

Energy Economist

Utility customers under the microscope

Fear, greed, envy, guilt, the human herd mentality and accomplishment: these are some of the emotions and motivations companies are trying to tap into to understand consumer behavior in relation to energy savings. Changing long-standing attitudes and patterns of behavior is the goal. It is a challenge in which psychology and economics are inextricably linked. **Elisa Wood**

With the rise of government energy efficiency mandates, the power industry must defy one of the most basic tenants of business. It must find a way to motivate customers to buy not more, but less of its product. It's not an easy challenge. For a century the industry has been making electricity almost effortless to use, rendering it nearly invisible to the householder except during blackouts when its loss is sorely felt.

Behavioral scientists are coming to the rescue, placing electricity consumers in a Petri dish, where they are being poked and prodded and analyzed. Who in the house worries about climate change? Which of them pays the bill? Will money, games or shame get them to conserve?

"Utilities are throwing a lot of things against the wall to see what sticks; they are trying to identify what combination of real-time feedback, advice on energy savings and other combination of things works for specific segments of customers," said Ben Foster, a research analyst at the American Council for an Energy Efficient Economy, the lead sponsor of a conference on energy and behavior that drew 650 researchers and industry insiders to Washington, DC late last year.

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The stakes are high in the US where 30 states now have energy efficiency standards. These savings goals, pegged to various dates, often include financial carrots and sticks for utilities. Research dollars are flowing from the Department of Energy, National Science Foundation and others for study into how residential customers respond to price and non-price signals to conserve. Words like 'mindshare,' 'cyber-sensitives,' and 'gamification' suddenly pepper utility discussions, as test programs and pilot studies spring up across the country.

Some gauge how customers react when they learn that their neighbors use less energy than they do. Others set up competitions among churches, schools and Facebook groups and offer store gift certificates to those who cut their energy use most. Still others focus on digital devices that give instant feedback to homeowners on their energy use and costs. Some achieve savings as high as 20-25%; others nothing.

An island apart

Behavioral strategists are honing in on a 28-square mile island off the coast of Seattle, Washington as a model because of the unusual way its population responded when they started to run short on energy. Typically it is the utility that launches an energy efficiency program, often trying to engage disinterested customers. But on Bainbridge Island the reverse happened. The community approached the utility.

The story began about three years ago when Puget Sound Energy announced that it needed to add a new substation on the island. Bainbridge's population of 24,000 includes a disproportionate number of biologist, architects, lawyers, technology geeks and other professionals, many who describe themselves as environmentalists and progressives. They didn't like the idea of more energy infrastructure on an island which carefully preserves its tree canopy.

The situation was ripe for the kind of not-in-my-backyard disputes that have cropped up around the country between utilities and well-to-do property owners. Instead, the island community launched a series of meetings to figure out a solution. About 30 people formed a group and for nine months they could be found every Thursday from 7 to 9 pm gathered together to talk about energy. Puget Sound Energy helped educate them, sending a representative to each meeting by way of a 35-minute boat ride from Seattle to the island.

"Many communities don't see that they have an energy problem. We said, 'What's our problem?'" said Hilary Franz, an environmental attorney and former Bainbridge Island City Council member. "We learned that of 8,800 hours of the year, only 10 hours exceeded peak load."

Spending millions of dollars to build a substation for 10 winter hours didn't make sense to them. So the community launched a drive to cut their peak demand, first educating the population about the problem, then

sending out alerts via email, social media, churches, non-profit organizations and other venues when the coldest temperatures were about to strike.

Households received word to turn down their thermostats two degrees, lower the temperature of their water heaters and avoid using major appliances until the peak period ended. Easy-to-read electronic dash boards were placed in the library, bakery, ferry and other public places so that people could see how well the island was balancing its supply and demand in real time. "We made it easily accessible so that people didn't have to work for it," Franz said.

The community reacted so positively to the demand response program, Franz and other community leaders decided to take advantage of the momentum and start a broader energy efficiency campaign – one that would focus on home weatherization and other energy improvements. They won federal and state grant money, brought in outside experts, trained workers and set a goal to complete energy assessments in 4,000 homes (half of the island's total), and install upgrades in 2,000 homes with the goal of reducing their energy use 15%.

Between March 2011 and January 2012, the islanders completed 1,600 energy assessments and about 300 major upgrades. Franz says it appears they will finish 2,000 assessments by March 2012, a strong start toward the three-year goal. Bainbridge will also expand into a new realm this spring with an online program offered by MyEnergy.com, which attempts to engage and reward consumer energy savings through games.

What's striking, says Franz, is how radically energy awareness changed on the island over just a couple of years. The local newspaper went from no articles about energy in 2008 to about one a week in 2010. And it has become commonplace to see people on the ferry ride to Seattle reading and discussing reports on their energy use, she said.

