
COST-EFFECTIVE CONSERVATION

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How to Avoid?



What Drives Consumption Down?

1. Income

2. Prices

3. Preferences/Attitudes

4. Technologies (and their prices)

5. Prescriptive demand management

Tool box



What Drives Consumption Down?

1. Income

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Tool box

Outdoor Water Use

4. Technologies and their Prices

Technologies and their prices



Household retrofits



Rebate programs

- EPA lists over 100 rebate programs targeting water efficiency retrofits
- These programs available to millions of customers

4. Technologies and their Prices

Two related questions:

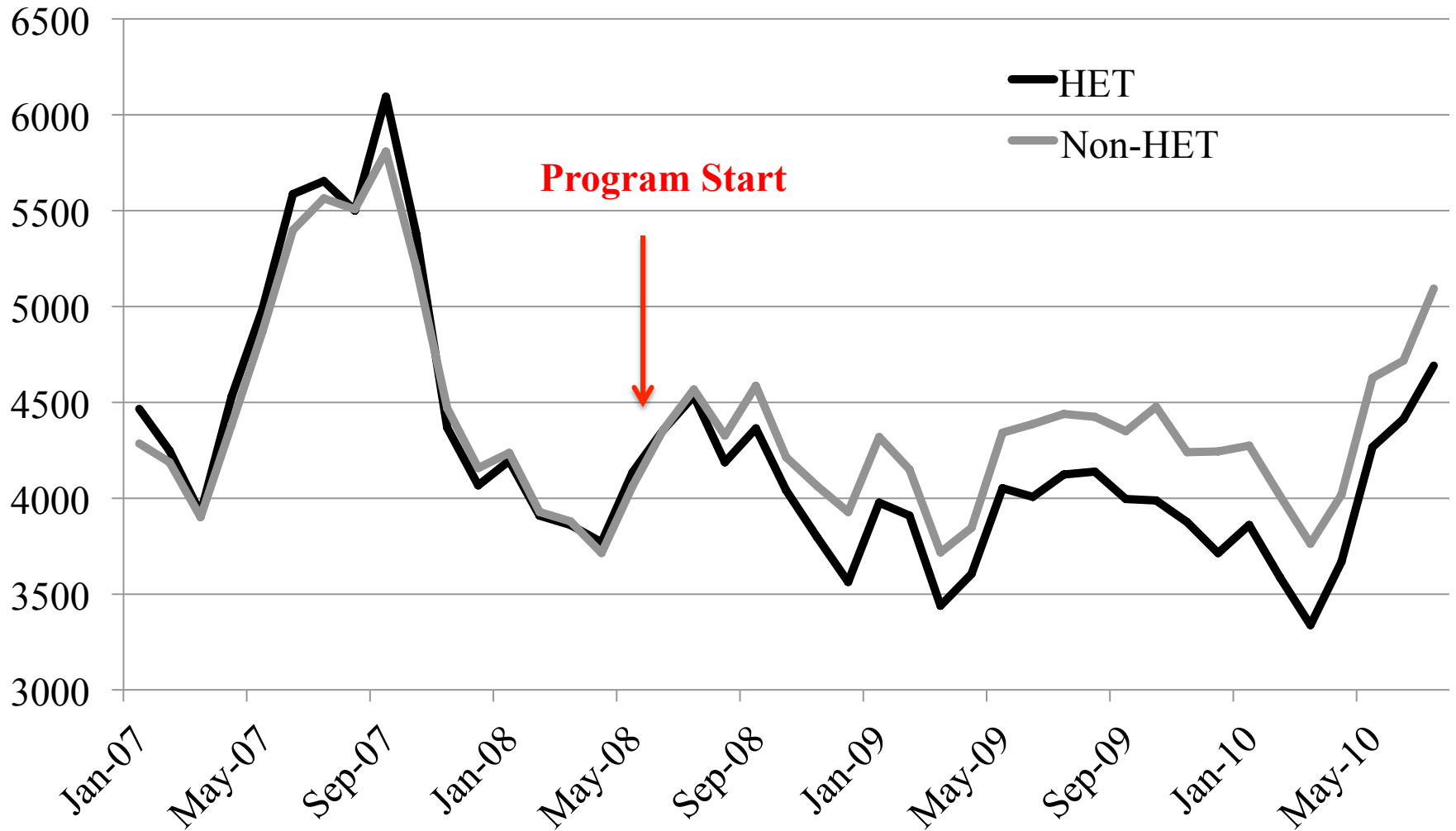
- ✓ What are the actual savings?
- ? Efficacy of the incentive program?
- ? Is the incentive *responsible* for the retrofit

Tricky to assess when the behavior (retrofit purchase) naturally occurs.

Need to measure *additionality*.

Additionality critical for assessing *cost-effectiveness of the program*.

