

# **A Behavior Program for Everyone: Moving Beyond the Opt-out Home Energy Report**

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## **ABSTRACT**

In Rhode Island, National Grid works to bring energy efficiency to all customers – striving to help every Rhode Island home save energy and money. The State also has the country’s highest energy savings target in the country at 3.3% of annual electricity sales in 2014. In order to achieve these high energy saving targets, National Grid in 2013 instituted an innovative behavior program, aiming to bring it to every Rhode Islander. But how do you offer such a service where not only every customer can participate, but where there are verifiable portfolio savings?

National Grid upended the typical behavior program by – launching the country’s first statewide home energy report offering. This offering has a strong mix of traditional and innovative features. The traditional opt-out home energy report program and thermostat pilot drove measurable and verifiable energy savings, while new features such as opt-in HER, rewards, and most importantly a grassroots call-to-action campaign helped to further increase awareness and engagement among customers. In the first year, energy savings equaled 10% of gas and electric portfolio goals, and four towns partook in community-based challenges, joining several Rhode Island businesses and non-profit organizations in the mission to engage residents, employees, and members about residential energy usage as well as efficiency actions they can take.

This paper presents an innovative advancement beyond the established home energy report programs currently delivered across the country. This paper details the unique program design, shares results from the program’s features, and includes early results from the independent evaluation.

## **Introduction and Background**

National Grid is the electric and natural gas provider to the majority of Rhode Islanders and has delivered energy efficiency since 1990. In 2006, Rhode Island enacted the Comprehensive Energy Conservation, Efficiency, & Affordability Act that established Least Cost Procurement. The legislation established a collaborative framework that has resulted in the country’s most aggressive energy savings through energy efficiency. National Grid, together with its’ partners, developed the 2012-2014 Energy Efficiency Procurement Plan (“Three Year Plan”) which planned to increase annual investments to \$100 million per year in electric and natural gas energy efficiency – 5 times higher than in 2008 (Anthony and Ferguson 2012). The Plan intended to save 2.5% of annual electric consumption by 2014. In fact, National Grid intends to save 3.3% in 2014 – the country’s highest annual energy savings target.

As part of the Three Year Plan, National Grid established a set of guiding principles for delivering energy efficiency (National Grid 2011). The principles are:

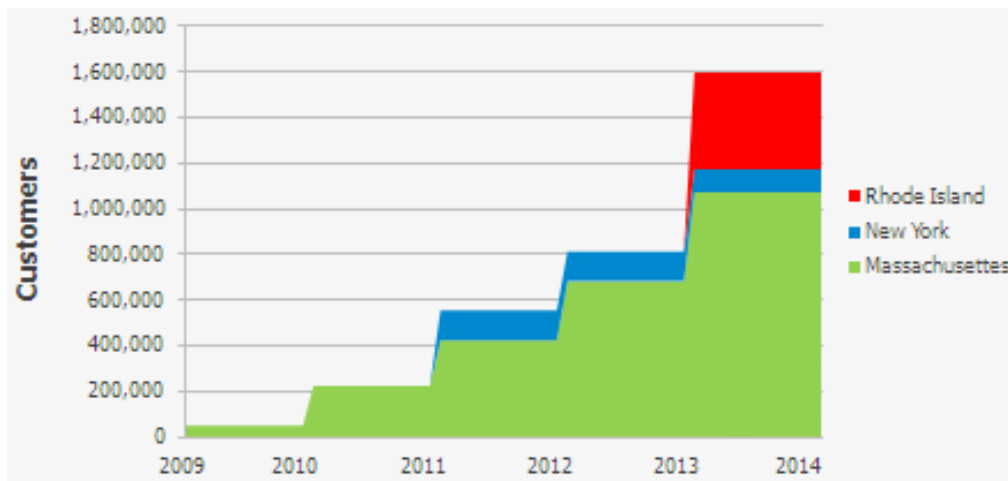
- Energy Efficiency is for everyone
- Reach customers where they live and work
- Innovation
- Economic growth

In 2011, during the development of the Three Year Plan, National Grid knew it would add a residential behavior program to its existing residential portfolio in order to achieve additional energy savings beyond the traditional rebate-by-measure approach. However, the principle that “energy efficiency is for everyone” prompted program designers to alter the structure of the typical residential behavior program, Home Energy Reports (“HER”), in order to ensure that every single residential customer had the opportunity to participate.

### National Grid’s Experience with Residential Behavior Programs

National Grid has extensive experience with various energy savings programs that rely on providing customers with information in order to both understand and save energy, colloquially referred to as ‘behavior’ programs. “Behavior-based energy efficiency programs are those that utilize strategies intended to affect consumer energy use behaviors in order to achieve energy and/or peak demand savings. Programs typically include outreach, education, competition, rewards, benchmarking and/or feedback elements” (SEE Action 2012, 1).

