

SESSION 7C

HOT RESULTS FROM RESIDENTIAL HVAC PROGRAMS

Moderator: Elizabeth Titus, Northeast Energy Efficiency Partnerships, Inc.

PAPERS:

New York Home Performance with ENERGY STAR Program (HPwES) Contractor and Customer Reports on Market Transformation

Victoria Engel, NYSERDA
David Carroll, APPRISE, Inc.
Scott Albert, GDS Associates, Inc.

A Pacific Northwest Efficient Furnace Program Impact Evaluation

Ken Agnew, KEMA Inc.
Mimi Goldberg, KEMA Inc.
Bobbi Wilhelm, Puget Sound Energy

The Reliability of Natural Gas Savings from Multifamily Boiler Controls

Jean Shelton, Itron, Inc.
Tami Rasmussen, KEMA, Inc.
Rafael Friedmann, Pacific Gas & Electric
Rob Rubin, San Diego Gas & Electric

SESSION SUMMARY:

This session reports findings from studies of programs addressing HVAC efficiency improvements, including: an assessment of what customers want (and get) from Home Performance with ENERGY STAR; impacts from an efficient gas furnace program in the Northwest and an overview of billing analyses from several multifamily boiler retrofit programs. The papers cover a wide range of programs targeting residential HVAC efficiency and they offer important insights about methodological challenges and program design as well as program impacts.

NYSERDA's Home Performance with ENERGY STAR (HPwES) Program was studied to assess the extent to which contractors are delivering whole house services and contributing to market transformation by employing HPwES standards when installing efficiency measures. Market assessment surveys were conducted with all market actor groups involved in the program. While the assessment relied on self-reported data, it was designed to provide meaningful qualitative information about the extent to which market transformation is occurring in the marketplace. The study analyzed and compared results about many indicators of market transformation across many market sectors. Program data indicate that the number of HPwES jobs is increasing. The surveys indicated that both participating and nonparticipating contractors are influenced by the program. For example, the amount of their work outside the program but done to HPwES standards is increasing. A comparison of program designs and installation rates for energy services delivered to market rate and assisted components of the program in NYSERDA with a similar New Jersey program except that it includes rebates suggests that gross installation rates for market rate customers in NYSERDA could be higher.

Puget Sound Energy (PSE) has offered rebates to customers for ENERGY STAR qualified gas furnaces since 2002. This paper reports the results of the use of a billing analysis approach to estimate gross and net savings from the program. The billing analysis approach included nonparticipants in the

analysis. While it was designed to directly control for both kinds of naturally occurring savings, standard installations and free riders, in actuality, the approach provided an estimate of gross impacts, impacts relative to a standard installation baseline. Due to apparent self-selection of efficient furnace installers into the program, the billing analysis did not control for free ridership. Importantly, as explained, the self selection of efficient furnace installers is an identifiable kind of self-selection. As a higher percentage of this group opt into the program, naturally occurring savings is biased down to a lower limit of the naturally occurring savings due to the installation of new up-to-code furnaces. At the same time, net savings is biased upwards to the upper limit of gross savings (relative to a standard baseline). The estimated annual impact of 88.8 therms is a sound estimate of savings relative to the appropriate standard installation baseline. Two separate estimates indicate a high level of free ridership, putting the rate at 55 to 56 percent.

The third paper compares results from two evaluations of natural gas savings associated with retrofitting multifamily boilers with boiler controllers. One of the evaluations used pre- and post-billing data pooled across multifamily sites and time in a statistically adjusted engineering (SAE) model. The data available limited the SAE billing analysis to using gas consumption, the time of installation, and weather data to determine the impact of the controller. Significant data quality issues may have affected the evaluation findings. The second analysis collected refined data from site-specific analysis of pre- and post-installation consumption means. The savings realization results from these two very different analyses were remarkably similar, and neither supported the deemed savings values. The savings observable from the installation of boiler controllers in multifamily settings is substantially less than the ex ante claimed savings. In addition, the observed savings are highly variable.

Lessons learned these analyses included considerations of the influence of alternatives to boiler reset controls as energy efficiency and program design strategies, their energy savings, the importance of increased expertise on the part of the installer and the role of the utilities in program delivery. The paper provides suggestions for changes in installation criteria, training protocols, and system repair and commissioning recommendations.