# SESSION 6C

## IMPROVING THE DESIGN, IMPLEMENTATION AND EVALUATION OF RESIDENTIAL ENERGY EFFICIENCY PROGRAMS: INSIGHTS FROM THE SOCIAL SCIENCES

*Moderator: Edward Vine, Lawrence Berkeley National Laboratory & California Institute for Energy and Environment*

PAPERS:

**akAB Theory: Moving from Theory to Application**

Mersiha S. McClaren, Research Into Action, Inc.
Alexandra Dunn, Research Into Action, Inc.
Jane Peters, Research Into Action, Inc.

**Behavioral Economic Models of Household Electricity Decision Making: An Application to Energy Efficiency Program Evaluation**

David Lynch, Centre for Regional Innovation and Competitiveness, University of Ballarat
Peter Martin, Centre for Informatics and Applied Optimization, University of Ballarat

SESSION SUMMARY:

This session will focus on how lessons learned from social scientists can be used to improve the design, implementation and evaluation of residential energy efficiency programs. The findings from these modeling studies provide policy makers and the energy industry with a greater understanding of how energy efficiency programs influence participant decision□making and behavior and vice versa.

The energy efficiency community has long assumed that if energy efficiency programs can increase awareness or knowledge about energy efficiency (ak), then customers' attitudes (A) toward energy efficiency will change, and energy-efficient behaviors (B) will follow. **In the first paper, McClaren et al.** present the results of two market research studies conducted in California and Vermont that included indicators for assessing *awareness/knowledge* of energy-related issues (ak), *concern* and *personal responsibility* attitudes about energy use (A), and *intention* to act on a behavior (B). The two market research studies focused on very different energy efficiency programs - a residential appliance rebate program in California and an extensive home energy retrofit program in Vermont.

In the California study, they found that program nonparticipants who had not planned to buy an ENERGY STAR® appliance had similar levels of *awareness/knowledge* and *attitudes* toward energy use as did the program participants. In the Vermont study, they found that respondents who had dropped out of the whole house/comprehensive upgrade program and nonparticipants who were not interested in installing a renewable energy system were more *concerned* about the financial impacts of energy use than program participants and nonparticipants who considered installing a renewable energy system.

Findings from both studies demonstrated that *awareness/knowledge*, *concern*, and *personal responsibility* were effective in explaining some participant and nonparticipant differences or similarities. As for the *intention* indicator, the authors noted that further research is needed to refine this measure.

**In the second paper, Lynch and Martin** describe the application and testing of a behavioral economics model to evaluate and explain adoption of energy efficiency recommendations from a program in central Victoria, Australia. This study's conceptual framework integrates diffusion of innovations and behavioral economics frameworks to explain energy efficiency program participant

decision-making. It does this by testing the influence of subjective assessments of the value of energy assessment recommendations, characteristics of participants and environmental context. It is proposed that these characteristics mutually motivate or prevent residential energy efficiency investment and curtailment behavior. This behavioral economics framework guided the evaluation design and construction of associated survey instruments for participants in an energy efficiency program in central Victoria, Australia. This study found that High Adopters achieved significantly higher savings than Low Adopters when compared to their respective matched control groups. Significant differences were also found between High and Low adopters with respect to the three major groups of diffusion variables. Subjective characteristics and personal characteristic measures were scored higher by the High Adopters. With respect to participant characteristics, High Adopters had higher levels of product knowledge, comprised fewer young participants, and older participants, as well as a smaller proportion of those employed, and a higher proportion of retirees. Households were more likely to be influenced by marketing communication emphasizing the cost of maintaining the status quo rather than the benefits of change. This suggests that such communication has greater persuasiveness to those already committed to adopting energy efficiency behavior, and that behavioral economics concepts have an important role in informing and improving the design, implementation and evaluation of energy efficiency programs.