Sacramento Municipal Utility District's (SMUD) Home Electricity Report

May 11, 2011

Webinar Transcript

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Tools of Change

Landmark Designation

The program described in this case study was designated in 2010.

Designation as a Landmark (best practice) case study through our peer selection process recognizes programs and social marketing approaches considered to be among the most successful in the world. They are nominated both by our peer-selection panels and by Tools of Change staff, and are then scored by the selection panels based on impact, innovation, replicability and adaptability.

The panel that designated this program consisted of:

- Melissa Klein, US EPA's ENERGY STAR Program
- Arien Korteland, BC Hydro
- Clifford Maynes, Green Communities Canada
- Stephanie Thorson, Summerhill
- Edward Vine, Lawrence Berkeley National Laboratory
- Dan York, ACEEE

This transcript covers a webinar held on Wednesday May 11, 2011. Additional materials about this program can be found at:
http://webinars.cullbridge.com/course/view.php?id=642.

Introduction by Jay Kassirer

Welcome to today's webinar on SMUD's Home Electricity Report program. This is quite an interesting program that is getting a lot of attention, not just in the energy conservation field, but in other fields where people are looking at how to provide effective feedback and avoid the rebound effect.

Before I introduce today's speaker, I'd like to remind those of you with an interest in home and building energy resources that we now have on our website a topic resources page focused on home/building energy resources for social marketers. There, you will be able to find the most recent case studies in this area and you'll be able to find other resources for social marketers working in energy efficiency.

This webinar is the fourth of five energy conservation case study webinars this season. It was awarded the landmark case study designation, which recognizes programs and social marketing approaches considered to be among the most successful worldwide based on impact, innovation, replicability, and adaptability.

These case studies are chosen by a peer selection panel (list of panelists can be found on page 2 of this transcript). The panel identified the extensive research involved in this program as one of its strength as well as its significant overall impact. While the individual impacts may be relatively small, because of the number of people affected, the overall impact is quite large. The panel also wanted to know more about the persistence of the results. How long do they last? Were there any privacy concerns? What was the role of the rebate or loan program?

You'll also see illustrated in this case study areas such as getting informed, the research that needs to be done in setting a baseline ahead of your program so that you know what things were like before you started the program and made the changes. In this case study, there was a well-designed pilot and program impact evaluation. In terms of the specific tools of change that we talk about, you'll see a good use of *feedback, prompts, norm appeals*, *obtaining a commitment*, and *vivid personalized empowering communications*.

Bruce Ceniceros is a strategic planner responsible for developing the behavior-based programs in SMUD's (Sacramento Municipal Utility District) energy-efficiency portfolio, including home energy repots, in-home energy displays, and smart grid customer information and communication strategies. Bruce also facilitates the application of behavior change tools from the social sciences within SMUD's rebate program and marketing effort, and serves as co-chair for the Consortium for Energy Efficiencies Behavior Committee.

Prior to joining SMUD in 2004, Bruce was a program planner and policy strategist for the California Energy Commission for 15 years, managing energy efficiency and load management programs for the commercial, residential, water and wastewater, local government, and healthcare sectors.

Bruce Ceniceros, Principal Demand Side Planner, SMUD

I'd like to start with a poll. How many of you are not from the energy efficiency or energy utility field? [Participants answered]. I ask this question because, while I'll focus on these strategies from an energy-efficiency perspective, these tools are applicable in many other areas. In fact, I must admit that the energy-efficiency industry is behind some of these other fields in applying these insights from the social sciences to change behavior in a desired way in terms of social marketing or other social based programs.

I'll explain why we got into this at SMUD, as an electric utility who for decades has been doing energy efficiency, but not explicitly attempting to influence behavior and how people use things in their homes. Instead, we've been focused on getting them to purchase energy-efficient devices. This started back in 2007, when our board adopted very ambitious energy-efficiency goals, more than doubling what we expected to save in energy district wide from previous years. [Slide] The problem, however, was that those goals exceeded what the consultants told us was the energy-efficiency reservoir potential savings that we could tap. This is what they showed in the reports.

In 2006, from equivalent retrofits and improving new construction in commercial and residential–and also taking advantage of emerging technologies that were on the cusp of making it into the market that were known at that time–we only got about two-thirds of the savings available to us. While we made some efforts to go a little further, we doubled the size of our research and development program to test additional emerging technologies and make those available.

