

# Energy Saver Program Process Evaluation

New York State Electric & Gas and Rochester Gas and Electric

**Date:** March 8, 2016



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# 1 EXECUTIVE SUMMARY

This section contains a summary of more detailed findings found elsewhere in this report.

## 1.1 Introduction

This report contains 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 provided tips and information to participants for achieving energy savings with incentives such as coupons and gift cards. The program ran from February 2013 to April 2014.

This report contains 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 behavioural 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. All residential customers were targeted for the program through bill inserts. Customers were also targeted through e-mails sent to RG&E employee's and letters mailed to residential customers identified by C3 Energy's billing review. Customers signed up through a website titled "RG&EEnergySaver.com" and were instructed through the sign-up process. Customers who signed up were required to provide email addresses. Customers received nominal rewards for actual energy savings. The program ran from February 2013 to April 2014 and included 27,924 participants from both Companies combined. The total expenditures for the program were approximately \$1.1 million.

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.

Findings from the Energy Saver Survey, a survey of participants in this program, make up the bulk of this report. This survey uncovers the motivators of participation and provides an understanding of the relationship between specific program elements such as rewards with the level of customer engagement. In addition to these survey results, this report also brings together program participation data from C3, the program implementer, as well as other utility customer data.



## 1.2 Key Themes and Recommendations from Participant Survey

The Energy Saver Program concluded in 2014 and it is unlikely that NYSEG and RG&E will continue with the same program. An impact evaluation conducted in parallel to this process evaluation reveals that the program underperformed and did not yield the level of savings expected. This research sheds light on the areas for improvement and those that can be capitalized on when designing customer programs in the future. Findings and recommendations herein should be taken in the larger context and looking forward to other programs where these insights into the customer base will be useful.

We found considerable evidence that the Energy Savers program had influenced participant decision-making related to adoption of energy saving habits with nearly two-thirds of all respondents stating that it did. Program impact on purchase of energy using equipment is relatively lower with two-fifths of all respondents stating that it did. We followed up with those who said the program influenced their adoption of energy-saving habits by asking what habits they adopted related to lighting, HVAC, and others (such as dishwasher, laundry, electronics, etc.). The top five habits adopted are as shown below:

- Turning lights off more often when not needed – 82%
- Heating less when no one is home – 62%
- Using cold water for laundry load – 56%
- Doing only full loads of laundry – 55%
- Lowering winter set points – 54%

While program satisfaction levels were higher for the initial program activities such as enrollment and program information, they were significantly lower for later program activities such as reward redemption. Given that the Energy Saver program used incentives as the key motivator, respondents seem to indicate that they found that the program does not live up to that promise. Additionally, over half the respondents did not perceive a change in their monthly bills as a result of participating in the program.

The key themes and DNV GL's recommendations stemming from our survey findings are summarized below (Figure 1). More detail on these findings can be found in [Chapter 4](#) of this report.

**Figure 1- Key Themes and Recommendations**

Key Theme	Recommendation
<u>RG&amp;E customers have greater potential for participation in this program than NYSEG customers</u>	A significant segment of NYSEG customers could benefit from programs targeting those with room air-conditioners or room heating in a more significant way than was done in the Energy Saver program.
<u>“Money talks”: While care for the environment is a motivation for program participation, it is a secondary motivation compared to direct financial incentives.</u>	Ensure program materials stress WIIFM – what’s in it for me.
<u>Satisfaction with the program declines as participants move through the participation activities</u>	Website and any customer outreach needs to do more to retain the initial interest customers had when signing up.  Ensure that the program promise from the original marketing materials is carried through to the website. Including testimonials or case studies on the website of happy participants who earned points and realized savings through the program could help to keep participants engaged.
<u>Customer perceived communication gaps result in lost opportunities for increased engagement and improved performance</u>	Program design should allow customers to choose from a menu of channel choices such as email, text, traditional mail etc. and frequency choices such as daily, weekly, fortnightly, and monthly at the time of enrolling in the program ensuring that communication is tailored to customer preferences and is more effective.
<u>Most participants did not notice a change to their monthly bills. Additional program engagement had a marginal but not statistically significant effect on self-reported bill savings.</u>	Cull ineffective recommendations from the program materials. Help customers understand that total bills can be affected by other factors such as the weather, so their bill could still be lower than it would have been without their actions.

**Figure 2 Continued-Key Themes and Recommendations**

Key Theme	Recommendation
<p><a href="#"><u>Participation in other RG&amp;E/NYSEG energy efficiency (EE) programs acts as a multiplier for enhanced program performance on the Energy Saver Program</u></a></p>	<p>Cross-sell energy efficiency programs to participants in other RG&amp;E/NYSEG EE programs. They represent an attractive target and show improved performance relative to other participants.</p> <p>The driving force underlying participation could be explained by attitudes towards energy efficiency amongst segments that could be described as “Green Champions” or “Savings Seekers”. Customer data should reflect past participation and outreach can use this advantageously.</p>
<p><a href="#"><u>Pledges indicate a reluctance to spend money or be inconvenienced by program activities</u></a></p>	<p>Focus the program on fewer, more effective actions. Encourage low or no cost measures that correspond to high energy savings such as use of energy saving showerheads when the water is heated by electricity. Funnel participants to other rebate programs for higher cost actions. Provide information about typical savings or payback periods for the various actions.</p>
<p><a href="#"><u>Engagement with the program and general utility websites is low; customers don’t have much reason to visit the sites other than to get information related to their bills</u></a></p>	<p>If utility websites are to be thought of as more than another vector for paying bills, integrating behavior modification programs with direct feedback which provides “real-time” premise level energy usage information could lead to greater savings and greater engagement.</p>
<p><a href="#"><u>Customers have technological capability for greater engagement from the utilities, but little motivation</u></a></p>	<p>Utilities face the dilemma of engaging a customer base that feels entitled to the utilities’ product and whose vast majority of interactions with the utility are of a negative nature (pay bills or report outages). The utilities need to come up with a positive reason for customers to receive outreach – something that really matters to them.</p>

## 2 INTRODUCTION AND SCOPE

This report contains 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 evaluation covers the 2013-2014 program periods.

A key objective of this evaluation is to understand the effectiveness of the Energy Saver Program as a portfolio option for RG&E and NYSEG. While the historical consumption data analysis provides the bottom line estimate of savings generated by the program, it does not provide insight into the customer experience in the Energy Saver Program or what could have contributed to savings. In order to capture these insights,

the Energy Saver Survey has two separate areas for inquiry: The customer experience of the program and the customers' energy savings activities related to the program.

The Energy Saver Survey uncovers the motivators of participation and provides an understanding of the relationship between specific program elements such as rewards with the level of customer engagement. While the survey data informs the bulk of the findings presented in this report, we bring together participant billing data, program participation data from C3, and other utility customer data for additional insight into a heterogeneous customer base. The Energy Saver Program concluded in 2014 and it is unlikely that NYSEG and RG&E will continue with the same program. Findings and recommendations herein should be taken in the larger context and looking forward to other programs where these insights into the customer base will be useful.

### 3 SURVEY 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 e-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 odds of winning were 1:200. 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. All participants in the program were required to provide e-mail addresses. A total of 27 gift cards were issued to survey participants. Respondents were deemed eligible to take the survey if they were able to recall participation in the Energy Saver Program. 72% of all respondents were able to recall participation in the Energy saver program and proceeded to complete the survey. This research was conducted as a web survey by DNV GL and the response rate for the survey was 19% (Table 1).

**Table 1- Energy Saver Survey Sample Disposition**

<b>Description</b>	<b>Number</b>	<b>Percent</b>
Original sample frame – all Energy Saver program participants	27,924	100%
<b>(1.0) Interviews - – Those who responded to the survey (partial and complete responses)</b>	7,458	27%
<b>(1.1) Complete Interviews– Eligible respondents who completed the entire survey</b>	5,400	19%

While program participants in both territories were asked the same questions, the survey was customized to reflect the right utility for customers in each territory. The response rate was marginally higher in RG&E territory relative to NYSEG (Table 2).

**Table 2- Energy Saver Survey Disposition by Utility**

<b>Survey Group</b>	<b>Population</b>	<b>Sample completes</b>	<b>Response Rate</b>
NYSEG	16,490	3,381	17%
RG&E	11,434	2,019	21%
<b>Total</b>	<b>27,924</b>	<b>5,400</b>	<b>19%</b>

## 4 FINDINGS FROM PARTICIPANT CUSTOMER SURVEYS

The Energy Saver Program provided tips and information to participants for achieving energy savings with incentives such as coupons and gift cards. Participants opted-in to the program and the program ran from February 2013 to April 2014. This section contains a summary of findings from the participating customer surveys.

### 4.1 Survey Overview

The survey contained questions on the following topics:

- Demographics and dwelling characteristics
- Heating, cooling, and appliance characteristics
- Motivators of program participation
- Program satisfaction and interest
- Program influence on energy saving habits, purchase of equipment, and monthly bills
- Use of the Energy Saver program website
- Use of the general NYSEG and RG&E website
- Customer readiness for future programs

### 4.2 Demographics – Participant and Dwelling Characteristics

We asked program participants a number of demographic questions about their housing characteristics. Household composition, building vintage, and dwelling size are factors that influence energy consumption and in this section we characterize the market along these key demographic lines. Table 3 summarizes their responses to these questions. Some interesting findings included:

- **Household size:** Over two-fifths (44%) of participating households reported having 3 to 5 occupants. Households with higher numbers of occupants typically have higher consumption.
- **Occupants' Age:** Participants reported that that nearly half of the occupants in the participant households were of working age with smaller proportions of occupants being children or seniors. Households with a higher proportion of seniors and infants could have higher energy consumption due to increased need for heating/cooling and/or more time spent at home.

- **House Characteristics:** Two-thirds of the participants reported having homes of 2000 square feet or less. Forty percent of them also said that their homes had been built before 1960. Older buildings can provide greater opportunity for efficiency upgrades.

