

Post Mortem: Dissecting an Underperforming Behavior Program

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ABSTRACT

Behavior programs aimed at energy consumers engage behavioral levers such as rewards or the normative effect to influence customers to reduce their energy consumption and/or make consumption more efficient. This paper presents findings from the evaluation of an underperforming behavior program to shed light on factors that could explain its underperformance. In this case, although the program included incentives such as coupons or gift cards, the level of savings achieved fell short of ex-ante program estimates. The analysis examines how customer engagement as measured by actual participant data such as energy savings actions pledged, use of energy reports, use of the program website to get information, and incentives redeemed relates to customer feedback on the program as measured in the survey and changes in site-level consumption. The analysis also includes textured customer profiles based on customer ratings of the program and utility websites as compared to other service providers such as their bank or credit card. The paper will contribute to the body of empirical evidence that aims to relate high consumer engagement with program success. As utilities increasingly look to change their low engagement relationship with the customer, this presentation will provide essential insights on how to improve customer engagement through better designed programs.

Introduction

This paper presents findings from DNV GL's process evaluation of the New York State Electric & Gas (NYSEG) and Rochester Gas and Electric (RG&E) Energy Saver program. The Energy Saver program was an opt-in behavioral based residential energy efficiency program that targeted residential customers, educated them on their energy use and "ways to save" and helped them to track actual energy savings. Customers also received nominal rewards for actual energy savings. The program ran from February 2013 to April 2014.

The free online energy efficiency program for residential energy customers provided personalized energy-saving recommendations, which factored in location, weather, and home profile, and rewarded customers with points based on the amount of energy saved. The points could be redeemed by customers for discounts from online retailers. Customers could log in to their account and pledge energy saving actions. Customers were sent email messages each month showing how much energy they saved and how many reward points they earned. With verified reductions in energy use, participants received two points for every kWh of electricity saved and twenty points for every therm of natural gas saved compared to the previous year. Any customer with an active NYSEG or RG&E account was eligible to join the program and customers with accounts that have been active for at least one year could accumulate reward points if they were able to save energy compared with the previous year.

The Energy Saver Survey, which surveyed participants in this program, uncovers the motivators of participation and identifies the linkages between specific program elements, such as rewards, with the level of customer engagement. The research also provides nuanced insight by bringing together program participation data from C3 Energy (now known as C3 IoT), the program implementer, as well as other utility customer and billing data.

Methodology

The Energy Saver Survey was conducted in Q4 2015 among participants in the Energy Saver Program in NYSEG and RG&E territory. The survey was mailed to 27,924 Energy Saver program participants and a \$100 gift card lottery incentive was offered to those who completed the entire survey. The sample frame of 27,924 participants included the entire population of program participants and only excluded customers on NYSEG and RG&E do-not-call lists.

Respondents were deemed eligible to take the survey if they were able to recall their participation in the Energy Saver Program. DNV GL conducted this research as a web survey and achieved a response rate of 19%. Approximately three-fourths (72%¹) of all respondents were able to recall participation in the Energy Saver program and proceeded to complete the survey.

Table 1: Energy Saver Survey Sample Disposition. *Source: DNV GL*

Description	Number	Percent
Original sample frame – all Energy Saver program participants	27,924	100%
Click-through –partial and complete responses	7,458	27%
Completes – eligible respondents who completed the entire survey	5,400	19%

Data Sources

The research brought together the following streams of data to extract layered insights on the customer:

- Energy Saver Survey data – The Energy Saver survey questioned respondents on the motivators of program participation, program satisfaction and interest, program influence on energy saving habits and equipment purchase, use of the program and general utility websites, customer readiness for future programs and some general demographics and dwelling characteristics.
- Usage data from NYSEG/RG&E – The analysis used electricity usage data for respondents with a minimum of 10 months of pre-program and post-program usage data. This was correlated with program engagement and respondent perception of program impact.

¹ Respondent recall of program participation is low considering that the Energy Saver Program was an opt-in program. While this might be lower in part due to households where adults share an email address and the survey respondent is not the customer who opted in to participate in the program, we note that a recall of 72% for the Energy Saver opt-in program is lower than the recall of 95% for an opt-out behavior program (DNV GL, 2014).

