

# Measuring The Impact Of Programmable Thermostats In Gas Heated Homes

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## Introduction

Manufacturers often market programmable or set back thermostats as a tool to help consumers save energy. The energy savings are achieved by reducing or lowering the temperature in a residence during specific hours, such as unoccupied or night hours. The current literature is mixed regarding the energy savings associated with programmable thermostats. The Environmental Protection Agency (EPA) has proposed to sunset the ENERGY STAR<sup>®</sup> labeling for programmable thermostats; “The decision to scrap the Energy Star thermostat specification was made after thermostat manufacturers failed to provide any data to show that installing ENERGY STAR thermostats results in energy savings<sup>1</sup>”.

## Methods and Results

To help provide meaningful input into this issue, GasNetworks<sup>®</sup> authorized *RLW* to conduct a survey supported billing analysis on a large sample of participants in the GasNetworks ENERGY STAR<sup>®</sup> Qualified Thermostat Rebate Program. The project used a test-control experimental design to help control for extraneous variables yielding net program impacts from the analysis. The primary objective was to calculate the net average annual gas energy savings for programmable thermostat program participants.

The study shows a savings of 80ccf, or 6.2% of total household annual natural gas consumption associated with the installation of an ENERGY STAR rated programmable thermostat. These savings are normalized to the installation of one programmable thermostat in a 2,000 square foot home with a pre-program normalized annual consumption (pre-NAC) of 1,287ccf. The savings are derived using a weighted least squares model. The relative precision associated with the savings is calculated to be  $\pm 23.7\%$ . This yields a 90% confidence interval from 61ccf to 99ccf or a percent savings ranging from a low of 4.7% to a high of 7.7% of normalized annual total household consumption.

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<sup>1</sup> December 2006 Energy Design Update, credited to Andrew Fanara, EPA project manager.