**Table 3- Demographics – Household Size, Household Composition, and Dwelling Characteristics**

Category	Total across NYSEG and RG&E				
Household Size	Single-person Household		Two-person Household	3 person Household	4 persons or more
	13%		41%	28%	18%
Household Composition	Less than 5 years	5 to 18 years	19 to 64 years	65 years and over	
	12%	16%	49%	23%	
House Characteristics	House Built After 1980		House Built 1979-1960	House Built Before 1960	Don't Know
	31%		24%	42%	3%
	2,000 sq. feet or less		More than 2,000 sq. feet	Don't know	
	67%		27%	5%	

There are statistically significant differences between utilities along the following demographic lines (Table 4):

- **Education:** There is a significantly higher prevalence of respondents with a four year college degree or higher in RG&E compared to NYSEG at 66% versus 59%.
- **Income:** NYSEG respondents had 30% with income under \$50,000 vs 25% in RG&E. There is a significantly higher prevalence of respondents with a relatively lower level of income in NYSEG vs RG&E. Higher income brackets are comparable in both, although a significantly higher percent of RG&E respondents prefer not to answer.

**Table 4- Demographics – Education, Income**

<b>Category</b>	<b>NYSEG (n=3381)</b>			<b>RG&amp;E (n=2019)</b>		
<b>Education</b>	<b>High school degree, some college, or less</b>	<b>Four year college degree</b>	<b>Graduate or some grad school</b>	<b>High school degree, some college, or less</b>	<b>Four year college degree</b>	<b>Graduate or some grad school</b>
	39%*	28%‡	31%	33%*	33%‡	33%
<b>Household Income</b>	<b>&lt;\$50,000 Annual Income</b>	<b>&gt;=\$50,000 Annual income</b>	<b>Prefer not answer</b>	<b>&lt;\$50,000 Annual Income</b>	<b>&gt;=\$50,000 Annual income</b>	<b>Prefer not answer</b>
	30%◊	49%	21%®	25%◊	52%	24%®

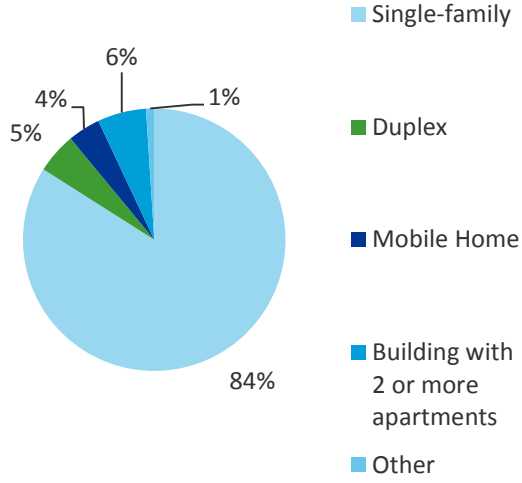
\* Significant differences between the two utilities across the specific response category. (These symbols also indicate significant difference: ‡ ◊ ®)

Figure 3 illustrates the breakdown of housing types for RG&E and NYSEG. Both RG&E and NYSEG are dominated by single-family properties, with at least 80% of respondents living in these types of owned properties.

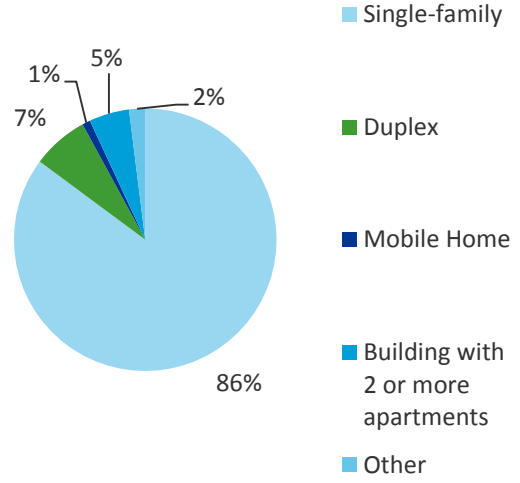
An interesting difference between the housing mixes which the RG&E and NYSEG participants reported is the presence of mobile homes. Four percent of the NYSEG survey respondents said they had mobile homes compared to only 1% of the RG&E respondents. Since mobile homes are normally associated with lower income families, this fact aligns with the larger proportion of lower family incomes in NYSEG compared to RG&E as shown in Table 4 above. This also aligns with the urban versus rural character of the RG&E and NYSEG service areas respectively.

Figure 3- Home Type by Utility

NYSEG



RGE

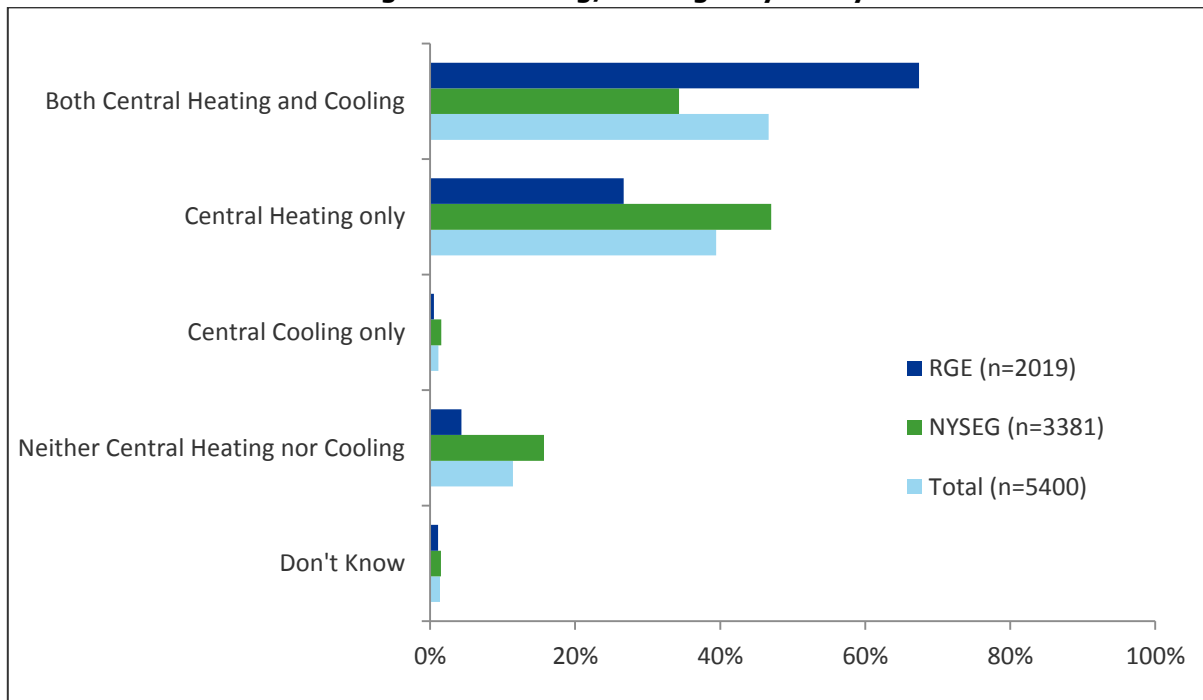


### 4.3 Heating, Cooling and Appliance Characteristics

The Department of Energy estimates that heating and cooling account for about 48% of the energy use in a typical U.S. home, making it the largest energy expense for most homes. In order to better understand this portion of home energy consumption, the survey asked questions related to the heating, cooling and appliance use in the participant's home.

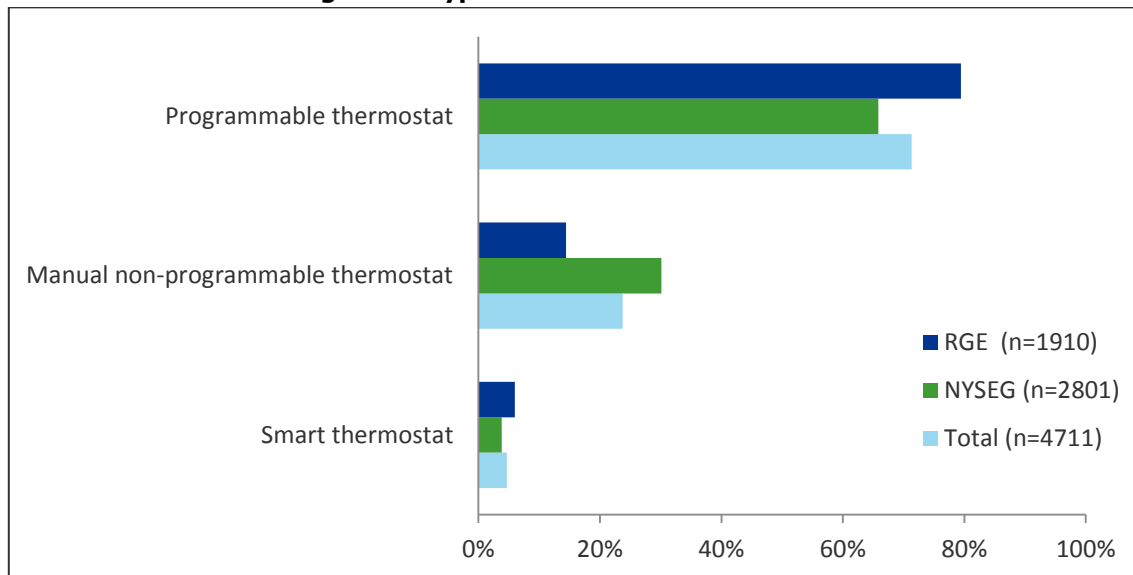
Figure 4 provides information about the heating and cooling systems which the participants reported having. The majority of RG&E respondents (67%) stated that they have both central heating and cooling, while the largest share of NYSEG respondents (7%) said that they just had central heating. Since central cooling systems are more expensive to purchase and operate, the lower incomes reported by the NYSEG respondents may help explain why they are less likely to report having central cooling.

**Figure 4- Heating/Cooling – By Utility**



The survey asked the participants what kind of thermostats they had. Figure 5 shows that the large majority of respondents from both utility service territories said that they had conventional programmable thermostats. RGE has a significantly higher prevalence of respondents with programmable thermostats compared to NYSEG at 79% versus 66%. Smart thermostats appear to be making an entry into the market as well, but so far percent penetration is in the single digits. Equipment such as programmable and smart thermostats facilitate greater participation since they are easier to set up to automatically achieve savings relative to manual non-programmable thermostats.

