# SESSION 26

## CHANGING BEHAVIOR: FROM THEORY TO RESULTS

*Moderator: Linda Schuck, California Institute for Energy and Environment, University of California*

PAPERS:

**Exploring Behavioral Change Theory**
Kevin Monte de Ramos, KMDR Research

**Enhancing Environmental Citizenship and Reducing Energy Consumption through Creative Engagement with Building Users**
Monica Pianosi, De Montfort University
Dr. Richard Bull, De Montfort University
Prof. Martin Rieser, De Montfort University

**What Do We Know About Comparative Energy Usage Feedback Reports for Residential Customers?**
Mitchell Rosenberg, DNV KEMA Energy & Sustainability
G. Kennedy Agnew, DNV KEMA Energy & Sustainability
Valerie Richardson, DNV KEMA Energy & Sustainability

SESSION SUMMARY:

This session will explore three different behavioral theories that have been used effectively in other fields and examine the application of these theories to programs and research aimed at reducing energy consumption. The first paper discusses a "staged-transformational" theory of behavior change and its potential application in regulation and utility program design. The second paper focuses on participatory engagement theories and their application in a workplace setting using social media tools. This research study is designed to use an "action research methodology" which involves iterative interaction between researcher and participants. The third paper focuses on evaluation results from comparative energy usage feedback report programs - based in social norming theory - and summarizes findings from a number of large-scale, multiple-year.

***"Exploring Behavioral Change Theory***" focuses on two different constructs that describe the processes by which people change their behavior. The first is a staged transformational approach called the Trans-Theoretical Model of Behavioral Change (TTM). Under the TTM, individuals wishing to initiate and maintain a new set of behaviors move through five stages of change. The TTM has been applied health and social programs. Applying the TTM model to energy programs, the author asserts, can help identify both limitations in current program designs and opportunities for potential future improvements. The second construct, Cognitive-Structural-Behavior (CSB), evolved from the application of the TTM to energy efficiency programming, simplifying it for market transformation logic models. This construct has been embedded in the logic model for the *EM&V Protocols and Requirements of Ontario* and can potentially be used to develop program theory across a wide range of energy efficiency offerings. The author proposes that by better understanding the process of self change, program managers and regulators could draft policies that allow participation from individuals not yet ready to adopt energy efficiency behaviors. Evaluators employing the CSB constructs may be able to establish metrics that track cognitive, structural, and behavioral outcomes towards the realization and attribution of desired programmatic impacts.

*"**Enhancing Environmental Citizenship and Reducing Energy Consumption through Creative Engagement with Building Users"*** presents a research study design that is focused on the

question: “Can social media tools be used effectively to foster an interactive, participatory process that increases environmental citizenship and reduces energy consumption in workplace/university buildings?” The authors seek to understand how work-based communities engage with energy and to evaluate the impact that building-users can have on workplace energy reduction. The paper describes ‘participatory engagement theory’ (previously successfully applied in the context of waste management and landscape planning), an approach that re-invents the usual program design paradigm, which is top-down, and replaces it with an organic process. The participatory engagement is now more feasible with the advent of social media tools. The study also employs an `action research` methodology. This is an approach that changes the normal relationship between researcher and the researched, creating an interactive collaboration to accomplish the goals.

The final paper, *“**What Do We Know About Comparative Energy Usage Feedback Reports for Residential Customers?”*** reviews findings from multiple, large-scale, independent evaluations of comparative energy use feedback programs in the United States to assess how they have worked and the extent to which those studies validate underlying program theories. Comparative feedback programs such as Opower and Efficiency 2.0 provide monthly or quarterly reports to customers that compare their metered energy use to average consumption among their neighbours. These comparisons are meant to stimulate attention to energy use and adoption of energy efficiency measures and behaviours. The design of the reports relies on theories of behavioural influence that identify validation of recommended actions through reference to the actions of others in a similar situation - “social norming” - as an effective strategy. The paper summarizes documented energy savings, persistence of savings over time, and the impacts of report frequency, segmentation and customer perceptions.