# Short and Long-Term Energy Cost Disclosure Effects on Willingness-to-pay for Residential Energy Efficiency

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## Motivation

While more energy efficient products generally cost more to buy, their lower running costs can make them better investments over their lifetime. Some consumers may fail to make this trade-off by choosing products with lower upfront purchase costs but higher energy consumption. This underinvestment in energy efficiency, if prevalent, is known as the Energy Efficiency Gap. Given that energy consuming products, such as appliances, cars and properties, can have relatively long lifetimes, the legacy of poor energy efficient investments can have considerable implications for future energy supply, emissions and the climate.

Many authors have proposed reasons for the Energy Efficiency Gap, including the possibility of 'missing' or 'incorrect' energy cost forecasts. This implies that some buyers do not consider energy costs when buying i.e. they are inattentive to energy efficiency, and for those who are attentive, it is possible that their estimates of future energy cost will be inaccurate. From a policy perspective, the key question is whether or not this omission or bias is reducing the uptake of more energy efficient technologies.

In this paper, we consider two research questions:

1. Does presenting energy consumption in monetary units increase the demand for more energy efficient technologies?
2. Would increasing the horizon of the monetary forecast increase this demand further?

While there has been some research conducted to date exploring these questions for appliances and private vehicles, to the best of our knowledge, this paper is the first to examine these issues for properties, a 'product' with relatively high energy consumption.

## The Research Conducted

We test the two questions above using a discrete choice experiment for a sample of over 350 renters in Dublin, Ireland. A discrete choice experiment presents the participant with a choice of two rental properties which differ according to a number of property characteristics, including energy efficiency. Participant choices are used to infer the value placed on each property attribute, including energy efficiency.

In order to test the questions above, we randomly divided our sample into three experimental groups. The control group received energy efficiency information as per the current labelling policy in Ireland (the *Building Energy Rating* (BER)), which displays a property's energy efficiency information through a non-monetary indicator (kWh/m$^2$/year displayed on a colour-coded efficiency grading system). In treatment group one, we converted this information into a "typical two-month energy bill" and explored the change in renter's willingness-to-pay (WTP) for energy efficiency

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(Hypothesis **H1**). To explore whether the temporal framing of energy cost information affects valuation (Hypothesis **H2**), we created a "yearly energy cost" label for treatment group two.

**Main Conclusions**

We find that long-term energy cost forecasts (in our case, annual) increase the WTP for energy efficiency whereas the short-term forecast (2 months) has no effect. Our findings therefore provide additional evidence that buyers are, to some degree, missing the long-term costs implications of their energy-consuming investments, and that such information is valued by consumers and nudges more energy efficient decisions.

**Policy implications**

Long-run energy cost labelling appears to be a straightforward amendment to current energy labelling policy, which are generally based on kWh or carbon estimates. However, we note that such a change in metric represents a major ideological shift in labelling in regions like the EU: prior labelling often highlights the carbon-reducing and therefore public benefits of energy efficiency while energy cost labelling shifts the focus more towards the private benefits. Public benefits may become more persuasive in the coming years as the effects of climate change become more visible to technology adopters.