Consumer Experiences with the Renewable Energy Standard Offer Program and the Adoption of Microgenerating, Residentially Mounted Solar Photovoltaic Systems in Ontario

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1. Introduction

Traditionally, high initial capital costs and lengthy payback periods have been identified as the most significant barriers that limit the diffusion of solar photovoltaic (PV) systems. As incentive programs such as the Renewable Energy Standard Offer Program (RESOP) begin to address financial barriers, the role and significance of other barriers may shift. This shift may result in the emergence of new barriers, the greater transparency of existing barriers, or an alteration in the relative significance of previous barriers.

This research focuses on the consumer and their decision making process in terms of the adoption of a solar PV system and participation in the RESOP. Specifically, interests lay in the decision making of homeowners installing systems smaller than 10kW.

2. Objectives

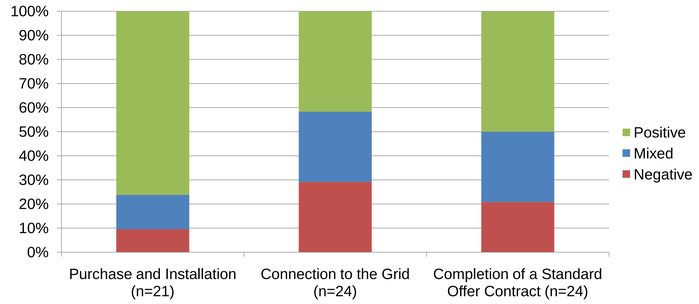
- Identify whether the RESOP influenced the decision to purchase a solar PV system
- Identify which drivers and barriers are present in the case of the RESOP

3. Methods

In-depth, semi-structured interviews were conducted with households who had executed a Standard Offer Contract and who had either entirely completed the installation and grid connection processes, or who were in the process of doing so. Of an eligible 105 participants, 73 were contacted. Ultimately, 24 interviews were conducted between November 19, 2008 and December 5, 2008. Interview lengths ranged from 19 to 55 minutes, with an average length of 33 minutes. Ten interviews took place in person and 14 took place over the telephone. Interviews were audio recorded and later partially transcribed. The research protocol used received approval from the Office of Research Ethics at the University of Waterloo.

4. Results

Participant Experiences with the RESOP and the adoption of a solar PV system

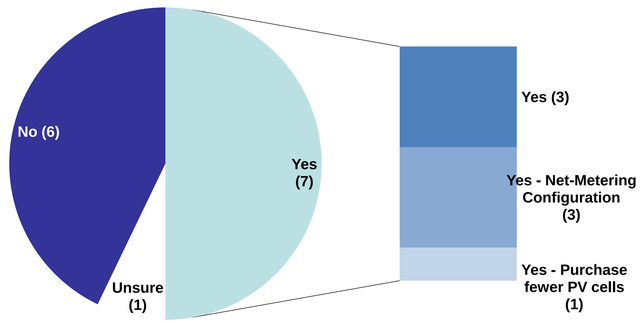


Sample Quotations

Positive Experiences	*"They … did a really fantastic, professional, clean, safe worksite."*	*"Getting them to actually come out, it was actually pretty good communication. In general, it was good."*	*"The OPA … they were pretty good."*
Mixed Experiences	*"Since we were so early, I don't think they even knew what they were doing."*	*"When [LDC] came online with this, everything was ok. But, for like 6 months, they didn't know what to do."*	*"It wasn't that it was bad, because [retailer] gave me a whole outline on what to fill out … everything's on a timeframe. That's what kinda bugged me .. A lot of paperwork."*
Negative Experiences	*"… it's the installer. My installer really screwed up."*	*"The BS that we got from [LDC] … that was a real hassle. I left that with [installer]. If it had been up to me, I woulda washed my hands and walked away … I've heard other nightmare stories about them."*	*"I ended up reading the instructions for hours and hours and hours … It was really just a case of bullshit. If the instructions were decent, and all the people had their act together, it should be just a Saturday afternoon of work."*

