Experience with Energy Efficiency Policies and Programs: Lessons from the Critics

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Will the Rebound Effect Erode Most Energy Savings?

Empirical Evidence of the Rebound Effect in the United States

Sector	End Use	Size of rebound effect
Residential	Space heating	10-30%
Residential	Space cooling	0-50%
Residential	Water heating	<10-40%
Residential	Lighting	5-12%
Residential	Appliances	0%
Residential	Automobiles	10-30%
Business	Lighting	0-2%
Business	Process uses	0-20%

Will the Rebound Effect Erode Most Energy Savings?

- Direct rebound effect is real, but small to moderate in most cases
- Indirect economy-wide effects are very small (<2% loss of energy savings)
- Rebound effect, to the extent it occurs, is not evidence that energy efficiency is a failure

Would Most Energy Savings Happen Anyway?

- Average efficiency of appliances or vehicles was stagnant or declining prior to adoption of energy efficiency standards
- Various studies of "prices vs. policies" have concluded that policies were the leading cause of efficiency gains; e.g., appliance standards in EU or vehicle standards in U.S.
- Many (but not all) energy efficiency studies take into account ongoing efficiency improvements in "base case"
- Ex-post program evaluations confirm energy efficiency policy/program effectiveness

Are Energy Efficiency Policies/Programs as Effective as Their Proponents Claim?

- Policies such as appliance and vehicle efficiency standards or financial incentives have been effective for increasing energy efficiency
- Efficiency proponents should take into account market-based efficiency improvements and the response to changing energy prices when analyzing the impacts of specific EE initiatives.
- It is important to evaluate real world energy savings and the full costs and benefits of energy efficiency policies and programs, including non-energy benefits.

Are Energy Efficiency Policies/Programs as Effective as Their Proponents Claim?

What do Econometric Studies Reveal about the Effectiveness of Utility Energy Efficiency Programs?

Parfomak and Lave (1996) – Examined 39 utility DSM programs and found 99% of reported savings are statistically observable after accounting for changes in energy price, income growth, and weather effects

Loughran and Kulick (2004) – Examined changes in state electricity use and found that utility DSM programs save less energy and have a higher cost of saved energy than utilities claim. But L&K used first year energy savings only, not energy savings over the life of efficiency measures.

Are the Discount Rates Used to Justify EE Policies Too Low?

- Energy efficiency analysts and proponents use real discount rates of 4-10%
- But implicit discount rates in the marketplace are 50% or greater in many cases
- High implicit discount rates are another way of acknowledging market failures and barriers
- Lower discount rates are used to analyze other types of policies and programs, and alternative energy investments
- Lower discount rates are justified for analyzing responses to long-term problems such as global warming

Are the Market Failures Used to Justify Energy Efficiency Policies a Myth?

Market failures documented in literature

- unpriced costs and benefits
- distortionary regulatory and fiscal policies
- misplaced incentives
- insufficient information

Policies and programs aimed at overcoming these factors are justified

Are the Market Failures Used to Justify Energy Efficiency Policies a Myth?

Market barriers (not failures) also limit adoption of energy efficiency measures

- Low priority given to energy costs
- Bounded rationality
- Incomplete markets for some efficiency measures
- Lack of capital

What Should Energy Policy Makers and Analysts Do?

- Take into account rebound effects when estimating energy savings
- Take into account ongoing trends towards lower energy intensity as well as energy price effects
- Continue using discount rates of 4-10% in cost effectiveness analysis
- Continue implementing policies and programs to remove or overcome market failures and barriers
- Analyze full costs and benefits of EE policies and programs, including net impacts and transaction costs

SWEEP:

Dedicated to More Efficient Energy Use in the Southwest

Resources available online at:

www.swenergy.org

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