**Figure 5- Type of Thermostat in the Home**



We examined how the types of reported thermostats varied by the respondents’ home type. Table 5 shows that households in multifamily properties and mobile homes had a significantly higher proportion of manual thermostats and a lower proportion of programmable thermostats compared to single family and duplex homes.

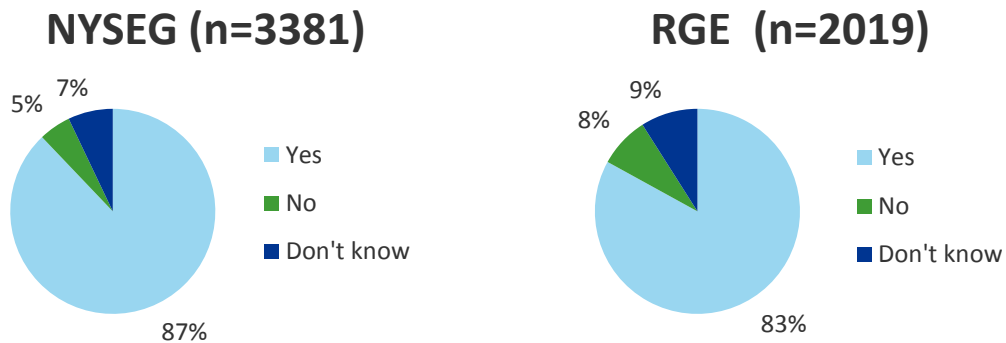
There are a number of explanations for this. First, in the multifamily sector landlords usually make the equipment purchase decisions but do not pay the tenant’s energy bills (the “split incentive” barrier) and therefore have less incentive to invest in energy-efficient equipment. Second, tenants are unlikely to spend their own money on a programmable thermostat because unlike an LED light bulb, for example, it is not easily transportable. Finally, residents in both multifamily properties and mobile homes tend to have lower incomes than those in single-family homes and therefore have less discretionary income to get their thermostats upgraded.

**Table 5- Thermostat by Home Type**

Type of Thermostat	Single family (n=4039)	Duplex (n=255)	Building with 2 or more apartments (n=232)	Mobile home (n=128)
<b>Manual</b>	21%	25%	53%	45%
<b>Programmable</b>	73%	70%	45%	52%
<b>Smart</b>	5%	5%	1%	2%

The survey asked the participants whether they had Energy Star appliances. Figure 6 shows that the large majority of both RG&E and NYSEG respondents said that they have such appliances.

**Figure 6- Prevalence of Energy Star Appliances**

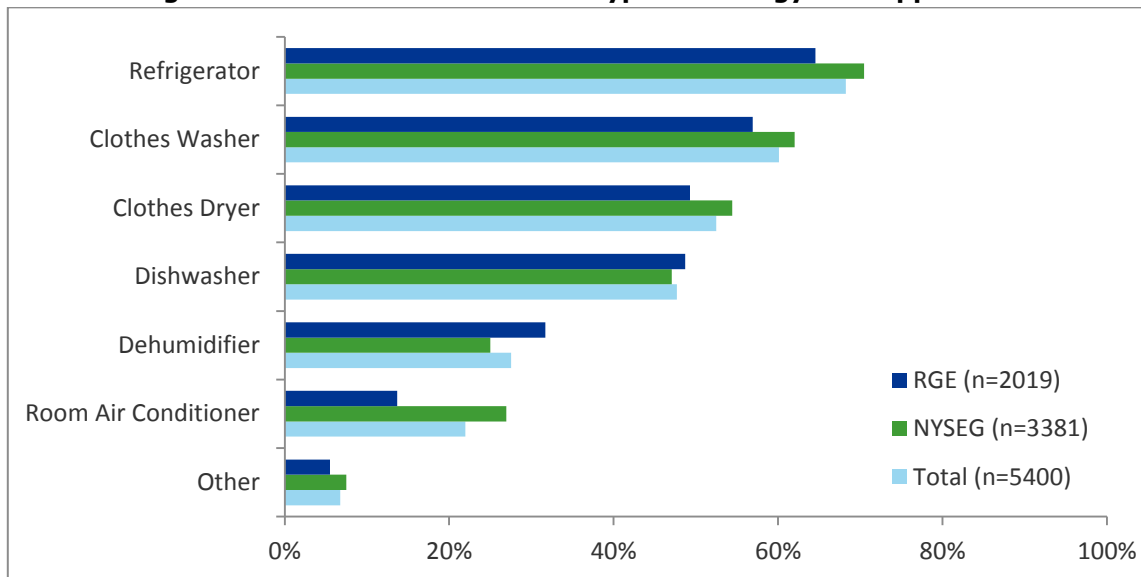


We asked those who stated that they owned Energy Star appliances about the different types of Energy Star appliances they owned. Figure 7 shows the prevalence of different types Energy Star appliances. The majority (around half or above) of those who state they have Energy Star appliances have Energy Star refrigerators, clothes washers, clothes dryers<sup>1</sup>, and dishwashers in their homes. There is a lower penetration of Energy Star dehumidifiers and room air-conditioners relative to other appliances like refrigerators, and this in turn is related to the lower prevalence of these appliances in general when compared to refrigerators which are found in almost all homes. Furthermore, there is a marginally, but significantly, higher prevalence of Energy Star appliances in NYSEG relative to RG&E in all cases except dishwashers and dehumidifiers.

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<sup>1</sup> The clothes dryer category reflects customer perception, not reality as clothes dryers have only recently been Energy Star rated and only apply to heat pump clothes dryers

**Figure 7- Prevalence of Different Types of Energy Star Appliances**

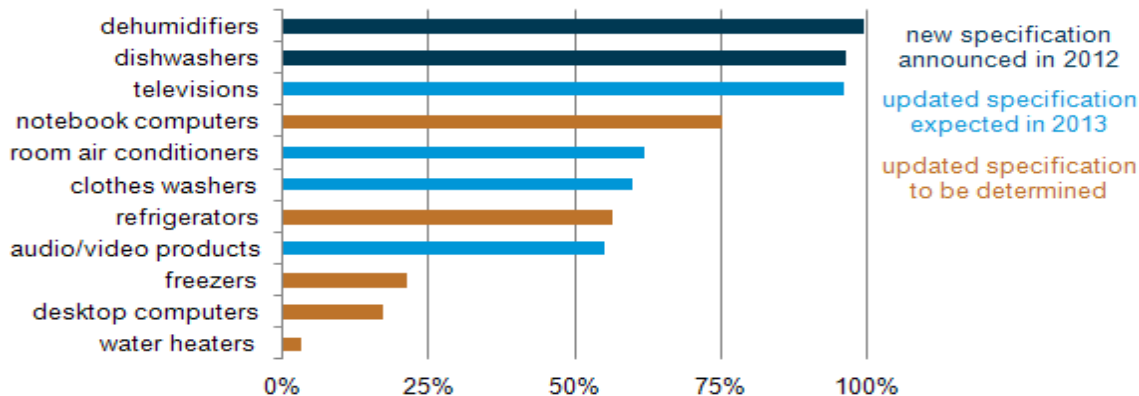


For comparison purposes, below is a market penetration graph from the Energy Information Administration.

OCTOBER 15, 2012

## Adoption of ENERGY STAR equipment varies among appliances

**Estimated market penetration of selected appliances, 2011**  
percent of units shipped



Source: U.S. Energy Information Administration, based on ENERGY STAR.  
Note: Product types shown are not comprehensive of the ENERGY STAR program.

## 4.4 Program Participation

This next section will focus on the how the survey respondents learned about the program and the reasons for their participation.

Figure 8 shows that 69% heard about the program through electronic channels (email and website) in NYSEG, while 72% heard through those same channels in RG&E. This is a marginal but statistically significant difference between the two utilities. The direction of the results is aligned with the higher levels of education and income.