In 2009, National Grid became one of the first utilities to work with Opower, and today is their largest utility client (Greentech Media, 2014). Currently, National Grid sends HERs to more than one million customers (see chart below).



National Grid’s growth of Home Energy Reports by customers (2009-2014).

Since 2011, the Massachusetts statewide collaboration of program administrators (MassSave<sup>®</sup>) has evaluated National Grid’s HER program. The evaluations found that electric savings vary between 0.9% - 2.2% of annual household consumption based on the number of reports a customer cohort has received and their energy usage. The evaluations also found that

natural gas savings vary between 0.5% - 1.8% based on the same factors as electric households (Opinion Dynamics 2012, 2013).

National Grid also evaluated the program for the New York State Public Service Commission and determined from 2011-2012, households that received electric-only reports saved 2.43% while households that received dual fuel reports saved 1.34% of their electricity, and households with natural gas saved 0.83% (DNV Kema 2014).

Additionally, National Grid has experience with other types of residential behavior offerings. The Company has had pilots including in-home energy displays, load control, and various types of thermostats that display information. Through MassSave, the Company was also able to learn from residential initiatives conducted by the Cape Light Compact (“CLC”) and Western Massachusetts Electric (“WMECo”), a subsidiary of Northeast Utilities. WMECo had previously launched Western Mass Saves, an opt-in behavior program where customers earned rewards for saving energy. Initially, 668 customers who opted-in saved between 5.5% - 5.7% of their energy savings in the pilot (Opinion Dynamics and Navigant 2012, 65). However, the small sample size and quasi-experimental design of the program made the results imprecise. Additionally, the pilot results included selection bias as “the assignment across the treatment groups was not random. Due to the lack of randomization, the evaluation team could not investigate the differential effects of the treatment types” (ibid., 93).

## **Not Just Another Home Energy Reports Program**

In order to meet impressive electric and natural gas savings targets, National Grid needed a program and vendor that could reliably deliver measureable savings. But in order to reach every customer, National Grid needed to alter the structure of traditional Home Energy Report programs to avoid excluding control group customers from the opportunity to participate.

Opower’s HERs are widely used by utilities across the country. It is an *opt-out program* – one which uses randomized control trials (“RCT”) to assign customers to treatment or control groups. “A program that is set up as a RCT will yield valid, unbiased estimates of energy savings that are very robust for the population and time frame being studied” (SEE Action 2012, 1). Customers have the choice to opt-out of programs, but are not directly asked if they want to participate before receiving treatment” (Opinion Dynamics 2012, 10). As an opt-out program using an experimental design that has been evaluated numerous times, Opower’s HERs thereby have demonstrated verified energy savings.

There are a wide variety of *opt-in programs* – ones that may employ the use of customer pledges or competitions. “Opt-in program models are programs where customers specifically choose to participate in the program. These programs include a wide range of efforts, from online portals to in-home displays” (Opinion Dynamics 2012, 10).

In developing its Three Year Plan for Rhode Island, National Grid decided to enhance an opt-out program with an opt-in option, therefore combining a proven savings getter (opt-out) with an opportunity for everyone (opt-in) The opt-in program was implemented using Randomized Encouragement Design to allow all customers the option to opt-in, while maintaining the rigor of experimental design. Additionally, Opower and National Grid designed a program that would treat another segment of customers typically left out of behavior programs – new movers. Traditionally, customers that moved into new homes did not have historical data to generate comparisons to neighbors in a typical home energy report and were therefore

excluded. National Grid and Opower also designed a new initiative that customers could opt into – rewards for saving energy.

Lastly, National Grid planned to help deliver this program via a grassroots vehicle – community mobilized challenges and calls to action. National Grid intended to promote the opt-in opportunity via community groups and events in cities and towns, businesses, and schools, and partnered with SmartPower, a Connecticut-based non-profit clean energy marketing firm, to design a grassroots campaign that would encourage groups and organizations to save energy through pledges, community calls to action, and community-based energy challenges.

## Program Design

In April 2013, National Grid launched a Home Energy Reports program available to all residential electric and gas customers, hosted at a customer home in Cranston, RI (see video link from the launch event below).



Figure 1: Rhode Island Home Energy Reports Program launch video available at: <http://youtu.be/UxTTSZxZNAI>

The following month, National Grid, Opower, and SmartPower launched the Rhode Island Energy Challenge: Find Your Four! at a public kick-off event in Providence, RI.



Figure 2. Call to action through the RI Energy Challenge: Find Your Four!

