



## Harvard Kennedy School Energy Policy Seminar Series, Spring 2015

### How Much Energy Do Building Energy Codes Really Save? Evidence from California

Monday, April 20, 2015

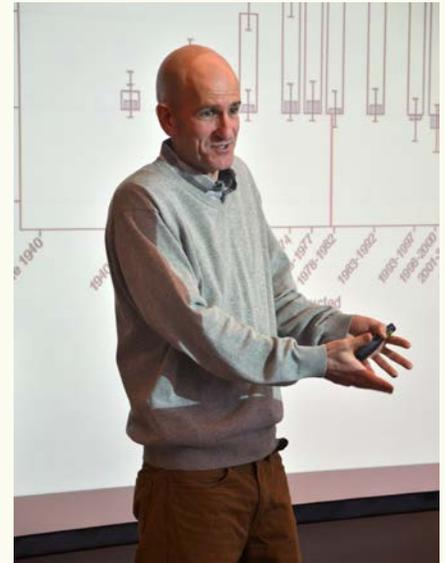
By Louisa Lund, Program Director, Consortium for Energy Policy Research

It is “tremendously difficult to prove empirically” that building energy efficiency codes actually result in energy savings, argued Arik Levinson of Georgetown University in Monday’s energy policy seminar.

Levinson walked the seminar through his surprising analysis of the effects of California’s energy efficiency building codes, in which he tried to show a causal relationship using three different methods, but was unable to find any good evidence that these codes actually reduced electricity use, compared to what would have happened without the codes.

Levinson acknowledged the often-cited slower growth in California’s energy use compared to other states, a difference that is often attributed to California’s 1978 passage of energy efficiency building codes. But this correlation, Levinson argues, is misleading.

Teasing out the actual effect of California’s building codes is challenging, since other factors have changed over time as well—for example, houses have gotten bigger, which would tend to increase the energy used, all things being equal. At the same time, the average number of members of households in California has increased, which might tend to reduce per capita energy consumption.



In an attempt to isolate the effects of building codes themselves, Levinson explained, he performed a regression analysis focused on identifying whether single family homes built after the 1978 codes came into effect are using less electricity today than older houses, after controlling for other factors. In a separate analysis, he examined whether post-1978 houses use less electricity in response to extreme temperatures. And a third analysis compared trends in household energy consumption in California to trends in other states, post-1978.

In all three cases, Levinson reported, he found no evidence that building codes themselves reduced energy consumption. He did find evidence that very new houses are more energy efficient than houses that are a couple of years old—but that “newness effect” seems to wear off after several years and might have nothing to do with energy efficiency.

Levinson acknowledged how surprising his findings were and suggested some possible explanations. It could be that the “rebound effect” is absorbing many of the savings—homeowners might run their air conditioners more, for example, if efficient units allow them to do so without increasing their electricity bills too much. Alternatively, new homes may not be showing greater efficiency because the older, pre-energy efficiency code homes have been remodeled to incorporate energy efficiency measures. Whatever the reason for his findings, Levinson noted that optimistic projections of the potential effects of energy efficiency measures are “doing a lot of the heavy lifting” in US energy policy, including in the EPA’s proposed Clean Power Plan—so it may be important to be sure current savings projections are realistic—something that Levinson’s analysis calls into question.

The talk was part of the Kennedy School’s Energy Policy Seminar Series, which is jointly sponsored by the Energy Technology Innovation Policy research group of the Belfer Center for Science and International Affairs and by the Consortium for Energy Policy Research of the Mossavar-Rahmani Center on Business and Government.