Green with Envy: Neighbor Comparisons and Social Norms in Five Home Energy Report Programs

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ABSTRACT

Social norms, which describe commonly accepted ways of behaving, have long been recognized as a powerful way to influence behavior. People's beliefs about what they think everyone else is doing can be leveraged to increase the probability that an individual will perform a desirable behavior such as reducing his or her energy use (Schultz et al 2007). This paper explores one way in which program administrators are using social norms to spur neighborly competition and, as a result, curb energy use. In recent years, home energy reports (HER) programs have applied the concept of social norms to the energy efficiency context. These feedback programs inform customers of how their energy consumption compares to their neighbors' and provide other information about their usage, with the goal of enticing customers to change their energy use behavior to improve their relative neighborhood ranking.

This paper provides an overview of several HER programs that have been evaluated to date. It also describes a number of the characteristics that varied across these programs and the ways in which these variables impacted, or did not appear to impact, the energy savings generated by the program. The case studies include home energy report programs delivered by five different program administrators: ComEd in Illinois, National Grid in Massachusetts, Puget Sound Energy in Washington State, Sacramento Municipal Utility District in California, and Southern California Edison. In particular, this paper looks at the possible relationship between key variables, such as baseline energy use and the frequency with which the home energy reports were sent, and the overall reported savings from these programs. This paper also explores the correlation between participant characteristics such as baseline energy use and the apparent effectiveness of HER programs for these customers.

Introduction

In the ongoing quest to find new energy savings opportunities, program administrators have recently been exploring a new application of an old approach that was—both literally and figuratively—right in their own backyards.

Social norms, which describe commonly accepted ways of behaving within a given community, have long been recognized as a powerful way to influence behavior. While people rarely admit to being influenced by others, human beings are taught to follow society's codes of behavior. Though prevailing social norms can vary widely from one community to another, research has consistently shown that people tend to bring their behavior closer to the norm when they learn what the norm is (Schultz et al 2007). This longstanding research has recently been applied in a new way by leveraging this powerful social tendency to reduce customers' energy use.

In home energy report (HER) programs, popularized by vendors such as OPOWER, participating customers receive energy information reports that provide information on how their energy use compares to that of similar customers in their community. Each time they receive a report, they are told whether they are doing better or worse than similar customers in their neighborhood and, in some cases, also how their energy use compares to that of their most energy efficient neighbors. Additionally, the reports may include a variety of tips on how customers can improve the energy efficiency of their homes—everything from simple behavioral changes such as unplugging devices not in use, to larger time and money investments such as replacing old refrigerators and freezers (Ehrhardt-Martinez et al. 2010). While at first glance the reports appear mainly informative, their comparative nature may spur neighborly competition from customers and encourages recipients to reduce their energy consumption in order to keep up with their most efficient peers.

The programs discussed here are similar in several key ways. All five included both a treatment group of customers that received the reports and a control group that did not receive the reports. All the programs used customer billing information as the primary data source. Only one of the pilots, Puget Sound Energy's, exclusively targeted homeowners—the others were open to renters as well. In all five cases, participants who moved during the pilots were excluded from the analyses. Additionally, rather than inviting customers to participate, customers were selected into these programs and told that they could withdraw at any point. This "opt-out" approach takes advantage of the status quo bias, which is the human tendency to prefer the default option (Thaler and Sunstein 2008).

Beyond these basic characteristics, the programs diverge somewhat in approach. This paper will provide an overview of the primary differences in each of these programs and the results observed. The outcomes and lessons learned from these varying approaches to a similar program model can provide insight to program implementers and evaluators planning to undertake similar efforts.

Purpose, Scope, and Methods

This paper highlights a few examples of how comparative feedback programs have been approached in different ways, and attempts to draw conclusions about the impacts of different approaches on the overall outcomes. This information is intended to serve as an illustration of some of the different potential approaches to implementing a comparative feedback program.

