Do Energy Savings Really Persist?
Columbia Gas of Ohio's WarmChoice Program
Demonstrates Long-Term Energy Impacts

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Overall Energy Savings Unaffected by Treatment Age

Energy consumption for the WarmChoice population appears to be unaffected by the aging of energy conservation measures. During the 11-year post-weatherization period under study, no degradation in energy savings was observed. Our findings suggest WarmChoice and similar weatherization programs have the potential to transform low-income housing stock.

Sample Selection

A random sample of 50 WarmChoice participants was selected for each program year between 1990 and 2000. The final sample contained 550 program participants with a post-weatherization usage history ranging from 1 to 11 years. A geographically matched non-participant sample was randomly selected from Columbia Gas of Ohio's WarmChoice database. Mock treatment dates were assigned to the non-participants in a loosely pair-wise fashion. The resulting sample contained 539 non-participants with an assigned post-treatment usage history ranging from 1 to 11 years.

Analysis of Variance

Weather-normalized annual consumption (NAC) estimates were created for both the participant and non-participant samples. These estimates were aggregated by program year and age of treatment. The resulting group means were then tested using a one-way analysis of variance (ANOVA). No significant differences in mean NAC levels existed between the age of treatments in either the participant or non-participant samples. Additional statistical measures were tested over the post-weatherization period using an ANOVA; namely control-adjusted mean NAC levels, year-to-year NAC changes, and baseline NAC comparisons. In every case, the null hypothesis was accepted suggesting no effects were related to the age of treatment. Further ANOVA found mean NAC levels unaffected by calendar year. Probability statistics show that less than 2 out of 100 samples would have a real post-weatherization NAC mean greater than 140 MCF verses the 126 MCF level observed for the participant sample.

Multiple Regression Analysis

Beyond the qualitative determination of the ANOVA, a multiple regression model was formulated to isolate treatment age and calendar year effects on NAC year-to-year change. The model found statistically significant age and year effects, but the cumulative effects were minimal; within 1.3% (-1.3 to 1.6 MCF) of the mean post-weatherization usage levels.