We added some efforts to enhance the local and statewide building appliance standards so that we would get additional savings from that. There was still this big gap here we had to fill, so we turned to the behavioral plans and strategies. I estimate that there's even more here than is necessary to fill this gap if we really explore this to its full potential. This is getting people to change how they use devices, not just to buy efficient devices.

[Slide] The main tool that the social sciences use in the home electricity reports is leveraging social norms. The theory is that people have a strong tendency to do what their peers do. If we compare their energy usage to their neighbors who use less, then people who use more than the average will tend to reduce their energy consumption. It's people following the patterns of other sheep essentially. That was the main insight there.

This program was developed by Opower, and has been rolled out to many other utilities since we started this in 2008. [Slide] There are a variety of challenges in doing these behavior programs. First of all, in the electric utility industry we have to answer to either regulators, like the public utilities commissions, or in the case of municipal utilities like SMUD, to our own board and our business planning folks who have to plan for an adequate supply of electricity to meet the demand forecast. We have to prove to them that this is actually going to be real savings, and it's not just going to evaporate if people change their whims.

We have a relatively short history in energy efficiency of doing this. Those regulators and business planners do expect a high degree of precision. They're used to being able to put monitoring equipment on refrigerators and air conditioners and measure the precise savings that these things deliver when we're buying efficient widgets. This is not that way. The changes people make in behavior, we hope, will form habits that will be long-term. But they can change from one day to another.

This requires a whole different mindset in how you think about the savings and also of persistence in the savings. When you're selling efficient widgets you do a stimulus and the response of the purchase behavior, and then you enjoy the savings for the average measured life of 18 years, if it's an air conditioner for example. Not so with behavior. You have to continue efforts to maintain those behaviors over a long period of time, so you have the initial expense then maintenance expenses that need to be factored in. Then you can measure the savings over that term that you'll be applying that maintenance effort. It's just a whole different ball of wax.

On the positive side, other fields have been doing this for decades – smoking cessation campaigns, neonatal health in third world countries, etc. They've really had some successes in not just doing things that change behavior, but measuring accurately those behavior changes. We borrowed from those folks tremendously. There is a huge potential here and these things are very low cost. It maybe doesn't require as much accuracy if the cost effectiveness is very good.

[Slide] I've expanded the screen here so you can get a look at what the reports look like that we send to our customers. You'll see at the top of the first page that there is a neighbor comparison where we show your energy use and the energy use of all of your neighbors (a group of 100 similar homes that have about the same square footage and same heating type, gas or electric). For those who happen to use less than the average, like this example, we put in a different benchmark.

Everyone sees this benchmark, but this is the one for the low users, the efficient neighbors – the 20 out of 100 who use the least. The idea is that people will aspire to the average, whether they're above or below it. We don't want to encourage people to increase their energy use, but to be congratulated for being among the most efficient.

[Slide] At the bottom of the page you'll a 12-month rolling comparison and line graphs that show the trend. For this particular customer, the line in grey was rolling in between the average and the efficient neighbors, but something changed where they managed to beat the neighbor averages for those last four months. The trend can be very useful in showing people what's going on and giving them positive feedback.

On the backside of the report, we see a personal comparison. Here's your energy use on the last reporting period. It happens to be a quarter in this case. We compare that to the same time period in the previous year. Here, they're actually getting feedback on their energy use and whether they have improved relative to the previous reporting period.

On the bottom, we have a series of action steps, which deliver enabling information. At the same time, we're delivering the motivation, which is this normative comparison. These tips change out with each report. They're tailored for things that we know about each recipient. If they have a pool, for example, we'll give pool tips. If they have higher than typical electrical spikes in the summer, we'll assume they have some cooling issues going on and give them lots of cooling tips.

[Slide] The program uses several tools from the social sciences, not just normative messaging. We use feedback, which is in the comparisons I showed you between the neighbors and themselves. It shows actual energy use for those periods for this recipient. The reminders come with getting this report every month or every three months. Customers are getting these nudges about their energy use, trying to get them to think about their energy use on a regular basis because most people don't.

We tap into the idea that people care more about what they have and might lose than what they might gain and don't have currently. We phrase the excess energy use in terms of money they're losing, how much extra they're spending that they maybe don't have to be spending. We've found that it's more effective.

