



N O R T H E R N
E N E R G Y
C A P I T A L



Rankin Inlet Wind Farm

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Presentation Outline

- Project Concept
- CO₂ Reductions
- Project Foundation
 - Location
 - WWF Report
 - Our Technology
- Project Outcomes
- About Northern Energy Capital

Project Concept: Overview

The Rankin Inlet Wind Farm consists of a \$12M investment in a 2 MW project, providing energy to over 500 homes

- The Project will provide **5,200 MWh of renewable energy** from wind turbines featuring advanced blade heating technology
- The seasonal energy production profile correlates directly with Rankin Inlet's thermal energy demand, creating substantial opportunities for **fossil fuel displacement and emission reductions**
- Northern Energy Capital is committed to working with Sakku Investments Corporation and the Kivalliq Inuit Association to spread economic opportunities and outcomes throughout the community as well as generate local capacity building for future projects
- The Project is anticipated to be **commercially operational in 2021**

CO₂ Reductions

The **Rankin Inlet Wind Farm** has the capacity to reduce the carbon emissions from diesel production by over **30%**.

Here's how:

- **1.48 million litres** of diesel are being burned each year in Rankin Inlet for electricity generation alone
- **4,655 tonnes** of CO₂ emissions are being produced each year from this diesel electricity generation
- The **Rankin Inlet Wind Farm** has the production capacity to displace **34,900 tonnes** of CO₂ emissions over the course of its' lifetime by supplying **clean energy** to the hamlet

Project Location: Rankin Inlet





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World Wildlife Fund: Canada Community Energy Report for Rankin Inlet

In late 2017, at the request of the community, World Wildlife Fund Canada and the Alaska Center for Energy and Power (ACEP) visited Rankin Inlet to explore the potential for renewable energy.





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World Wildlife Fund: Canada Community Energy Report for Rankin Inlet

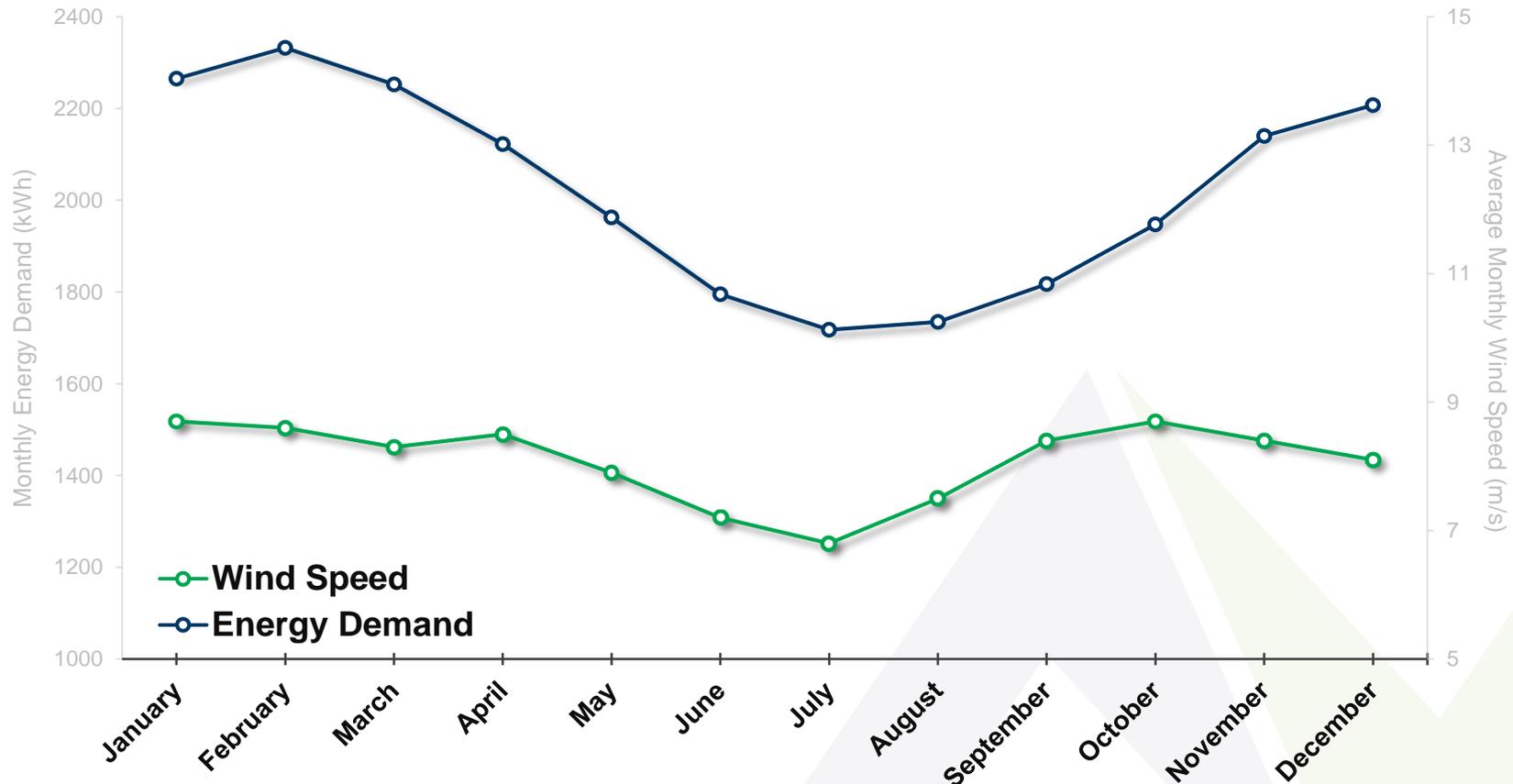
Northern Energy Capital has made extensive use of the document in planning the clean energy project in Rankin Inlet