- Cross-program participation from NYSEG/RG&E – The analysis used cross-program participation information provided by NYSEG/RG&E in five other energy efficiency programs including refrigerator recycling, gas rebate, multifamily, and showerhead aerator programs.
- Energy Saver Program participation/tracking data from C3 Energy – The analysis used program tracking data for participants such as number of energy efficiency actions pledged on the program, number of instances points were earned, total points earned on the program, number of instances points were redeemed, and total points redeemed on the program among others.

Program Satisfaction

The Energy Saver survey asked the participants about their level of satisfaction with various aspects of the program as well as with the program overall. Respondents were asked to rate the program on a five-point scale where 5 indicated “Very Satisfied” and 1 indicated “Very Dissatisfied.”

Respondents had higher levels of satisfaction (satisfaction ratings of 4 or 5 on the 5 point scale) for the initial program activities such as enrollment and program information. However, satisfaction levels drop for the later program activities with a 30% drop to an average 55% level of satisfaction with the redemption process. Given that the Energy Saver program used incentives as the key motivator, respondents seem to indicate that they find that the program does not live up to that promise.

An analysis of verbatim responses reveals that respondents indicate a preference for rewards that were more readily usable – like cash or a credit on their monthly bill. The redemption process to get to the incentive seems to act as a disincentive for many. Respondent

suggestions for customized information, energy saving tips for deeper savings for advanced customers, and inclusion of a competition element with others to motivate performance echo program elements of other home energy report programs.

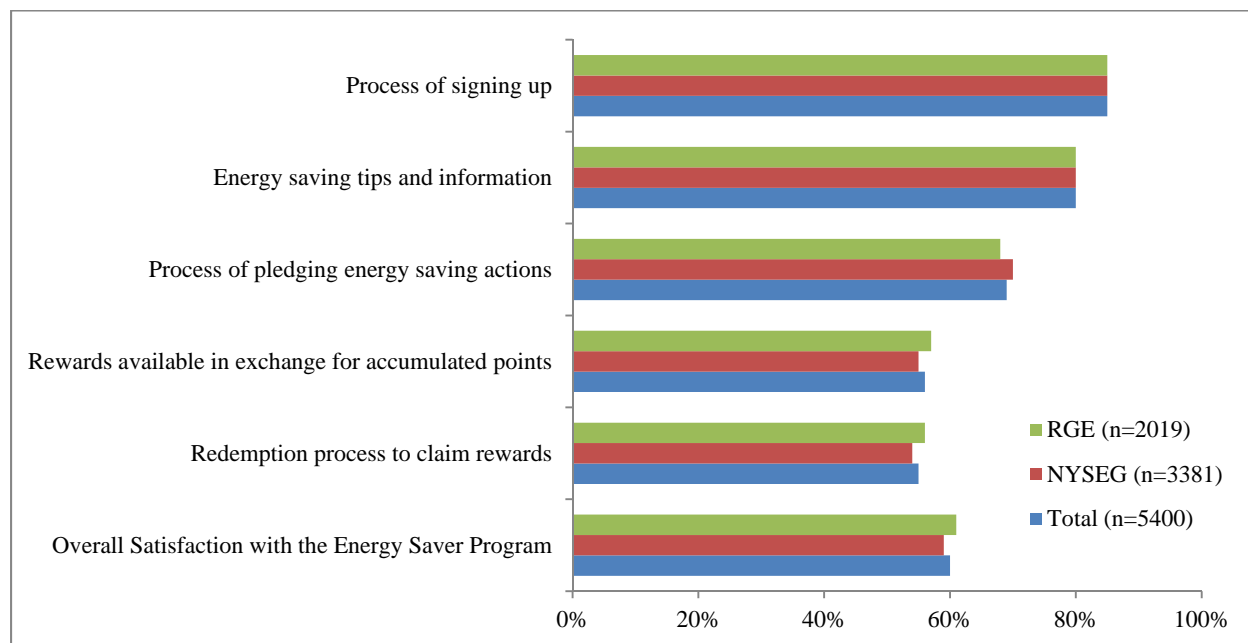


Figure 1: Satisfaction Ratings for NYSEG/RG&E Energy Saver Program *Source: DNV GL*

