

Applying Behavioral Insights to Financial Incentive Programs for Residential Energy Efficiency

Workshop on Integrating Social and Behavioral
Insights to Current DOE Programs and Policies

NREL/LBNL Offices
Washington DC
October 6, 2009

Paul C. Stern
U.S. National Research Council

Why focus on household efficiency?

- That's where most of the near-term potential savings lie
- Efficiency is not perceived as involving loss of well-being
- Effects of action maintain themselves

Why social science is needed (beyond economics)

- Policies rely on an overly narrow model of behavior (Physical-Technical-Economic model)
- Policies neglect important non-financial influences on behavior (e.g., agency issues, costs of acquiring information, access to trustworthy products/services): *There are good reasons people fail to do what saves money*
- Effective policies address both financial and non-financial barriers to adoption of technology

How important are Non-Financial Factors?

Three incentive programs from the early 1980s

Program	Incentive	Median Adoption rate (%/yr)	Lowest Adoption rate	Highest Adoption rate	Highest/Lowest ratio
NY program (1978-84)	Modest loan subsidy	0.12	0.01	0.51	51.0
BPA pilot program	Long-term 0% loan	4.4	0.8	10.4	13.0
BPA interim program	Grant of ~93% of cost	8.6	1.4	19.3	13.8

Lessons from the '80s

- Incentives necessary for inducing investment
- Non-financial factors are key barriers to action
- Incentives often work best when combined with other approaches. These include:
 - *Marketing* to get the incentives noticed (including social marketing)
 - Make the program *convenient* to use
 - Ensure accessible *information* about the desired action (how to do it, what to expect)
 - Provide for *quality assurance* that the products or services will produce as promised

Grading some recent programs: Cash for Clunkers (CARS)

Grades on policy criteria

Environmental effectiveness: C

(cars purchased exceeded fleet average only moderately)

Cost-effectiveness: D

Grading Cash for Clunkers

Grades on behavioral criteria

Increase in new vehicle sales: A

- Marketing: A+ (media saturation, at no cost to taxpayers)
- Convenience: A (one-stop shopping, no paperwork for consumers, instant rebate)
- Information: A
- Quality assurance: A (easy to learn quality of cars)

Grading the 30% residential energy efficiency tax credit

Behavioral criteria

Increased investment in retrofits: Unknown so far

- Marketing: D (how many know about it?)
- Convenience: C (save receipts, file return next year, wait to collect)
- Information: B (fairly clear procedure to get credit)
- Quality assurance: D (shopping for retrofits is difficult)

Grading residential solar photovoltaic incentives (NJ)

Behavioral criteria

Investments in solar: Unknown so far

- Marketing: D (every state different, few if any advertise)
- Convenience: F (state credits + renewable energy credits traded in market, complicated application procedure, deadline to complete)
- Information: D (complicated program, information hard to understand; must depend on installer)
- Quality assurance: F (state lists contractors; caveat emptor)

A policy strategy for energy efficiency: Make it easier

- Marketing
 - Create incentives to get vendors to do marketing
 - Look for opportunities for word of mouth
- Convenience
 - Design program from consumer's standpoint; minimize hoops
- Information
 - Develop credible information on effects of home retrofits
 - Invest in making information accessible and clear
 - Provide information on effects after the fact
- Quality assurance
 - Develop systems for rating service providers
 - Inspections of work

Some promising possibilities: Develop more useful information

- Develop credible measures of energy cost of home occupancy for houses, apartments
- Improve feedback devices, including for efficiency investments, to publicize savings
- Human factors design for smart meters

Some promising possibilities: Policy ideas

- *Invisible loans:* Low-interest loan paid in utility bill so that monthly bill is lower
- *Home energy cost of occupancy disclosure requirement at transfer* (this can create an incentive for rentals)
- Combine above with invisible loans
- *Cash for appliance clunkers*
- *And others...*

Sources and contact information

G.T. Gardner and P.C. Stern, *Environmental Problems and Human Behavior, 2nd ed.* Pearson Custom Publishing, 2002.

P.C. Stern, Environmentally significant behavior in the home. Pp. 363-382 in A. Lewis, ed., *The Cambridge Handbook of Psychology and Economic Behaviour*, Cambridge, U.K.: Cambridge University Press, 2008.

Gardner, G.T., and Stern, P.C. The short list: Most Effective Actions U.S. Households Can Take to Limit Climate Change. *Environment*, 2008, 50(5), 13-24.

T. Dietz, G.T. Gardner, J. Gilligan, P.C. Stern, and M. Vandenberg, Household actions can provide a behavioral wedge to rapidly reduce U.S. carbon emissions, *Proceedings of the National Academy of Sciences*, in press.

Contact: Paul C. Stern

U.S. National Research Council, Washington DC

pstern@nas.edu