"Two years ago I didn't know what a ductless heat pump was. No one did. I'd do presentations and call it heatless duct pump. Now everywhere I go around here, I hear people saying, 'Have you got your ductless heat pump yet?'" Franz said.

Why is the Bainbridge Island campaign working? Franz says its ongoing success stems in part from emphasizing direct benefits to the consumer, such as jobs for out-of-work building contractors and better warmth in the homes. "The ductless heat pumps are moving largely because of word-of-mouth. People feel the difference in their homes so they are talking about it," she said.

More importantly, island residents were "primed" for the energy efficiency measures because they received so much information and education in advance by way of the energy dashboards, community events, social media, churches, non-profits, their neighbors, and other

information channels on the island. “The utilities are spending a lot of money on energy efficiency and not necessarily seeing the results. Why was this successful? Because it was built by the community and the community knows best how to reach the community,” she said.

Will it play in the South?

Can the Bainbridge Island experiment be replicated elsewhere? The island is an unusual place, given that it is a self-contained community. In addition, it is more highly educated and wealthier than the norm, with a median income of \$71,000. Sixty-percent of the population holds a bachelor’s degree or higher and over 56% of the workforce describes itself as management or professional.

While the island offers good lessons, behavioral programs must be customized to local culture. What works for one may not work for another, said Stephen Cowell, CEO of Conservation Services Group, an energy efficiency company that operates in about half the US. On Bainbridge Island CSG handles program marketing, implements energy efficiency measures and supplies tracking, reporting, measurement and verification. “Your messaging and audience has to go together. If you try to sell yourself as a New York City person in Buffalo, they say get out of here,” he said.

When it comes to energy efficiency and culture, if there is a direct opposite to the Bainbridge Island demographic, it is most likely to be found in the southern states. The American Council for an Energy Efficient Economy’s 2011 ranking of state energy efficiency policies put most of the South in the bottom half, with Alabama at 43, South Carolina 46, and Mississippi 49 out of a possible 50. Susan Mazur-Stommen, ACEEE’s director of behavior and human dimensions, plans to find out why in a study this year.

According to industry folklore, green energy endeavors stand little chance in the South because the region uses a large amount of nuclear and coal-fired generation, and its electricity prices are therefore low. Mazur-Stommen isn’t sure the folklore holds true. Southerners actually spend a larger proportion of their income on energy than those in wealthier states. California, a leader in energy efficiency, has cheaper energy than the southern states when the prices are weighted and normalized against income. Therefore, the South’s relationship with energy efficiency may be more complex than is commonly believed, she said.

The year-long study is particularly important because the South “continues to possess stubborn pockets of poverty, including many of the poorest counties in the United States. Mississippi alone is a statistical stand-out having the ‘most obese’ county (Holmes) and the county with the lowest life expectancy (Jefferson). Here, truly, resources that are currently being directed towards energy expenditures can be repurposed so that they might improve the lives and communities of some of our neediest citizens,” she said in her research plan.

The study will look at four areas: Oneonta, Alabama’s farming community; Corinth, Mississippi’s small-town businesses; Alpharetta, Georgia’s reloville culture (a term for areas where upwardly mobile corporate employees relocate); and New Orleans’ substandard housing neighborhoods. Mazur-Stommen said she hopes to refine the energy discussion about the South which “has a history of being misunderstood and marginalized in terms of its socio-political processes.” The region, she says, has vast potential for energy efficiency and behavioral strategies could induce savings as high as 20% with the right messaging.

The game is on

Location aside, there appears to be certain truths that hold when it comes to getting people to conserve. Opower, a Virginia-based behavioral strategy company, has probably made the most conspicuous inroads with its keeping-up-with-the-Jones program that compares energy use neighbor to neighbor. Because of its reach – Opower has worked with 60 utilities and 10 million households – its name has taken on Google-like use in the language, with energy insiders often referring to behavioral programs in general as Opower-like efforts.

Opower sends out home energy reports to households comparing their energy use to their neighbor’s. The reports also provide tips to help the household cut back. As of mid-January, Opower saved over 540,000,000 kWh, according to a ticker it runs on its website. To put that in perspective, Opower says that is enough energy to power the Empire State Building for a decade or drive a Chevy Volt more than 5,000 times around the world.

Efficiency 2.0 is another dominant player in the behavioral realm, known most for its programs in the Chicago area. The New York-based company describes its method as a consumer-first approach that does not try to foist unwanted energy savings devices and technology upon households. “We start with the premise: What does the consumer want, how do they want to save energy, and how do they want to be incentivized. Starting with technology first creates this horrible dynamic where you are designing programs that are incredibly unfriendly to consumers,” said Andy Frank, vice president of business development.

The company employs a variety of methods, online, though energy reports, community activities, competitions and other endeavors to get customers to track and save their energy use, with financial rewards like store gift certificates to encourage them along. “The key thing is mind share. People know how to save energy. But most people barely look at their bills. If you get them to think about it once a month or once every other month you can have some pretty drastic effects,” Frank said.