**Figure 8- Channel through which you heard about the program**

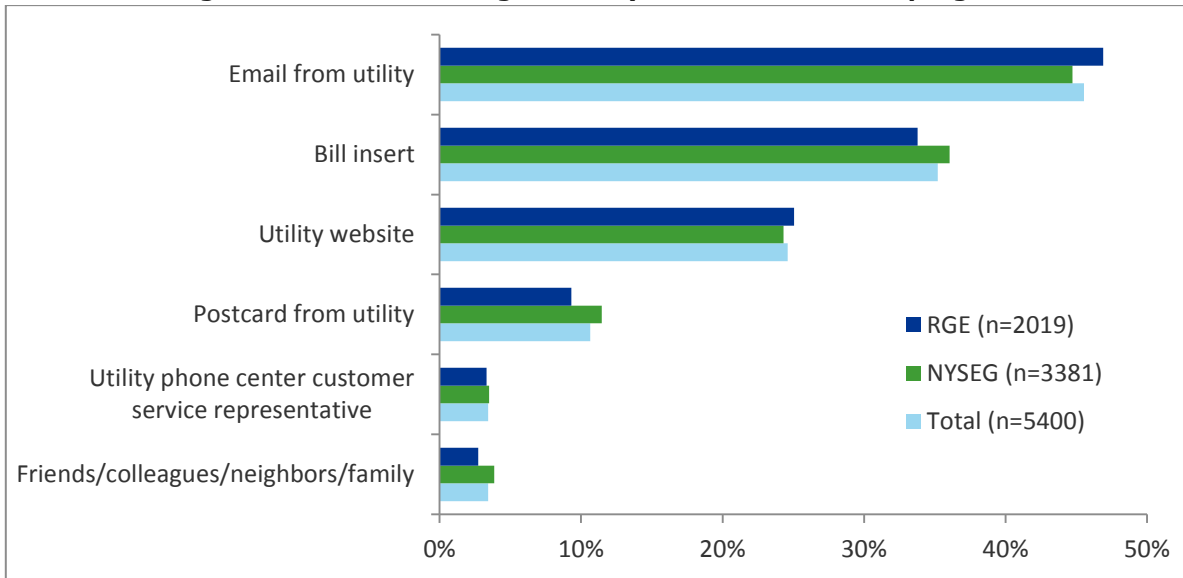
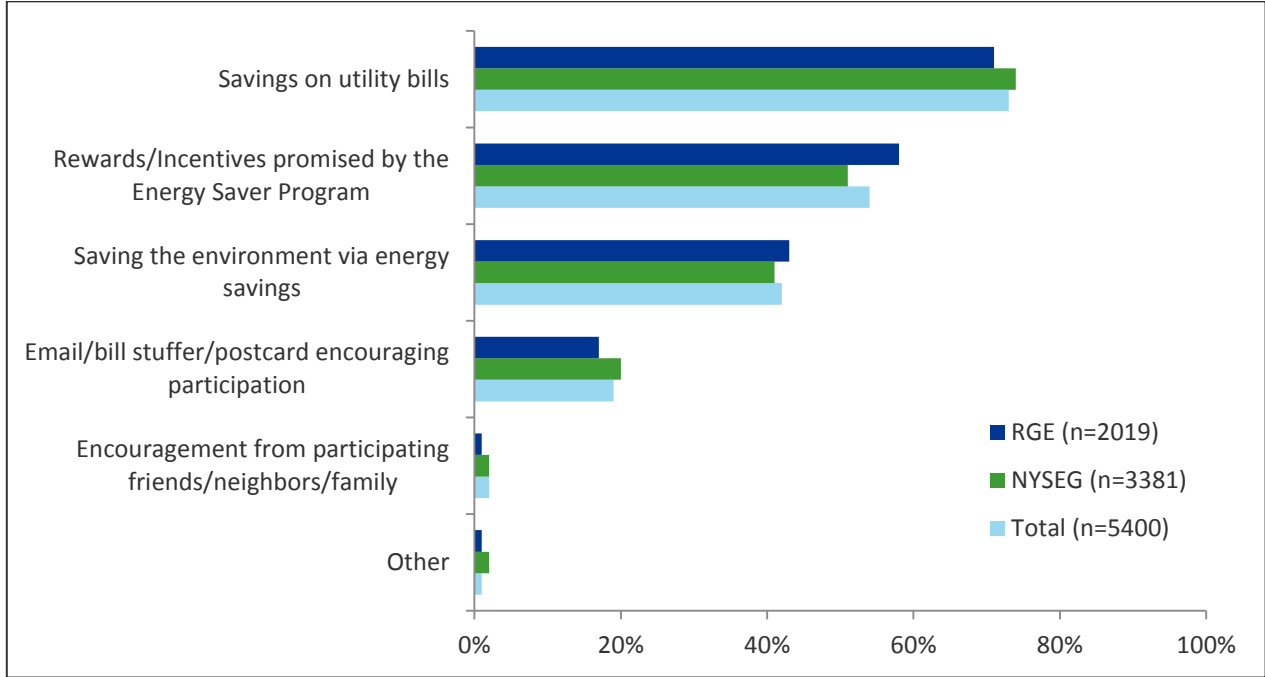


Figure 9 lays out the responses to the survey question that focused on the motivations for participation. The highest motivators are savings on bills and then rewards, while saving the environment via energy savings is the third highest motivator. NYSEG customers indicate that their participation in the program was motivated by potential savings on utility bills at a marginally higher, but statistically significant 74% relative to RG&E customers at 71%. RG&E customers indicate that their participation in the program was motivated by the rewards/incentives promised by the program at a statistically significantly higher 58% relative to NYSEG customers at 51%. There is no significant difference by utility on proportion of customers who cite saving the environment as a motivator to join the program. NYSEG customers are marginally, but statistically significantly more amenable to suggestion than RG&E customers to participate in the program by marketing or by those in their social networks at 20% versus 17% and 2% versus 1% respectively.

**Figure 9- Motivation to Participate in the Energy Saver Program**

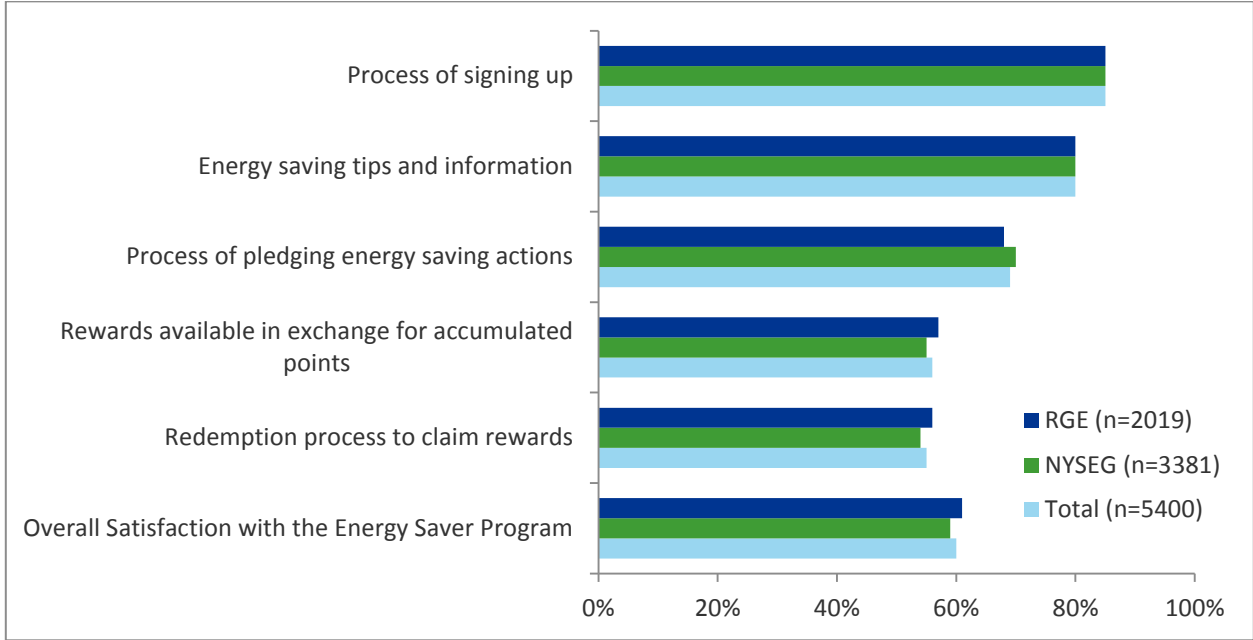


### 4.5 Program Satisfaction and Interest

The 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.”

Figure 10 shows that respondents had higher levels of satisfaction (satisfaction ratings of 4 or 5 on the 5 point scale) for the initial program activities such as enrolment 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. While we shed some more light on this below (Table 7), program participants tell us clearly that they would like to see “...real, substantial rewards, like cold hard cash or a credit on their utility bill.” There are no significant differences in these satisfaction ratings by utility.

**Figure 10- Satisfaction Ratings for NYSEG/RG&E Energy Saver Program**



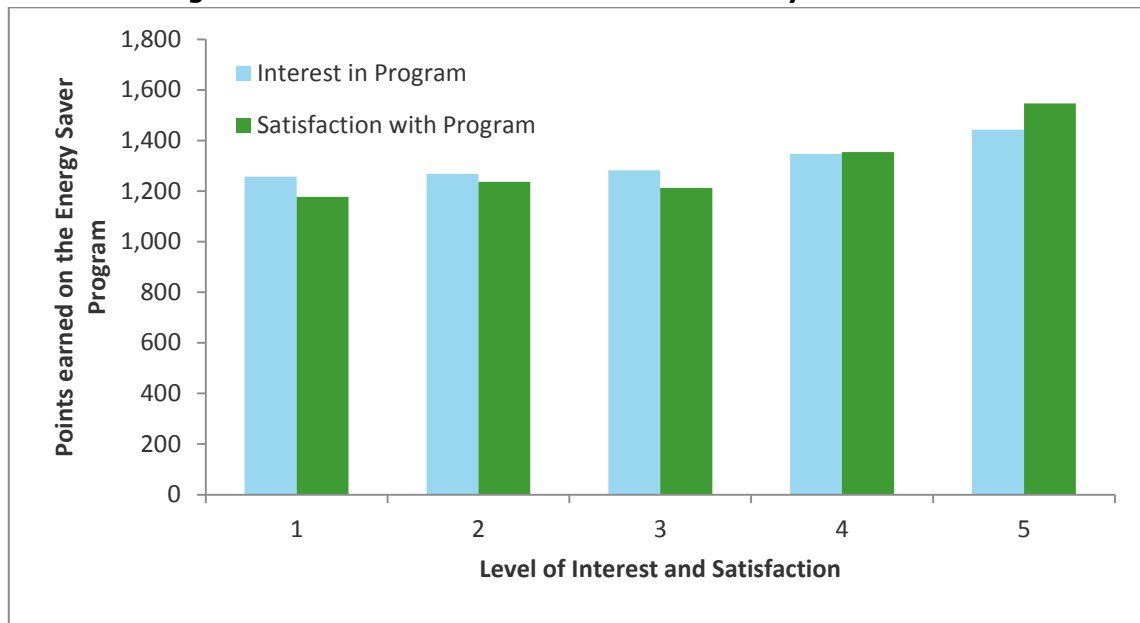
We asked the participants about their level of interest in the program using a five point scale where 5 indicated "Extremely Interested" and 1 equalled "Not at all Interested". Table 6 shows the level of interest in the Energy Saver Program. About half (52%) stated that they were extremely or very interested in the Energy Saver program, which corresponds to a score of 4 or 5 on a 5-point scale.

**Table 6- Level of Interest in Energy Saver Program**

Level of interest in the Energy Saver Program	Total (n=5400)	NYSEG (n=3381)	RG&E (n=2019)
<b>Extremely/Very Interested</b>	52%	52%	52%

On average, higher interest in the program and higher satisfaction with the program corresponds to higher points accumulated in the program. Figure 11 summarizes the points earned in the Energy Saver program at varying levels of interest in and satisfaction with the program. We note an upward trend in participant interest and satisfaction as the number of points earned in the Energy Saver Program increases. It should be noted that the causality could go either direction. It could be that participants who are more satisfied increase their participation. However, it could also be that participation 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 participation.