Given the purpose of this overview, the intended method was to include as many Consortium for Energy Efficiency (CEE) member comparative feedback programs as possible. The criteria for inclusion in this document were twofold. First, the organization implementing the HER program had to be a member of CEE in order to facilitate access to the evaluation report. Secondly, the pilot or program had to have at least a preliminary impact evaluation completed and made available to CEE by September 2011.

In order to gather relevant evaluation reports, CEE staff reached out to the program contacts listed for all comparative feedback programs that had been reported in the 2010 and 2011 Behavior Program Summaries that CEE uses to collect information about members' behavior-based efficiency programs. We contacted these individuals via e-mail to find out whether evaluations of those efforts had been completed, and followed up with those from whom we did not hear back. We also informally inquired among CEE members as to whether there were other organizations that they were aware of that might have completed an evaluation of this type of program. As a result of these efforts, we received impact evaluation reports from the following organizations: Commonwealth Edison (ComEd) in Illinois, Puget Sound Energy (PSE) in Washington State, the Sacramento Municipal Utility District (SMUD) in California, National Grid in Massachusetts, and Southern California Edison (SCE).

The programs described here include only CEE member programs and do not include all CEE members' HER programs. As a result of the methodology used in collecting this data, the results discussed here are intended to be qualitative in nature and do not aim to represent HER programs—or CEE members' comparative feedback programs—on the whole. This overview is not intended to be prescriptive, nor does it suggest that other organizations implementing these types of programs might experience similar results to those reported here. Rather, the intent is to inform other program administrators of some key program findings from these specific program examples and provide tangible details on the various approaches used in these pilots.

Program Approaches and Observations

Baseline Energy Use

One characteristic of the program participants that might impact the effectiveness of a home energy reports program is the household's baseline energy consumption level. Based on a review of all five programs, households with high baseline energy consumption saved more through the program than homes with low baseline energy consumption; this held true even when the energy saved was measured as a percentage of the customer's baseline energy use.

The National Grid pilot found that participants that began with higher baseline consumption saved more energy as a percentage of their total consumption as compared to both the participants with medium and low baseline energy consumption. For instance, in the electric pilot, high baseline energy users saved an average of 1.9 percent, while low baseline energy users saved an average of 1.2 percent; a similar trend was observed for the gas pilot, with high energy users saving 1.1 percent and lower energy users saving just 0.6 percent (Dougherty 2011). Participants with moderate energy use at baseline also saved more energy than those that used less energy at the start of the pilot (Dougherty 2011).

Along similar lines, ComEd found that energy savings were higher for program participants with higher baseline energy use as compared to participants with lower baseline energy consumption. On average, the ComEd program reported savings of 1.54 percent for high energy users and 1.27 percent for low energy users (Provencher 2010). In fact, over the course of the program, high energy users "contributed about twice as much savings on a per customer basis (327 kWh/year) as low energy users (141 KWh/year)" (Provencher 2010). Baseline energy use also seemed related to how much customers saved during different seasons, with high energy users saving much more during the summer than low energy users. Savings for the high energy users peaked during the very last quarter of the program, whereas this was when savings was the lowest for the lower energy users; given that it was summertime during the last quarter of the program, it is unclear whether this increased savings was from program effectiveness or weather.

Other complicating factors impacting the SCE pilot made it a challenge to determine the potential relationship between the program and resulting energy savings. A marketing campaign that coincided with the SCE Palm Desert pilot (but unrelated to SCE work) may have influenced the results and complicated attempts to attribute the observed savings to the SCE pilot. There were also significant demographic differences between the treatment group in Palm Desert and the surrounding communities used as control groups. As a result, the SCE pilot did not benefit from a true experimental design as intended, and its evaluation results should be understood in that context. Nevertheless, OPOWER's evaluation of the SCE pilot found that a portion of the customers involved had such low energy use at baseline that these customers, as a group, had greatly lowered the overall savings achieved. As expected, when the bottom 25 percent of energy users in the SCE pilot were removed from the analysis, the energy savings achieved through the program by the remaining customers increased 11 percent (OPOWER 2010).

