

Expediting Energy Efficiency Retrofits for U.S. Housing: Where Things Stand

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Paper Summary

U.S. housing accounted for over 22 percent of the country's total primary energy consumption in 2009, which equated to more than \$2,000 per household and \$229 billion in aggregate expenditure. It appears these amounts could be reduced substantially, with benefits to both household budgets and the environment's well-being. This paper's goal is to evaluate the alternative mechanisms that could expedite energy efficiency retrofits for U.S. housing. We focus on retrofitting existing homes since older homes are significantly less efficient, and much more numerous, than newly constructed homes.

We begin in Part 2 by evaluating the evidence that significant improvements in the energy efficiency of existing U.S. housing are feasible, both technologically and financially. We focus on the method used in the widely discussed report by McKinsey (2009). This report concludes, "Energy efficiency offers a vast, low-cost energy resource for the U.S. economy.....The residential sector accounts for 35 percent of the end-use efficiency potential..". Similar positive conclusions are drawn in EPRI (2009) and studies focusing on California such as Harcourt, Brown, and Carey (2011) and Bamberger (2012). In contrast, Allcott and Greenstone (2012), in a recent survey paper, provide a less optimistic appraisal for the effectiveness of energy saving investments, concluding "it is difficult to substantiate claims of a pervasive Energy Efficiency Gap". We evaluate these alternative positions, concluding that very significant energy savings do appear to be feasible.

In Part 3 of the paper, we consider why the investments to achieve these energy savings have not already been carried out. Carrying out an energy-efficiency upgrade generally requires two fundamental steps. The first step is to acquire the necessary information to recognize the overall feasibility of energy-saving investments and to select the specific investments and contractors. The second step is to acquire the financial resources, normally a loan, to cover the capital costs of the investments. A bottleneck at either step can very well cancel the entire project, since taking no action or postponing action are also available choices for most homeowners.

Part 4 of the paper discusses how property owners, and other stake holders in the retrofit process, can obtain expert advice to allow informed choices in carrying out energy-saving investments. We focus on the usability and accuracy of computer-based "tools" that allow property owners to evaluate the benefits from various energy-saving investments.

Part 5 of the paper considers the financial impediments to carrying out energy-saving investments. We focus on two widely discussed programs, namely Property Assessed Clean Energy (PACE) plans available from participating local governments and On-Bill repayment and financing plans available from participating public utilities. We also consider other loan instruments that could be used to finance energy-saving investments.

Part 6 concludes with evaluation of the available policies, and other actions, that could encourage energy efficiency. Some policies directly remove informational and financial obstacles, whereas others are intended to "nudge" households to action.