APPENDIX EXHIBIT 17

Residential Energy Efficiency: This Is How We Do It (Part 2)

06.09.09 Andy Frank, Executive Vice President, Efficiency 2.0

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In Part I, we discussed why behavior strategies should be an important component of any energy efficiency program. The "behavior resource" can be a more cost-effective solution than traditional rebate programs. By approaching energy efficiency from a consumer marketing perspective, utilities and others can take advantage of a few key principles to maximize energy efficiency investments while creating a positive, engaging experience with their customers. Personalized information, general and specific commitments, social pressure and constant feedback are all elements of a successful energy efficiency behavior campaign.

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So what do behavior campaigns actually look like in practice? Like anything else, there are many marketing channels and technologies that can be employed, but it all comes down to execution. Running a good behavior campaign relies on careful understanding of your customers, a clear set of priorities and a capable team. Most important, however, is a strong commitment to try something new. While behavior strategies have been used in some form for many years, it takes focused leadership to properly execute a program that fully leverages the insights garnered over the years from behavioral science and consumer marketing.

The first research on behavior approaches occurred during the first energy crisis in the 1970s. For example, a study done by Lawrence Becker in 1978 found significant effects from combining energy saving goals and feedback. Households were asked to commit to goals of 2 percent or 20 percent energy savings and then some from each group were given feedback three times a week on how well they were doing. Becker found that the group that received the higher goal and feedback reduced their actual usage by an average of 15 percent, while the groups that received either the higher goal or feedback reduced energy use by about 5 percent. So the effects of behavior strategies are more than simply the sum of parts, but actively reinforce each other.

Similarly, a 1999 study by Vollink and Meertens combined information, feedback, and goal-setting to produce very significant savings: 23 percent natural gas reductions, 15 percent electricity reductions and 18 percent less water. And these savings will actually persist, and may even increase over time. A 2002 study by Staats et al. found that electricity reductions went from about 5 percent to about 7.5 percent after two years when they combined information, social pressure and feedback.

Starting in this decade, new technologies have allowed ever more dynamic feedback to be communicated to households. New "smart meters" can deliver near-real time feedback on actual energy use directly to the customer. This information is usually communicated via some sort of home energy display, but can also be shown through the Internet. Not surprisingly, reductions from smart meter feedback can vary; a review in 2006 by Darby, for example, found that savings ranged from 5 percent to 15 percent, depending on the manner in which information was displayed as well as the social context of participants (whether information was shared with friends, etc.). She also found that there were significant synergies between feedback and other types of information, a confirmation of previous studies.

And as consumers now receive information through a variety of electronic media, new software tools have been developed that display real-time energy information on the internet and cell phones. Some companies, such as Energy

Hub and Tendril, combine home displays, networking hardware, and online software that allow a homeowner to control energy use with the push of a button. Others like Greenbox and Google's PowerMeter utilize existing advanced metering hardware to display real-time energy use in a variety of graphical interfaces. All of these technologies rely on the simple premise that households will be more likely to save energy if they know how much they're using and how much it costs at any moment in time.

When creating a behavior change program, utilities and others must therefore consider a variety of strategies and technologies. The challenge, of course, is to design a program that will maximize energy goals while minimizing costs. Every program manager should therefore ask themselves the following questions:

- What marketing strategies are most effective?
- What technologies have the ability to cost-effectively influence energy behavior?
- How do you effectively combine marketing strategies with technology?

Let's look at each of these questions in turn.

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(1) What Marketing Strategies are Most Effective?

There is a variety of marketing channels that can be employed to effectively communicate energy efficiency messages to households. Diffuse advertising campaigns (television and radio ads, billboards, posters, etc.) can reach a wide audience. Utilities and others have historically invested significant resources in spreading various energy efficiency messages across their service territory. The downside of this strategy, however, is that messages cannot be personalized, effects cannot be easily measured, and conventional advertising is very expensive.

Direct mail is another traditional marketing channel with which utilities are very familiar. Mailers can deliver messages and information directly to the home and customers can be segmented by energy usage, demographics and psychographics. The company Positive Energy, for example, tells households how their energy use compares to similar homes in their area, with smiley faces providing an easy visual cue. Savings are then measured by comparing households that receive the mailer with a control group that does not receive anything. But direct mail is also fairly expensive, does not allow two-way communication, and is often thrown out with other junk mail.

