Lanfine
Wind Power Project



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BowArk

Welcome to BowArk's Open House

Lanfine Wind Power Project

We hope today you will be able to meet the team, learn more about the Project, and get answers to your questions.







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Who are we?

- BowArk Energy Ltd. is a renewable energy and natural gas power developer based out of Calgary, Alberta
- Owned by Clearwater Fine Foods Inc., a multi-million dollar seafood company based in Nova Scotia
- BowArk Energy has the experience, knowledge, and financial backing to be an industry leader in renewable energy projects in Alberta

Renewable Energy

BowArk Energy has been developing and financing renewable energy projects since 2003 with expertise in wind and solar power.

500
MW in operation

5
Provinces of development and financing experience

1000
MW under development

Natural Gas

BowArk Energy currently owns and operates, and is developing a series of fast reacting simple cycle natural gas fired power plant

6
MW in operation

132
MW under development

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BowArk's highlighted projects

- BowArk has been developing renewable energy projects since 2003, and has successfully developed and financed three wind farms across Canada
- BowArk is always looking for projects across the country and working with stakeholders in various regions

South Kent Wind Farm

Location	Chatham, Ontario
Number of Turbines	124
Project Size	270 MW
Turbine	Siemens 2.3 MW
Commercial Operation	2014
Owner and Operator	Pattern Energy

St. Joseph Wind Farm

Location	St. Joseph, Manitoba
Number of Turbines	60
Project Size	138 MW
Turbine	Siemens 2.3 MW
Commercial Operation	2011
Owner and Operator	Pattern Energy

St. Leon Wind Farm

Location	St. Leon, Manitoba
Number of Turbines	63
Project Size	99 MW
Turbine	Vestas 1.65 MW
Commercial Operation	2006
Owner and Operator	Algonquin Power and Utilities Corp

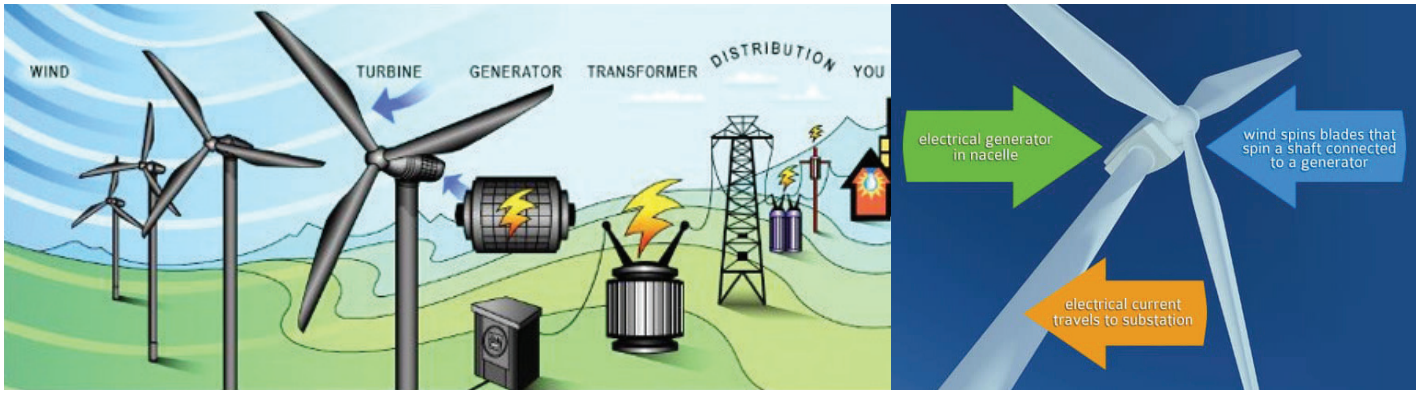
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How wind power works

Wind is produced by the uneven heating of the earth's surface by the sun. The wind causes the turbine blades to spin. The spinning blades cause a generator to rotate, converting the wind energy into electricity.



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Benefits of wind power

- Wind power provides free fuel for life, with stable prices to protect consumers
- It is more cost-competitive than any other new source of energy today, and the costs are still declining
- It uses very little water and does not pollute water in the production of electricity
- It helps to diversify Alberta's electricity supply
- It reduces air pollution



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Local community benefits

- Municipal tax revenues throughout the Project life
- Construction and operations jobs, and support services during and after construction of the Project
- Contract opportunities for local businesses
- Increased local spending on goods and services during the Project's development, construction, and operational phases

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Why wind? Why now?

- Alberta is changing its mix of power generation to include a larger portion of renewable energy in the province — including wind and solar
- The Alberta Electric System Operator (AESO) intends to encourage the development of renewable power through a series of competitions
- The Lanfine Wind Power Project intends to participate in the AESO's recently introduced Renewable Electricity Program (REP)
- The first round of the REP, includes procuring up to 400 MW of renewable electricity for projects that are required to be online by 2019

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Why did BowArk choose this site?

- Wind resource is strong and steady and not too gusty which means larger rotor machines can be used
- Proximity to the Alberta transmission system means a competitive interconnection cost
- Land use is generally agricultural which is compatible with wind turbine technology and avoids environmentally sensitive areas
- Proximity to community centres for local employment and services



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General project information

Developer: BowArk Energy Ltd.

Project: Lanfine Wind Power Project

Total installed capacity: 290 MW

Construction phases: Lanfine North and Lanfine South

Project area: 45,000 acres of private agricultural land

Municipalities: Special Areas 3 and the Municipal District of Acadia

The Project will generate enough electricity to power approximately 150,000 homes

Typical project infrastructure includes: Wind turbines, access roads, collector systems, substations, transmission lines, operations and maintenance building, temporary laydown areas and meteorological towers

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Project infrastructure



Wind turbine:

Number of turbines per phase: 42 to 72

Total number of turbines for Project: 84 to 144

Turbine capacity: 2.3 to 3.6 megawatts

Hub height: 90 to 130 metres

Rotor diameter: 116 to 142 metres

Access roads:

- Temporary access roads will be used during construction and are wider than permanent access roads to accommodate cranes
- Permanent access roads will be designed to allow landowners easy crossing by farm machinery

Project collector system and substation:

- Link the turbines to the Lanfine North and Lanfine South collector substations
- Medium-voltage power collection system
- Combination of above- and below-ground cables

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Project infrastructure

Interconnection

- 144 kV transmission lines developed and constructed by ATCO Electric will connect both Lanfine North and Lanfine South to the Alberta Integrated Electricity System
- Lanfine North will connect to the existing ATCO 959S substation
- The interconnection location for Lanfine South continues to be evaluated

Operations and maintenance building

- One building will be used to support Lanfine North and Lanfine South
- Location to be determined

Temporary laydown areas

- Will be used during construction for storage of equipment and materials
- Location to be determined

Meteorological tower

- Meteorological towers form part of the project footprint

Final project infrastructure will be determined through stakeholder consultation, noise studies, constructability reviews, and environmental and engineering studies

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Project siting
Wind resource assessment

- This assessment determines how much electrical energy can be extracted from the wind
- Meteorological towers are installed on site to measure wind speed and direction
- A meteorological tower has been collecting wind data since September 2016
- Wind turbine locations are assessed and optimized based on local topography and measured wind speed



