6A: Social Norms – Putting Herd Mentality to Productive Use Saving Energy and Saving the Planet

Moderator: Elaine Ulrich, U.S. Department of Energy

Guillaume Calas, Pacific Gas and Electric Company

Home Energy Reports – Avoiding a Mid-Life Crisis

Pacific Gas and Electric Company's (PG&E) Home Energy Reports (HERs) is one of the oldest and largest behavior-based energy efficiency programs in North America. Launched in summer 2011, it now impacts 1.5 million households by sending printed and/or email reports. These reports leverage the power of social norms to encourage customers save energy by comparing their energy consumption to one of nearby similar homes. Reports also contain energy efficiency tips and information about other Energy Efficiency programs offered by PG&E. Industry-wide average savings per household is modest, generally ranging between 1.0% and 2.5% for electric usage and 0.5% and 1.5% for gas usage. One upside of the HERs opt-out design is it enables enrolling large populations; because of this, HERs is a significant savings contributor to PG&E's Residential Energy Efficiency portfolio (50% for ex-post first year net electric savings in 2014). Though HERs appear in their prime today, challenges on the horizon could create a 'mid-life program crisis' impacting long-term program viability and effectiveness. How to reinvigorate depressed HERs programs without putting them on Prozac? This presentation synthesizes key learnings and strategies for continued program success from six years of PG&E implementation. Three key metrics are at risk: • Long-term savings or 'fixing poor life habits': the common "low-hanging fruit" strategy to target the highest-energy users has slowly reduced the savings potential of the pool of eligible households not yet enrolled in the program. Customer attrition – i.e. customers moving out of their homes (and then being removed from the program) – also poses a threat to current and future savings. Leveraging interval meter data and developing customized behavioral treatments can provide avenues to capture more savings and avoid HERs programs from suffering a reduced life expectancy. •Customer engagement/satisfaction or 'reframing the communication': the opt-out design and generic approach used by many HERs programs raise challenges associated with satisfaction and report fatigue in participating households. No need to buy a Corvette: reinventing the customer experience to promote deeper engagement, especially across more mature HER experiments, in order to refresh the purpose of the program for customers. Hint: think (report) face lift to stimulate savings. • Cost-effectiveness or 'financial health': newly developed empirically-derived savings load shapes help capture measure benefits during peak hours more effectively. The observation of savings persistence also demonstrates that current savings accounting methodologies are inefficient, especially around measure life.

Beth Fitzjarrald, E Source

Utility Behavioral Demand Response Programs: Cost-effective Demand Savings

Traditional residential demand response (DR) programs require costly devices, costly installation of those devices, and costly financial incentives to entice customers to participate. The program design is often fairly unappealing to those customers, as it requires them to sacrifice their comfort on the hottest days of the summer, and even more so, give up control of the comfort of their home. Several utilities are exploring a new demand response option, using social-science-based normative messaging, similar to that used in popular home energy report programs. The early pilot results point to reliable peak savings with lower cost and high customer satisfaction. There have been some forays into behavioral DR in the past, with several California utilities using community-wide messaging asking customers to please save on hot summer afternoons. Those efforts saw little in the way of verifiable savings. Now utilities are learning from home energy reports and changing generalized community messages to highly personalized interactions. Personalized behavioral DR works by sending individual social norming messages - how much are you using in comparison to your neighbors and your historical self - to inspire residential customers to reduce energy use during peak events. Customers get feedback just before a peak event asking them to save, then get a follow-up message several days after letting them know how they did. These behavioral DR programs use no rates or financial incentives, no costly devices, just intentionally-worded personalized messaging. E Source has reviewed leading behavioral DR programs and found that energy savings from these programs are noteworthy, ranging from 1 to 5 percent, with savings during each peak demand event averaging around 1.5 to 3 percent. Naturally, before investing in programs like this, utilities want to know if these savings will persist year-to-year and how many customers will choose to opt-out. Early results in both of these areas are promising for program managers. In this presentation, attendees will learn why several utilities are pursuing behavioral DR and hear case studies with verified results from 3 of the top utility behavioral DR programs in the country. We'll discuss key concerns including savings persistence, opt-out rates, verification, and customer response. Highlights include: - Behavioral DR can be cost-effective. - Program results over two consecutive summers, with low (6-8 percent) opt-out rates. - Early analyses of savings persistence, with consistent savings across two seasons and several back-to-back events. - Customers satisfaction results --

