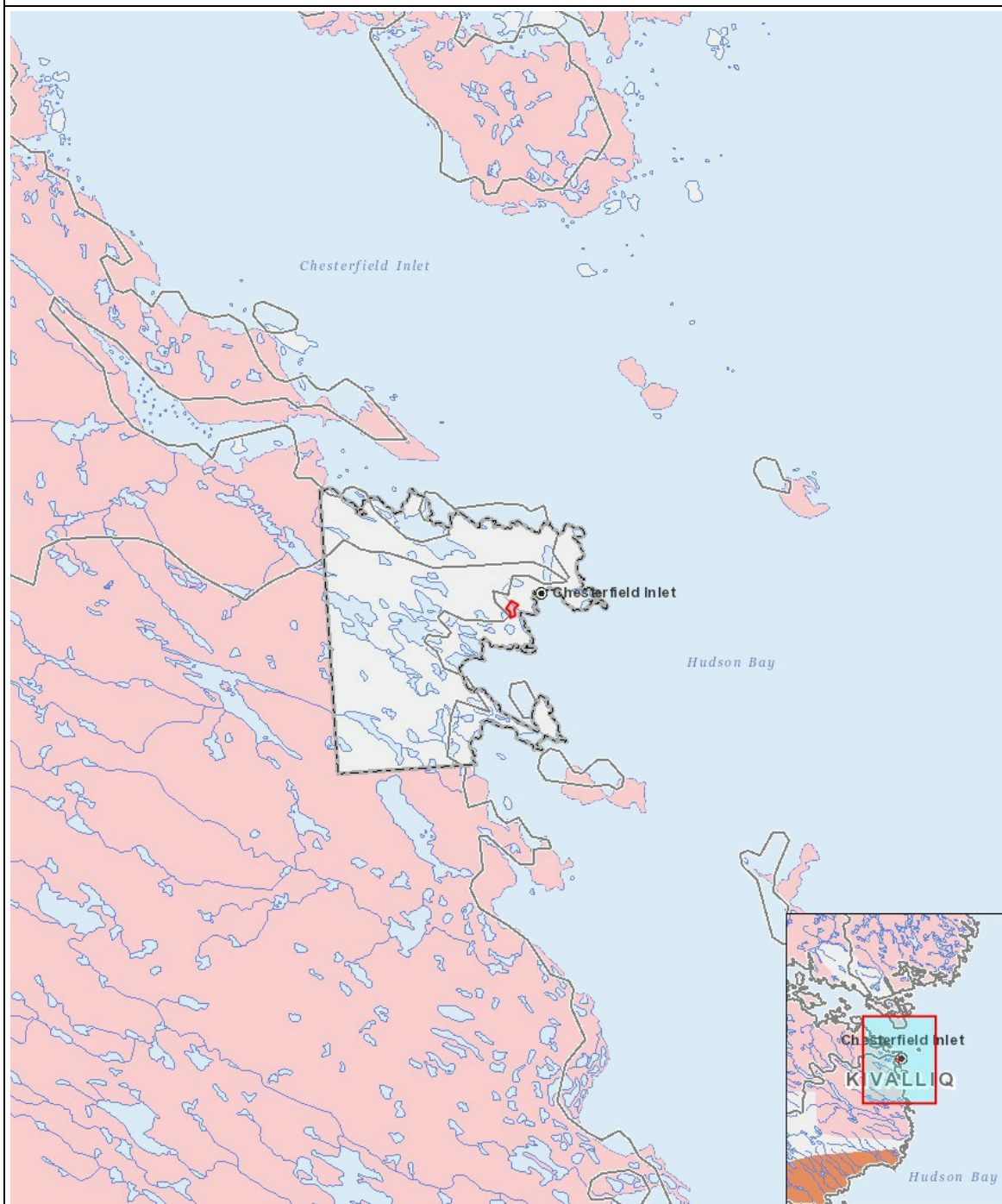
Impacts

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																									
Equipment installation		-	-	-	-	-	-	-	-	-	-	N	N		-	-	-	-	-		N	-	-	-	-
Operation																									
Equipment installation		-	-	-	-	-	-	-	-	-	-	P	-		-	-	-	-	-		P	-	-	-	-
Decommissioning																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-

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

Project Location



List of Project Geometries

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