

Nova Scotia Power urged to give electric car drivers a boost

By LYNN SAWYER

IF ELECTRIC VEHICLE OWNERS WERE ALLOWED TO OPT INTO TIME-OF-USE BILLING, THE PROGRAM COULD BE A WIN-WIN-WIN, THINKS DALHOUSIE UNIVERSITY ENGINEERING PROFESSOR LUCAS SWAN. 'THE CUSTOMER WOULD SAVE MONEY, THE UTILITY'S PEAKS COULD BE SHAVED, AND THE PROGRAM COULD HELP THE PROVINCE ACHIEVE ITS GREENHOUSE GAS REDUCTION TARGETS.'

Lucas Swan wants a time-of-day rate plan with Nova Scotia Power. He figured out he'd save money.

Here's how he knows: "I put a metering system on my home, monitored high-resolution data for an entire year, and found out that if I could just opt into that program, I could save money, instantly," said Swan, a professor of engineering at Dalhousie University.

"I have that data available to make that analysis at the time," said Swan in an interview.

But, "to get into Nova Scotia Power's time-of-use residential rate, you have to have an electric thermal energy storage heating unit (ETS) in your home," said Swan.

Certain NSP-approved in-floor radiant heating systems are also eligible for the cheaper rate, "as of about 10 years ago, approved by the Utility and Review Board," clarified Nova Scotia Power spokesman David Rodenhiser.

Electric vehicle owners like Swan, who do not have an ETS or similar heating system, cannot choose time-of-day rates.

Could that change?

"This is a very interesting and timely discussion," said Peter Craig, a panellist with Swan at a recent energy data event in Halifax. "It's worth noting that the original time-of-use metering plan was implemented in 1996. It really served its



Lucas Swan, professor of engineering at Dalhousie University: 'A time-of-use rate plan would incent people not to plug in their EVs to charge as soon as they get home from work.' (LYNN SAWYER)

purpose. What we are seeing now are additional purposes for that rate structure, and we haven't really tried to fit the existing model of usage into the policy that was put in place 20 years ago.

"It might make sense for someone like Lucas who has an electric vehicle (EV), for that to be the criteria on entry, rather than just an ETS," added Craig, who joined the Energy Department in 2013.

"When you get the opportunity," Craig told the audience, "feed that kind of suggestion into the popular discussion system that we have: the electoral system. Talk to your representatives. Bring it up to energy people when you see them, and point out how you think what you're doing plays into that."

“The utility must evolve,” said Sanjeev Pushkarna, manager of customer solutions at Nova Scotia Power.

“As the utility looks to encourage the use of electric vehicles in the province, you’ll start to see more awareness events throughout the year to help customers make informed decisions on whether an EV is right for them,” said Pushkarna.

Price signals to provide rewards for agreeing to delegate some degree of control to the utility for customer usage were mentioned in a 2013 Nova Scotia electricity system review, as a building block toward our future electricity system.

Swan pointed out the value to the utility of time-of-use billing for people who charge their EVs at home.

“A time-of-use rate plan could incent people not to plug in their EVs to charge as soon as they get home from work. If they had a lower rate during off peak hours, they’d want to program a delayed charging start. That would encourage adoption of electric vehicles in Nova Scotia, allowing them to opt into a time-of-use tariff. We know that by modifying our loads, we can benefit the grid by using loads later at night when people are using less. We should incent people by allowing them to opt into that program,” said Swan.

If EV adoption in Nova Scotia becomes widespread without smart grid load-shifting in place, supertime plug-in practice could add to the winter early evening provincial peak load on the grid.

To delegate some control of his charging time frame to NSP, Swan needs to have a smart meter connected to NSP’s digital infrastructure. That meter can be enabled to communicate his time-of-use energy data to the utility, which could then automate the time of charging to off-peak overnight hours.

That’s what would lower his bills.

Swan says he wants to do his part to help the utility with peak shaving. When overall peak usage is reduced on a massive scale, in a winter peaking region like Nova Scotia, that could prevent the expense of building a new natural gas

peaker plant, only to be used on the coldest days each year.

“It reduces our use of fossil fuels, and especially imported ... so it would overall reduce our greenhouse gas emissions and trade deficit,” added Swan.

The components to enable system automation, called automatic metering infrastructure (AMI), consist of digital hardware and software that collect and analyze energy-use data and provide continuous two-way communication between on-site electricity meters and the utility, according to the 2013 electricity system report.

AMI can help a power utility and its customers make informed decisions about energy use, based on the price at the time of use, according to the report.

For example, a controller can be set to turn on an electro-thermal storage (ETS) unit at off-peak times (at night) and hot bricks would release heat into the home in the early morning, so it is warm when people get up.

“AMI is going to be the foundational technology that will improve the engagement that we have with our customers. There’s going to be a pilot this year. It will be 1,000 customers to start,” said Pushkarna.

Pushkarna also explained how AMIs could enable emission-reduction benefits for the electrification of transportation.

The province can gain significant value by managing its existing electricity resources better through technologies that focus on automation, communication and load-shifting, with an appropriate rate system that supports such change, concluded the electricity system report.

If EV owners were allowed to opt into time-of-use billing, the program could be a win-win-win, thinks Swan.

“The customer would save money, the utility’s peaks could be shaved, and the program could help the province achieve its greenhouse gas reduction targets.”