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Urban micro wind turbine

Version 1 (updated May 31, 2017)

Context: Over the last decade Canadian wind energy production has seen continuous growth meeting 4% of the nation's energy needs. The Canadian Wind Energy Association has set a goal to meet 20% of the nation's energy needs through wind generation by 2025.

Problem: The wind market is currently dominated by horizontal axis wind turbines which must face prevailing winds to harness maximum power. In urban areas with wind obstructing development and infrastructure this can reduce effectiveness.

Solution: Vertical axis wind turbines are capable of harnessing the wind from any direction by utilizing an eggbeater-like blade design. This type of wind turbine is not widely utilized leaving gaps in the understanding of wind power viability in urban areas.

Impact: This project will allow Hydro One to determine the optimal ways for integrating urban micro wind turbines into their clients' buildings to enhance the future micro/smart grid infrastructure planning and control while maximizing the penetration of renewable energy into the grid.

CUE's role: CUE researchers installed two vertical axis micro wind turbines in two separate locations, TRCA Archetype Sustainable House (ASH) and another Hydro One determined location. They then conducted standard performance testing on one of the wind turbine at the TRCA ASH.

 Completed**Sponsors:**

Hydro One, NSERC

Timeline:

August 2013-December 2015

Research Team:

Alan Fung, Aidan Brookson

Key stats

2	Wind turbines installed
700W	Capacity (each)
10,204MW	Installed wind capacity in Canada