

Study shows big smart meter investment yielded 'very small' electricity savings

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Smart meters and time-of-use electricity pricing have only modestly reduced residential energy demand during the most expensive peak periods, a new study suggests.

Researchers at the University of Waterloo compared data for nine months before and nine months after time-of-use rates were introduced in November 2011 by an unidentified distribution company with more than 20,000 household customers in southwestern Ontario.

Using advanced statistical tools to factor out the impact of weather differences, their analysis showed residential demand for [electricity](#) dropped just 2.6 per cent during on-peak periods and 2.4 per cent during mid-peak periods following the change.

"There is a gain, but the gain is very small," said Lukasz Golab, a management sciences professor and Canada Research Chair at Waterloo.

Smart meters to enable time-of-use pricing were installed by hydro utilities across Ontario at a cost

of about \$1 billion. A key goal was shifting demand away from peak periods to reduce maximum capacity requirements and save money on infrastructure.

The study did not attempt to assess if the cost of the switch to time-of-use pricing has been justified by modest changes in the behaviour of residential customers.

"Is it enough?" asked Catherine Rosenberg, a professor of electrical and computer engineering and also a Canada Research Chair at Waterloo. "Of that I'm not sure. We don't have the data to decide if these kinds of savings warrant the use of [smart meters](#)."

The findings also suggest that time parameters used to set rates may not be aligned properly with actual usage, at least for residential customers. The summer on-peak period on weekdays in Ontario is noon to 5 p.m., but demand actually hit its highest point at 6 p.m. in the utility used for the study.

The research, which also involved former master's student Reid Miller, was recently published in the journal *Energy Policy*.

Provided by University of Waterloo

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