We also include elements on the web version of these reports, where they can see this information and a lot more. They can set a goal for how much they want to save over a certain period of time and, in this way, they're making a public commitment, which has been shown to cause people to follow through in much higher numbers than if they just get a message that says, "Please do this." And they go, "Hm, that sounds good." If they make a commitment and they actually click a box and it shows up and we're tracking their progress towards that commitment, they do it in much higher numbers. Lastly, we try to make this easy by delivering ideas a few bites at a time on how people can reduce their energy use.

A lot of people are curious about the results of this pilot. First, I'll talk a little bit about the design of the experiments. It's important when you're doing things that are measuring lots of little changes from a whole lot of people, and you can't attribute things to specific equipment, that you have a good experimental design. We had a control group of 50,000 residential customers, and a test group of 35,000 who received the reports. That was for the first year.

Since then, we have continued a large portion of those reports to test persistence over a three-year total period. That will be concluded this July. We intentionally stopped reports to 6,500 of the original pilot group so that we could see what happens to their energy savings once they no longer receive the reports.

[Slide] The design of the evaluation itself used a linear regression model. It looked at savings characteristics, before and after, of the test group versus the control group. It's a "difference of differences" study; correlating those different characteristics about the house and other things we knew about the recipients. We had to make some adjustments because the billing periods are staggered throughout the month and we also had to adjust

for weather. The bottom part shows the period that we used, the 12 months before the reports were received for both groups, and then the 12 months following that.

There are a variety of things that we've done to evaluate this program. It's probably one of the most heavily evaluated behavioral programs in the energy-efficiency industry that I know of. [Slide] I'm not going to go through all of these, but they're in the slides if you want the information. I haven't updated the slide to show the results of some longer-term persistence measurements and savings from Opower, who did that for us, but I will show you some of the studies we have coming up here shortly.

[Slide] For the pilot, this is just more detail about the evaluation design in case you want to refer back to that later. We got around 2% savings on the bill. That equated to about 213 kilowatt-hours per residence for recipients. We realized that part of those savings was influenced not only by people who received the reports, but who also participated in one of our rebate programs or the loan program. There was no way to really sort things out with the data that we had because we didn't have specific information on which rebates people took who were also recipients of the reports.

[Slide] All we could do was look at the worst case scenario; that everyone who received the rebate or loan and any savings associated with those recipients, that we would just attribute that to the other program until we could do a better job of measuring that in the future, which we do intend to do. Even with that – even assuming that there's no persistence beyond when people receive these reports, because we hadn't measured that – and assuming that 1.4% net savings, that the cost effectiveness was still right about at the marginal cost of acquiring new electric resources – 6.9 cents per kilowatt hour.

This was a randomly selected group. There were certain people who saved a whole lot more than the average, but some who saved virtually nothing. The average was about 2%.

One thing we tried to do was to tease out of the data how much of the savings resulted from permanent changes that we knew would persist, because we're used to measuring those things, versus peer behavior changes – such as turning off lights when leaving a room, unplugging miscellaneous loads that have a standby power loss, etc. We found that, just as far as a peer poll of reported behaviors, almost half of the changes were equipment changes. That's good news. People are making long-term changes as well as behavior changes.

When we attempted to measure what specific changes were made, there were only four out of a list of nearly 50 that we asked about that were statistically significant. When you add them all up, you look at the total kilowatt-hour impact – 20 kilowatt-hours. That only explains 10% of the total gross savings that we saw, so we know we're missing a whole lot here. There are a whole lot of small changes that didn't come through the noise and the data. We'll have to design better studies in the future to understand more accurately the kinds of changes people made as a result of this strategy.

We were very concerned at SMUD about how people felt about these reports, how they were using them and how this might affect our customer satisfaction numbers. [Slide] We did two surveys. The first was a pre-post evaluation of attitudes and behaviors. With a blind study, people didn't know that this survey was affiliated with the electricity reports. We did a pre-test before the reports were received, to both the test and control groups, and then a post-test after one year of getting the reports. We looked at the differences of those responses.

[Slide] We also measured the overall satisfaction with SMUD and the degree they felt SMUD was actively helping them in specific areas that we asked questions about. Generally, we asked about their energy IQ and literacy, so to speak – what they knew – we asked about understanding opportunities for saving energy and what specific behaviors they had reported making in the previous year, and some things about our SMUD communications.

