

SESSION 7B

BUILDING MODELING AND BENCHMARKING: ARE THEY EFFECTIVE PROGRAM TOOLS?

Moderator: Monica Nevius, Consortium for Energy Efficiency.

PAPERS:

ENERGY STAR® Portfolio Manager and Utility Benchmarking Programs: Effectiveness as a Conduit to Utility Energy Efficiency Programs

Rohit Vaidya, Nexus Market Research, Cambridge, MA

Arlis Reynolds, National Grid, Waltham, MA

Gail Azulay, NSTAR Electric & Gas, Westwood, MA

David Barclay, Nexus Market Research, Cambridge, MA

Betty Tolkin, Nexus Market Research, Cambridge, MA

Using Measured Whole-Building Performance for Green Building Program Evaluation

Cathy Turner, New Buildings Institute, White Salmon, WA

Howard Reichmuth, New Buildings Institute, White Salmon, WA

A Re-examination of the NBI LEED Building Energy Consumption Study

John H. Scofield, Oberlin College, Oberlin, OH

SESSION SUMMARY:

This session addresses key questions about the effectiveness of two important commercial program strategies: supporting building performance benchmarking for existing buildings, and using energy modeling during new construction as a predictor of actual building performance.

The first paper by Rohit Vaidya et al. looks at whether benchmarking based on building performance can yield cost-effective savings for energy efficiency programs. A key focus of the evaluation described in this paper was to assess the effectiveness of the programs in stimulating installation of energy efficiency measures. The paper also identifies challenges to program growth and scalability.

The second and third papers explore the variability in individual performance levels of LEED buildings, whether modeled building performance accurately reflects the complex relationships that give rise to actual building performance, and the reliability of building performance prediction over time, given the current state of building science. In their paper, Turner and Reichmuth describe the use of whole-building measured energy use, by month and fuel, to evaluate the achievements of high performance building programs at both the individual building and program level. The authors examine a subgroup of 23 buildings, drawn from a previous exploratory review by the New Buildings Institute (NBI) of post-occupancy LEED-certified commercial building energy performance, to understand the drivers of the wide variability in individual performance levels revealed in the initial review. The results give a quick picture of unusual patterns, potential areas for improvements, or drivers of particularly good performance. In the final paper, John Scofield re-examines the NBI data set from which Turner and Reichmuth draw their subgroup of buildings, identifies what he considers to be critical flaws in the data, and reaches different conclusions from the original study. His conclusions include that LEED-certified medium-energy buildings and office buildings use less site energy but no less source (or primary) energy than do comparable conventional buildings. Scofield points out that as green house gas

(GHG) emission correlates with primary energy, not site energy, LEED certification is not yielding any significant reduction in GHG emission by commercial buildings.