Case Study:

Pilot Project Establishes Accuracy of EnergySavvy’s M&V 2.0 Software

A common challenge for energy efficiency programs is the lack of regular feedback on energy savings from recent projects during the program year. Due to this lack of timely feedback, program administrators and implementers generally do not know which measures, regions, home types or contractors may be over- or under-delivering with respect to energy savings. As a consequence, utilities may encounter surprisingly low realization rates, dissatisfied customers, lack of visibility into developing trends and lost opportunities to exceed program goals.

PSEG Long Island’s (PSEG LI) Home Performance Direct (HPD) program is no different, yet it faces one additional challenge – customer billing data is only recorded every other month for many residential customers. PSEG LI partnered with EnergySavvy to investigate whether automated measurement could help to address these challenges. PSEG LI utilized EnergySavvy’s M&V 2.0 software,¹ to measure results from nearly 1,100 projects from the Home Performance Direct (HPD) program during the 2013 program year. For these projects, EnergySavvy obtained baseline data (i.e., customer usage) from 2012, and utilized a comparison group of past participants for the analysis.

PSEG LI and EnergySavvy set two goals for the pilot:

1. Determine if the software could generate a reliable indication of program performance with bi-monthly data, as measured by its ability to reproduce evaluation results from the selected pilot period.²

2. Determine if continuous measurement software could provide PSEG LI with faster insights into program performance compared to traditional billing analysis and subsequent year evaluation reports.

The pilot also took place in the context of a changing policy landscape in New York, which encourages Advanced M&V as an enabling technology to animate markets and scale energy efficiency programs. While not directly applicable to LIPA and PSEG LI’s earnings, as noted in the recent REV Order, “Any earning adjustments related to net savings should be tied to advances in Evaluation, Measurement and Verification (EM&V) that utilize direct customer information.”³

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¹ M&V 2.0 software is also referred to as Advanced M&V.
² Bi-monthly data: one meter read per two months.
³ Public Service Commission of New York; Case: 14-M-0101; Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision; Order Adopting a Ratemaking and Utility Revenue Model Policy Framework. May 19, 2016. Pg. 83.
Goal #1:

Accuracy and Reliability of Savings Measurement Software

EnergySavvy and PSEG-LI validated the outputs from the M&V 2.0 software relative to the existing program evaluation results, which were already available. Both EnergySavvy’s continuous measurement software and the evaluation study utilized a billing analysis approach so PSEG LI could compare the energy savings estimates “apples-to-apples.” At the end of the pilot, EnergySavvy’s program-level results correlated with the existing evaluation results within a 6% margin of error, providing PSEG LI confidence that M&V 2.0 could provide early, indicative information on program savings.

Goal #2:

Gaining Faster Insights

In addition to providing comparable results to the evaluation across the entire program year, EnergySavvy’s M&V 2.0 software produced a statistically significant estimate of overall, year-end program performance after only three bi-monthly meter reads. These results not only provided a valid indication of year end performance but also yielded statistically significant findings at a more granular level, which can serve as a valuable insight for mid-course corrections, pro-active planning, and data to inform evaluation research.

About the Pilot

EnergySavvy’s M&V 2.0 software is designed to provide immediate feedback during the program year. However, for this pilot, EnergySavvy examined the 2013 residential Home Performance Direct (HPD) program in order to establish baseline accuracy. This program already had evaluation results available, which allowed PSEG LI and EnergySavvy to establish this baseline. EnergySavvy demonstrated the speed of measurement by simulating the use of the software as if it had been running throughout the 2013 program year, providing proof that its continuous measurement software could unlock actionable insights midyear, with bi-monthly data.

Conclusion

The ability to accurately measure savings in just seven months, even with bi-monthly billing data, has the potential to empower PSEG LI to create a continuous improvement system in which program managers and implementers can proactively monitor program performance and make informed mid-course changes if necessary. With the continuous and timely feedback, PSEG LI can better plan efforts related to customer satisfaction, increased quality, and more cost effective programs. Furthermore, the pilot demonstrated that bi-monthly billing data is not an insurmountable impediment to deeper analytics around customer usage and energy savings.

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4 Different billing analysis methods were used. The evaluator utilized a fixed effects regression model and EnergySavvy employed a two-stage approach.

5 This is less than seven months of program activity, with at least one read during the summer cooling months.