- ✓ NEC is dedicated to community consultation for every step of the project
- ✓ Erection of 50m meteorological tower
- ✓ Installation of heated and unheated anemometers
- ✓ Instruments installed at several heights
- ✓ Data averaged over 10 minute intervals
- ✓ Commitment to using local labour for met tower installation and monitoring
- ✓ Consultation with Locals, Wildlife experts and NavCanada during site selection



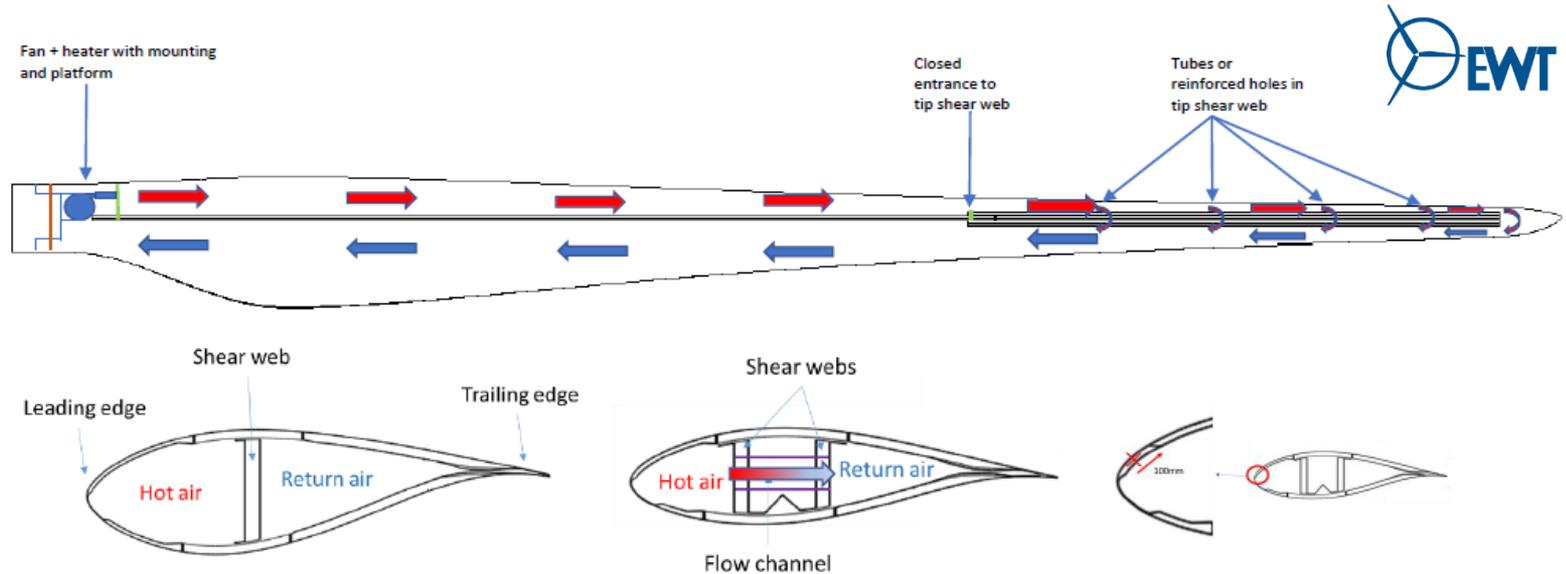
The wind resource shows 72% correlation with the monthly energy demand in Rankin Inlet