We asked the participants about their level of interest in the program using a five point scale where 5 indicated “Extremely Interested” and 1 equaled “Not at all Interested”. About half (52%) stated that they were extremely or very interested in the Energy Saver program, which corresponds to a score of 4 or 5 on a 5-point scale. Overall, interest in and satisfaction with the Energy Saver program is low, at 52% and 60% respectively, given that this is an opt-in program. This low level of interest and satisfaction with key elements of this opt-in program such as the rewards available and the redemption process for rewards is a potential contributing factor to underperformance.

Program Performance in Relation to Satisfaction and Interest in the Energy Saver Program

The total number of points earned by the respondent as a participant on the Energy Saver program corresponds to reductions in energy use. On average, higher interest in the program and higher satisfaction with the program corresponds to higher points accumulated which in turn corresponds to higher reductions in energy use. Figure 2 summarizes the points earned in the Energy Saver program at varying levels of interest and satisfaction with the program.

We noted an upward trend in the number of points earned in the Energy Saver Program as participant interest and satisfaction increases, although this should be considered directional evidence and is not statistically significant. It should be noted that the causality could go in either direction. It could be that participants who are more satisfied accumulated more points. However, it could also be that accumulating more points increases satisfaction, although combined with the previous finding of decreasing satisfaction as one moves sequentially through

the program, this seems less likely. Furthermore, there could be a third variable, such as pro-environmental values, driving both level of interest and point accumulation.

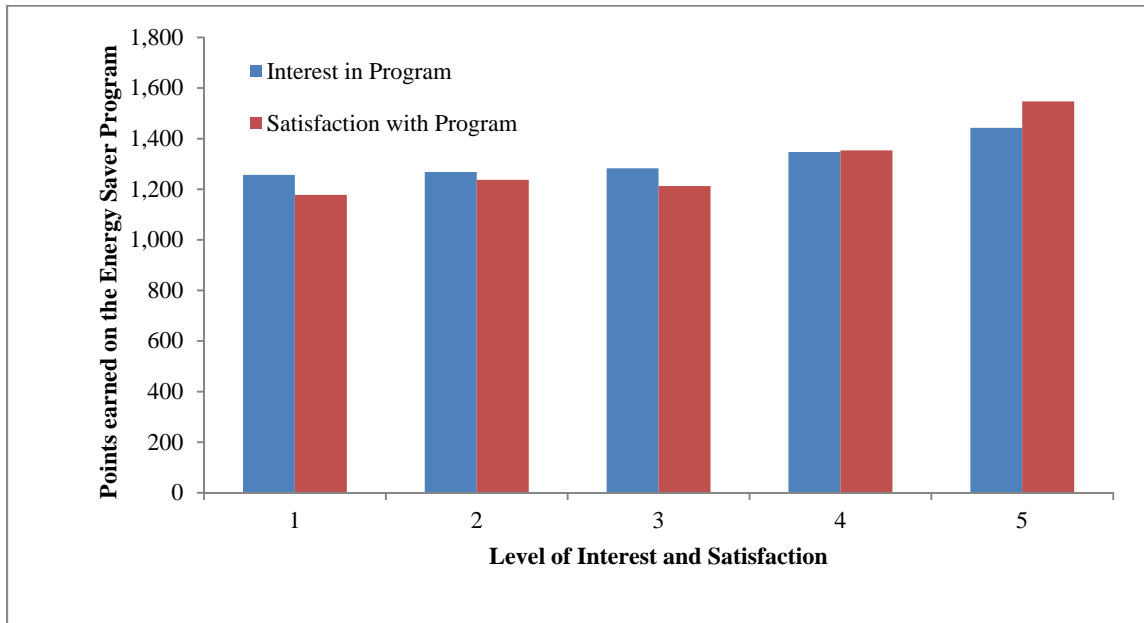


Figure 2: Level of Interest and Satisfaction by Points Earned *Source: DNV GL.*

Program Website

When asked how often they logged in to the Energy Saver program website, one-quarter (25%) of respondents said they logged in only once at the start of the program (Figure 3). Overall, these results indicate a low level of engagement.