We didn't see that people were aware of more efficiency opportunities after receiving these reports for a year. Instead, it appears that the reports reminded them to engage in these activities more often. That's not really a big surprise since we have been providing these kinds of tips for years via a lot of different communications such as our SMUD newsletter, bill inserts, etc., but people were pretty much ignoring them before. But now that they're getting these reminders and getting a motivation, they're actually paying more attention to them.

[Slide] In the blind study the customer satisfaction numbers were very strong. This is a graph [slide] of just the post-test results. They were virtually identical to what we saw on the pre-test. The numbers are almost all the same, so we didn't see this as hurting customer satisfaction in any way. But it didn't improve either.

[Slide] We then did a participant satisfaction survey. In that survey we told people it was about the reports. We showed images of the reports and asked them specific questions about their experience with them. There were some things about what we call the program and a little interaction with the reports and feedback on specific sections so we can design them better.

[Slide] These are surprisingly high numbers for us. The fact that 98% recalled receiving the reports and 90% were reading all or most of the reports was very encouraging. We have to wonder if this isn't a fact of people getting an envelope from SMUD in the mail that looks a lot like their bill, has our name and logo on it – they're at least initially opening these things. The fact that they're continuing to read them every month once they know what they are is very encouraging.

Seventy percent found the reports easy to understand. Most people, two-thirds, found them valuable. We found that people were talking about these reports to their neighbors or to their family members – just the kind of interactions we were hoping for to make this an effective strategy.

[Slide] We also found something very interesting about their sentiments towards the reports, which explained some of the feedback we got in emails and calls, which I'll go into a little bit later. Initially, a small number didn't like the reports (15%). That increased to 19%. Those who liked the reports increased from 54% to 60%. You can see that when you look at those who initially reported that they were indifferent, 10% of those people moved to one poll or the other.

[Slide] In other words, we found that their ongoing experience with the reports was causing them to form an opinion about whether they liked it or not. We think this is largely due to the fact that we are doing an opt-out strategy with this program.

Have any of you attempted to use an opt-out program where you provide something to 100% of a target group and they have to tell you if they're not interested? This could be a demand response program, recycling options, etc. [Participants answered]

There are pros to going with an opt-out strategy. You get much higher participation. Those who are using this know this. With demand response programs, I've seen numbers that go from single digit percentages for opt-in programs to above 80% for opt-out programs – with the same style of program. People are more likely to opt for the status quo. That's another tool from the social sciences that we understand. If you want to get a large number of people to do something, you want to do it for them and they have to tell you if they're not interested.

We also are able, with this technique, to reach customers who would not otherwise bother to participate in other programs. We found at SMUD that, with more than 25 programs at any given time that we offer for energy efficiency, on a regular basis we are only reaching about one-third of them and we get repeat participation from them. The other two-thirds don't participate in anything. For whatever reason, we're not reaching them, but this program does.

The cons of the program are that you are reaching people who did not, and would not, ask for this. Some of those people, who would not have volunteered for this, love it and are just fine with it. But you also reach some people who are not. They tend to be a very vocal small minority and you have to deal with that. Sometimes you'll see some pretty strong negative reactions from people who see this as a violation of their privacy or an encroachment on their rights. But I also look at this as a positive and I'll give you an example of that later.

[Slide] This is the kind of feedback one could expect with a pilot. We were the first utility to do this with the Opower product so we were on the bleeding edge. Even so, out of 35,000 customers, we received less than 1,000 calls, letters, and emails. That's about 3% of the test group that contacted us to give us one opinion or another, or ask us questions about the reports.

The opt-out rate, after the first year, was 1.7%, very low. That means were still continuing to reach 98.3% of the people to whom we started sending reports to. Not

counting those who moved, we had no data stream to continue making these neighbor comparisons. But it's a very high participation rate.

[Slide] The feedback that we got is not necessarily representative of the whole, because people who are not happy with something will tell you how they feel. Those who are happy tend to not share that information very often. But we did get some positive feedback – quite a few nice letters and calls. People appreciated SMUD being proactive in sharing this information with them. They really appreciated the specific information on how to make improvements. It was also a good lead generator for some of our other programs, such as the energy-efficiency rebate programs, our medical rate and bill systems programs, and others as well.