Reference: Northern Energy Capital Analysis. Monthly profile of energy demand and monthly wind resource obtained from the WWF Community Energy Report, created in collaboration with ACEP and Western State Colorado University. Wind resource data assumes 55m height; profile of energy demand provided by QEC and partly extrapolated from the report.



Customised blade-heating technology to overcome harsh winter conditions



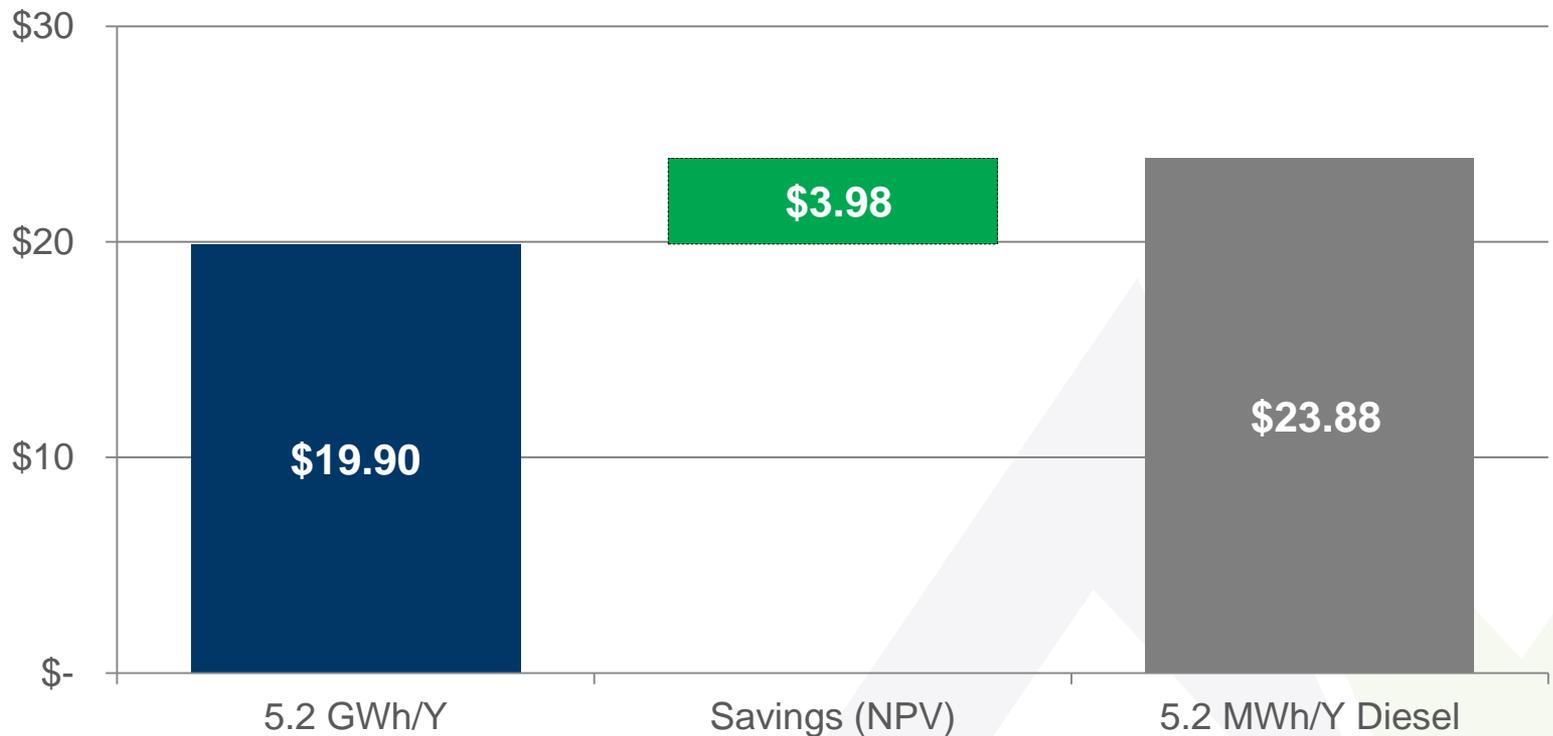
De-icing Process

- The de-icing system works by heating the interior of the blade, thus heating the exterior and shedding the ice
- A blower, heater and duct system target heat to the tip of the blade.



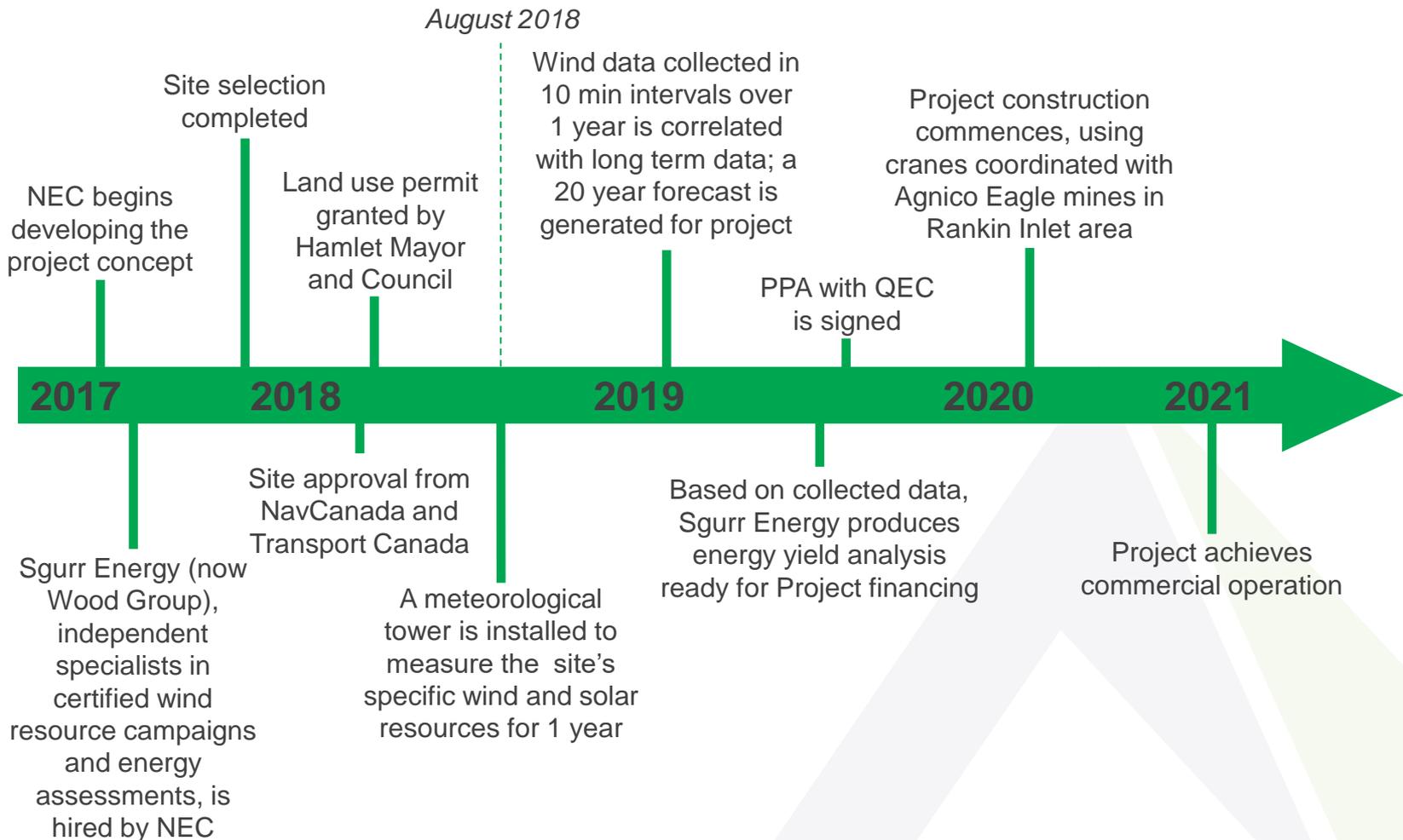
Savings generated by The Rankin Inlet Wind Farm can add up to \$4 M