they seem to like it. While the magnitude of savings from this type of program won't make it a demand response silver bullet, early results indicate this might be a useful added tool in the peak-shaving toolkit.

Vedran Lesic, Leeds University Business School

Assessing consumers' perceptions of electricity use: Does providing reference points help?

INTRODUCTION Consumers often find it hard to assess how much electricity is used by their household appliances. Providing a 'reference point' (or how much electricity is used by another appliance, such as a single light bulb) can be a simple yet effective strategy to improve the accuracy of consumers' perceptions of appliances' electricity use (Attari et al, 2011). The aim of this study is to test whether the provision of single or multiple reference points improves consumers' perceptions of appliances' electricity use. METHOD In a US online survey, 504 participants reported their perceptions of electricity use (in Watt hours) for nine different appliances (e.g. air conditioner, electric oven, dishwasher, etc.) as used over the course of one hour. Participants were randomly assigned to receiving one of five experimental conditions: (i) no reference point, (ii) a single low reference point (light bulb), (iii) a single high reference point (electric dryer), (iv) two reference points, one low and one high (light bulb and electric dryer) and (v) three reference points, including one low, one medium, and one high (light bulb, washing machine and electric dryer). RESULTS We found that providing one or more reference points (rather than no reference point) influenced the accuracy of perceptions of electricity use across all of the appliances presented. Specifically, participants who received a single low (e.g. light bulb), or two or three reference points reported more accurate perceptions of electricity use for specific appliances. This findings confirmed that providing participants with a potential range of values improved their judgement of the frequency of their behaviors, but only when the range is based on representative information which was the case in this study (Schwarz, 1999). Also, in conditions with two or three reference points, participants were more confident in their estimates and perceived the task as less difficult. Furthermore, participants in our study underestimated the use of high electricity consuming appliances (e.g. air conditioner, dishwasher) but overestimated the use of low electricity consuming appliances (e.g. laptop, TV). CONCLUSIONS Our findings suggest that reference points play an important role in improving the accuracy of perceptions of electricity use across different appliances. We discuss the importance of incorporating reference points in the design of effective electricity feedback for consumers.

Elizabeth Palchak, University of Vermont/Vermont Energy Investment Corporation

Casting a wide net: what we know now about behavioral strategies and energy use

Casting a wide net: what we know now about behavioral strategies and energy use This lighting-round presentation will report on a section from a meta-analysis on pro-environmental behaviors related to water use, land-use, family planning, meat consumption, recycling and energy use. This meta-analysis, "Encouraging pro-environmental behavior: what we know about what works" (forthcoming publication) is the result of a two-year collaborative project out of the Gund Institute for the Environment at the University of Vermont. Researchers focused on experimental designs testing behavioral strategies and captured statistical significance, sample size and noteworthy findings. The MINDSPACE Framework developed by the UK's behavioral insights team served as a way to capture and coalesce the various behavioral tools applied across many different behaviors and many different research experiments. To develop new insights about the state of behavioral science and energy use, we examined seven frequently cited meta-analyses. In recording statistical significance, sample size and capturing the type of behavioral strategy a "grid" was created illuminating areas of high impact (like the combination of commitments and information feedback) and areas of promise that require more experimentation (like more effectively leveraging the messenger effect). One of the most striking areas of discovery was related to the effects of social norms when examined across various studies, despite the popularity of strategy in many programs. Vermont Energy Investment Corporation is developing a tool to operationalize these findings into its program design. In this presentation, I will present on the findings from this study and highlight several key opportunities for program designers and further research.

