

Research case study > net-zero buildings

Demand management and control system

Version 1 (updated May 9, 2017)

Context: Rising energy costs and increased homeowner awareness regarding their energy consumption has created a demand for intelligent energy management devices that allow consumers to make more decisions about their energy use.

Problem: Increasing energy consumption has consumers wanting intelligent energy management. Most systems are, however, limited to simple automation and energy use tracking. A gap remains to be filled for devices capable of communicating with the smart grid.

Solution: Informing consumers on their energy use is the first step; this project goes further with reductions through load shifting appliances to off-peak times and/or optimizing HVAC systems, domestic water heating and renewable energy equipment.

Impact: This project is valuable for government agencies looking for solutions to climate change, utilities looking for electrical-load shaving and peak-load shifting, agencies interested in demand side management opportunities, and homeowners who want higher-performing homes.

CUE's role: Researchers developed an energy management device using adaptive control strategies, such as PeakSaver analysis and smart dual fuel switching systems; component control strategies; and a communication strategy between the utility and the home and between the sensors and equipment within the home.

 Completed**Sponsors:**

Toronto Hydro-Electric System Ltd., MITACS

Timeline:

January 2011–December 2015

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22%	Electricity demand for cooling
104,971	PeakSaver participants in Ontario