The theme that higher baseline energy consumption was associated with higher savings from the HER programs merits a closer look. Perhaps customers using higher amounts of energy have yet to take advantage of the initial, low effort but high impact energy efficiency actions that can reduce a household's energy consumption relatively easily. In other words, it is possible that customers that have low energy use at baseline have already taken many of the steps necessary to live more efficiently; thus, including them in these pilots may have the potential to underestimate program impacts. This finding may be useful going forward as program administrators consider the target audiences on which to focus HER programs in the future and suggests that it may be most effective to focus these efforts on customers with higher energy use at baseline.

Seasonal Variation

In determining the efficacy of a HER program, it is important to keep in mind the potential impact of seasonal variation on energy use among participants. To date, there has been little evidence of seasonal variation in energy savings achieved for these HER pilots. Only one of the five evaluations found that savings varied by season.

In the first year of the ComEd program in Illinois, high energy users experienced much higher than average energy savings during the summer (2.09 percent), whereas lower energy users experienced lower than average energy savings during the summer (1.08 percent) (Provencher 2010). Savings were relatively consistent across seasons for the second year of the ComEd program (Provencher 2011).

SMUD, on the other hand, found savings to be nearly identical from one season to the next, observing 2.0 percent savings during the summer and 2.1 percent savings during the winter (ADM Associates 2009). That SMUD experienced consistent savings across seasons is not surprising when you consider that this pilot took place in California's moderate climate.

The SCE pilot experienced different levels of energy savings depending on the month, though no clear pattern emerged. For instance, the highest energy savings (3 percent) were achieved during May 2010 (OPOWER 2010).

The variations across these programs in how much the seasons impacted energy savings may be in part due to the very different climates in which these programs took place. When running programs like HER, it may be beneficial for program administrators to continue to track how the program's energy savings vary, or not, throughout the seasons to better understand how the program's impact on energy savings may differ from season to season. Further research could shed light on potential causes for any disparity in savings across seasons observed. It is still unclear what factors may be at play here and how program administrators might most effectively tap into any season-specific additional savings opportunities. Future findings may also provide clarity on what approaches might encourage seasonally high savings achieved from a given program to continue throughout the year.

Household Income

Only one of the utilities examined how household income might be associated with the energy savings achieved from the home energy reports pilot. ComEd found that households with intermediate incomes and higher energy use appeared to achieve greater savings as a result of the reports as compared to households with low or high incomes (Provencher 2010). Perhaps the lowest income customers have already reduced their energy use as much as possible given the funds they have available for energy expenses, whereas high income customers may have less of a need to reduce energy use for financial reasons. The other programs did not analyze the savings generated by the home energy reports by the income level of the participating household.

Frequency of Reports

Only three of the pilots varied the frequency with which the reports were sent to participants. Overall, only one of the studies—Puget Sound Energy's—found a link between the frequency with which reports were sent and the energy savings achieved. Although just one study found a significant difference in energy usage by report frequency, with more frequent reports appearing to lead to higher savings, it's important to note that the other studies were not set up to allow for a proper analysis of the impact report frequency may have had on savings.

In the Puget Sound Energy pilot, about 25 percent of report recipients received reports quarterly, while the rest received monthly reports (KEMA 2010). The participants had been randomly assigned to these two groups. For both electric and gas, energy savings were higher for those that received monthly reports as compared to those that received quarterly reports.

For the ComEd pilot, the frequency with which the reports were sent to participants did not appear to impact the ultimate energy savings achieved. In this pilot, low energy use participants receiving the reports quarterly appeared to save a comparable amount of energy to those receiving the reports every other month (Provencher 2010). During three of the four seasons of the program, the low energy use participants receiving reports less frequently had lower energy savings. During the winter months, the low energy use participants that received the reports more frequently saved more energy. The resulting difference in annual averages of savings were not statistically significant based on how frequently the low energy users received reports. As a result, ComEd has not drawn any conclusions from these data about the efficacy of varying report frequencies and during the second year of the program, everyone received reports on a bimonthly basis (Provencher 2011).

