

The rebound effect is a worry in terms of the possible environmental impact of increased energy efficiency. But how big a worry, and what can be done about it?

There is a lot of controversy about this issue, and the evidence seems to be far from crystal clear. For contrasting views, see these [NRDC](#) and [Breakthrough Institute](#) posts.

Estimating the rebound effect turns out to be difficult. In a [2010 review](#) of the economic literature, two economists said that “there seems to be some evidence for direct rebound under certain conditions like a large unsatisfied demand,” but the studies do not support the “backfire” scenario or large rebound otherwise. In developed countries the rebound seems to be below thirty percent, possibly much lower, but rebound in developing countries may be higher because of unmet demand. Examples of unmet demand leading to large rebound include residential heating in Japan and Britain in the 1970s and use of residential lighting in rural India. These conclusions also seem consistent with a recent review of the literature conducted for the European Union.

The rebound effect can be limited by using other tools to help control carbon emissions, such as an emissions trading system or carbon tax. These techniques raise the price of electricity, offsetting the potential rebound effect of greater efficiency. Increased efficiency, conversely, decreases the economic burden of a carbon tax or emission trading system on consumers, which may be politically useful in making the case for those measures. Increased consumption due to the rebound effect could also be countered through a tax to soak up the additional funds.

Finally, it’s worth keeping in mind that the rebound effect is an environmental negative but an economic positive, since it means that energy efficiency has enabled an increase in consumption.

The bottom line: the rebound effect is something to keep in mind when designing energy efficiency programs, but it’s not a deal breaker. There is good reason to think that energy efficiency can be an important component of climate policy — but clearly it should not be the only component.