

John Paul II Secondary School Carbon-Free Microgrid Energy System

Grid Innovation Fund Project Details

Lead Proponent: Ameresco Canada Inc.

Partner: Natural Resources Canada (NRCan)

Strategic Area(s):	Enabling Non-Wires Alternatives, Infrastructure Resilience, Wholesale Market Integration
Project Total Cost:	\$ 947,704
Year Contracted:	2019
Location:	London
Economic Development:	25 - 30 jobs

Project Objectives

This project will design, build, own, operate, and maintain a carbon free microgrid at John Paul II (JPII) Secondary School in London, Ontario. The microgrid is expected to provide all of the school's heating, cooling and electricity needs, and provide excess electricity back to the grid.

Along with the ratepayer benefits of annual electricity savings and improved electrical resiliency through controlled islanding and ride-through generation during outage conditions, it will conduct the IESO's standardized distributed energy resource (DER) test cases and work with London Hydro and Hydro One to unlock real-time feeder data.

The facility microgrid includes the installation of 2700 covered carport (providing 825 kW DC of power), piping for a geothermal heating and cooling system, a 1.1MW / 2.2MWh electrical energy storage system, 4 electric vehicle charging stations and a supervisory control and data acquisition (SCADA) system for real-time monitoring and control. In addition, the school's space and water

heating and cooling will be electrified using geothermal heat pump and electric water heater. Implemented improvements are expected to reduce greenhouse gas emissions, previously required to heat, cool and provide electricity to the school, to near zero and remove approximately 277 tons of carbon on a yearly basis.

Expected Outcomes

This project will result in a zero-emissions facility and will enhance reliability and resilience at the JPPI high school. During outage conditions, the microgrid can provide outage support through controlled islanding. Further, the assets will be used to participate in the IESO-administered markets.

This project aims to evaluate financial models for microgrid development including:

1. A novel Energy as a Service business model
2. The potential stacked benefits of providing services back to London Hydro and participation in the IESO administered markets.



Battery (L) and solar carport (R) at John Paul II Secondary School.