“If I find out people are most likely to save energy if I mail them pink ponies, I will be mailing them pink ponies tomorrow. I don’t care how people save energy. I just want them to be able save energy in a cost-effective

manner.” Like Opower, Efficiency 2.0 tracks its energy savings on its website and showed more than 13,000,000 kWh saved as of mid-January.

Most of these programs rely on basic human motivations: fear, greed, envy, guilt, the human herd mentality and accomplishment, says CSG’s Cowell. His company gravitates toward the last two: the herd mentality and accomplishment because it “pulls the positive rather than the negative” and, he believes, encourages the deeper savings his company seeks, as much as 25-40%.

“The whole idea is to get subliminal. You don’t smack them with a base ball bat. When you hit someone with a baseball bat, they remember but they don’t like it. We want multiple messaging that reinforces something positive,” Cowell said.

To that end CSG invested in MyEnergy.com and the two are partnering in new efforts on Bainbridge Island. MyEnergy.com tends toward motivating in a positive way through the “gamification” of energy, according to Ben Bixby, CEO of the Boston-based company. “People who are looking at our space are saying, ‘We have millions of people playing Angry Birds. If a few do this in some way with energy, is that a way we can get people to change light bulbs?’” Like its competition, MyEnergy creates home energy reports and offers incentives. But the company distinguishes its service as being non-confrontational. No baseball bats.

“The game of energy is already on. People are already saving electricity, natural gas and water at home. What we need to focus on is building a better score form,” Bixby said. And the score form needs to open the way for both single player and multi-player games online, in keeping with current online gaming trends. That may mean playing alone, with friends, or neighborhood against neighborhood, he said.

The platform is also built around the idea that a household is made up of several different people who use energy. “It would be awesome if when people got their bills they put them on the refrigerator, but that doesn’t happen,” he said. It’s important to appeal to more than just the person who reads the bill. So MyEnergy created its online program so that each person in the home can access their own platform. When the energy report arrives, the message goes to each person. “Then it becomes more likely it will become a real world conversation around the breakfast table,” he said.

Beyond a cold beer and a hot shower

Most consumers are not interested in the complexities surrounding their energy use; what they want from electricity is a “cold beer and a hot shower,” said Foster, quoting environmental scientist Armory Lovins. But behavioral strategists are out to find the exceptions, so that they can come to understand them and perhaps encourage more consumers to behave in a similar way.

What demographic most readily responds, older or younger, educated or not, rich, middle class or poor?

ACEEE thinks it may have found the elusive customer group that is quick to save energy. Foster calls them the ‘cyber-sensitives.’ They do not fall into any clear demographic of age or income in pilot programs. But they are a group that is consistently willing to use real-time feedback devices to save energy, such as home energy monitors, smart thermostats, and computer software. In a program run by Chicago-based Commonwealth Energy, about 10% of customers were cyber-sensitives, a group that achieved energy savings of 20%, Foster said. “We’re seeing large savings in a thin slice,” said Foster, whose study on cybernetic savings and retail energy feedback is due out in March.

J.D. Power Associates, which in October released the first part in a series of studies on smart energy and consumer behavior, breaks energy consumers into six types. They range from the ‘innovators,’ those willing to spend a lot of money to yield large environmental and financial benefits, to ‘automates,’ those who do not mind the utility managing their thermostats in exchange for savings, and finally the ‘indifferents’ who have little interest in energy management. (J.D. Power Associates, like Platts, which publishes *Energy Economist*, is part of the McGraw-Hill Companies).

Another issue to consider is the aesthetics of energy savings devices, says Foster. Given that they are in the home, how devices look may determine how they are treated. Some energy display monitors are mobile and can be placed where people readily and regularly see them. Maybe the bill-paying spouse wants to keep the display in the living room, but the less engaged spouse finds it ugly and puts it in less conspicuous place where it is soon forgotten. “It comes down to the issue of intra-household dynamics,” he said. Limited data so far indicates a male is more likely to look at the display, treating it like a techie gadget.

Several behavioral companies say they are close to striking deals with utilities and expect an array of program announcements in 2012. Those with behavioral programs already underway include Pacific Gas & Electric, Southern California Edison, Xcel Energy, National Grid, Baltimore Gas & Electric and Commonwealth Edison.

“Stimulus funding and attention from the highest level of government has generated interest. That interest has been picked up by a lot of smart people and entrepreneurs. You combine entrepreneurs with technology and you get a lot of good and interesting ideas. We are picking through the ideas and trying to expand those that make the most sense and test drive as many possible,” CSG’s Cowell said. Or as Brian Keane, CEO of non-profit energy marketing firm SmartPower summed it up: “The challenge that we have is not just to fix the buildings; we have to fix the people who live work and play in those buildings. We have to fix us.”