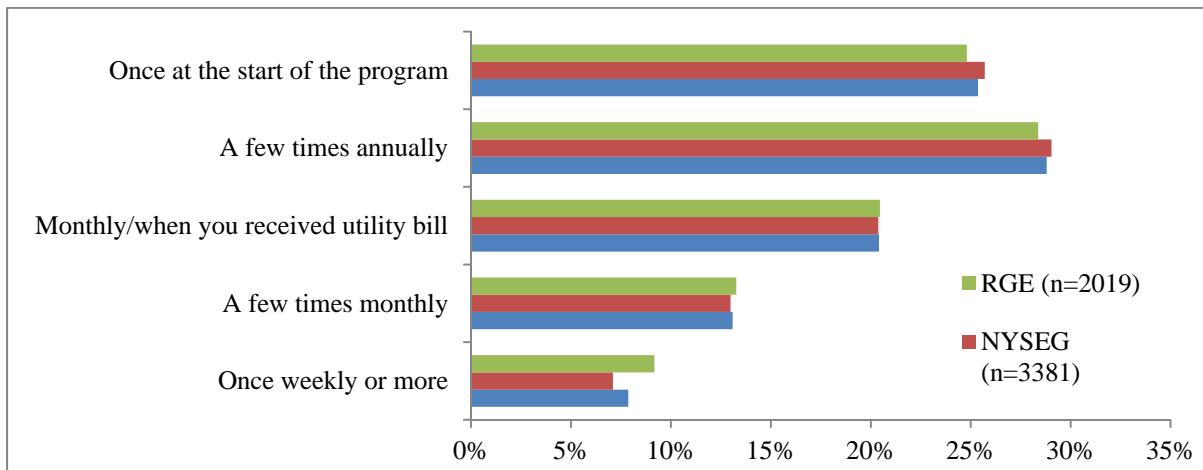


Figure 3: Frequency Logging in to Energy Saver Program Website *Source: DNV GL*

When we asked respondents why they visited the website, nearly half (49%) said they did so to get energy-saving tips, about one-third (35%) stated that they visited the site to check their point balance, and only 21% stated that they visited the site to redeem points. The full range of responses can be seen in Figure 4. This is yet another indicator that the positive feedback loop of

progress, rewards, and energy saving information to help accumulate points was not accessed by the majority of respondents thus potentially contributing to program underperformance.

