LARGE COMMERCIAL AND INDUSTRIAL RETROFIT PROGRAM

IMPACT EVALUATION

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National Grid

SUMMIT BLUE CONSULTING, LLC

FINAL REPORT

Submitted to:

William Blake
National Grid
781.907.1583
William.Blake@us.ngrid.com

Submitted by:

Summit Blue Consulting, LLC
1722 14th Street, Ste. 230
Boulder, CO 80302
720.564.1130

Prepared by:

Michael Ozog
970.407.1048
mozog@summitblue.com

Mary Klos
608.807.0083
mklos@summitblue.com

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY

National Grid offers an energy efficiency retrofit program to their Large Commercial and Industrial customers. This is called the Energy Initiative (EI) program. A large share of the electric energy savings from the EI program comes from prescriptive lighting measures.

The purpose of this study is to estimate a realization rate for the prescriptive lighting measures from participants in the 2007 EI program. The realization rate compares estimated savings from the tracking system to actual billing data to verify the gross energy savings that were achieved.

The statistical model that was developed to estimate the savings from the lighting measures installed through EI was framed within the Statistically Adjusted Engineering (SAE) approach. Under this approach, the engineering estimate of savings is included as an explanatory variable in a regression equation with the billed electricity consumption as the dependent variable. The estimated coefficient on the engineering estimate of savings may be interpreted as the realization rate. That is, the coefficient indicates the percentage of the engineering estimate of energy savings that is realized on average according to the analysis of billing records.

The final model result was a realization rate of 1.04 with a t-value of 8.72. This result is statistically significant at the 90% confidence level and the precision of the estimate is plus or minus 19% at that confidence level.

Table 1-1 presents the results of this statistical modeling effort for the EI program. The final model result was a realization rate of 1.04 with a t-value of 8.72. This result is statistically significant at the 90% confidence level and the precision of the estimate is plus or minus 19% at that confidence level.

Table 1-1. Summary of Lighting Savings Realization Rate for EI Program[1]

Realization Rate	T-value[2]	Statistically Significant at the 90% Confidence Level?	Precision at the 90% Confidence Level	Lower Bound of Realization Rate at 90% Confidence Level	Upper Bound of Realization Rate at 90% Confidence Level
1.04	8.72	Yes	± 19%	0.85	1.24

The realization rate from this study should be applied to gross energy savings estimates from engineering calculations or deemed savings to create verified gross energy savings estimates. Additional estimates of free-ridership and/or spillover effects would need to come from other studies and be applied to the verified gross energy savings to estimate net energy savings. The development of net energy savings estimates is beyond the scope of this study.

[1] All results shown in this table are calculated using realization rates and T-values with six decimal points. After the calculations, the results are rounded to two decimal points for reporting purposes.

[2] The T-value is equal to the estimated realization rate divided by its standard error. It can be used directly to test the hypothesis that the realization rate is equal to zero. A T-value of 1.645 indicates there is 90% confidence that the realization rate is statistically significant and is not zero. Higher T-values indicate higher confidence levels.