

Wind Energy Institute of Canada

Leading the development of wind energy across Canada through research, testing, innovation, and collaboration.

The Wind Energy Institute of Canada (Institute), located in North Cape, Prince Edward Island, has been leading the development of wind energy across Canada through technical testing and consultation; research, development and demonstration; and outreach since its formation in 1981. As a national research facility and independent wind farm and battery energy storage system operator, with strong industry ties, the Institute is well-positioned to lead research in the advancement of wind energy.

The Institute received funding through NRCan's Clean Energy Fund and a loan from the province of PEI to own and operate a Wind R&D Park that features five 2 MW wind turbines and a storage system with a 1 MW/2 MWh capacity. The Institute views this infrastructure as a laboratory that is available for research and is open to collaboration with interested parties.

WIND R&D PARK

WIND TURBINE PERFORMANCE

Since commissioning in 2013, the Institute's 10 MW Wind R&D Park turbines generated 81.2 GWh of energy.

Attributes of the Wind R&D Park's DeWind D9.2 turbines :

- Solid operation in harsh coastal environment and cold weather
- Direct medium voltage tie-in of the D9.2's 13.8kV synchronous generator
- Voltage control capabilities providing stability to utility grid presents a unique opportunity to view impact on grid
- Integration of battery grid stability support in the future

2014-2015 Performance Statistics include (Apr'14 to Mar'15):

- 41.7 GWh energy produced
- 95% + Availability
- 47% + Capacity Factor

Wind R&D Park Wind Turbine Specifications:

Installed Turbine Capacity	10 MW
Number of Wind Turbines	5
Model	DeWind D9.2
Frequency	60 Hz
Cut In Wind Speed	4 m/s
Cut Out Wind Speed	25 m/s
Operating Temperature Range	-30° C to +40° C

RESEARCH PROJECTS HIGHLIGHTS

As a national research facility, independent wind farm, and battery energy storage system operator, with strong industry ties, the Institute is well positioned to lead research in the advancement of wind energy.

Wind and Battery Demonstration Project

Objective is to lead energy storage and wind integration research to understand the benefits storage can offer. Services tested include:

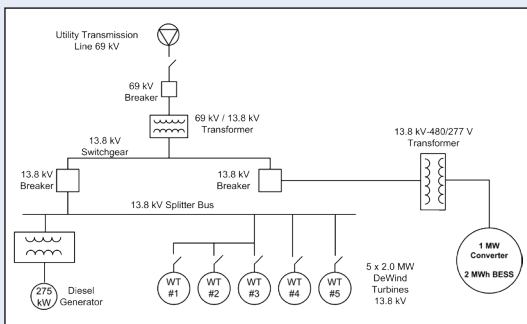
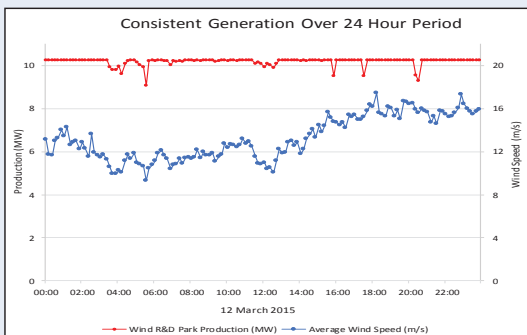
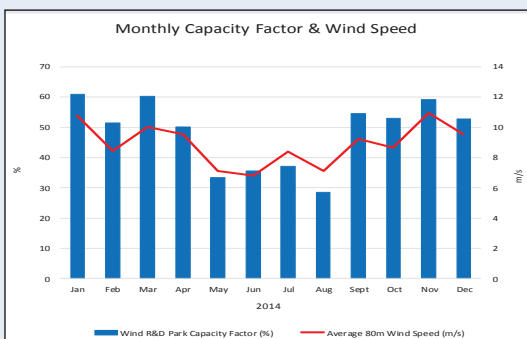
- Demand/Energy Avoidance
- Automate Generation Control
- Diesel Displacement

Service Life Estimation:

- Data Analytics for Canadian Commercial Wind Industry*
Active research in data collection to determine wind turbine service life.
- Impact Of Wakes And Cliffs On Wind Speed And Turbulence*
Collaborative study of the impact of wakes and cliffs on wind speed and turbulence and how this affects wind turbine performance and service life.

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