Rebecca Malfroid, DTE Energy

Improving Customer Satisfaction in Home Energy Report (HER) Programs without Sacrificing Savings

Must utilities settle for low program satisfaction in order to achieve savings through Home Energy Report (HER) programs? DTE Energy tackled this question head-on by researching the effects of softening the tone of HER messaging on satisfaction and savings. While HER programs are a positive experience for some customers, encouraging them to conserve and save money on their energy bills, HERs can frustrate inefficient users. Participants who consistently rank poorly in neighbor comparisons may

feel that efficiency goals are too difficult to achieve. These customers often report low program satisfaction and may disengage from the program entirely. Between March and December, 2016, approximately 100,000 households with inefficient energy use were assigned to either a “Soft Norm” or “Target Rank” message designed to soften the tone and provide a more positive experience for these customers. Through experimental design, DTE identified the 150,000 most inefficient users in the HER program, assigned 50,000 to each of the alternate messaging regimes, and assigned the remaining 50,000 to a control group who continued to receive status quo messaging. Analysis of the results confirmed with 85% confidence that the alternate messaging increased satisfaction by over five percentage points. Average satisfaction scores among Target Rank and Soft Norms participants were 67.1% and 64.8%, respectively, compared with 58.7% satisfaction among the Baseline group. Moreover, satisfaction gains did not come at the expense of savings. T-tests of the differences in mean savings between groups showed no statistically significant differences. Through the Message Testing experiment, DTE created happier HER participants who saved just as much as their less-satisfied counterparts. These results are of interest to all utilities interested in increasing customer satisfaction with their HER programs without depressing savings.

Gary Swan, National Energy Foundation

National Energy Literacy Survey of High School Seniors

Energy Efficiency and Energy Literacy: The First National Energy Literacy Survey By May 2017, the National Energy Foundation (NEF) will have completed the first ever National Survey on Energy Literacy in the U.S. The survey is being administered to 2,000 randomly selected high school seniors, with the objective of finding out what students know (knowledge), feel (attitudes) and are doing (behaviors) about energy and energy efficiency as they complete their K-12 journey. High school seniors have been selected as the target for this survey because of this critical juncture in a student’s life where they become voters, possible utility bill payers, college students, and/or members of the full-time workforce. NEF has seen preliminary data from the survey, and the results are fascinating, particularly as we examine the correlation between knowledge, attitudes and behaviors. For example, if a student scores high on the knowledge portion of the test, how well does that translate to their actions? Additionally, the national sample is stratified for various demographic factors, including family income level, ethnicity, gender, high school GPA, and region of the country. Exploring the differences in energy literacy among these subgroups provides some powerful insights that can help drive new energy efficiency program design for both utilities and government. Another area for insight is the development from the data of energy-related “personas,” much like psychographics that are used in product marketing. Specific knowledge categories in the survey include: Basic Energy Concepts, Energy Use, Energy Efficiency & Conservation, Sources & Types of Energy, and Energy Tradeoffs & Implications. Students’ responses lead to an overall Energy Literacy Score, scaled on a 1 to 100 point scale. Preliminary data (more than 75% of surveys completed) show a score distribution that follows a typical bell curve, suggesting a well-designed set of questions. A pilot survey to approximately 350 participants was administered in February and March to help refine the final questionnaire. NEF’s survey research partner is Cicero Social Impact, a reputable research group that has worked in partnership with the Clinton Foundation, the Gates Foundation, the George W. Bush Presidential Center, and many other national organizations. NEF believes this is an unprecedented project, and will produce an unprecedented data set that will help inform utility and government planners as they create critical energy efficiency-related regulation and policy for the future. A formal white paper has been planned, and will be developed and completed by the end of May 2017. NEF will be referencing this white paper, and making it available, as a part of presenting at the BECC conference.