

Preparing for smart grid technologies: A behavioral decision research approach to understanding consumer expectations about smart meters.

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Preparing for smart grid technologies: A behavioral decision research approach to understanding consumer expectations about smart meters

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Abstract

With the enactment of the 2009 American Recovery and Reinvestment Act, U.S. President Obama made a public commitment to a new approach to energy production and transmission in the United States. It features installing smart meters and related technologies in residential homes, as part of transforming the current electrical grid into a “smart grid.” Realizing this transformation requires consumers to accept these new technologies and take advantage of the opportunities that they create. We use methods from behavioral decision research to understand consumer beliefs about smart meters, including in-depth mental models interviews and a follow-up survey with a

sample of potential smart meter customers of a major U.S. mid-Atlantic electricity utility. In both the surveys and the interviews, most respondents reported wanting smart meters. However, these preferences were often based on erroneous beliefs regarding their purpose and function. Respondents confused smart meters with in-home displays and other enabling technologies, while expecting to realize immediate savings. They also perceived risks, including less control over their electricity usage, violations of their privacy, and increased costs. We discuss the policy implications of our results.

Highlights

- We outline normative risks and benefits of smart meters from scientific literature.
- We examine consumer perceptions of smart meters via interviews and surveys.
- Smart meter desire stems from consumer misconceptions about purpose and function.
- Appropriate communications may prevent consumer protests against the smart grid.



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Keywords

Smart meters; Perceived risks; Mental models

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