

# Central Hudson Gas & Electric Corp Commercial Lighting: Impact Evaluation Summary

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

## **PROGRAM SUMMARY**

The objective of the Central Hudson Small & Mid-Size Business Lighting Program is to replace existing inefficient lighting with energy efficient lighting and lighting controls in Central Hudson business customer facilities in order to capture significant energy savings and environmental benefits. Participants receive a free energy audit conducted by Alliance Energy Solutions (“Alliance”), the third-party program implementer. Incentives cover up to 70 percent of the equipment and installation costs. A financing program initiated by Central Hudson and approved by the New York Department of Public Service (“DPS”) provides zero percent financing to cover the remaining equipment and installation cost.

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

An independent evaluation contractor Applied Energy Group (AEG) designed the impact evaluation to estimate energy and demand savings impacts of the 2010-2011 program. The evaluation utilizes various methods to calculate savings and other program impacts, including engineering and metering analyses. 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 participant survey to verify program participation and determine the influences of free ridership and spillover.
- Conducted an engineering analysis to identify changes in energy usage as a result of program participation.
- Performed a cost-effectiveness analysis of the program.

In 2010-2011, a total of 2,062 participants accounted for 7,975 projects and 153,318 measures. The majority of participants were Small-Size (91%) with the remaining Mid-Size (9%). All business types were represented with Office/Retail (33%), Automotive (18%), Industrial (17%) and Assembly (11%) making up the majority of building types participating in the program.

The overall net energy and demand savings determined by the engineering analysis were 41,841,182 kWh and 12,684 kW, respectively. AEG estimated a net-to-gross factor of approximately 91 percent using the results of a telephone survey of program participants designed to assess the effects of free ridership and spillover.

## **DETAILED IMPACT EVALUATION FINDINGS**

AEG performed engineering analysis to determine program impacts. A metering study was also conducted to estimate lighting usage hours.

Savings were spread across all building types. Office/Retail buildings accounted for the greatest amount of energy savings (31%) followed by Industrial (20%), Assembly (15%), and Automotive (12.5%). The combination of Schools, Healthcare, Other, Food Service, and Hotel/Motel combined to account for significant program savings (20%).

The net-to-gross factor includes estimates of free ridership and spillover. Using the results of a participant telephone survey, AEG estimated that 17 percent of savings would have been achieved due to natural market activity without the influence of the program. However, the program motivated participants to engage in spillover energy saving actions that amounted to 8 percent of additional savings. These included actions such as installing energy appliances, upgrading their HVAC system, and installing a programmable thermostat.

## **EVALUATION METHODS AND SAMPLING**

The impact evaluation includes four major components: an engineering analysis to determine the amount of expected savings, a metering study to determine observed lighting usage by building type, and a participant survey to assess free ridership and spillover..

AEG performed the engineering analysis consistent with the *2010 New York Standard Approach Manual for Estimating Energy Savings from Energy Efficiency Programs* ("Tech Manual").<sup>1</sup> AEG utilized the program tracking data with savings algorithms provided by the Tech Manual for each lighting measure installed through the program. The savings algorithms yielded savings per measure for each type of lighting, which were multiplied by the number of participants to determine total gross savings.

The metering study used light loggers to determine the lighting usage patterns among commercial participants by building type. Only twenty participants, whose representativeness was not able to be determined, volunteered for the study, so the results and the information gained from the study are for information purposes only. Each participant had up to ten light loggers installed in their facility for a period of 60 days. The results of the study provided lighting full load hours by facility type.

In October 2012, AEG conducted a telephone survey of 72 randomly selected program participants to evaluate the impacts of free ridership and spillover. Free ridership was determined through a series of questions designed to predict whether the participant would have installed the lighting without receiving an incentive through the program. Responses to the free ridership questions were weighted based on the probability that the participant was a free rider and to account for potential bias. Similarly, participants were asked if the program motivated them to engage in spillover energy savings actions beyond the program, such as upgrading HVAC, installing a programmable thermostat, or energy efficient appliances. The spillover factor was calculated based on the ratio of spillover savings to total gross savings for each participant.

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<sup>1</sup> *New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs*, Prepared for New York Department of Public Service by TecMarket Works, October 15, 2010.