

MEASURING ENERGY SAVINGS FROM ENERGY CODE AND APPLIANCE STANDARDS

Moderator: Isaac Elnecave, Midwest Energy Efficiency Alliance

PAPERS:

Panel Studies: Utilities and C&S Federal Advocacy – Policy Considerations for Calculating Net Attributable Savings

Paula Gruendling, California Public Utilities Commission

Ken Keating

Cracking the Code: Impact Evaluation Methods of ARRA-Funded Energy Code Initiatives

Michael Rovito, ERS

Tim Pettit, DNV-GL

How Do We Know that Commercial Codes Deliver Energy Savings? Designing and Testing a New Methodology for Assessing Commercial Code Compliance

Poppy Storm, Ecotope, Inc

Steven Phoutrides, Northwest Energy Efficiency Alliance

Impacts Evaluation of Appliance Energy Efficiency Standards in Mexico since 2000

Michael McNeil, Lawrence Berkley National Laboratory

Anna Maria Carreno, Center for Law and Social Policy

SESSION SUMMARY:

Over the last few years, there has been a significant uptick in activity around appliance standards and building energy codes (building energy codes received a boost under the American Recovery and Reinvestment Act -- ARRA). However, as appliance standards and building energy codes are policies and not programs, significant questions exist on how to measure energy savings from these policies (particularly salient under building energy codes because energy code improvements work as a system within a building and not simply as individual components.). Moreover, appliance standards and building energy codes are now being incorporated into utility programs; a fact that makes the need for accurate measurements of energy savings even more important. This session will explore the ways of addressing these questions from various perspectives.

Gruendling et al. tackle the problem of how the California Public Utilities Commission can attribute energy savings to utilities from the utilities' efforts in advancing federal appliance standards. Utilities have been receiving credit for their state-based efforts on appliance standards for many years but receiving credit for efforts on federal appliance standards pose very difficult problems that include the fact that only a portion of the energy savings from a federal standard can be counted in California. This paper presents the process of developing the guidelines, challenges encountered, and steps taken to overcome challenges. Challenges that include how preemption of Title 20 standards by federal standards affect savings streams, and future policy considerations. This paper provides results from the 2010-2012 Codes and Standards Impact evaluation including a comparison of attribution scores for the same federal and state standards.

This paper outlines the process by which the CPUC developed savings estimates for federal standards advocacy through the establishment of novel savings and attribution approaches and the leveraging of existing evaluation policies.

Rovito et al. focuses on evaluating the energy savings from code adoptions and from efforts to improve energy code compliance as a result of ARRA. Evaluating the energy impacts of building energy codes is difficult due to the fact that codes are state based and the environment under which codes are adopted and enforced vary significantly. Moreover, there are significant differences due to diverse climates, building stocks, existing codes and enforcement regimes that complicate the ability to develop a consistent methodology. This paper describes the work done by Oak Ridge National Laboratory to develop a uniform methodology for measuring savings and evaluating attribution that is both sound and cost-effective. Data were primarily collected through interviews with public and private sector experts, who estimated building practices. Quantitative responses were captured through a Delphi process and were used as inputs into the model. Expert estimates were combined with data on building stock growth for major sectors and energy use intensity deltas between codes and state-specific base cases to arrive at savings by state. The savings algorithms were built on the publically available Pacific Northwest National Laboratory's code savings estimator.

Storm et al. describes the effort to develop a methodology for measuring energy code compliance for commercial buildings. Over the last few years, significant progress has been made in developing a methodology for measuring code compliance in residential dwellings that captures compliance and concomitant energy savings. However, many of the aspects of residential construction that allow this kind of analysis do not exist for commercial structures. All/most residential dwellings typically have the same features and as a result, it is possible to look at some number of residential dwellings and capture a statistically significant number of observations. Commercial construction differs in several important ways. First, commercial structures are much more complex requiring more observational time. Moreover, there is much greater multiplicity in the type of energy saving features among different type of commercial structures i.e. a hospital will have different components than a school or office building. Therefore, it is much more costly (as compared to residential dwellings) to generate a statistically significant number of observations for the universe of commercial structures. This paper explores the goals, challenges, and structure of an alternative new methodology and mindset for assessing compliance and energy impacts in order to ultimately apply the methodology to a multi-state commercial building code compliance pilot in the Northwest.

McNeil et al. analyzes the impacts of the imposition of energy standards on residential refrigerators and window air conditioners in Mexico. The analysis uncovers that the average efficiency of these units increased resulting in annual electricity consumption reductions of 6 Twh in 2014. The study found concomitant economic benefits of about \$3 billion between 2012 and 2014. Mexican industry representatives interviewed acknowledged the introduction of standards as a positive regulatory mechanism that creates a level playing field, sends a clear signal for investment and increased awareness of energy efficiency among Mexican consumers.