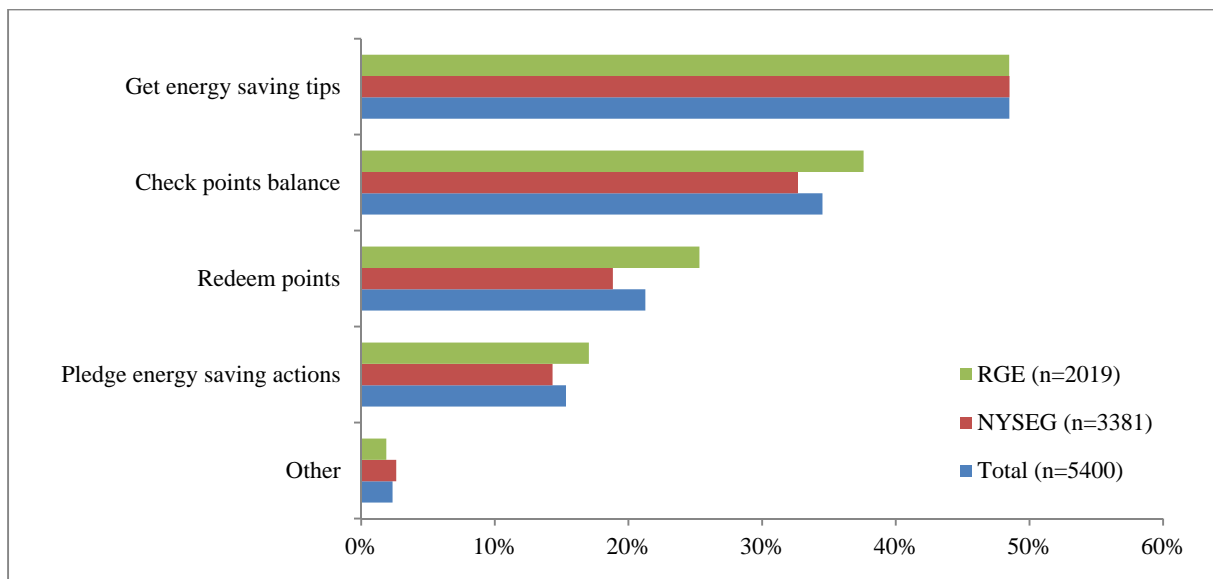


Figure 4: Reasons for visiting Energy Saver Program Website Source: DNV GL

Cross-Program Participation

We examined the impact of cross-program participation on performance in the Energy Saver Program. This indicator of customer proclivity towards energy efficiency is of interest to us in the context of examining Energy Saver program performance. We obtained customer data from NYSEG and RG&E that indicated what other EE programs the respondents participated in. All the other EE programs began two to four years prior to the start of the Energy Saver Program, and while some EE programs concluded prior to the start as well, some others continued to be offered through the duration of the Energy Saver Program. Three-fourths (76%) of all respondents had not participated in any other EE program, 19% had participated in one other EE program, and 5% had participated in two or more other EE programs.

Overall satisfaction with the Energy Saver Program is significantly higher among those who have participated in one and two or more programs relative to those who have participated in no other programs (Table 2). As shown below, customers who have participated in other EE programs perform better in the Energy Saver program relative to those who have not participated in other EE programs in terms of program satisfaction, actions pledged, and total points earned which in turn indicates reduced energy consumption on the Energy Saver program.

While the trend is not statistically significant for all metrics, there is directional evidence that cross-selling energy efficiency to participants in other NYSEG and RG&E EE programs could yield increased savings. As such, this segment of customers that have participated in multiple EE programs represents an attractive target with a higher likelihood of engagement for new programs from NYSEG and RG&E.

Table 2: Influence of Past Participation in Other RG&E/NYSEG EE Programs on Energy Saver Program Performance. *Source: DNV GL*

Influence of past participation in other RG&E/NYSEG EE program on Energy Saver Program performance	Participated in no other NYSEG/RG&E EE programs (n=4113)	Participated in any one other NYSEG/RG&E EE program (n=1015)	Participated in two or more other NYSEG/RG&E EE programs (n=272)
Overall Satisfaction with the Energy Saver Program	58%	63%	68%
Number of actions pledged	15	17	19
Points Earned	1271	1501	1542

Program Influence – Self-reported changes in monthly bills

We asked the survey participants whether they had noticed any changes in their monthly bills since they began participating in the Energy Saver program. Respondent perception of change in their bills as a result of program participation is an inexact but important indicator of program performance. As Figure 5 shows, the majority of respondents (52% in total) said there had been no real change in their monthly bills, and nearly one-third (31%) said their bills were lower since participating in the Energy Saver program. The fact that fewer than one-third of respondents stated that their bills were lower may be viewed as yet another potential indicator of underperformance. It should be noted that utility bills are estimated every other month and respondents are unable to assess weather variation impacts or seasonal trends on their bill in response to a survey question on changes in their monthly bills. Respondent estimates of reductions in bills or perceptions of changes in bills should be interpreted keeping the above factors in mind.