Net Present Value of Energy Spend During Life of Project (Millions of CAD)



Reference: Northern Energy Capital Analysis. Assumes an energy cost of \$0.250/kWh for a 5.2 GWh/year output for a 2 MW wind turbine; an average cost to produce energy with diesel of \$0.30/kWh (cost of diesel only, maintenance and operation activities no included); energy outputs of 5.2 GWh/year for diesel plants; and a project life of 30 years

Project Timeline



Outcomes

Socioenvironmental Outcomes

- ✓ Demonstrates the Territories commitment to fossil fuel independence, GHG reductions
- ✓ Project delivery model is specifically repeatable in off-grid, diesel communities
- ✓ Training and development opportunities for Nunavut Residents to engage in North America's fastest growing industry
- ✓ Technologically-advanced wind turbines provide energy for 500+ homes

Economic Outcomes

- ✓ \$16M capital investment in Nunavut
- ✓ 5.2 GWh's of production available ahead of other renewable and non-renewable sources
- ✓ Produces the lowest cost of energy in the winter when demand is at its peak

About Northern Energy Capital

Northern Energy Capital is a Yukon-based company committed to the improvement of our communities

- Northern Energy Capital was launched as a company dedicated to the research, investment, and development of community-owned renewable energy projects
- Based in Whitehorse, Yukon, Northern Energy Capital stands to empower northern communities in the transition from fossil fuel consumption to clean energy asset ownership

The NEC Team

Our team has the knowledge and experience necessary to make the Rankin Inlet Project a success



Malek Tawashy – Chief Executive Officer

Malek brings 12 years of public-private sector partnership experience delivering large healthcare infrastructure projects up to \$200M



John Maissan – Chief Technical Advisor

John brings 26 years of renewable energy experience, 14 of which were directly with the Yukon Energy Corporation leading the original Haeckel Hill Wind Project



Olivia Chang – Chief Business Development Officer

Olivia brings over 20 years of public and private experience in strategic energy policy and development experience including BC's Energy Plan, IPP policies and clean renewable technology.



Duncan Sinclair – Public Sector Consultant

Duncan was a long-time senior executive in the Government of Yukon and former President, Yukon Development Corporation, Vice-President, Yukon Energy and President of the Energy Solutions Centre Inc.

Our Partners

An experienced consortium of globally recognised service providers and manufacturers combine with local expertise to deliver a successful project



Sgurr Energy – Owner’s Project Engineer

Project Design and Energy Yield Assessment

Sgurr Energy (now Wood Group) is a global firm providing project design, long term wind resource analysis, and energy yield assessment for the project



EWT – Preferred Wind Turbine Supplier

Supply and Installation Wind Turbines

EWT is a global, full service company specialized in the design and production of wind turbines and technical support



Sentrex Wind – Owner’s Wind Resource Contractor

Supply and Installation Meteorological Tower

A Canadian company established in 2006, Sentrex provides services to the wind energy industry across Canada



Dorward Engineering – Owner’s Electrical Engineer

Electrical Design Services

Yukon based, electrical engineering firm with a portfolio of successfully completed projects in planning, design, and contract services.



NGC Builders – Owner’s Construction Manager

General Contracting Services

NGC Builders has provided trusted and reliable general contracting services in the Yukon for over 30 years bringing the right mix of self-performed and sub-contracted work to the Project