Predicting Naturally Occurring Energy Efficiency—Development and Application of a New Tool to Obtain Expert Input

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Introduction

Estimating what would have happened to a market in the future without a given efficiency program is often critical when program impacts are evaluated, particularly for market transformation, codes and standards, or long-term programs. Although various methods have been employed to estimate naturally occurring market adoption, they are often simplistic, not very transparent, or lack the input of knowledgeable experts. This poster discusses an innovative approach developed to estimate naturally occurring market adoption of efficient appliances and building measures.

Description

We designed an innovative, web-based tool and assessment process for soliciting and analyzing experts' estimates of naturally occurring market adoption. This tool was applied to a codes and standards program to calculate how much the gross estimated energy savings should be discounted to account for naturally occurring adoption, and estimate net saving attributable to the program.

The tool is an interactive, web-based graphical display that allows experts to express their views on how market shares would have changed, over time, for energy-efficient measures if no program existed. We selected market and industry experts to provide input on nine different appliances and building efficiency measures. By adjusting three slider bars on a web page, experts were able to control the shape of a curve depicting their expectations of future market shares for the efficient appliance or measure they were analyzing. The shape was created in real time by a Bass-type logit market adoption equation using Flash animation. The Bass curve is the most commonly used, simplified estimator of product adoption rates and is well-tested in the market.

We estimated an "average" curve based on the curves generated by the experts when they selected three parameters defining the Bass curve. Using a limited Delphi approach, each expert then provided feedback on the comparison between the average curve and their submittal. The final curves were used to net out the effects of naturally occurring adoption from the gross savings estimates.

Findings

We successfully developed and demonstrated this tool and approach, producing naturally occurring adoption estimates consistent with theories of market behavior. The biggest challenges were recruiting experts to provide their inputs and ensuring they had the appropriate knowledge to develop the most accurate estimates.