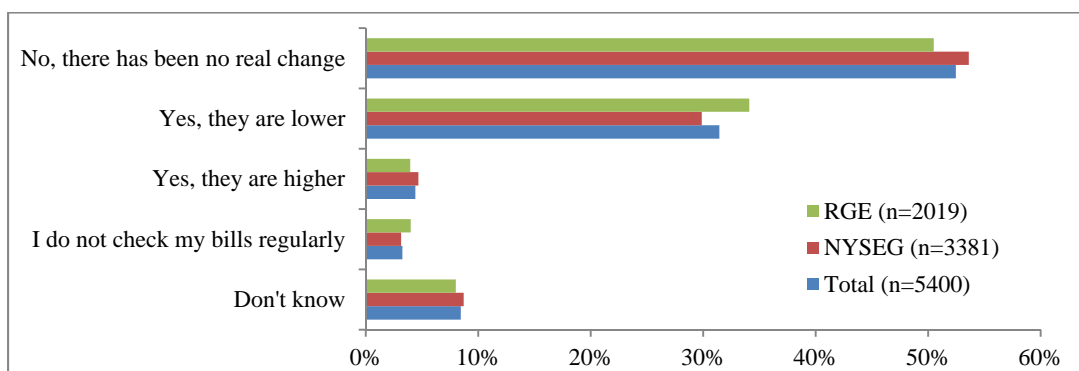


Figure 5: Perceived Changes in Monthly Bills since Energy Savers Participation Began *Source: DNV GL*

Table 3 shows customer engagement and performance in the program, broken out by whether respondents said their monthly bills increased or stayed the same after enrolling in the Energy Savers program and those that said their bill is now lower. We see marginal and directional (but not statistically significant) differences, with those who thought they saw bill reductions on average pledging more actions, earning more points, and redeeming more of the points they earned relative to those who saw bill increases or no change.

Table 3 - Program Engagement by Self-Reported Changes in Monthly Bills *Source: DNV GL*

Program engagement	No change in bill/bill is higher (n=3070)	Bill is lower (n=1697)
Average number of actions pledged	15	18
Average points earned	1,252	1,471
Average points redeemed	465	764
Average percent points redeemed	37%	52%

Program Influence – Perceived versus Actual Change

We undertook an analysis that merged consumption² information from the billing analysis with self-reported change in monthly bills for an insightful look at customer perception versus actual consumption influenced by the program. This analysis was restricted to participants for whom we had at least 10 months of pre-program and post-program billing data. Furthermore, we examined annual electric consumption for these households³. We classified those who achieved an actual reduction in annual consumption of 5% or more as energy savers and the rest as those who did not change energy consumption or those who used more energy. This 5% savings threshold for our classification was set in keeping with proven levels of savings for opt-in programs which have a relatively narrow reach but promise deeper savings of around 6% on average, versus opt-out programs which have broader reach and shallower savings of around 2% on average (Efficiency 2.0, 2011).

A cross tabulation of self-reported bill change with the percent change in actual electricity consumption reveals that around two-thirds of the participants in this analysis had false-positives – participants perceived that they had saved on their monthly bill when in reality their consumption increased or did not reduce significantly (Table 4). This finding illustrates that a significant number of program participants did not have an accurate perception of their usage from their monthly bill and/or progress updates via email from the program.

The opacity of the relationship between occupant activities and choices and their energy use/energy bill has long been theorized as a hurdle to energy efficiency. This opacity and disconnect between customer perception of usage and their actual usage, as found here, is one of the reasons utilities explore alternatives like dynamic or real-time feedback mechanisms to provide customers with a true picture of their actual consumption so that they can see how it varies based on usage.

² Consumption used in this analysis refers to electricity consumption.

³ This analysis excludes records where multiple meters correspond to the same account holder and also excludes outliers. Outliers are defined as those participants who had over a 200% increase in energy consumption post participation in the Energy Saver program. There are no outliers of this magnitude in the other direction. i.e. those who reduced energy consumption post participation.

Table 4: Self-Reported Bill Change by Actual Change in Electricity Consumption *Source: DNV GL*

Self-reported bill change by change in consumption	No change in consumption/Higher consumption	Reduced consumption by 5% or more
Reported no change in bill/higher bill (n=1198)	68%	32%
Reported lower bill (n=658)	62%	38%

Use of the General Utility Website

We asked respondents if they also browsed the general utility website when on the Energy Saver Program site and 36% of them indicated that they did so. Among those who did not also browse the general website, 71% indicated that they had visited/used the general utility website at some time. We asked all respondents if they used the general utility website for the actions shown in Table 5. We note that 25% of respondents said they do not use the website to check their usage, make payments, or enter meter reads.