Roles of the RESOP and Cooperative Purchasing Groups

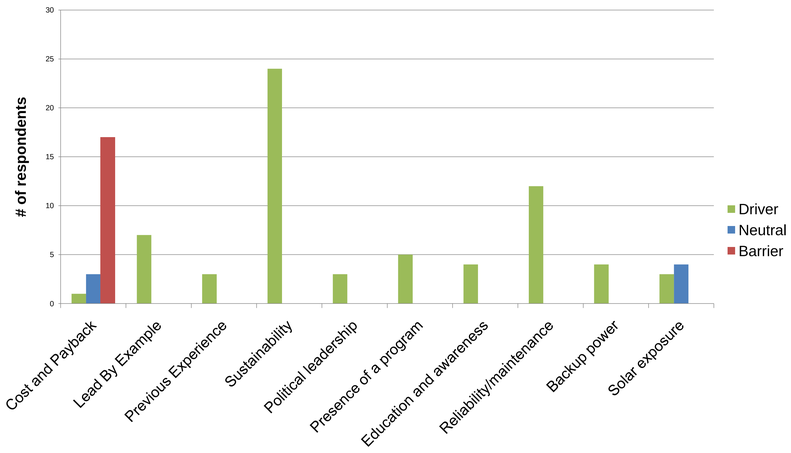
Of the 24 participants interviewed, ten purchased prior to the creation of the RESOP, only to later apply for the program's compensation. Of the remaining 14 participants, only six noted that they would not have adopted without the presence of the RESOP.



Ten participants were asked "Would you have purchased solar panels had a Cooperative Purchasing Group (CPG) not been present?" Nine stated that they would not have purchased a solar PV system had the CPG not been present to reduce the costs and to help facilitate the adoption process.

Results demonstrate that the presence of the RESOP is closely correlated with the presence of a CPG. Of the 11 participants who adopted through a CPG, nine stated that they would not have adopted in the absence of a CPG; seven of these nine noted that, not only did they require the presence of their CPG to adopt, but that the RESOP needed to be present as well. Stated otherwise, only two of ten participants would have purchased a solar PV system through a CPG in the absence of the RESOP.

Drivers and Barriers



Drivers and Barriers: Sample Quotations

Cost and payback: "*I guess the only factor against it would be that it costs a lot of money.*"
Lead by example: "*To start an example … once people saw what we had, it would generate interest in the neighbourhood.*"
Previous experience: "*We've got a cottage that's off-grid.*"

Drivers and Barriers: Sample Quotations continued

Sustainability: "*I'm worried about the future of the planet … we related environment to everything.*"
- **General environment**: "*It seemed neat to have something that generated power that didn't produce pollution.*"
- **Climate change**: "*Since the late 80s, when we first heard of climate change … we wanna make a difference for our future.*"
- **Energy concerns**: "*To get off oil and gas as much as possible.*"
- **Air quality:** "*I think the big environmental problem I'd like to be part of the solution of is air quality.*"
- **Future generations**: "*I think it was environmentally … I have a young family here.*"

Political leadership: "*[Politician] is a good friend of mine. I have a lot of respect for him/her, and [s/he was] part of this. I wasn't throwing money down the sink. I had a sense it was stable.*"
Presence of a program (the RESOP): "*With the introduction of the RESOP, it was now financially feasible.*"
Education and awareness: "*It was also a way of communicating or making people aware of the technology.*"
Reliability/maintenance: "*Because they make sense. They're reliable. They have no moving parts*."
Backup power: "*My [partner] was interested in participating primarily because we got a backup battery.*"
Solar exposure: "*We have a southern exposure, but part of the problem is we have a tree that completely shaded our backyard."*

5. Conclusions and Discussion

With respect to the diffusion of residentially mounted solar PV systems in Ontario, the Renewable Energy Standard Offer Program has been found to have enabled six of this study sample's 24 participants to adopt. When one accounts for the RESOP's role in the creation of cooperative purchasing groups, however, the RESOP's influence becomes greater, as nine out of 10 participants would not have adopted in the absence of their respective cooperative purchasing group.

The supportive role of the RESOP, however, is solely of a financial nature. In both of the execution and operating phases of adoption, the RESOP application process and the grid connection requirements under it have resulted in a lengthy, cumbersome, and largely bureaucratic process. Sustainability related motivations have been sufficiently strong to overcome such barriers. It must also be acknowledged that co-operative purchasing groups have been influential, enabling consumers to proceed from motivations to action. Benefits of adopting through a CBCPG have included: i) a reduction in system cost due to bulk purchase, ii) previous research into appropriate technologies and vendors, and iii) administrative support throughout the execution phase of adoption.

Challenges to the utilization of the RESOP did not emerge until participants had already made the decision to adopt a solar PV system; in other words, the barriers to the utilization of the RESOP do not lie in the *decision* to use it, but in the procedures required to participate in the program. Still, because of the relatively substantial increase in payback provided by the RESOP, participants were willing to complete the RESOP and grid connection processes in the presence of such challenges.

The forthcoming implementation of the Feed-In Tariff will present an opportunity to further study the relationship between financial incentives and the diffusion of solar PV systems. In particular, a comparison between this poster's findings and the increased remuneration provided by the Feed-In Tariff may reveal further insight as to the influence of specific rates of compensation on the rate of solar PV system diffusion.

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