HET Retrofit Program Results



HET Retrofit Program Results

- What are actual savings?
 - 325 gallons per month reduced
 - An 8% reduction in monthly household use
 - No evidence of a rebound effect
 - Engineering estimates suggested 336 gallons per month

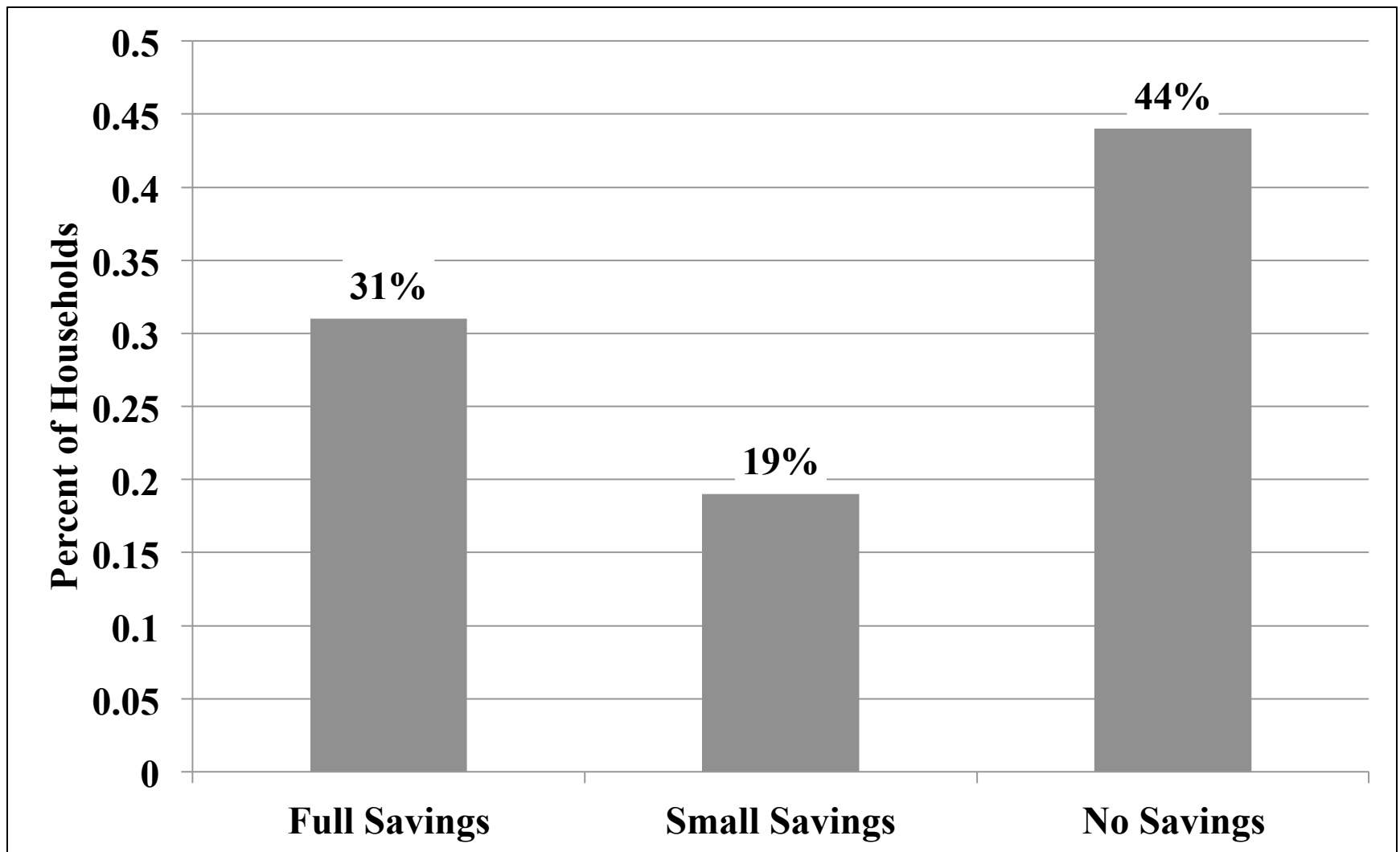
Cost-Effectiveness?

- At \$150/rebate and assuming 100% additionality:
Cost-effectiveness = \$4 to \$5 per 1,000 gallons
- Estimated cost of expansion = \$7 ptg
- *Did the \$150 “buy” all the gallons saved?*

Additionality?

- Survey of rebate recipients
- 80% response rate
- Asked a series of questions about:
 - motivation for replacing toilet
 - motivation for choosing an HET
- Three categories of respondents:
 - Full Savings:** rebate sole reason replaced toilet at all
 - Small Savings:** rebate reason chose HET over other new
 - No Savings:** planned to replace with HET even in absence of rebate

Additionality?



Additionality?

- 63% of water reductions would have occurred in absence of the program.

Cost-Effectiveness?

- At \$150/rebate and only attributing water savings *directly purchased* by the rebate:

Cost-effectiveness = \$11 to \$15 per 1,000 gallons

Summary

- Cost effectiveness?
 - \$5 ptg if attribute *all* water savings to rebate
 - \$15 ptg if attribute *only rebate-induced* savings
- Effect likely to be exacerbated with lower rebates relative to purchase price
- HH targeting may not increase cost-effectiveness
- Smarter options?
 - Apartments/commercial/industrial

3. Preferences/Attitudes

- Information campaigns: are they effective?
- Randomized experiment in Cobb County
 - 35,000 households receive one of three information treatments
 - Compare usage to 77,000 control households

3. Preferences/Attitudes (Ferraro, GSU)

- Technology message (top ten tips)
 - No effect
- Technology + appeal to social good
 - 2.7% ↓ immediately
 - Could not detect an effect one year later
- Technology + social good + social norm
 - 4.8% ↓ immediately
 - 2.6% ↓ one year later
 - 1.3% ↓ two years later

3. Preferences/Attitudes

- Salience of price signals:
 - Sub-metering conversion in apartment buildings (billing pass through) resulted in 30% reduction in water use.
 - Electric utility work indicates similar impacts of e-bills (those with e-bills use more electricity).

Parting Thoughts

- Lots of data exists & host of tools available
- Additionality critical to consider in any incentive program
- Design your programs with eye toward evaluation
- Engage with the resources available to evaluate programs

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