Utility customers overestimate cost savings with energy-conservation plans

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When deciding whether to participate in programs designed to conserve energy during peak hours, consumers appear to rely more on their intuition about how much money they're saving rather than on proof

their bills are smaller, a new study has found.

Actual savings for utility customers who participated in a program that encouraged thoughtful energy usage—things like running loads of laundry during non-peak times and turning off the air conditioning during peak evening hours—was real, but minimal, the study found.

"What really prompted customers to decide whether they wanted to stay in the program was their perception of how much money they were saving—not so much actual savings," said study author Nicole Sintov, assistant professor of behavior, decision making and sustainability at The Ohio State University.

"People thought they were saving more than they were, and they were making decisions to renew the program based on these ideas, not on real savings. These are surprising results, and could suggest that there's a disconnect that could undermine the goals of these programs."

The study appears today (Dec. 3, 2018) in the journal *Nature Energy*.

Sintov worked on the research with Lee White, who is a postdoctoral researcher at Ohio State.

The basic concept behind time-of-use programs is that you pay more for energy when it's in highest demand, and less when usage typically dips. The idea is to better align supply and demand—for instance, shifting more use to daytime hours when solar energy is available and use typically decreases. Rates can vary based on time of day, day of week and season.

This study and others show that the programs are effective.

That's good news in terms of energy conservation, but it's important to

understand what motivates utility customers to remain enrolled in these programs and whether their expectations line up with reality, Sintov said.

"Our study seems to indicate that many consumers have a faulty impression about their savings, and that the faulty impression is prompting them to stick with the program."

The study included 8,702 customers of a large power utility in the southwestern United States. The researchers do not name the utility in the study, at the company's request.

The households were randomly assigned to one of three time-of-use rate programs, or to a control group that remained on their normal rate during a 12-month pilot of the program.

After several months of experience with the pilot, participants were asked to fill out surveys in which they were asked about their willingness to stay on the plan after the pilot. In the survey, researchers also asked questions exploring other variables including perceived savings, perceived ability to reduce on-peak use, perceived understanding of rates and actual understanding of rates.

Though consumers may be motivated by environmental stewardship and other factors aside from savings, the perception that their changing energy-use choices was having a significant impact on their budgets proved to be key to whether or not a customer wanted to continue in the time-of-use program.

Previous research has shown that customers in general have a poor understanding of their electricity use and bills and that disconnect is likely at play here, Sintov said.

"They may be thinking, 'I made all these efforts, things like turning off

my lights, so I must be saving money,' when in reality what they're doing is barely moving the needle on their usage or bills," she said.

The study found other mismatches in the influences of perceptions versus reality on program acceptance. The more informed consumers were in terms of the actual rate structure, the less likely they were to want to stay in the program. On the other hand, the more consumers thought they understood the rates, whether or not they really grasped them all that well, the more inclined they were to renew.

Sintov said it's important for consumers considering participation in time-of-use programs to be aware that perceptions about energy usage and cost savings might not be realistic.

"It's a good idea to actually look at your bills and your usage patterns to see what's happening in your household," Sintov said.

More information: Lee V. White et al. Inaccurate consumer perceptions of monetary savings in a demand-side response programme predict programme acceptance, *Nature Energy* (2018). DOI: 10.1038/s41560-018-0285-y

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