The picture is a bit murkier in the case of SMUD. It was determined which participants would receive quarterly reports and which would receive monthly reports based on the participants' baseline energy usage. Customers that had lower energy use to begin with were assigned to receive the reports less frequently—just once per quarter—while customers with higher baseline energy use received the reports once per month. Since assignment to the monthly or quarterly report receipt categories was not random, it would be inappropriate to try to draw conclusions about the effectiveness of sending the reports at a given frequency based on the different energy savings observed between these two groups (ADM Associates 2009).

Although only one of the studies found significant savings variations based on report frequency, it's important to note that this study was also the only one initially designed to detect a potential correlation between frequency and savings. Many of the other studies referenced in this paper either did not attempt to measure the correlation between frequency and savings or did not randomize assignment of frequency. PSE did a few key things that assisted in the measurement of frequency. First, they selected a homogenous group of households from which to randomly assign participant and control households. Of the participant households, they once again randomly assigned households to receive reports quarterly or monthly, sending enough reports to each group to be reasonably confident that the difference in savings could be measured. This was an important piece of the evaluation because it provided PSE with additional information that would allow them to optimize their behavior portfolio.

The potential connection between report frequency and energy savings achieved is worth exploring further. If future research indicates that one report frequency is more or less effective at spurring energy savings, this could have implications for program cost.

Participation in Other Programs

While the goals of an energy efficiency program often include increasing participation in other similar programs, it is also vital to quantify this increased participation in order to avoid double counting. Overall, the increased participation in other programs observed as a result of participation in HER programs was generally slight.

During the first year of the ComEd program, high use customers receiving home energy reports had slightly higher, but statistically significant, program participation in ComEd's appliance recycling program. From those in the control group, 0.62 percent enrolled in the recycling program, while 0.9 percent of those in the treatment group did (Provencher 2010).

Along the same lines, a greater proportion of report recipients participated in the SMUD rebate and financing program as compared to the control group. Data was not available to determine which efficiency improvements were implemented by report recipients and non-recipients; therefore it was not possible to estimate the change in energy use attributable exclusively to the influence of the rebate and financing programs. As a conservative move to avoid any possibility of double-counting, the regression model was rerun after removing all rebate and loan participants from both the test and control groups, resulting in about a 25 percent reduction in net savings. Since report recipients who took a rebate or loan are likely to have also taken other energy saving actions that were not related to the rebates or loans, the adjusted net savings of 157 kWh (1.4 percent) represents the lower bounds of savings that could be attributable to the home energy reports (ADM Associates 2009).

While National Grid found awareness of its other energy efficiency programs to be higher among the home energy reports participants (57 percent among the pilot participants and only 50 percent among the control group), this higher awareness did not appear to result in an increase in participation in the utility's other electric programs. However, the channeling analysis found that approximately 5 percent of the gas savings identified in the billing analysis was from other gas efficiency measures; therefore, the average savings estimate of 0.81 percent in households was decreased to 0.77 percent (Dougherty 2011).

At SCE, the home energy reports program was linked to a 9 percent increase in program participation in other SCE programs from 1.13 programs for nonparticipants to 1.24 programs for customers receiving the home energy reports (OPOWER 2010). It is not stated in the report whether this increase was statistically significant. This increased program participation was split roughly in half between new customers participating in any energy efficiency programs on the one side and households participating in additional energy efficiency programs on the other.

While participation in other programs is an important observation for utility marketing strategies, it's also a major input into savings calculations. HER savings are measured through billing analysis. To the extent that savings from other programs coincide with the HER measurement period, savings claimed from other programs have the potential to show up as savings in the billing analysis. To avoid double counting, PSE tracked participation in other programs for both the participant and control group during the measurement period. The savings for other program participation were then prorated by end use load shape (not by day), for both the participant and control groups, to yield a more solid estimate of savings which could not be attributed to HER. PSE chose to prorate savings by load shape and not by day to account for the seasonality of savings. For example, a high efficiency furnace doesn't save anything in the summer when the furnace is not running; thus, prorating savings by day is not appropriate.