Community marketing campaigns are another strategy that can be employed, one that emphasizes peer-to-peer interactions, led by trusted local leaders. Southern California Edison, for example, has embraced community marketing strategies in their energy efficiency campaigns, with incentives and resources predicated on community commitments. Community marketing can be much more cost-effective than traditional strategies, as messages can be passed on at no cost through local media and word of mouth. The Clean Energy Communities program in Connecticut, for example, relied on local energy task forces, and has proven to be about three times more cost-effective than traditional marketing strategies. The challenge of this marketing strategy, however, is to gain the buy-in of local leaders and create the proper "buzz" needed to grab people's attention. But, similar to diffuse advertising campaigns, it can be difficult to measure actual effects.

(2) What technologies have the ability to cost-effectively influence energy behavior?

As discussed above, there are a variety of technologies that can be considered for behavior programs. Traditionally, energy efficiency providers have relied on in-home audit technologies to provide detailed information and investment recommendations to homeowners. Local contractors as well as larger companies such as Conservation Services Group and GreenHomes America employ a variety of tests to estimate current energy breakdown and reduction opportunities. These audits can be very accurate, but are generally most effective with customers who are already very serious about making an investment in energy efficiency. In-home audits are expensive, not including the actual costs of energy upgrades.

For more casual customers who enjoy their gadgets, in-home energy displays can effectively increase the awareness of energy costs. A pilot project by NSTAR, for example, found that more than 60 percent of participants have made changes in their electricity use as a result of using the energy display. In a similar vein, a variety of "energy orbs" have been developed that give visual cues based on the amount of energy you're using. But displays are also an expensive investment by either the utility or the homeowner, and so savings must be sufficient to justify the cost.

Software technologies can also play a significant role in behavior programs. Online energy audit tools have been used for many years to help households understand their energy use. Most utility websites combine audit software with energy "tips" that recommend energy reduction actions. The accuracy of these audits is based on the sophistication of the energy algorithms, the number of customer inputs, and the amount (if any) of actual usage data that is integrated.

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Software is, of course, cheap compared to hardware, and can scale very easily. On the other hand, customers must make an active decision to utilize the software. Therefore, the software must be fun and easy to use, and effectively break down information, legitimacy, and social barriers while providing relevant feedback. Long surveys and generic tips are not enough in this day and age.

(3) How do you effectively combine marketing strategies with technology?

In many ways, this last question is the most important. As we've seen, each marketing strategy and technology has its advantages and disadvantages. To design an effective behavior campaign, program managers must choose the proper tools.

For example, campaigns combining community marketing with advanced online software mean consumers can then use the software to set savings goals and receive personalized information on how they can meet those goals (think Amazon.com product recommendation system) based on advanced energy algorithms. They can then commit to specific actions to reach their goals and share these commitments with friends. Participants will also see how they compare to their neighbors and community and receive regular reminders and feedback. A robust community marketing campaign complements the online platform, leveraging local groups that have an interest in energy efficiency. A community competition, which is reflected in an online leader board, adds additional excitement and "buzz" to the program. The offline community is therefore reflected in a dynamic online community. If successful, these programs will be cost-effective, scalable, and verifiable.

But of course, there is no one "right" approach. The answers to these questions are not necessarily straightforward, but they will help frame any internal discussions. Program developers must also take into account other factors that may be specific to a given service territory. If there are large concerns over peak power, then the demand response lens must be taken into consideration. This may increase the return on investment from smart meters, for example. If carbon is a factor, then conversions must be made between the local fuel mix and greenhouse gas emissions. And you might therefore focus all of your marketing on carbon reductions rather than energy costs.

But no matter the specific strategies and technologies, it all comes down to bridging the gap between intentions and actions. The most important thing to keep in mind is that a behavior program must always have a relentless focus on the consumer. As any marketing manager will tell you, this is no easy task. It requires significant planning, investment and flexibility. But changing consumer behavior can also deliver large rewards. The utilities that gain a head start on behavior strategies will have a significant advantage as the regulatory landscape continues to shift.

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Reader's Comments

Date	Comment
Bob Amorosi *6.9.09*	This article is a nice overview of the benefits and challenges for utility companies to engage residential consumers in efficiency programs. A key problem for utility companies is how to fund the hardware and software that is required to provide consumer feedback in real time or near real time to all their customers. The benefits to consumers of real-time feedback have also been studied for years by Ontario's largest utility company Hydro One. They learned a long time ago that large numbers of consumers equipped with simply a real-time power and energy display will voluntarily reduce their consumption by nearly 10% on average across hundreds of consumers in study groups. More affluent consumers who don't care about efficiency have zero reductions, but some are as high as 20%. Utility companies can usually easily justify spending some money on pilot studies for limited groups of customers. But to implement new technology to all customers requires an effective way to pay for it. Increasing billing rates to all customers is the last thing they want to do though since not only does it require regulatory approval, any disinterested customers are unwilling to pay extra for it. So without government handouts, the only alternative left is to get government regulators to allow them to change their business models.