

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 (WEICan), located in North Cape, Prince Edward Island, has led the development of wind energy across Canada through technical testing and consultation; research, development and demonstration; and outreach since 1981. As a national research facility and independent wind farm operator with strong industry ties, WEICan is well-positioned to lead research in the advancement of wind energy. WEICan views its Wind R&D Park as a laboratory that is available for research and is open to collaboration with interested parties.

WIND R&D PARK LABORATORY

5 DeWind D9.2 2 MW wind turbines

- 92 m blade diameter; 4 m/s cut in; full production at 10.5 m/s
- Directly connected synchronous generators improve inertia and stability

Future Solar Photovoltaic (PV) Array

- >100 kW solar PV array expected operational in Fall 2020. The array will have a 66%-33% split between bifacial and monofacial panels.

Future Battery Energy Storage System

- 111.5 kW/223 kWh battery storage system from Tesla Energy expected operational in Fall 2020

Fully equipped meteorological (met) masts

- 80 m IEC met mast at the Wind R&D Park, equipped with:
 - wind direction and speed sensors at multiple heights
 - 80 m temperature, relative humidity and air pressure sensors
 - ice detector allows research into ice propagation
 - pyranometer allows measurement of solar irradiance
- 60 m met mast at the WEICan site with data recorded since 1982
- 10 m met mast with a Campbell Scientific PWS100 weather station, which allows identification and quantification of precipitation

275 kW diesel generator.

- Provides power during extended outages for turbine ancillary functions, such as yawing to protect during high wind events

Wind R&D Park substation

- Maintained by Maritime Electric for 69 kV grid tie in

Wind turbine condition monitoring systems (CMS)

- Installed on all turbine drivetrains and the blades of one turbine. These systems monitor various parameters to determine performance and anticipate possible upcoming failures.

Supervisory control and data acquisition (SCADA) system

- Provides real time interface and controls between the various systems including wind turbines, solar array, BESS, the local utility, and substation equipment

OSISoft PI Data and Event Infrastructure

- Collects, analyzes, visualizes, and shares large amounts of high fidelity time-series data from the above components, and the WEICan small wind test site into a common database. This data is used for research purposes and to aid in Wind R&D Park operation.

Contact:

Marianne Rodgers, Ph.D.
Scientific Director
(902) 882-2746 Ext. 207
marianne.rodgers@weican.ca



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