Other Findings

A few of the evaluations of these programs included interesting observations that don't easily fit into a specific category, but are nevertheless worth noting. For instance, the SMUD program examined several other unique participant characteristics that might impact the effect of the home energy reports. For example, the evaluators found that the highest energy savings for the program came from homes with pools. The age and size of the participant's home was also correlated with the energy savings achieved through the program. Report recipients in smaller homes saved more than those in large homes, while customers in homes built between 1993 and 2001 saved more than those in homes that were either newer or older than that range (ADM Associates 2009). While these are interesting observations, no plausible causal factors could be determined by the program team to account for the correlation between these variables and program impact. It is likely that these differences are related to other unexamined variables that differed with house size and age rather than house size and age impacting the overall energy savings achieved through the pilot (Ceniceros 2011). Nevertheless, future research may investigate how different target audience characteristics may or may not impact savings from the program. If additional variables that appear to increase a participant's savings from the program can be identified (for example, high baseline energy use) this may help improve effective targeting and increase cost-effectiveness of these programs.

Given that the total energy savings from the SCE program were calculated at 1.46 percent, which is somewhat lower than the savings achieved from similar programs, the OPOWER evaluation report from the SCE pilot cites a number of potential causes for this pilot's comparatively lower savings (OPOWER 2010). For instance, the population targeted for this pilot in the desert cities of Southern California includes many customers that only reside there seasonally, called "snowbirds," which would impact how much savings the program could generate during months when there are fewer residents (OPOWER 2010). To ensure that participants were not concerning themselves with how little energy snowbird neighbors might be using and how that could impact their own comparisons, residents received clarification on their energy reports that the neighbor comparisons were only among occupied homes.

Self-Reported Behavioral Changes

In addition to measuring changes in energy use, the SMUD program also aimed to capture specific behavioral changes the participants had made as a result of participation in the home energy reports effort. This was accomplished through the use of a survey administered via mail and the internet, as well as a telephone survey. Overall, a total of 75 percent of the changes made by the treatment group, as reported on the surveys, were behavioral as opposed to equipment changes (ADM Associates 2009).

The largest behavior change reported by the SMUD treatment group was an increase in unplugging electronic devices not currently in use, with 56 percent of the report recipients asserting that they were performing this behavior (ADM Associates 2009). Recycling old refrigerators and freezers, which is perhaps the action recommended by the reports with the greatest savings potential, was much less commonly adopted by recipients of the reports as compared to other behaviors, with only 11 percent adoption (ADM Associates 2009).

That said, the statistically significant behavioral changes participants made account for only 10 percent of the energy savings observed through the SMUD program; it is still unclear how the remaining energy savings were achieved. Additionally, all the results described here are based on self-report data, which has inherent limitations. For instance, it's possible that participants over reported behavior changes that were emphasized more in the program literature or that they perceived to be more desirable from the perspective of the program staff.

National Grid also found that program participants reported taking a wide variety of actions in order to help them reduce their energy use. There was a significantly higher rate of purchasing higher efficiency equipment over the course of a year among the participant group as opposed to the control group (Dougherty 2011). However, overall, the participant group did not report a higher level of energy saving behaviors as compared to the control group. For instance, the experimental group appeared to be more likely to take certain types of energy efficient action, such as reducing hot water usage, whereas in the control group actually seemed more likely to perform certain energy saving behaviors, such as HVAC maintenance (Dougherty 2011).

Evaluation Design

Puget Sound Energy, ComEd, and National Grid all used experimental evaluation designs, meaning that customers were randomly selected into the program's control or treatment groups. In contrast, SMUD used a quasi-experimental design that included a pretest and posttest (ADM Associates 2009). The evaluation of the SCE pilot also used a quasi-experimental design, since the treatment and control groups were selected using nonrandom assignment.