While this is not directly related to program performance, this analysis aims to characterize participants to understand how they interact with their energy provider. The fact that one-quarter of respondents who opted in to a program where points redeemed online for rewards were the main mechanism to drive behavior change, very minimally and do not at all engage with their utility online could be one of the barriers to achieving better performance.

Table 5- Reasons for Using the General Utility Website *Source: DNV GL*

Reasons for using general utility website	Total (n=5400)	NYSEG (n=3381)	RG&E (n=2019)
Make payments online	21%	23%	18%
Check usage/bills online	15%	16%	15%
To enter meter reads	12%	10%	15%
Do one/some of the above	26%	24%	28%
Do none of the above	25%	25%	24%
Don't know	2%	2%	1%

We asked respondents to rate the general utility website in terms of ease-of-use on five functionalities, with the final results tabulated in Figure 6 **Error! Reference source not found.** Respondents rated the website as easiest to use for checking their usage and bills (59%) followed by making payments (53%). The rest of the functionalities (finding contact information for customer service reps, finding energy-saving tips and other information, and learning about energy efficiency programs) garnered less than 50% of respondents saying those functionalities were very or extremely easy to use.

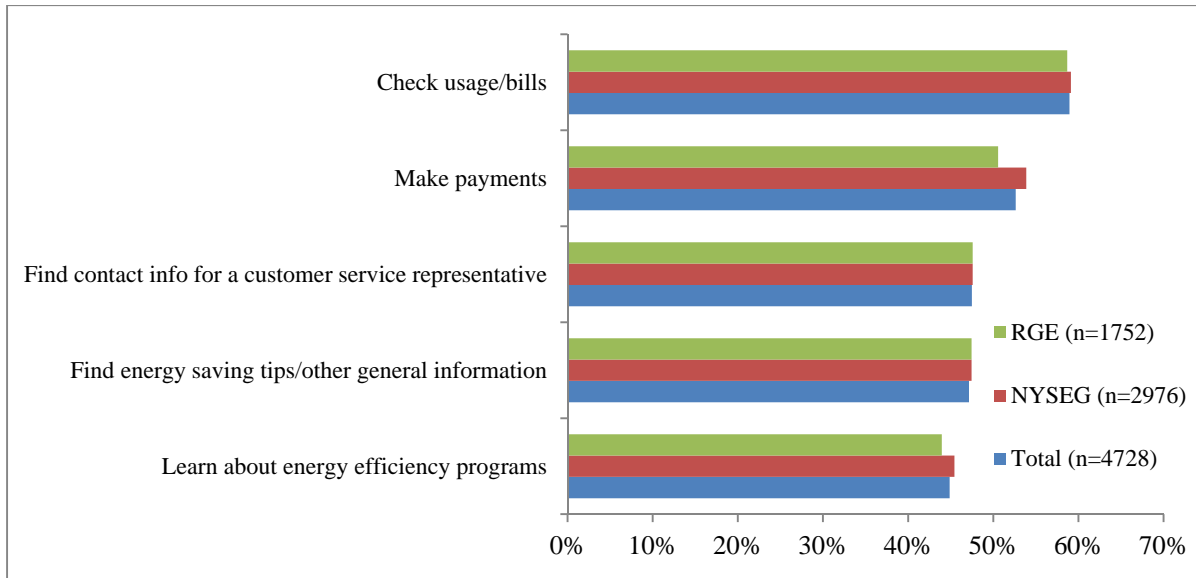


Figure 6: Percent Stating Very/Extremely Easy to Use on General Utility Website *Source: DNV GL*

Respondents were asked to compare the general utility website with their bank or credit card website (Table 6). About one-fifth said the utility website is worse than their bank or credit card website on navigability, functionality, and design, but the overwhelming majority said the websites were about the same. About 7% said the utility website was better. While utility websites seem to compare favorably on functionalities relative to a bank/credit card website, only a small segment of customers actually using the website points to a lack of compelling reasons for the majority to do so.