**Figure 11- Level of Interest and Satisfaction by Points Earned**



When we reviewed these numbers, we wanted to further explore the reasons behind the “low interest” for participants. Table 7 excerpts some customer feedback that can provide some insight on areas of improvement to focus on. These areas of improvement were derived from the open-ended statements made by respondents who rated their interest in the program as very low, either a 1 or 2, and were subsequently asked for their suggestions on what RG&E/NYSEG could have done to increase their interest in the Energy Saver program. These are a sample of quotes to accompany these suggested areas to illustrate the feedback that was provided through these surveys.

**Table 7- Ideas for Increasing Interest in the Program from Participants with Low Levels of Interest in the Program**

Areas of improvement	Illustrative Quotes from Participants with Low Levels of Interest in the Program
<p><b>Rewards</b></p> <ul style="list-style-type: none"> <li>Participants indicated they were interested in reduced energy bills, rebates and dollar incentives.</li> </ul>	<ul style="list-style-type: none"> <li>“Give me real, substantial rewards, like a percent off my RG&amp;E bill or cold hard cash!”</li> <li>“Better rewards that are relevant to me and easy to redeem”</li> <li>“Never turned in rewards, not enough info from program to know when and how to turn in rewards.”</li> </ul>
<p><b>Communication- about program itself, reward programs, reminders, updates</b></p> <ul style="list-style-type: none"> <li>Info about program itself</li> <li>Clear information about accumulating points and rewards program</li> <li>Email reminders that they joined the program</li> <li>Better feedback on energy saving progress (send emails showing progress)</li> </ul>	<ul style="list-style-type: none"> <li>“I only vaguely remember signing up (or did I?). I don't remember receiving any information or points, let alone rewards.”</li> <li>“I didn't understand the benefit to me. It seemed like after I signed up there wasn't a lot of clear, customized information and I don't recall any incentives or savings.”</li> <li>“I did not receive much from RG&amp;E throughout the year to remind me I am in the program so I didn't actively participate. I would have checked the website more frequently if there were monthly reminders.”</li> </ul>
<p><b>Broader audience</b></p> <ul style="list-style-type: none"> <li>Renters/apartment dwellers feeling left out</li> <li>Advanced participants see the program as basic upgrades which they've already done, so they feel left out</li> </ul>	<ul style="list-style-type: none"> <li>“I rent in an apartment building so what I can do is limited somewhat. If RG&amp;E wants to increase my interest then including things that pertain to me as a renter would be appealing.”</li> <li>“Since I had already taken the described steps to reduce my energy there was little I could do to save more energy.”</li> <li>“The tips that I received were nothing new. I guess that something more up to date or more ambitious would be more interesting.”</li> <li>“Prior to participating in the program our household had already taken steps to</li> </ul>

	<p>reduce our energy consumption. So our baseline was already low. To earn any rewards we would have had to use even less than the low level we already used. There wasn't any real way without spending big money to reduce our energy consumption further. I didn't feel like this program recognized the steps we had already taken by looking further back into our energy use history."</p>
<p><b>Increase motivation</b></p> <ul style="list-style-type: none"> <li>• Status updates</li> <li>• Information to spur competition</li> <li>• Mobile app option (only one mention of this)</li> </ul>	<ul style="list-style-type: none"> <li>• "A status report on how I am benefitting from the program and how I can improve"</li> <li>• "Maybe a fun "standings" chart where people can opt-in and "compete" with each other on energy savings... if that was in there, I apologize for not finding it :)"</li> </ul>

Respondents indicated 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 Opower’s Home Energy Report.

### 4.6 Cross Program Participation

DNV GL examined the impact of cross program participation on performance in the Energy Saver Program. We obtained customer data from NYSEG and RG&E that indicated what other EE programs<sup>2</sup> the respondents had participated in. 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 amongst those who had participated in one and two or more programs relative to those who had participated in no other programs (Table 8). 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 actions pledged, points earned, number of instances points earned and redeemed, and points redeemed.

While the trend is not statistically significant for all metrics, there is directional evidence that cross-selling energy efficiency to participants in other RG&E/NYSEG EE programs could yield increased savings. As such,

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<sup>2</sup> Other RG&E/NYSEG EE programs include the following: Refrigerator/Freezer Recycling Program, Residential Gas Rebate Program EEPS1, Residential Gas Rebate Program EEPS2, Multifamily Program, Showerhead/Aerator Mailing. Program periods for these other EE programs vary and while some concluded prior to the start of the Energy Saver program, some were still running during the course of the Energy Saver program and after it. Participation in other RG&E/NYSEG EE programs is as of October 2014 and as provided to DNV GL by RG&E/NYSEG.

this segment of customers that have participated in multiple EE programs represents an attractive target for new programs from NYSEG and RG&E.

**Table 8- Influence of Past Participation in Other RG&E/NYSEG EE Programs on Energy Saver Program Performance**

<b>Influence of past participation in other RG&amp;E/NYSEG EE program on Energy Saver Program performance</b>	<b>Those who participated in no other RG&amp;E/NYSEG EE programs (n=4113)</b>	<b>Those who participated in any one other RG&amp;E/NYSEG EE program (n=1015)</b>	<b>Those who participated in two or more other RG&amp;E/NYSEG EE programs (n=272)</b>
Overall Satisfaction with the Energy Saver Program	58%	63%	68%
Self-reported average reduction in monthly bill	12%	11%	13%
Number of actions pledged	15	17	19
Points Earned	1271	1501	1542
Number of instances points earned	7	9	10
Number of instances points redeemed	1	2	2
Points redeemed	510	733	833

## 4.7 Program Influence

We asked the survey participants whether they had noticed any changes in their monthly bills since they began participating in the Energy Saver program. As Figure 12 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. There were no statistically significant differences in responses between RG&E and NYSEG. 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. Estimates of reductions in bills or perceptions of changes in bills should be interpreted keeping the above factors in mind.

**Figure 12- Changes in Monthly Bills since Energy Savers Participation Began**

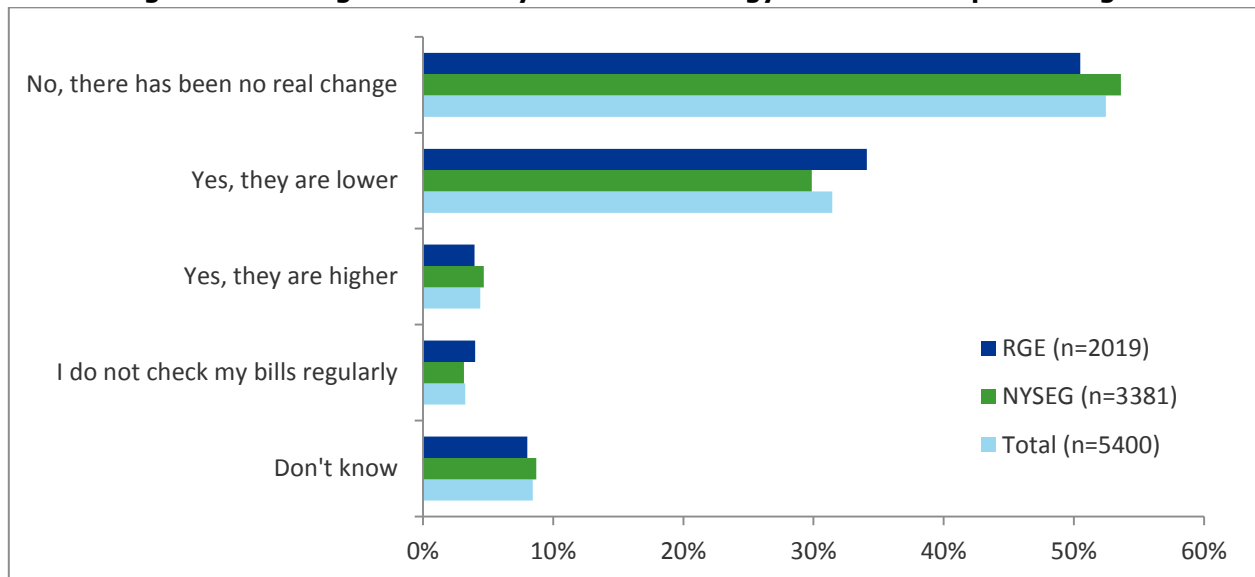


Table 9 below shows thermostat type (for those with central heating/cooling), broken out by whether respondents said their monthly bills increased or stayed the same after enrolling in the Energy Savers program and those that said their bill is now lower. One might theorize that, since programmable or smart thermostats offer more opportunities<sup>3</sup> for energy savings relative to standard thermostats, a higher proportion of these types of thermostats would be found within the group that said their bill is now lower. However, as the table shows, this was not the case.

**Table 9- Thermostat Type by Self-Reported Changes in Monthly Bills**

Thermostat type for those with central heating/cooling	Total (n=4167)	No change in bill/bill is higher (n=2669)	Bill is lower (n=1498)
Manual non-programmable thermostat	24%	24%	24%
Programmable thermostat	71%	71%	71%
Smart thermostat	5%	5%	5%
Don't Know	0%	0%	0%

<sup>3</sup> [Several studies](#) have shown that while programmable thermostats are designed to provide savings, user behavior still remains a barrier to achieving potential savings. [Some have proven the case](#) for savings with Smart Thermostats such as Nest under specific conditions. See Nos. 5 and 6 in the References section at the end of this document.

Table 10 shows customer engagement 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 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 stagnation.

**Table 10- Program Engagement by Reported Changes in Monthly Bills**

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

For respondents who said their monthly bill had gone down since they began participating in the Energy Savers program, we asked how much their average bill had gone down on a percentage basis (Table 11). The average bill reduction from these respondents was roughly 12%, with no statistically-significant difference between the utilities.