The RI HER program includes the following elements, which are described in detail throughout this section:

- Statewide Reach
- Opt-Out Home Energy Reports
- Opt-In Home Energy Reports
- Opt-In Rewards
- Opt-out New Mover Home Energy Reports
- Grassroots Community Initiative

Every residential customer in Rhode Island can participate in the Home Energy Reports program and there are various paths in which they may hear about it and join. They may receive a HER in the mail or via e-mail (opt-out). Customers may hear about ways to save through a mailing, from a friend, or at a community event and visit a website to sign up to receive regular reports (opt-in). Every customer is eligible and welcome to use the new home energy reports web portal. The web portal, illustrated in Figure 3 offers customers an opportunity to sign up for HERs, see basic create energy goals, challenge their friends through social media, etc. For measurement and verification purposes, the web portal is considered a baseline experience (statewide reach).

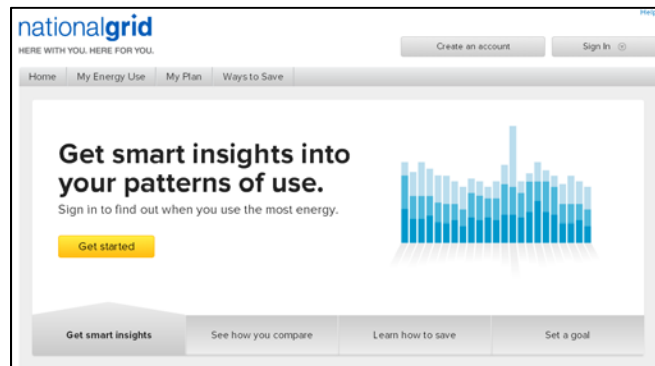
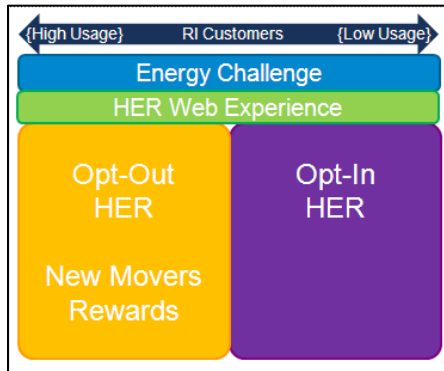


Figure 3. National Grid's Home Energy Report Web Portal, available at: [www.nationalgridus.com/RIEnergyReports](http://www.nationalgridus.com/RIEnergyReports)

Behind the scenes, Opower segmented all customers based on fuel type and energy usage. For the highest energy users, Opower used RCT to assign customers to opt-out treatment and control groups – as they do with other HER programs across the country. Savings are measured using the linear fixed effects regression (LFER) difference-in-difference statistics method. These opt-out customers receive regular mail or email reports, and have an online platform with additional resources beyond the baseline experience.

For customers who had lower energy usage, Opower used a 'Randomized Encouragement Design - Deny Control Access' methodology to assign customers to opt-in cohorts. Opower randomly split the population into recruitment and control groups. National Grid only marketed to the recruitment group to opt into the program. Savings are measured by comparing the entire recruitment group versus entire control group. This controls for any self-selection bias of those who opt-in. Figure 4 illustrates the program design.



Figures 4. RI HER program design and cohort designation.

National Grid has approximately 430,000 residential customers (households). In 2013, approximately 230,000 customers were enrolled in the opt-out HER. The Company was able to save more than 10,000 MWh and 122,000 therms. The average savings per household in the first nine months were less than 1%, lower than savings National Grid experienced in more mature programs in Massachusetts and New York, although savings are anticipated to more than double in 2014 as the program ramps up and customers receive a full year of reports.

The Company targeted 41,000 customers for marketing for the opt-in offering. National Grid mailed and emailed recruitment materials multiple times to these customers. Approximately 1,700 customers signed up; not enough customers opted in to the program to estimate significant energy savings. National Grid was disappointed with the low turnout for opt-in.

The Company learned some valuable lessons from the unique program implementation. First, opt-in did not lead to significant customer interest or energy savings. Second, because National Grid targeted every customer, not just high energy users, the average savings per customer during the initial ramping period were lower than in our similar programs in other states.

## Rewards

National Grid and Opower were both energized to offer rewards to residential customers for saving energy, a first of its kind for Opower. This initiative tests the theory that customers save more energy when there is a small financial motivation. The Rewards initiative was marketed to a subset of the opt-out cohorts who were randomly selected. A subset of the opt-out customers received no marketing and was not eligible for rewards – creating a comparison group. This design created an a/b test within the recipient population in order to determine the incremental savings of a customer participating in the Rewards pilot.

