

# **Central Hudson Gas & Electric Corporation**

## **Home Energy Comparison Report Program: Impact Evaluation Summary**

*Evaluation Conducted by:* Applied Energy Group (AEG), *DATE:* November 2014

### **PROGRAM SUMMARY**

The objective of the Central Hudson Home Energy Comparison Report (HECR) Program is to promote energy efficient behavior among electric and gas customers through Home Energy Reports. The report compares residential customers' electric and/or natural gas usage with comparable peer households, and provides clearly defined, actionable information to promote energy efficiency.

Central Hudson administers the program in conjunction with Opower, Inc., a private implementation contractor specializing in behavior change programs. The program was launched in February 2011 and targeted over 110,000 residential electric and gas customers. The targeted customer population was determined by Opower, who designed the reports in collaboration with Central Hudson staff. Customers were randomly selected to receive the reports on an opt-out basis.

### **EVALUATION OBJECTIVE AND HIGH LEVEL FINDINGS**

Applied Energy Group (AEG), an independent evaluation contractor, designed the 2010-2011 impact evaluation to estimate electric and natural gas savings attributable to the program. AEG performed the following tasks to determine the impacts of the program:

- Reviewed program tracking database to verify savings and develop participant samples for the billing analysis.
- Conducted a statistical billing analysis to identify changes in billed energy usage as a result of program participation using a t-test and a fixed effects regression analysis.

The analysis covers a total of 95,313 electric and gas customers who received reports from February through December 2011. The analysis did not include any participants who opted-out of the program.

The overall net electric and natural gas savings determined by the billing analysis was 18,650 MWh and 286,226 therms. The average annual net electric savings of 2.45 percent and a natural gas savings of 1.44 percent, based on the results of the fixed effects regression model of billing data. In addition to the billing analysis, AEG conducted a separate assessment of free ridership and spillover using results from a participant survey.

### **DETAILED IMPACT EVALUATION FINDINGS**

A review of the HECR program tracking data shows that 111,085 Central Hudson customers were initially targeted to receive reports. Nearly 14 percent of initial participants opted-out of the program, resulting in 95,313 participants that were included in the analysis. The majority of

participants (70%) were electric-only customers and the remaining participants receiving both electric and gas service. Very few (18) participants were gas-only customers.

The t-test and the fixed effects regression analyses yielded comparable results. The average annual savings per participant based on the t-test was 210 kWh and 205 kWh based on the regression results. Overall the HECR program resulted in an electric energy savings of approximately 2.45 percent. The natural gas impacts represented slightly less savings at 1.44 percent of annual consumption.

The total net electric and natural gas savings attributable to the program was 18,650 MWh and 286,226 therms.

## **EVALUATION METHODS AND SAMPLING**

The statistical billing analysis included a two-pronged approach to measuring energy savings attributable to the program using a t-test and a fixed effects regression model. The t-test compares the average change in energy usage between a treatment group of participants and a control group of non-participants. The fixed effects regression model measured the net impacts of the program.

AEG segmented customer participation data in order to isolate the HECR program impacts. Program tracking data was cross-referenced to Central Hudson customer billing data to develop experimental and control group samples. The treatment group is a random sample of Central Hudson customers who only participated in the HECR program. Participants in other programs were removed from the treatment sample. The control group included customers who had no identifiable affiliation with any Central Hudson energy efficiency programs. All control and treatment groups were independently developed by AEG, independent from Opower, to ensure transparency and objectivity in the analysis. Various sampling techniques were applied to ensure that results had a 90/10 level of confidence and precision.

The fixed effects regression model describes the energy impacts associated using a year-over-year differencing method to reflect changes in average daily energy usage over the same billing period before and after the program. Weather-related influences represented by heating and cooling degree day variables were included to isolate program impacts independent of changes in weather.

Although AEG conducted a telephone survey of program participants to assess free ridership and spillover, no net-to-gross adjustment to the billing analysis results is necessary. Results of the survey reveal that participants engaged in a variety of energy savings actions after receiving the report. The participant survey is intended to provide additional insight into participant behavior and cannot be used to make inferences about the overall impacts.