**Table 11- Average Reported Bill Reduction Since Participation Began**

	<b>Total (n=1697)</b>	<b>NYSEG (n=1010)</b>	<b>RG&amp;E (n=682)</b>
Average percent reduction in monthly bill	11.4%	12.2%	10.2%

DNV GL undertook an analysis that merged consumption<sup>4</sup> 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 households<sup>5</sup>. We classified those who achieved an actual reduction in annual consumption of 5% or more as energy savers and the rest were classified as those who did not change energy consumption or those who used more energy.

<sup>4</sup> Consumption used in this analysis refers to electricity consumption

<sup>5</sup> 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.

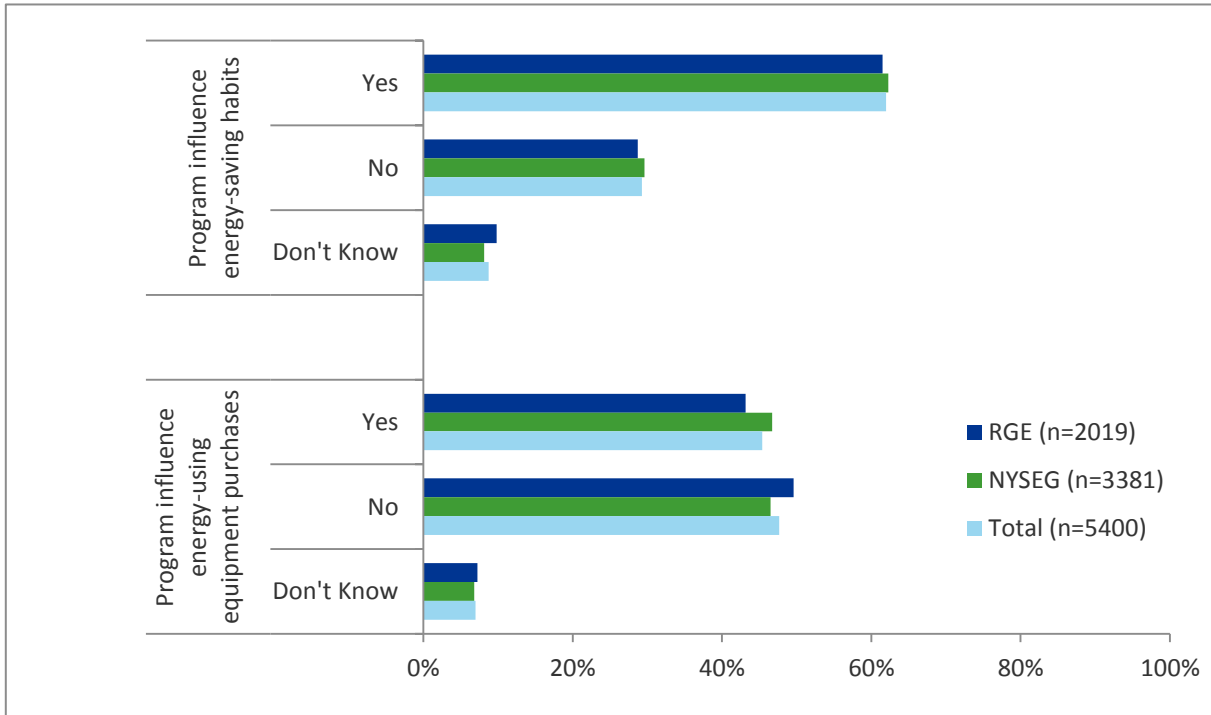
A cross tabulation of perceived bill change with the percent change in actual energy consumption reveals that around two-thirds of the participants in this analysis had false-positives – perceived that they had saved on their monthly bill when in reality their consumption increased or did not reduce significantly (Table 12). This further underscores the importance of dynamic or real-time feedback to ensure that customers have a true picture of their actual consumption and can see how it varies based on usage.

**Table 12- Reported Bill Change by Actual Change in Consumption**

Perceived bill change by change in consumption	No change in consumption/Higher consumption	Reduced consumption by 5% or more	Total
Reported no change in bill/higher bill	68%	32%	<b>1198</b>
Reported lower bill	62%	38%	<b>658</b>
<b>Total</b>	<b>1220</b>	<b>636</b>	<b>1856</b>

We found considerable evidence that the Energy Savers program had influenced participant decision-making (Figure 13). Specifically, when asked whether the program influenced them to adopt new energy-saving habits, nearly two-thirds (62% overall) of respondents said it did, with results for each utility nearly identical. When asked whether the program influenced their purchases of energy-using equipment, however, almost less than half (45% overall) said that it did. A statistically significantly higher percentage of respondents in NYSEG said the program influenced their purchases (47% vs. 43% for RG&E).

**Figure 13- Program Influence on Energy-Saving Habits and Equipment Purchases**



When we examined the overlap amongst positive responses to the questions about program influence, we found that the majority (59%) of respondents who said the program influenced their adoption of energy-saving habits also said the program influenced their energy-using equipment purchases. As Table 13 shows, this overlap was significantly higher among NYSEG participants than RG&E participants.

**Table 13- Program Influence on Purchase of Energy Using Equipment among Those Who Stated Program Influenced Adoption of Energy Saving Habits**

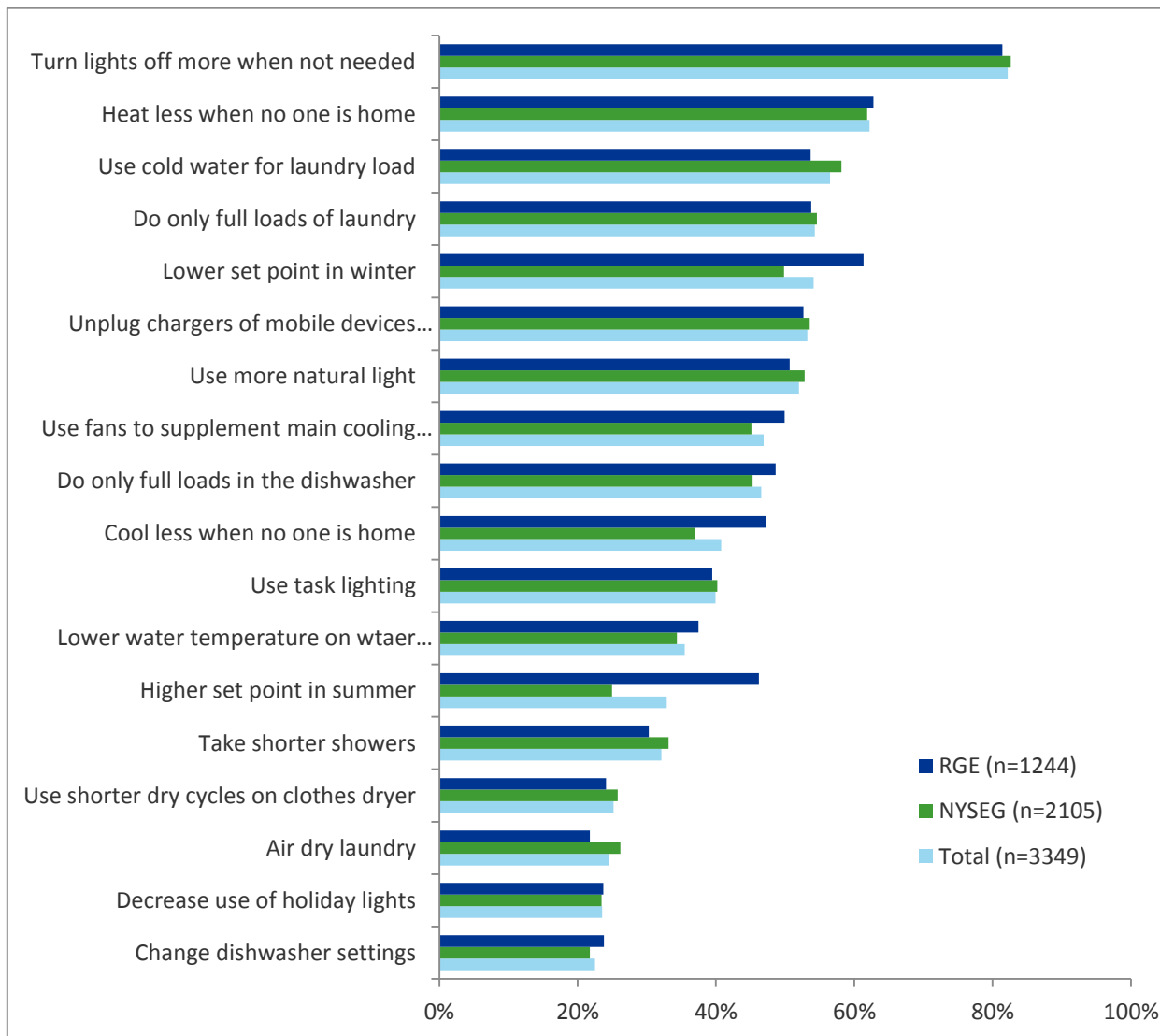
<b>Program influenced purchase of energy using equipment</b>	<b>Total (n=3349)</b>	<b>NYSEG (n=2105)</b>	<b>RG&amp;E (n=1244)</b>
Yes	59%	61%	57%
No	34%	33%	36%
Don't Know	7%	6%	7%

We followed up with those who said the program influenced their adoption of energy-saving habits by asking what habits they adopted related to lighting, HVAC, and others (such as dishwasher, laundry, electronics, etc.). Of all the possible (listed) habits, respondents on average said they adopted 24% of the lighting-related habits, 25% of the HVAC-related habits, and 15% of the “other” habits (e.g. dishwasher, laundry, electronics, etc.). Turning lights off more frequently when they are not needed is the most often mentioned at 82% of respondents who say the program influenced them to adopt new energy saving habits (Figure 14). The top five habits adopted are:

- Turning lights off more often when not needed
- Heating less when no one is home
- Using cold water for laundry load
- Doing only full loads of laundry
- Lowering winter set points

We note that while laundry related habits are two out of the top five, these do not include energy saving actions related to use of the clothes dryer. Two of the five least mentioned energy saving habits include using shorter cycles on the dryer and air drying laundry. RG&E participants indicate adoption of the habit of using a lower set-point in winter and a higher set-point in summer in greater proportions than NYSEG participants at 61% versus 50% and 46% versus 25% respectively, which in turn is related to the higher prevalence of central HVAC among RG&E participants relative to NYSEG participants at 67% versus 34%.