[Slide] There was a lot more negative feedback than positive, even though the survey showed that the negative opinions were much smaller than the positive opinions. People thought the comparison was unfair because we were only taking into account house size and heating type, not how many people were in the home. Were they home during the day? Did they have a swimming pool? There were a lot of other factors that they thought wasn't apples and apples.

They only felt this was unfair, of course, if they were using more than the average. Some writers were clearly showing a fatigue factor after we'd been doing this for six or eight months. They were continuing to stay above the average, even though they were making some attempts to reduce. That is compounded – that perception, I believe – because the average person is only saving 2%. Even if they got 5% or 10% savings, when they're being told they're 150% above the average, they're not going to ever get to the average. That was something that made us aware that we had to look at other ways to show progress.

Some people thought this was an invasion of their privacy. Here is that example I alluded to earlier. This gentleman wrote one of the most scathing letters I've ever personally received professionally. I can't repeat everything he said, but basically he thought this was ridiculous, a waste of money, and a waste of paper. We should leave him alone. He's been paying his SMUD bill for 25 years on time and here we are judging him, telling him that he's using more than his share of energy. He even used the phrase that "once again we've hung the black letter of energy hoggedness around his neck."

I thanked him for his feedback and took him off of the program. Then I looked at his report. [Slide] This is it here. You can see when he received his first report. You can also see that he reduces energy use significantly two months later and held it there. It kept getting lower and lower, in fact, compared to the neighbor average. I wonder if he had not managed to cross that line and started seeing the positive message of using less than the average, if he would've felt better about this.

This gentleman actually saved a lot of energy – way more than the average. He started out 25% above the average and was getting right down near the average. That also showed in his personal comparison. Maybe something else happened in his home.

Maybe someone moved out or he got a new air conditioner, but this is an example of someone who was livid about these reports and thought that they were a waste of time saving a whole lot of energy.

It wouldn't surprise me if those things go hand in hand because people who make a big effort and don't see adequate improvement might just react negatively and turn on the reports and blame it on the reports and say it's all a bunch of hooey.

It's a good lesson for us, that opt-outs have their advantages. They do create this issue that you have to deal with, though. A lot of negativity in calls and letters – that particular letter went to my general manager, which I had to respond to. If you have supportive leadership that understands this, they will tolerate this and understand that it just comes with the territory when you are doing something that will reach so many of your customers.

[Slide] Last summer we launched reports to 20,000 new customers that we were targeting specifically based on attributes they shared with those who saved the most during the pilot program. These were some of the higher energy users. Another group that popped up was a specific SMUD market segment that we call "big toys/big spenders." They have higher incomes, they're families with larger homes, larger energy use.

You can see that the predicted energy savings from that group is 677 kilowatt-hours compared to the 213 that we got from the randomly selected group in the pilot. There was another group, with similar savings, which was basically handpicked based on individual attributes that matched up with those that were correlated with high energy savings in the pilot. Rather than taking a whole big market segment, we actually looked at the census block information that individuals lived in – whether we had those correlating factors in high numbers in those census blocks. We are targeting 5,000 people with that method.

[Slide] We're going to compare all three of these methods of targeting and see which one yields the best results and which are the best predictors of what savings you can expect. At the same time, we're sending 5,000 electronic versions of the reports. They don't get any paper, except for the first month. After that, they get an email reminder that looks like this image that they can click on and go to the web tools associated with this program. They can see their electronic reports and print them out if they want. They can access all the same tools everyone else can.

We don't expect the same kind of participation rates with this because people are just over spammed in their email boxes. These will likely be ignored by a large number, but we're doing the test to see what kind of numbers we get because it's cheaper to do it this way and it does save paper. The control group for all of these above target groups totals up to 25,000 folks. We have matching sub segments of our target group, of that control group, that have the same characteristics of each of these four target groups.

Overall, we're projecting that we will get the levelized cost down from 6.9 cents per kilowatt-hour to under 4 cents per kilowatt-hour via targeting. That's about 4% of our customers so we can target very accurately. [Slide] The next generation of our program we see going more towards smart grid enable tools. We have a grant from the American Recovery and Reinvestment Act to expand our smart grid efforts here.

