Putting Codes Into Action: How Newly Updated Building Codes Translate Into Practice

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Abstract

Estimating energy savings from codes and standards programs is a complex undertaking. In addition to the quantification of expected savings resulting from an increase in code stringency, the approach must also account for the effect of pre-existing utility incentive programs, naturally occurring market trends, and non-compliance rates. This paper describes the methods employed and empirical findings from one study aimed at quantifying non-compliance rates for a sample of newly codified (and newly code-updated) building measures in California.

We looked at seven building measures in both the residential and nonresidential sectors to learn how closely actual building practices adhere to newly adopted codes. Data were collected by reviewing permits and conducting verification site visits for a sample of building projects throughout the state. Key findings from this study include quantitative estimates of noncompliance rates for the seven measures, as well as qualitative information about some unexpected complexities associated with data collection efforts around building practices, both at building departments (during permit review) and at building sites (during inspection).

This study found a range of noncompliance rates, from 28% (± 3%) for residential hardwired lighting to 100% (± 1%) for the duct testing requirement for new nonresidential buildings. Qualitatively, the study yielded lessons on the research process; for example, building permit data were often found to be incomplete, and compliance criteria were often partially – but not fully – met, raising important questions about the appropriateness of awarding “partial credit,” and if so, the appropriate level.

This paper is targeted at providing participants with the following: For utilities and designers of codes and standards programs, insight into realistic ex ante savings estimates with respect to noncompliance rates; for evaluators, important process lessons including how to effectively work with building departments and streamline data collection efforts.