

SESSION 5

EVALUATION OF BEHAVIOUR CHANGE PROGRAMMES

Moderator: Edward Vine, Lawrence Berkeley National Laboratory

PAPERS:

Widgets versus Actions: Measuring the Role of Behavior Change in DSM Programs

David J. Freeman, Skumatz Economic Research Associates, Inc.

Lisa A. Skumatz, Skumatz Economic Research Associates, Inc.

Analysis of the Effectiveness of the Campaign for District Heating Energy Savings Considering Seasonal Influence

Hyeong-Jung Kim, Korea Energy Management Corporation

Sang-Soo Ahn, Korea Energy Management Corporation

Sung-Hee Lee, Konkuk University

Woo-Nam Lee, Konkuk University

Jong-Bae Park, Konkuk University

Behavior Change and Driving Forces to Save Electricity in the Electricity Crisis in Japan

Ken-ichiro Nishio, Central Research Institute of Electric Power Industry

Kenta Ofuji, University of Aizu

SESSION SUMMARY:

This session will focus on the evaluation of behavior change programs in Japan, Korea and the United States. Each of the papers presents a unique perspective on behavior and behavior change, as depicted in different countries, contexts, and energy technologies.

Freeman and Skumatz present both a review of the current best practices in the measurement of behavior change found in the literature as well a hands-on case study measuring behavior modification impacts in Colorado. The authors discuss the state of current practices in determining how an evaluator can identify what needs to be measured as well as the myriad of options to complete the measurement. The paper also addresses a host of other issues such as behavior retention, persistence, impacts compared to other approaches, and what is currently undervalued in behavior evaluation. Finally, the authors review recent projects completed by the authors, showing how the techniques discussed can be applied in the 'real world.'

Kim et al. present the results of the analysis of the effectiveness of the heating energy saving campaign that was conducted by the Korea District Heating Corporation in 2011. The authors present how the energy savings were calculated for this program. To calculate the energy savings, the outliers were investigated and revised according to the theory of the exploratory data analysis method. The heating energy savings were calculated by deducting the total heat energy consumption in 2011 from that in 2010. The energy savings had to be applied after the revision, according to the fluctuations in the outdoor temperature or the exogenous factors. The results were compared using a regression model that employed the annual trend and another regression model for the lowest temperature to analyze the relationship between the annual household heat energy sales volume and the temperatures. The comparison results showed that the annual trend had a significant influence but the temperature had none. Therefore, the energy savings were calculated without considering the temperature effectiveness.

Nishio and Ofuji present the results an evaluation of energy savings efforts in the residential sector in Japan after the electricity crisis in the summer of 2011 – because of the earthquake and tsunami, along with the accompanying nuclear power plant shutdown. In response to this emergency, the government of Japan set electricity conservation targets of 15% for July through September. As a

result, demand for electricity was curbed substantially, avoiding power outages. The authors provide evaluation results based on interviews with a focus group interview of 20 people and a questionnaire survey of 3,000 households. The result shows that 10% saving was achieved on average after the weather normalization adjustment. About 40% of the reduction in electricity use resulted from conservation of electricity used for air-conditioning. Moreover, the authors elaborate on the roles of incentives in changing consumer behaviors. While social norms played an important role in raising consciousness of electricity conservation, they tended to lead to electricity conservation through self-control on air-conditioning, lighting, and other uses, and, in some aspects, these effects are difficult to maintain. Provision of information was effective for the purpose of planned electricity conservation, which can take firm root. Finally, the authors tested the degree to which people were conscious of peak electricity hours and how they acted on information provided about peak electricity conservation.