Part of that is focused on customer facing applications. We see this partly being electronic media, the way the world is going here. This will include web-based tools, maybe some kind of in-home devices, not necessarily dedicated for reporting your energy use, but leveraging other platforms that people already have – iPads, Verizon's home appliance than can do texting and other things like that, mobile applications for your smartphones, etc. We do intend to integrate all the same kinds of tools from the social sciences that I'm reporting on here. We'll have a lot of rich features that are listed here that people can use to understand more about their energy use.

It is our intent to try to improve our customer's energy literacy as well as their motivation so that they are more effective at acting upon that motivation. Our timeline for these efforts is that during 2011 we are putting out an RFP to hire a third-party contractor to design a pilot program. We'll be running the pilot in 2012 and, based on what we learn, we'll be ruling that out by late 2013.

Q&A

Q: You haven't mentioned anything so far about the rebound effect. Did some of the lowest users start to regress when they saw that they were using less than their neighbors? This is what we would call the rebound. When they see that they're doing better, maybe they even start to use a little more. Can you fill us in on that, please?

A: First of all, I'll tell you what we do know. The savings for the whole pilot group has persisted over time. It actually continued to increase and hold steady for those who were receiving quarterly reports. I think they're up around 2.2% based on Opower's quarterly evaluations. Those aren't official SMUD results, but so far none of their results have differed statistically significantly from SMUD's.

The quarterly recipients continued to increase based on their numbers up until the early third year of receiving these reports. That just may be because the savings were smaller and it took them longer because they're getting these more infrequently to develop the same habits and make the same kinds of changes. That was a positive, i.e., that these things haven't rebounded for those who had been receiving the reports. Again, we won't know for those whom we stopped sending reports until the end of this year – whether those savings rebounds.

Regarding your specific question about the low energy savers, those who are using less than the average, we have not broken down the longer-term savings beyond the pilot that way. We will do that during our later evaluation. I appreciate the reminder because I'm reviewing the RFP right now. I want to make sure that's in there.

During the first year, we found that even those who were very low energy savers saved around the average or better. I think the average was higher than 2% for the low users, but it's a percentage of a smaller number of kilowatt hours per year, so the overall kilowatt hours was smaller than the average.

Q: I believe I read on Doug McKenzie-Mohr's website that West Shultz had done some research on your program, or had reported on some research on your program, that indicated at first, when you showed the people who were doing better than their neighbors, there actually was some rebound effect. Once you started putting the happy faces on that gave them the added encouragement to keep doing better and they stopped going in that direction. Is that correct?

A: We've been using the happy faces from the beginning of our program. That was probably referring to the initial survey work that Dr. Robert Cialdini did with Opower. I think they found that adding that positive reinforce would help reduce the rebound. That's why they made that part of their design from the very beginning of the electricity reports.

Q: The advice that you give on the report, are the tips specific to the homeowner?

A: We tailor the tips based on what we know about the household, so yes, these are tailored to the specific household. We are limited to the degree to which we can do that. We know things like whether they have a pool, whether they have a particularly high peak in the winter or summer, and we give them tips based on that knowledge.

In the future, we would like to enhance this with program participation data. We're implementing a customer relationship management software tool this year that may give us adequate data to do that in the future. Another way you could get that data is to ask people to report that information about their household, which will allow you to better tailor the tips. We're doing that in the web tools that are associated in the home energy reports.

Q: Have you considered doing home visits to targeted high users?

A: That’s a very costly way to engage the customers. It can be very effective and we have been offering home energy audits at SMUD for a long time – 15-20 years. But we had to scale that program back because it was so costly. We only do that for customers that we deem to be in unusual situations, where their electricity use is extraordinarily high or they're in a special situation where we really think they need our help. We don't advertise that we do this service, but we offer it when we see those kinds of situations.

Q: Were there any legal restrictions with respect to contacting customers, privacy issues? How were you able to determine which customers had “big toys”? Do you have an inventory survey for all your customers?

A: We don't have an inventory survey, but this is the same marketing information. The data is out there used by private companies everywhere. You would all probably be very nervous about the level of detailed information that's available on each of us if you were to call up Equifax or any of these other private companies that catalog this data and sell it to other corporations.

