

MULTIPLE SMALL BUSINESS SERVICES PROGRAMS IMPACT EVALUATION 2007

Submitted To:
Cape Light Compact
National Grid
NSTAR
Unitil
Western Massachusetts Electric Company



FINAL REPORT

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1 EXECUTIVE SUMMARY

The five sponsoring organizations of this study, the Cape Light Compact, National Grid, NSTAR, Unitil (Fitchburg Gas and Electric Light Company d/b/a Unitil), and Western Massachusetts Electric Company (WMECO), have offered Small Business Services (SBS) programs throughout Massachusetts to small business energy consumers for several years. A large share of the electric energy savings from the SBS program comes from prescriptive lighting measures.

Impact evaluations have been conducted in previous years to obtain estimates of realization rates for the gross energy savings resulting from the prescriptive lighting measures that are part of the SBS program. These realization rates reflect a comparison of estimated savings from the program tracking systems to actual customer billing data to verify the gross energy savings that were achieved. The purpose of this study is to estimate similar realization rates for 2007 program participants for each individual participating sponsor.

The statistical model that was developed to estimate the savings from the lighting measures installed through SBS 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.

Table 1-1 presents the results of this statistical modeling effort for each sponsor.

Table 1-1. Summary of Lighting Savings Realization Rates by Sponsor¹

	Realization Rate	T-value²	Statistically Significant at the 90% Confidence Level?
Cape Light Compact	1.04	8.58	Yes
National Grid	1.00	22.38	Yes
NSTAR	0.89	23.37	Yes
Unitil	1.02	12.39	Yes
Western Massachusetts Electric			

The realization rates varied from a low of 0.89 to a high of 1.04 with most of them near the value of one. This indicates there is a good correspondence between initial estimates of gross energy savings and

¹ This table will be completed after data is received from WMECO.

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.

verified gross energy savings for prescriptive lighting measures in the SBS program. All of the realization rates are statistically significant at the 90% confidence level.

Table 1-2 shows the precision rates that were achieved for each sponsor. The estimates for National Grid and NSTAR have a precision rate of plus or minus 7%. Sponsors with smaller numbers of customers had precision levels in the 10% to 20% range at the 90% confidence level. This wider precision range reflects the lower certainty of the coefficient estimates given similar variability and fewer observations.

Table 1-2. Confidence Intervals and Precision Levels for Realization Rates³

Sponsor	Expected Value of Realization Rate	Precision at the 90% Confidence Level	Lower Bound of Realization Rate at 90% Confidence Level	Upper Bound of Realization Rate at 90% Confidence Level
Cape Light Compact	1.04	± 19%	0.84	1.25
National Grid	1.00	± 7%	0.92	1.07
NSTAR	0.89	± 7%	0.82	0.95
Unitil	1.02	± 13%	0.88	1.16
WMECO		±		

The realization rates 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.

³ 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. This rounding method was used for all similar tables in this report.