**Figure 14- Program Influence on Adoption of Energy Saving Habits**

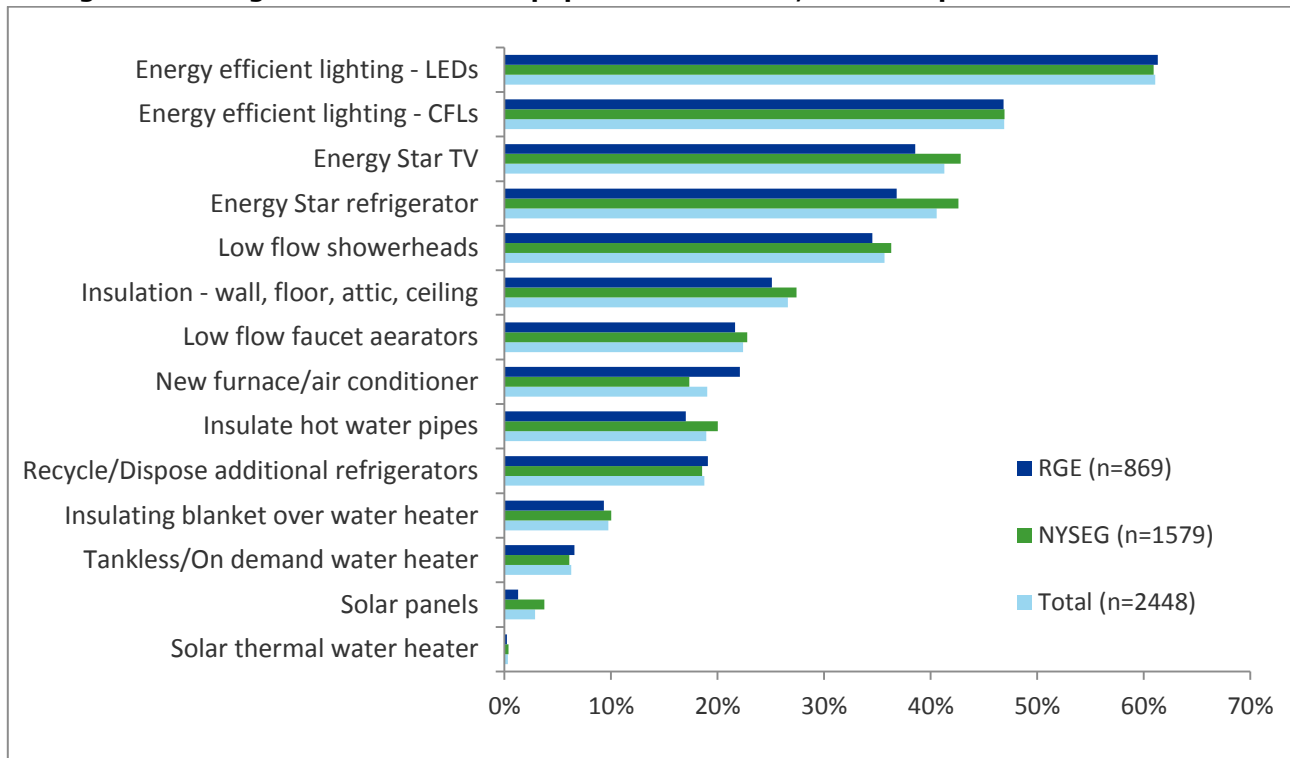


We also followed up with those who said the program influenced their purchases of energy-using equipment by asking what equipment purchases were influenced. On average, respondents undertook around one-quarter (24%) of the number of possible purchases of energy-using equipment, retrofits, or home improvements influenced by the program. There was no significant difference between the utilities on the number of program influenced purchases or measures undertaken.

Lighting upgrades influenced by the program are mentioned most often by respondents followed by purchase of energy efficient refrigerators and televisions (Figure 15). Insulation installation is mentioned by over one-quarter of all respondents who claim that the program influenced equipment purchases and home retrofits. One-fifth of all respondents whose purchases and retrofits were influenced by the program stated that they had disposed their additional refrigerator. It should be noted that the significantly higher furnace/air-conditioning upgrades among RG&E participants relative to NYSEG participants at 22% versus

17%, is in turn related to the higher prevalence of central HVAC among RG&E participants relative to NYSEG participants at 67% to 34% respectively.

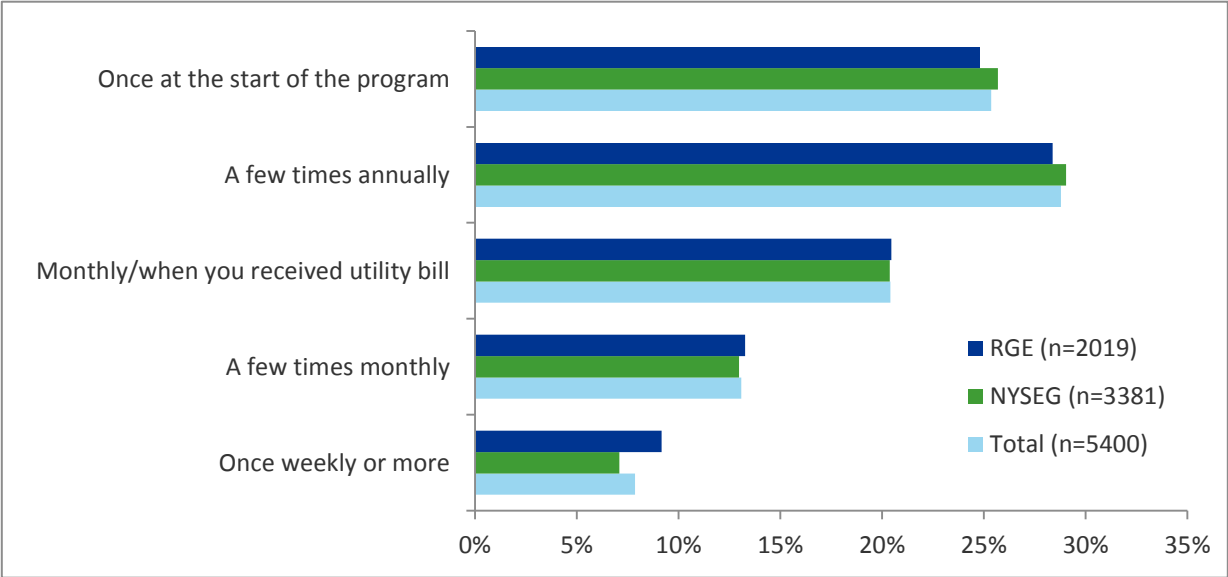
**Figure 15- Program Influence on Equipment Purchases, Home Improvements and Retrofits**



## 4.8 Customer Engagement with the Program

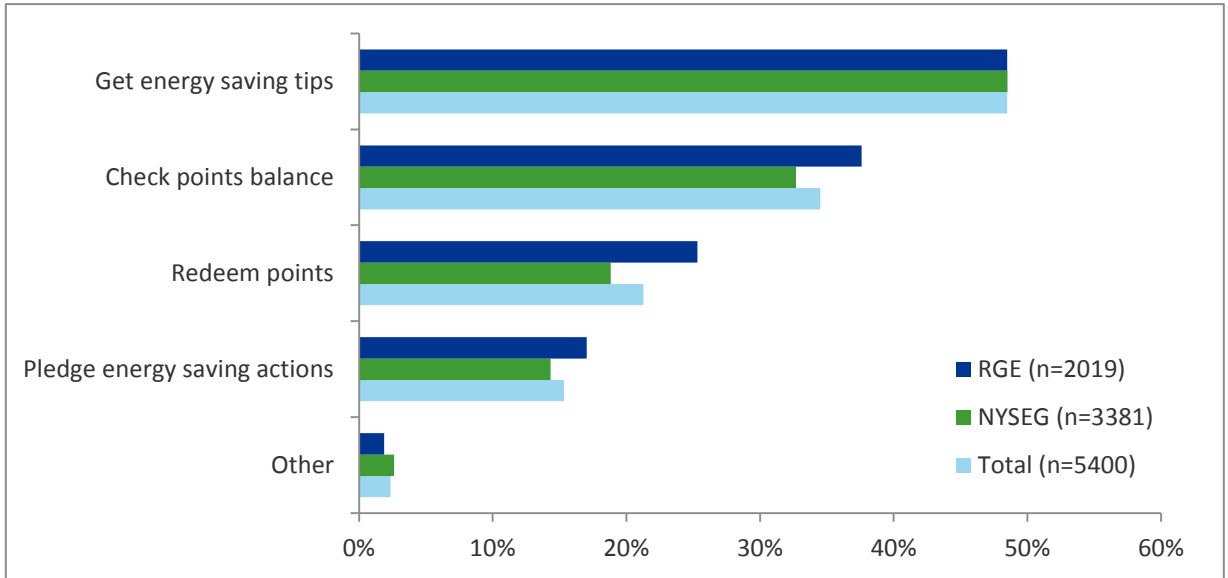
When asked how often they logged in to the Energy Saver program website, one-quarter (25%) of respondents said they logged in only once at the start of the program (Figure 16). Approximately one-third (29%) said they logged on only a few times annually, one-fifth (20%) said they logged in monthly or when they received their utility bill. Overall, these results indicate a low level of engagement.

**Figure 16- Frequency Logging in to Energy Saver Program Website**



When we asked respondents why they visited the website, nearly half (49%) said they did so to get energy-saving tips and about one-third (35%) stated that they visited the site to check their points balance. The full range of responses can be seen in Figure 17. It is worth noting that RGE respondents were more likely to say they visited the website to check their points balance, redeem their points, and to pledge energy-saving actions.