For most participants the engagement is perfunctory and/or transactional rather than proactive and persistent. This combined with similar findings discussed earlier on customer use of the Energy Saver Program site point to an inability to draw customers to the website and use it effectively as a channel for communication. For an opt-in program that delivered rewards through online redemption of points, this lack of engagement with the program website and the general utility website is a barrier to program performance.

Table 6- General Utility Website Compared to Bank/Credit Card Website *Source: DNV GL*

Utility website compared to bank/credit card site (n=4250)	Better	Same	Worse
Navigability	7%	74%	19%
Functionality	6%	76%	18%
Design	7%	75%	18%

Customer Readiness for Future Programs

As utilities move to programs that provide customers with real-time information on their usage, share information on outages and estimated restoration times, provide price alerts etc., the ability to communicate dynamically and through multiple channels, including mobile, becomes an imperative. The majority of respondents were in a position to receive information on their

phones – 79% said they used their cell phone to send/receive text messages and 85% of those who used their phones to send/receive texts (or 67% of respondents overall) said their cell phone was a smartphone. However, respondents were less enthusiastic about receiving communications from their utility with fewer than half stating they were either “very” or “extremely” interested in receiving communication on new energy efficiency programs or information and tips on energy-saving activities or appliances, as shown in Table 7.

It is likely that this proportion of disinterested customers is actually much larger in the general population as the following is amongst motivated customers who opted in to an energy efficiency program. This is an important finding regarding performance on the Energy Saver program and customer readiness for future programs and the challenge remains for the utilities to communicate compelling reasons for customers to receive outreach – something that really matters to them.

Table 7- Interest in Receiving Communication from Utility *Source: DNV GL*

Communication from utility	Total (n=5400)	NYSEG (n=3381)	RG&E (n=2019)
Information and tips on energy-saving activities or appliances	38%	39%	36%
New energy efficiency programs	45%	46%	44%

Conclusions

This process evaluation shows that, while some participants stated that their monthly bill was reduced as a result of program participation, the majority of customers did not perceive any change in their monthly bills. This is corroborated by our parallel impact evaluation which revealed that the Energy Saver Program underperformed with respect to actual savings achieved by program participants. This research comprehensively examined possible factors that could have an impact on program performance such as customer satisfaction, interest, engagement, elements of program design and website design.

Our research indicates that a combination of the following factors could have impacted Energy Saver program performance:

- Although all participants opted in to the program, nearly half did not express a high level of interest in the program and two-fifths did not indicate a high level of satisfaction.
- Engagement as measured by interaction with the program website to pledge energy saving actions is poor, with less than one-sixths indicating that they did so.
- While over half of the participants indicate satisfaction with the mechanics of point redemption, an analysis of the verbatim comments indicates that respondents indicate room for improvement in the type of rewards offered and life of the points which could translate into a negative impact on the program results given that rewards were the key and only mechanism to drive behavior change on this program.
- Over two-fifths of respondents self-reported changes in bills that were not aligned with actual levels of electricity consumption, pointing to a need for improved and real-time feedback to provide an accurate picture of consumption. Tailoring energy

saving tips and recommendations to advanced customers and engaging them beyond the low-hanging fruit of energy efficiency will ensure that this segment continues to reap savings.

Having an understanding of not only how program participants prefer to interact with the program website as well as the way they perceive the level of savings provides an insight into opportunities for education and further engagement into future programs. That nearly half of the website visitors were looking for energy savings tips demonstrates that they were motivated to increase their energy savings. However, the fact that most of the participants logged into the website a few times annually or only at the beginning of the program indicates that the information provided was not necessarily compelling enough to warrant repeat visits and increased engagement. That the participants had already shown their interest in saving energy by opting in to the program, but became less satisfied and engaged over time shows that they may require more specific feedback from the program about their usage and energy savings activities. This can then be applied to the general population as a means to broaden program engagement and increase interest overall.

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