All five programs used billing analysis as the main source of data, though SMUD and National Grid also supplemented this information with self-report survey data from participants. In addition to billing analysis, National Grid also conducted in-home participant interviews with 11 families; the interviewers asked about participant awareness of the home energy report, their reactions to the information contained in the report, changes they may have made as a result of participating in the program, and recommendations for possible future changes to the report or the way it was distributed (Dougherty 2011).

The program savings reported in these pilots may actually underreport the savings differential between the treatment and control groups, as control groups in feedback programs often reduce their energy use simply due to the knowledge that they are being monitored (Lutzenhiser 1993). When individuals do know that their behavior is being monitored, they may aim to behave according to perceived norms about how they should act (Schultz et al. 2007) which, in this case, may result in them reducing their energy use accordingly. That said, the participants in the control groups of the HER programs wouldn't necessarily have a reason to suspect that their energy use was the subject of ongoing monitoring.

In the SMUD pilot, members of the control group made statistically significant changes to several energy saving behaviors between the start and end of the study, such as installing energy efficient windows and unplugging appliances when not in use, which could be responsible for the less than expected differentiation between the savings of the control and treatment groups (ADM Associates 2009). This could have been due to the control group being partially exposed to the program if neighbors who received the energy reports discussed with control group neighbors either the reports or the resulting energy changes they were planning to make. However, as a whole, the control group in the SMUD pilot seems to have increased their overall energy use during the course of the study (ADM Associates 2009), so it is unclear exactly what overall effect, if any, the program had on the control participants.

Persistence

There have been varied experiences across the different organizations in terms of the persistence experienced from the program, including some indications that savings from home energy reports may actually be greater after the first year of the program.

In the second year of the ComEd program, there was a statistically significant increase in weather-adjusted program savings in the fall and summer months, which led to an overall increase in program savings for the second year as compared to the first (Provencher 2011).

Since its initial evaluation report was released, SMUD discontinued sending the home energy reports to a group of its experimental participants, and is continuing to track over the years how this group's energy usage compares to those that continued to receive the reports. Though evaluation results from this phase won't be available until April 2012, OPOWER's quarterly impact analysis showed that savings leveled off in the second year and held steady for the third year for participants from the original pilot's experimental group.

Massachusetts assumes the persistence of a one-year home energy reports program to be one year. However, the data collected as part of National Grid's HER program suggested the possibility that the impact of these kinds of programs may last longer (Dougherty 2011). National Grid is planning to further explore the persistence issue as part of a second evaluation report.

Concluding Thoughts

The programs described here offer a number of potential takeaways for other organizations considering implementing similar efforts. The following takeaways are based both on actual program observations as well as some hypotheses that might explain the anomalies noted throughout this paper:

- Given that several of these pilots found the highest energy savings from the home energy reports among customers with the highest baseline energy use, future program versions may consider targeting higher energy users specifically. Additional research is needed to better understand the impact of very low baseline energy users on the overall savings achieved by a given HER program. SCE found this to be particularly relevant.
- The evaluation of the SMUD HER Program identifies the potential future benefit of focusing recommended actions on those that will make the most impact on energy savings, such as the replacement of old refrigerators and freezers, over other actions that might be more commonly associated with efficiency but may make less of an impact on a household's overall energy usage, such as turning off lights when leaving a room.
- Based on the finding from the ComEd pilot that less energy savings were generated from program participants in low and high income categories, it might be worth further exploring messaging and energy efficiency recommendations targeted at those groups.
- Given the inconsistent findings on altering the frequency with which the home energy reports were sent in these pilots, more research may still be necessary in order to determine its potential impact or lack thereof.
- More investigation is needed to better understand the persistence of the HER programs.
- Further research is also needed to better understand what specific aspects, if any, of the energy reports are most influencing customers' behavior. Until then, it is still somewhat unclear the role that social norms are playing in motivating customers to change their energy use behavior, relative to other factors such as detailed consumption information.
- To the extent possible, additional research examining HER programs that used more similar evaluation approaches would also be beneficial. As described previously, the particular pilots included in this paper were selected in part based on their evaluation timing. One downside of this approach is that the resulting selection of programs employed differing evaluation approaches; as the number of HER pilots continues to increase, additional research—and perhaps meta-analyses—focusing on the results of HER pilots using *common* evaluation approaches may yield valuable insights.
- The National Grid evaluation report suggested two future approaches: (1) provide positive affirmation to program participants, and (2) more widely advertise opportunities such as the website that can be used to gain more information about one's energy use (Dougherty 2011). This report also found that customers in this pilot often have difficulty identifying steps they can take to further cut their energy use (Dougherty 2011).

