What Lies Beneath
The relationship between savings and customer engagement with behavioral program feedback mechanisms

BECC 2014

Shawn Bodmann, Gomathi Sadhasivan, DNV GL
Gayle Pensabene, National Grid
Home Energy Reports

Indirect feedback mechanisms
- Historical use
- Normative comparisons
- Savings tips
- Paper or electronic copy

Gaining popularity
- Used by over half of the largest 50 utilities in US
- 1% to 3% electric reduction
- High ROI / low $/kWh

Many implemented as randomized control trials (RCT)
- Facilitates evaluation
- Increases internal validity
How Matters

- What behaviors change?
  - Savings has to occur through some kind of behaviors.
  - Interaction with other programs?
  - Persistence?

- How do people engage?
  - Rational messages → Deep engagement
  - Emotional messages → Shallow engagement

- What parts of reports matter most?

- Credibility
  - Improvement
  - Sustainability
Niagara Mohawk HERS Program

- 189,000 treatments
- 94,000 controls
- 20 months evaluated

Billing analysis (difference of difference)

- Annual Savings:
  - 1.97% electric
  - 0.58% gas

Surveys

- Completes:
  - 814 treatment
  - 810 control
Niagara Mohawk HERS Evaluation: Survey

- Treatments vs. Controls
  - ~80 Behaviors
- Treatments only
  - Usefulness of components
    - Self-comparison
    - Tips
    - Neighbor comparisons
  - Depth of engagement
    - Did not remember receiving reports
    - Remembered report
    - Read report
    - Read report and found it useful
Behavior Differences

- Turn off lights more often: +11%
- Cool less when nobody home: +8%
- Set computer on standby: +4%
- New prog. Tstat: +2%
- Set TV on standby less often: -2%
- Use dryer more often: -3%

Gas: billing data → water heating changes
Savings by Depth of Engagement

Do not remember receipt, n=51
-4%

Remembered receipt, n=51
3%

Remembered and read, n=469
5%

Remembered, read, found useful, n=243
6%

KWh Reduction

5%

0%

-2%

-4%
Niagara Mohawk HERS Evaluation: Component Usefulness

- Own household comparison:
  - Somewhat useful: 48%
  - Very useful: 34%
- Action Step to Save Energy:
  - Somewhat useful: 55%
  - Very useful: 22%
- Neighbor comparison - 12 months:
  - Somewhat useful: 46%
  - Very useful: 21%
- Neighbor comparison - last month:
  - Somewhat useful: 46%
  - Very useful: 20%

Total usefulness: n=694
## Savings by Component Usefulness

### Average kWh Savings by 2x2 Component Usefulness

<table>
<thead>
<tr>
<th>Norms Not Useful</th>
<th>Self-comparison Not Useful</th>
<th>Self-comparison Useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>4%</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>

| Norms Useful     | 6%                         | 6%                     |

Self-comparison not useful

Self-comparison useful
Conclusions

Energy / Conservation more salient

- Nudging everyday behaviors
- n.s. engagement effect
- Self-comparisons preferred (p<.01)
  - n.s. effect on savings

Lessons about methods

- Survey along the way
  - Journals?
  - Web 5.0?
- Consumption = High variance
  - High n
- Leverage experimental design whenever possible
Thank You!

Gomathi Sadhasivan, DNV GL
Gayle Pensabene, National Grid

Shawn Bodmann
Shawn.Bodmann@DNVGL.com

www.dnvgl.com

SAFER, SMARTER, GREENER
Home Energy Report
Account number: 1234567890
Report period: 05/26/11 - 06/25/11

We are pleased to provide this personalized report to help you save energy.

The purpose of the report is to:
• Provide information
• Help you track your progress
• Share energy efficiency tips

This information and more is available at nationalgridus.com/EnergyReportsNY

A - Comparison of the receiving household's energy use to neighbors

B - Normative feedback

- "great
- "good
- "more than average

C - Line graphs showing 12 month comparisons to neighbors

D - Personal Comparison

How you're doing compared to last year:

YOU
JAN - MAR 2012
17,011

YOU
JAN - MAR 2011
16,340

So far this year, you used 9% less energy than last year.

Looking for ways to save even more? Visit www.nationalgridus.com/EnergyReportsNY

*This energy index combines electricity (kWh) and natural gas (therms) into a single measurement.

E - Action Steps: Personalized tips chosen for you based on your energy use and housing profile

Quick Fixes
Things you can do right now

☐ Be smart about clothes washing
Water heating accounts for about 90% of the energy used for washing clothes.

Unload your clothes have oily stains, washing with cold or warm water is effective. Some detergents are made specially for cold water, though most detergents will work.

For more savings, run only full loads and don't use the "sanitary" or "allergy-free" cycles, which use extremely hot water and increase energy use significantly.

SAVE UP TO $25 PER YEAR

Smart Purchases
Save a lot by spending a little

☐ Spotlight your work spaces
Whether you're preparing dinner, writing at a desk, or reading a book, light is important. Instead of spreading it around the room, focus light where you need it most.

Using desk lamps or under-the-counter lighting for specific tasks brightens important spaces, and it can significantly reduce your energy consumption.

Most of these lights are also compatible with energy-efficient bulbs.

SAVE $15 OR MORE PER YEAR

Great Investments
Big ideas for big savings

☐ Pay less to keep outdoor lights on
Operating outdoor lights all night could cost you over $40 per year on your electric bill. Luckily, you can reduce energy usage without sacrificing security or style.

Incandescent lights with motion sensors only operate when needed, saving you even more than efficient bulbs.

Or, unplug entirely and install outdoor solar lights, which are available as wall-mounted, post or patio lamps.

SAVE UP TO $35 OR MORE PER LIGHT ANNUALLY

Turn over for savings —→

nationalgridus.com/EnergyReportsNY (607) 663-8136 | EnergyReportsNY@nationalgrid.com
© 2011 OFNER

© 2014 DNV GL
# Home Energy Reports: Introduction

<table>
<thead>
<tr>
<th>You’re a Utility</th>
<th>Toolkit</th>
<th>Send a Letter → 3% Savings?!</th>
</tr>
</thead>
</table>
| • Regulators require you to implement efficiency programs | • Widget Rebates  
• DR programs  
• Rates  
• Participation ~3% | • Home Energy Reports (HERs)  
• Powerful  
• Incredible |
Agenda

Home energy reports overview

Niagara Mohawk evaluation

Exploration into how HERs work