

The Rebound Effect and Energy Efficiency Programs: An Evaluator's Perspective

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Context

- Energy efficiency program perspective
 - Residential, commercial, industrial buildings
 - Decision-making & behavior varies by building type

- Program evaluation perspective
 - Economics & non-economics
 - Quantitative & qualitative
 - Impact & process evaluation
 - Individual & social drivers (internal & external) affecting decision-making & behavior

A Few Evaluation Notes (#1)

□ Policy Context

- Loading Order (EE is #1) (Reliability)
- GHG emissions reduction
- Cost effectiveness
- Equity
- Better programs

□ Differences Between Estimated and Measured Savings

- Due to multiple reasons
 - Technical, behavior

A Few Evaluation Notes (#2)

- Gross Energy Savings versus Net Energy Savings
 - Adjustments for free riders
 - Spillover / market transformation not accounted for
 - Non-energy benefits and costs not accounted for
- Logic modeling
 - Causal analysis
 - For developing evaluation plan
- Attribution
 - Multiple methods and sources of data
- Evaluation Research Studies
 - Persistence
 - Behavior and Decision-Making (CIEE White Papers)

Focus of Rebound Effects

- Direct and indirect rebound effects on consumers
 - Direct: EE gains reduce the effective price of energy, potentially causing consumers to use more energy
 - Indirect: Money saved from purchasing EE measures is potentially used by consumers to purchase other goods and services that require energy

Past Studies on Rebound Effects

- EE evaluation community has not done much in last 18 years
- Steve Nadel (1993) – review of 42 studies
 - Rebound limited to specific end uses, such as:
 - Residential lighting (10% increase in operating hours due to CFLs)
 - Industrial plant production (2% increase due to EE)
 - Other end uses: no data or inconclusive data supporting the rebound effect

Guidance for Evaluators

- Evaluators need to be aware of rebound studies and implications for their work (including potential studies, and GHG reduction policies)
- Evaluators need to be aware of methodological issues associated with rebound studies
 - Reliance on a few questions in self-reported surveys and other limitations associated with self-reported surveys
 - Small samples of households or buildings for the micro effects analysis
 - Lack of causation in the macroeconomic effects studies

Future Research

- Retrospective Evaluation
 - Review past studies to examine how rebound effect was calculated
 - Identify methodological improvements
- Prospective Evaluation
 - Future evaluations include the analysis of the rebound effect
 - Will build on the lessons learned from retrospective evaluation
- Need for Experimental Design of EE programs
- Development of evaluation guidelines for analyzing rebound effect (?)
 - Will provide consistent terminology and definitions

BECC Conference

- Behavior Energy and Climate Change Conference
- Focus: Understanding individual and organizational behavior and decision-making
- Nov. 29 – Dec. 2, 2011 – Washington, DC
- Fifth annual conference
- Co-organizers: ACEEE, CIEE, Precourt Energy Efficiency Center (Stanford)
- <http://www.becccconference.org/>

IEPEC Rebound Panel

- International Energy Program Evaluation Conference
 - Boston – August 2011
- Panel: “The Rebound Effect: Should We Care?”
(August 17)
- Panelists:
 - David Owen
 - David Goldstein
 - Skip Laitner
- www.iepec.org



Time for Questions

