Information Searching in the Residential Solar PV Market

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Executive summary

The market for solar photovoltaic (PV) systems has experienced tremendous growth and cost declines over the past decade. In addition to government financial incentives and reduced technology uncertainty, at least some of this growth in the U.S. also can be attributed to the availability and use of third-party ownership (TPO) financing options. The TPO model allows customers to have solar on their roofs while a third-party owns the system, and customers can pay for using the system by either signing a lease or a power purchase agreement (PPA) with little or no money down. In comparison, households can also adopt solar through a host-ownership (HO) model, whereby they fully own the system and purchase it outright.

Innovative approaches to financing technology adoption, such as TPO, can open up markets to new customer bases and remove barriers to entry. Solar PV customer acquisition costs in the U.S. still remain high, however, potentially dampening future technology diffusion. A better understanding of solar PV adopter preferences could reduce these costs. In particular, if preferences for using TPO versus HO are correlated with other observed consumption patterns, the amount of time between a customer's initial interest in solar and actual adoption can be shortened with the use of customer segmentation and targeted marketing strategies.

In this paper, we examine heterogeneity in solar PV adopters' preferences as measured by their information searching behavior. Our objective is not to estimate the causal relationship between information search and the solar PV financing decision, but rather to explore correlations between searching for different types of information and the financing decision. This allows us to recover information on consumer preferences conditional on adoption, controlling for many other factors that influence the decision.

We study households that installed solar systems in San Diego County between 2010 and the first quarter of 2013, estimating probit and bivariate probit models to examine the relationship between their financing decisions and information search. We use information from two surveys of San Diego households that were fielded during 2014 and elicited new data on the motivations and perceived barriers to solar adoption, how information was accessed, and the type of information sought. We match this to proprietary data on actual TPO contract terms to determine the "prices" that TPO households paid for such systems as well as public data providing details on solar system and market characteristics.

Our main findings suggest that solar PV households using HO versus TPO seek different types of information throughout their decision-making process. Solar PV households using TPO spend more time researching the required home modifications associated with installing solar, while solar PV households using HO spend more time researching expected financial returns. We also

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explore how other household and market characteristics are correlated with the financing decision, and perhaps surprisingly, find no clear differences.

Understanding the type of information sought by solar PV households using HO versus TPO can help guide marketing strategies, which in turn can reduce customer acquisition costs and accelerate technology diffusion. Our results can be interpreted as conditional heterogeneous consumer preferences: conditional on adoption, TPO customers may place a higher value on reducing home modification hassle while HO customers may be more concerned with long-term investment returns. If these preferences are also correlated with other consumption patterns, solar companies may be able to identify which households are more likely to respond to certain types of marketing materials and strategies.

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