In 2013, 150,000 customers received invitations to the online rewards offer as part of their HER. With outreach limited to the initial invitation and with no broadcast advertising, as of spring 2014, 7,400 customers signed up. Customers can receive a point for each kWh of energy saved. They can also receive points for strategic actions such as completing an online audit. For a set number amount points, a customer can claim a small reward, such as a gift card for Home

Depot, Amazon, or several charities such as Habitat for Humanity. As of spring 2014, 5,700,000 points were earned and 2,700 rewards were redeemed. More than one-third of customers selected to donate their rewards to charity.

The rewards component of HERs has created more highly engaged customers compared to customers who just receive a HER. A customer who received the reward invitation was twelve times more likely to join the web portal and online community. Emails promoting rewards were opened 60% of the time – much higher than typical email open rates. National Grid is currently evaluating incremental energy savings from rewards through an independent evaluation consultant.

## **Rhode Island Energy Challenge: Find Your Four!**

The Rhode Island Energy Challenge: Find Your Four! (Challenge) was designed and launched to promote residential energy conservation and efficiency, raise awareness of National Grid's existing energy efficiency solutions, and encourage customers who did not receive a HER to opt-in, all through the vehicle of grassroots community mobilization. At the core of the Challenge is a simple call to action for all Rhode Islanders to be more efficient by finding four ways to save in their home.

As stated, the Challenge initially was designed to help increase the number of customers opting-in to the HER program. However, it was discovered that because the Challenge targets customers on the ground at community meetings, festivals, workplaces, etc., when customers sign up they may not have and/or recall their utility account number – a necessary step for opting into HERs. Because asking customers for account numbers is frankly awkward in such a setting, and would thus have greatly limited the number of customers who participated in the Challenge, the focus was shifted more toward encouraging customers to pledge to be more efficient via signing-up either in person or online for the Challenge. This new direction still allowed for the integration of the Challenge within the HER program since the HERs themselves provided customers with a great vehicle for identifying possible energy efficiency measures.

In addition to the call to action, the Challenge also organizes friendly competitions amongst Rhode Island towns/cities, business, non-profits, and faith-based organizations. For towns and cities, a friendly 12-16-week race is organized to determine who can first encourage 5% of their resident households to sign up for the Challenge and to take the pledge to be more efficient. For businesses, non-profits, and faith-based organizations, it is a simple challenge to encourage 5% or 10% of members, employees, and congregants within the allotted time frame (usually about 12-16 weeks). Those who achieve the 5% or 10% threshold are designated Rhode Island Energy Champions and are provided with a small monetary prize from National Grid that can be put toward either energy efficiency upgrades in appropriate buildings or toward the installation of a solar array. In 2013, the town of North Smithfield, population 12,000, achieved the 5% threshold, as well as three other businesses and non-profit organizations.

The Challenge was very successful in 2013, attaining over 1,100 household pledges on its website ([www.FindYourFour.com](http://www.FindYourFour.com)). National Grid, via a participant survey in early 2014, found that 70% of participants were encouraged to hear about the Challenge via local community members, thus proving that the community model resonates well with customers. Second, customer follow-through via the Challenge was high with over 90% of households indicating

that they took some energy saving actions (64% of those households responded that they took at least four actions).

Furthermore, broader awareness was improved as about 75% of households indicated they are more aware of energy use in the home because of the Challenge, and 66% of households in Challenge who receive a Home Energy Report noted they now pay more attention to them.

The Challenge also contributed to high achievement of National Grid's residential program portfolio in 2013 especially in our Home Energy Assessment program. The Challenge was not directly tied to savings as account numbers were not collected from customers and therefore savings were not tracked. However, the Challenge was a lead generator for several programs. National Grid, along with SmartPower will continue to build on 2013 success as the Challenge expands to new cities, towns, non-profits, businesses, schools, faith-based groups, and other organizations

## Conclusion

National Grid is committed to saving energy with every Rhode Islander. The Company redesigned the established Home Energy Report program to be more widespread and available for every customer. While the offering saved more than 10,000 MWh and 200,000 therms in 2013, the average savings per customer in the initial ramp period were lower than programs in Massachusetts and New York. Customers were highly engaged in saving energy through new initiatives such as rewards and the Find Your Four! Challenge. Offering rewards increased the typical HER recipient's interest, online sign up rate, and most likely their energy savings. The Find Your Four! Challenge broadened awareness with targeted towns and organizations and created leads for energy efficiency programs. In trying to save energy with every customer, National Grid found that an opt-in component for Home Energy Reports was not an effective strategy. The grassroots energy campaign proved to be more effective at reaching customers and encouraging them to participate in meaningful ways.

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