

Drivers and Barriers to Participation in the Standard Offer Program and the Purchase of a Solar PV System 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 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.

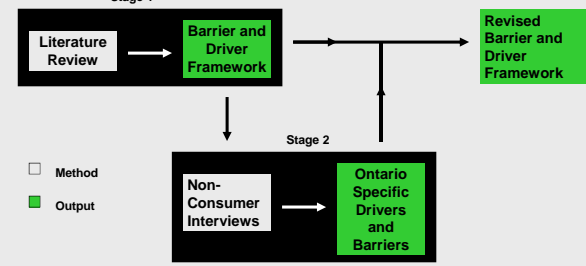
2. Objectives

- Create a comprehensive list of theoretically potential barriers to solar PV diffusion and/or participation in the RESOP
- Identify which barriers and drivers are present in the case of the RESOP
- Identify the relevant significance of those barriers and drivers present

3. Methods

Two methods were utilized in this research. In the first stage, a comprehensive literature review was completed to create a table which identified theoretically possible barriers and drivers to both the adoption of PV systems and participation in the RESOP. Literature consulted included policy literature, national studies, and reports that evaluated and identified reasons for the success or failure of similar programs. Upon completing the literature-based framework, it was then used to structure six semi-structured interviews with participants in the solar PV distribution and RESOP administration system. Non-consumer participants were interviewed, with at least one member interviewed from each of i) local distribution companies, ii) co-operative purchasing groups, iii) retailers, and iv) consultants. Interviews took place between July and August, 2008, and lasted between 20 and 45 minutes each. Interviews were conducted primarily by telephone. The research protocol used received approval from the Office of Research Ethics at the University of Waterloo.

Figure 1: Two-Stage Methodology and Research Outcomes



4. Results

4.1 Stage 1: Literature-Based Framework - Potential Drivers and Barriers to Consumer Participation in the RESOP

	BARRIER/DRIVER	NATURE OF ELEMENT
E C O N O M I C	<i>Cost and payback period</i>	Taxes on RETs may increase cost. A small market size and the lack of competition result in increased costs. High discount rates. Consumers and investors may be unable or unwilling to invest large amounts in a single transaction. Consumers and investors may be unable or unwilling to wait a long time for a return on their investment. Consumers may lack access to capital.
	<i>Alternative energy sources and associated pricing</i>	Subsidies to conventional energy allow consumers to pay below marginal costs for electricity. Full cost pricing: Negative externalities tend not to be accounted for in conventional energy production. Ingrained infrastructure and pricing makes it difficult for new technologies to enter.
	<i>Access to technology</i>	Economic barriers may restrict the sale of RET systems.
I N S T I T U T I O N A L	<i>Poorly articulated demand</i>	Consumers may not be interested in an innovation or they may fail to communicate this interest.
	<i>Awareness of program existence</i>	Presence and nature of information dissemination processes.
	<i>Availability of program information</i>	Interested purchasers have to undertake lengthy investigations to find out where to obtain what they need – the burden is placed on the consumer and the added work may act as a disincentive.
S O C I A L	<i>Administrative processes</i>	Cumbersome administrative processes may delay the operation of the system or prevent their purchase altogether. Institutional infrastructure and capacity is required to effectively and efficiently administer the program or to distribute a PV system. Service structures required for promotion, distribution, sales, technical assistance and maintenance.
	<i>Socio-political position</i>	The existence and nature of an explicit national policy for renewable energy at end-use level. Institutions/mechanisms to disseminate information.
	<i>Consumer perception</i>	Perceptions may be shaped by numerous factors and may be inaccurate or irrational. Consumers may misunderstand the technology or the program – e.g. the adequacy of local solar resources, payback periods.
O T H E R	<i>Social influence</i>	Social paradigms may affect the consumer's decision.
	<i>Environmental concerns</i>	Climate change. Pollution. Sustainable energy practices.
	<i>Technological fascination</i>	Early adopters and solar PV champions drive the adoption process.
	<i>Technical feasibility</i>	Adequacy of solar resources.

Selected Key References:
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4.11 Stage 2: Interview Results - Identified Drivers and Barriers to Participation in the RESOP

Environmental Considerations: Concerns for the environment (e.g. climate change and pollution) were repeatedly cited as the primary driver to adopting a PV system and participate in the RESOP.

Cost and Payback: The high cost of a system and the length of its payback were claimed to be the primary factor discouraging participation in the RESOP. It was also noted, however, that the presence of the program stimulated a number of investments.

Awareness and Understanding of the RESOP: Several participants noted that the vast majority of the Ontario population is unaware of the RESOP. One interviewee noted that they spent the majority of their interaction with clients providing education regarding the RESOP.

Political Support and Stability: Consumers have shown interest in the intentions of the government, primarily being the relationship between political partisan longevity and the persistence of the program. Interviewees also noted that the lack of a clear message from provincial leadership inhibits public participation due to the lack of a moral or social push.

Administrative Assistance: Retailers and third parties have provided assistance to consumers in completing the administrative process of the RESOP. This assistance has saved the consumer time and effort and has acted as a driver in promoting participation in the RESOP.

Previous PV Ownership: Owners of solar PV systems prior to the initiation of the RESOP have been motivated by the payback.

5. Discussion

While the literature-based framework was used to construct the interview stage question set, three elements not yet drawn from the literature emerged: i) political support and stability, ii) administrative assistance, and iii) previous PV ownership. Though not displayed here, a revised framework incorporating these three additional elements may prove to be of use for future research in jurisdictions interested in promoting greater solar PV system diffusion through the use of financial incentive programs.

This research is the preliminary phase of a larger study meant to investigate the consumer decision making process with regards to the purchase of a Solar PV System and participation in the RESOP. The second phase of this research will sample RESOP participants to identify the barriers and drivers which they confronted. The third stage will sample interested parties who, despite their stated interest, have yet to adopt and participate.

Ultimately, the purpose of this research is to identify the degree to which the RESOP is influencing the diffusion of solar PV systems at the residential, small scale (>10kW) level while simultaneously identifying the factors influencing the consumer decision making process. Completion of this research is estimated to be in April, 2009.



Source: Ontario Power Authority, www.opa.on.ca/RESOP