

The Supply-side Effects of Energy Efficiency Labels

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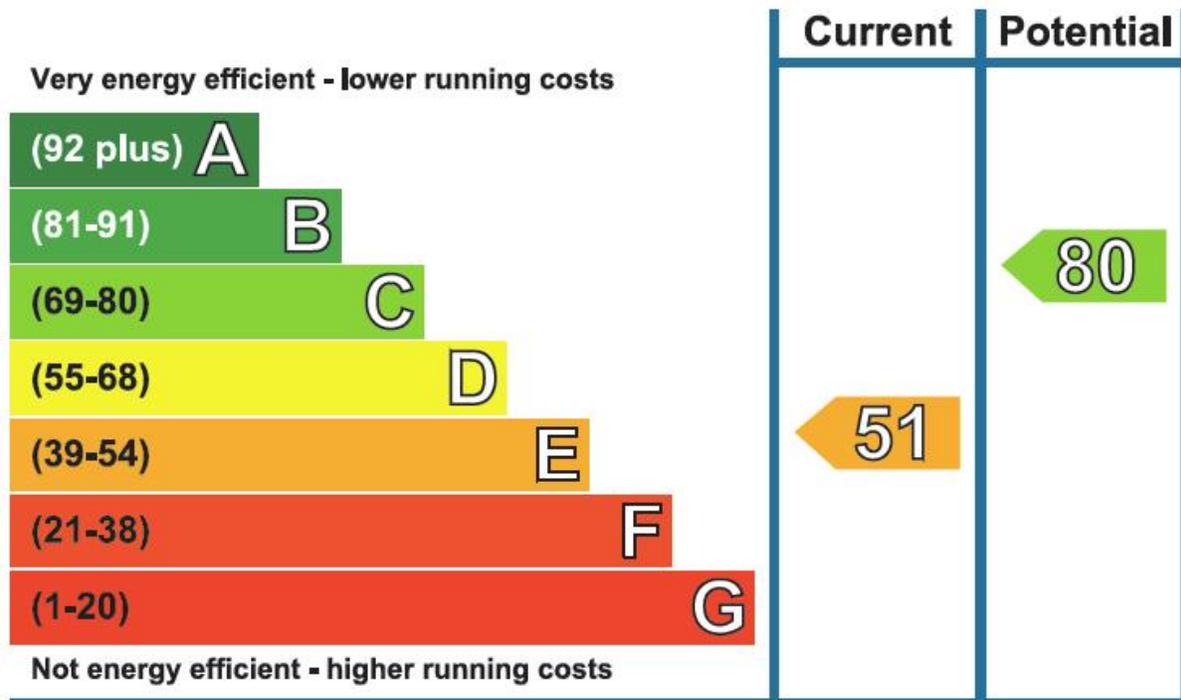
There is debate regarding the efficacy of energy-efficiency labels as a means to “green” the economy. The manner in which labels provide information is important, people will ignore labels that are difficult to interpret. Further, demand for energy efficient homes will only translate into a greener housing stock if the supply side – builders and existing home owners - respond by investing in energy efficient construction. This analysis will test for a housing supply side response when the form of the energy efficiency label is altered.

Our specific research question is whether a law requiring the publication of an Energy Performance Certificate (EPCs) for homes for sale or rent in the UK has had an effect on the level of energy efficiency of UK residential homes. We can draw a direct link between energy labeling and the behavior of market participants because we test whether the level of home energy-efficiency is predicted by a specific arbitrary detail in the design of the EPC energy label. The UK already had an energy efficiency measure in place prior to the announcement of the EPC requirement - the Standard Assessment Procedure (SAP) which measured efficiency on an unlabeled continuous scale from 0 to 100. The SAP score is a linear representation of home energy costs based on the attributes of the building, assuming constant preference for temperature among residents. A transition from 67 to 68 SAP should lead to the same reduction in energy costs as a transition from 68 to 69 SAP. In order to implement the EPC requirement, the UK coopted the SAP and overlaid its 0-100 scale with the EU energy label, a color-coded chart of letter grades (from A-G, where A is green and G is red). An example EPC is given below. Crucially, there are discontinuities in the mapping from SAP points to EPC letter grades. For instance, at 68 SAP points an extra point moves a home from a yellow “D” grade to a green “C” grade on the EPC, whereas at 67 SAP points an extra point would have a barely perceptible impact on the EPC – the certificate remains a yellow “D”. In other words, depending on a home's initial SAP score, a small investment in home energy-efficiency can either have a very salient effect on the EPC – a change of color and letter - or virtually no effect. If the EPC requirement has induced investment in home energy efficiency, then we would expect it to occur where investment has most impact on the result of the published EPC: where investment pushes a home from a lower letter-grade into a higher one.

Our hypothesis then is that there will be an overrepresentation of homes just above a letter grade threshold in the years since the EPC requirement was announced. We test this hypothesis using data from the English Housing Survey on a representative sample of homes in England spanning before and after the EPC requirement (2007-2009). Our analyses find significant clustering just above the threshold in the middle of the distribution, grade D. There is no evidence of clustering around letter grades for homes that are exceptionally energy efficient, or for homes that are exceptionally inefficient. Relative to the distribution of homes in the control period before the introduction of EPCs, our regressions estimate that around 0.004% of homes – corresponding to

about 100,000 homes -- moved to just above a letter grade threshold. Such a clustering could only be explained by chance or by the fact that homeowners responded to the EPC requirement by investing in the energy-efficiency of their homes. To rule out chance as an explanation, we test whether clustering occurred in the control years before the EPC requirement was announced. No clustering is found at any point in the distribution prior to the introduction of the EPCs. We conclude that the EPC requirement has induced investment in home energy-efficiency.

An Energy Performance Certificate, showing SAP scores (0-100) and letter grades



Notes: An example Energy Performance Certificate showing the SAP numerical score and the letter-color grade.