**Figure 17-Reasons for Visiting the Program Website**



The survey asked respondents how many pages on the program website they clicked through to get the information they were looking for (Table 14). The majority (57%) of respondents clicked through just 1-5 pages, 13% said they clicked through between 6 and 10 pages, and a minimal 2% said they had to click through more than 10 pages. Over one-quarter of respondents (28%) said they did not know how many screens they clicked through. There were no significant differences by utility.

**Table 14- Pages Clicked through to Find Information on Program Website**

Number of pages/screens clicked through	Total (n=3789)	NYSEG (n=2350)	RG&E (n=1439)
<b>1 to 5</b>	57%	58%	56%
<b>6 to 10</b>	13%	12%	13%
<b>More than 10</b>	2%	2%	2%
<b>Don't know</b>	28%	28%	29%

## 4.9 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 sometime. There is no significant difference by customers in NYSEG versus RG&E.

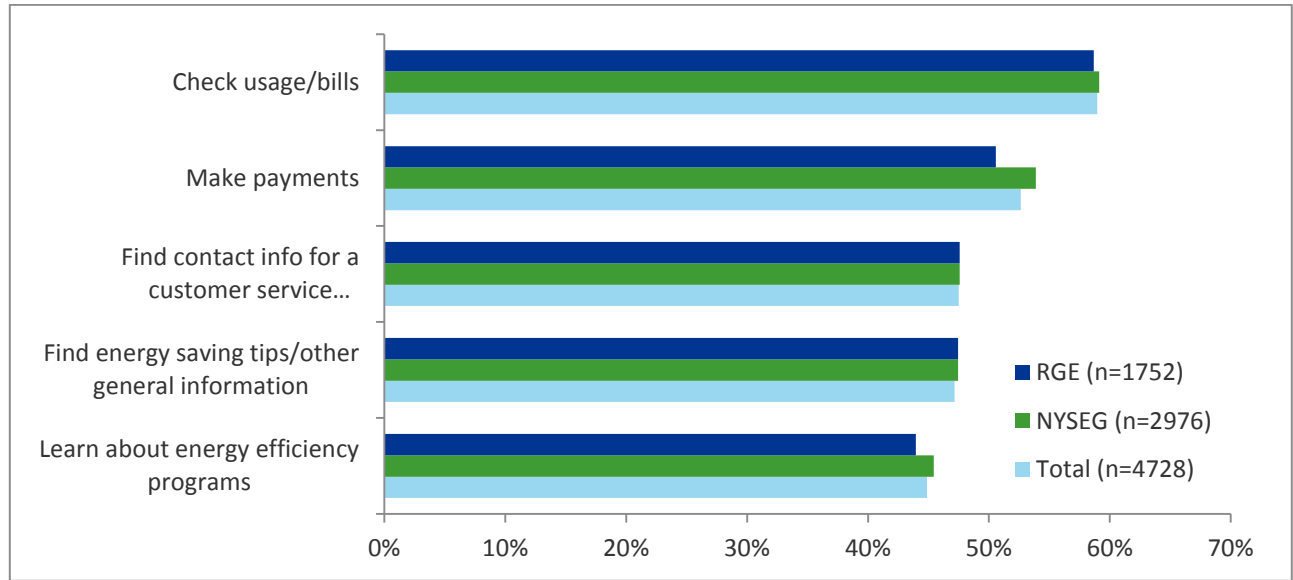
We asked all respondents if they used the general utility website for the actions shown in Table 15. We note that 25% of respondents said they do not use the website to check their usage, make payments, or enter meter reads. A higher proportion of NYSEG respondents than RG&E respondents said they used the general website to make payments online (23% vs. 18%). At the same time, RG&E respondents were more likely than NYSEG respondents to enter meter reads on the general website (15% vs. 10%). We note that RG&E respondents are more likely to use the website for multiple reasons than NYSEG customers (28% vs. 24%).

**Table 15- Reasons for Using the 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 18. 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. The only statistically-significant difference between utilities was that RG&E customers were less likely than NYSEG customers (51% vs. 54%) to say that making payments on the general utility website was very or extremely easy. Given that the website has a uniform design across both utilities, this may be a case of respondent demographics and comfort with website usage in general playing a role.

**Figure 18- Percent Stating Very/Extremely Easy to Use on General Utility Website**



Respondents were asked to compare the general utility website with their bank or credit card website (Table 16). 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. There were no significant differences by utility.

**Table 16- General Utility Website Compared to Bank/Credit Card Website (n=4250)**

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

## 4.10 Customer Readiness for Future Programs

The majority of respondents were in a position to receive information about future energy efficiency programs 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. While there is no significant difference by utility in the proportion of respondents who use their cellphones to send/receive text messages, a marginally higher, but statistically significant, proportion of RG&E customers who use their cellphones to send/receive text messages state that their cellphone is a smartphone relative to NYSEG customers at 86% versus 84% (or 66% versus 68% of respondents overall) respectively.

However, respondents were less enthusiastic about receiving communications from their utility through these methods. Fewer than half said 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 17. The table also shows that RG&E program participants showed lower interest in receiving these communications than NYSEG participants.

**Table 17- Percent Very/Extremely Interested in Receiving Communication from Utility**

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

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.

## 5 CONCLUSIONS

The impact evaluation reveals that the Energy Saver Program underperformed with respect to actual savings achieved by program participants. Our process evaluation shows that although some stated that their monthly bill reduced as a result of program participation, the majority of customers did not perceive any change in their monthly bills. This research comprehensively examined possible factors that could have an impact on program performance such as customer motivation, elements of program design and website design.

The utility website compares favorably to others and there is no evidence that customers find this lacking overall. While over half 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. Tailoring energy saving tips and recommendations to advanced customers and engaging them beyond low-hanging fruit of energy efficiency will ensure that this segment continues to reap savings. Key themes stemming from research findings and recommendations are summarized below (Figure 19)

**Figure 19- Key Themes and Recommendations**

Key Theme	Recommendation
<p><a href="#"><u>RG&amp;E customers have greater potential for participation in this program than NYSEG customers</u></a></p>	<p>A significant segment of NYSEG customers could benefit from programs targeting those with room air-conditioners or room heating in a more significant way than was done in the Energy Saver program. .</p>
<p><a href="#"><u>“Money talks”: While care for the environment is a motivation for program participation, it is a secondary motivation compared to direct financial incentives.</u></a></p>	<p>Ensure program materials stress WIIFM – what’s in it for me.</p>
<p><a href="#"><u>Satisfaction with the program declines as participants move through the participation activities</u></a></p>	<p>Website and any customer outreach needs to do more to retain the initial interest customers had when signing up.</p> <p>Ensure that the program promise from the original marketing materials is carried through to the website. Including testimonials or case studies on the website of happy participants who earned points and realized savings through the program could help to keep participants engaged.</p>
<p><a href="#"><u>Customer perceived communication gaps result in lost opportunities for increased engagement and improved performance</u></a></p>	<p>Program design should allow customers to choose from a menu of channel choices such as email, text, traditional mail etc. and frequency choices such as daily, weekly, fortnightly, and monthly at the time of enrolling in the program ensuring that communication is tailored to customer preferences and is more effective.</p>
<p><a href="#"><u>Most participants did not notice a change to their monthly bills. Additional program engagement had a marginal but not statistically significant effect on self-reported bill savings.</u></a></p>	<p>Cull ineffective recommendations from the program materials. Help customers understand that total bills can be affected by other factors such as the weather, so their bill could still be lower than it would have been without their actions.</p>
<p><a href="#"><u>Participation in other RG&amp;E/NYSEG energy efficiency (EE) programs acts as a multiplier for enhanced program performance on the Energy Saver Program</u></a></p>	<p>Cross-sell energy efficiency programs to participants in other RG&amp;E/NYSEG EE programs. They represent an attractive target and show improved performance relative to other participants.</p> <p>The driving force underlying participation could be explained by attitudes towards energy efficiency amongst segments that could be described as “Green Champions” or “Savings Seekers”. Customer data should reflect past participation and outreach can use this advantageously.</p>

[Pledges indicate a reluctance to spend money or be inconvenienced by program activities](#)

Focus the program on fewer, more effective actions. Encourage low or no cost measures that correspond to high energy savings such as use of energy saving showerheads when supplied by electric water heaters. Funnel participants to other rebate programs for higher cost actions. Provide information about typical savings or payback periods for the various actions.

[Engagement with the program and general utility websites is low; customers don't have much reason to visit the sites other than to get information related to their bills](#)

If utility websites are to be thought of as more than another vector for paying bills, integrating behavior modification programs with direct feedback which provides "real-time" premise level energy usage information could lead to greater savings and greater engagement.

[Customers have technological capability for greater engagement from the utilities, but little motivation](#)

Utilities face the dilemma of engaging a customer base that feels entitled to the utilities' product and whose vast majority of interactions with the utility are of a negative nature (pay bills or report outages). The utilities need to come up with a positive reason for customers to receive outreach – something that really matters to them.

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*Cecilia Aragon, Lawrence Berkeley National Laboratory and University of California Berkeley, Becky Hurwitz, University of California Berkeley, Dhawal Mujumdar, University of California Berkeley, Therese Peffer, California Institute for Energy and Environment, Daniel Perry, University of California Berkeley and Marco Pritoni, Lawrence Berkeley National Laboratory, [How People Actually Use Thermostats](#): This work was supported by the Office of Energy Efficiency and Renewable Energy, Building Technologies Program, of the U.S. Department of Energy under Contract No. DE-AC02-05CH11231 and United States Environmental Protection Agency, Interagency Agreement No. DW-89-92236901-9*

/6/ [Savings from Smart Thermostats](#)

Prepared by Apex Analytics LLC , Energy Trust of Oregon Nest Thermostat Heat Pump Control Pilot Evaluation, Prepared for Energy Trust of Oregon, 10/10/2014



## About DNV GL

Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. We provide classification and technical assurance along with software and independent expert advisory services to the maritime, oil and gas, and energy industries. We also provide certification services to customers across a wide range of industries. Operating in more than 100 countries, our 16,000 professionals are dedicated to helping our customers make the world safer, smarter and greener.