With these experiences in mind, it is worth noting that each of these programs took place in very distinct geographic and demographic locations. As a result, though the target audiences may appear to be similar on paper, the individuals participating in these programs likely varied in a number of characteristics not reflected here. These variations in geography and target audience, among other factors, likely impacted the results for each iteration of the program. Thus, what worked well for one of these variations in one context may not work as well in another area with a demographically distinct target audience. Nevertheless, the encouraging findings from these pilots—and the unexpected results that invite future investigation—may help pave the way for future efforts to better understand how to effectively engage customers in a neighbor-based comparison with the goal of reducing their energy use.

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Table 1. Home Energy Report Programs: At a Glance

	Service Territory	Energy Savings Achieved	Variation Across Seasons	Frequency Reports Sent	Target Audience	Evaluation Design	Channeling Analysis
ComEd	Chicago and Northern Illinois	1.54% for high energy users; 1.27% for low energy users	Highest energy users saved most in summer (2.09%); low energy users experienced lower than average savings in the summer (1.08%)	ComEd not drawing any conclusions based on frequency of sending reports (during second year, all reports sent bi-monthly)	Residential customers (regardless of dwelling type and whether home/apt was owned or rented); 50,000 received reports, 50,000 in control group	Experimental design (customers randomly assigned to receive reports or not)	High energy use customers had a small but statistically significant increase in ComEd's appliance recycling program
National Grid	Massachusetts	1.61% electric, 0.77% gas	No conclusions drawn	Reports sent monthly	Residential single family home owners and renters, with a focus on high energy users (25,000 each for electric and gas received reports); 25,000 each for gas and electric in control group	Experimental design (customers randomly assigned to receive reports or not)	Awareness of other programs higher among participants (57%) than nonparticipants (50%), but this didn't appear to result in increased participation in electric programs
Puget Sound Energy	Puget Sound region of Washington State	1.84% electric, 1.33% gas	PSE did not look for any potential relationship between energy savings and seasons	For both electric and gas, savings highest among those receiving monthly reports	Duel-fuel, single family homeowners; 40,000 received reports, 44,000 in control group	Experimental design (customers randomly assigned to receive reports or not)	PSE did not include a channeling analysis in the first evaluation report for this program
SMUD	Sacramento, CA	1.9% overall (1.2% electric, 1.8% gas)	Consistent savings across seasons	Higher baseline energy users received reports monthly, lower baseline energy users received reports quarterly	Electric and gas homes; 35,000 received reports, 49,000 in control group	Quasi-experimental design (pretest/posttest control group)	A greater proportion of those receiving reports participated in the SMUD rebate and financing program as compared to the control group
Southern California Edison	Central, Coastal, and Southern California	1.46% electric savings overall	Variations in savings from month to month, but without any clear pattern across seasons	This pilot was not set up to determine potential relationship between frequency of reports and energy savings	Approx. 32,000 total residential customers received reports; about 33,000 in control group	Quasi-experimental design (random assignment not used to determine whether customers received reports)	HER program participation was associated with a 9% increase in participation in other SCE programs (unclear if this difference was statistically significant)

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