We purchased some of that data. We keep it confidential. Even the staff here cannot see the data specific to a household. We use computer software to do the segmentation for us and lump people into big categories. We have our own self-imposed controls at SMUD on data security, particularly around energy use information. Some of the rest of you utility folks are probably in various stages of instituting the cyber security requirements of FURC (??) but that's a whole other story there. We have to go to great lengths to protect the data through encryption methods with our vendors and have them destroy data as soon as we're done using it. It's a whole different world now, but we do care about customer privacy.

Q: Have you considered rolling out a similar program to the ICI sector? (Institutional, Commercial, Industrial)

A: We haven't talked about using this specific design to do that but we have other programs that use many of the same tools of the social sciences. The commercial building benchmarking program through ENERGY STAR® is one of those. That's essentially a normative comparison. You're able to see how your building ranks in energy use per square foot or other indicators compared to other buildings in your sector. The goal setting, commitments, and things like that – there are a lot of programs that use those strategies and we employ many of those kinds of strategies to those programs.

Q: I'm involved in a large-scale residential energy efficiency program in Australia and I'm currently developing a feedback email campaign for the customers of the program similar to what you've implemented. That is, giving households feedback on how their energy use compared against households like theirs based on household characteristics and known energy use. The recommendation to proceed with this type of activity is up against the preference from the government policymakers, who would prefer to implement a standard per person daily usage target, which has been calculated based on the state's carbon emissions target. Is the energy savings required divided by the number of people in the state? Did you consider a standard target like this, but then decide to go with the neighborhood comparison approach? Is there anything that you can say that might help me in my situation?

A: We didn't consider using a typical average comparison that would apply to all customers for this program because Opower had the ability, for the first time, to tailor this to every customer. We thought that was a big strength. Opower hasn't been able to show us any data that shows how much of the savings is dependent on this being a tailored comparison versus a regular average. We have designed a test – but haven't yet been able to scrape together the resources to employ it – that would send a more generic

comparison to the Sacramento residential average just to see how much of the savings is due to the monthly nudge in a more generic comparison versus this tailored comparison.

We haven't yet started that. Based on the anecdotal evidence I've seen, people do respond more when you can make the comparison group appear to be their peers. It needs to be a comparison group that they identify with, that they relate to, maybe even a group whose opinions they care about. That matters probably more than even the accuracy of the comparison, such as making sure all of the homes are the same size. But when you do this comparison, you get a lot of skepticism about the accuracy of the comparison, so it's a double-edged sword. The more accurate you make the comparison appear to be, the more questions you might get about the accuracy.

Everyone knows they're just being compared to, for example, the Sacramento County average, that's not going to be very accurate. They may take that with a grain of salt. But it may not be as effective. I think the other factor is that when you look at the range of responses – I've given you only average numbers – we had people that saved 30% to 40%. We also had people whose energy use went up 30% or more. Only when you look at the differences between the whole group do you tease out that 2% savings.

We got letters from people who said they've changed their air conditioning system; they got a whole house performance evaluation and implemented insulation improvements and duct sealing and a whole bunch of other things. They said their bills went down by 30%, and thanked us because it was all due to the reports.

When you set a goal that's going to be universal, you're running the risk that you're going to put it out of reach of a good portion of your customers, or that it'll be too modest for a good portion of customers. That would be the main consideration I'd think about when you're looking at an appropriate goal for everybody.

Q: Won't you run into rate structure problems (income reduction versus infrastructure maintenance costs) down the road if the program is wildly successful?

A: We get this question all the time because people don't believe that a company would want to encourage you and expend resources to convince you to buy less of their product. How is that a successful business strategy? That has not been a problem up to the last couple of years, up to say two years ago, because we were in such a growth mode. The marginal cost of acquiring additional electric resources to supply the growing demand was so high that we could meet that increasing demand more cheaply through energy savings – energy efficiency and energy conservation.

However, the question is getting more difficult to answer now. In this economy, we've seen flat revenues. Now, when we look at saving 1.5% per year on flat revenues we're talking about turning our load curve down and actually reducing our revenues. That can only be recaptured if you have a rate structure that's not aligned money or fixed costs and variable costs through rate increases. But even that has been deemed to be acceptable

because we are providing higher value services. A person's actual bill will go down on average, even if the rates do go up.

Again, you're meeting these needs more cheaply than you could with conventional resources. Only those people who don't act and don't reduce their usage will actually see higher bills. You have to keep separate the idea of where the bills are going versus where the rates are going.