"Connected" Technologies and Behavioral Approaches in Efficiency Programs

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OUR MISSION

CEE increases the effectiveness of energy efficiency programs by enhancing communications and harmonizing approaches across programs to advance energy efficiency for the public benefit.

Presentation Overview

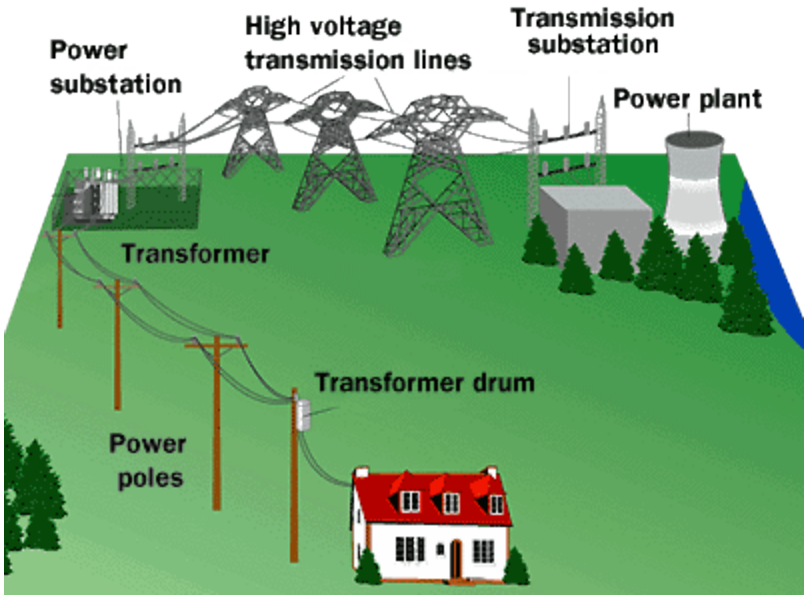
- **Introduction and Overview**
  - Overview of "Connected"
  - Potential benefits of these programs
- **Program Approaches, Characteristics, & Results**
  - Program Overview
  - Technologies and interface used
  - Information provided
  - Behavioral Insights incorporated
  - Evaluation results or early lessons
- **Concluding Thoughts**
  - Overall takeaways
  - Next steps

“Connected” Technology + Behavior

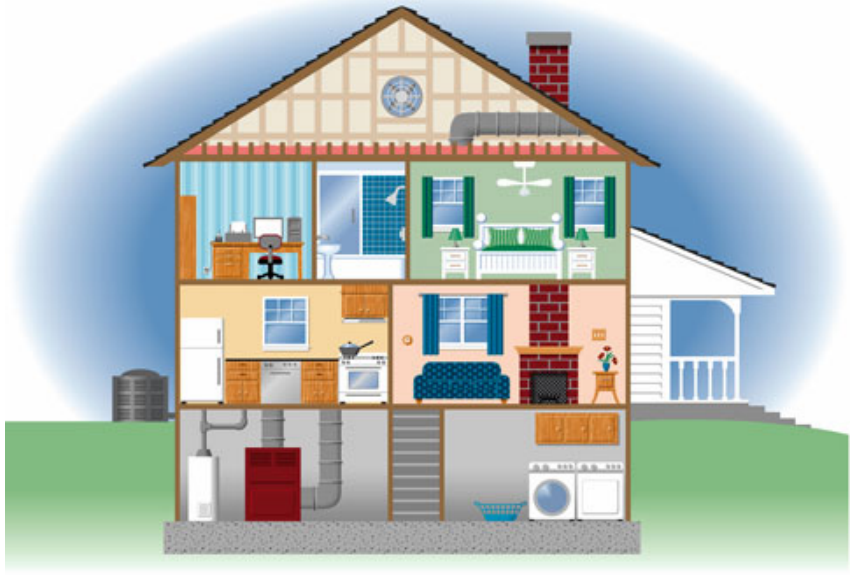
- Provides energy use or cost information in an engaging and interactive way → energy use ↓
- What does this look like in practice?
- Tremendous opportunities to:
  - Reach customers where they already get information
  - New technologies + behavior insights = ↑ motivation
  - Easier to demonstrate tangible benefits for customers

The Two Sides of "Connected"

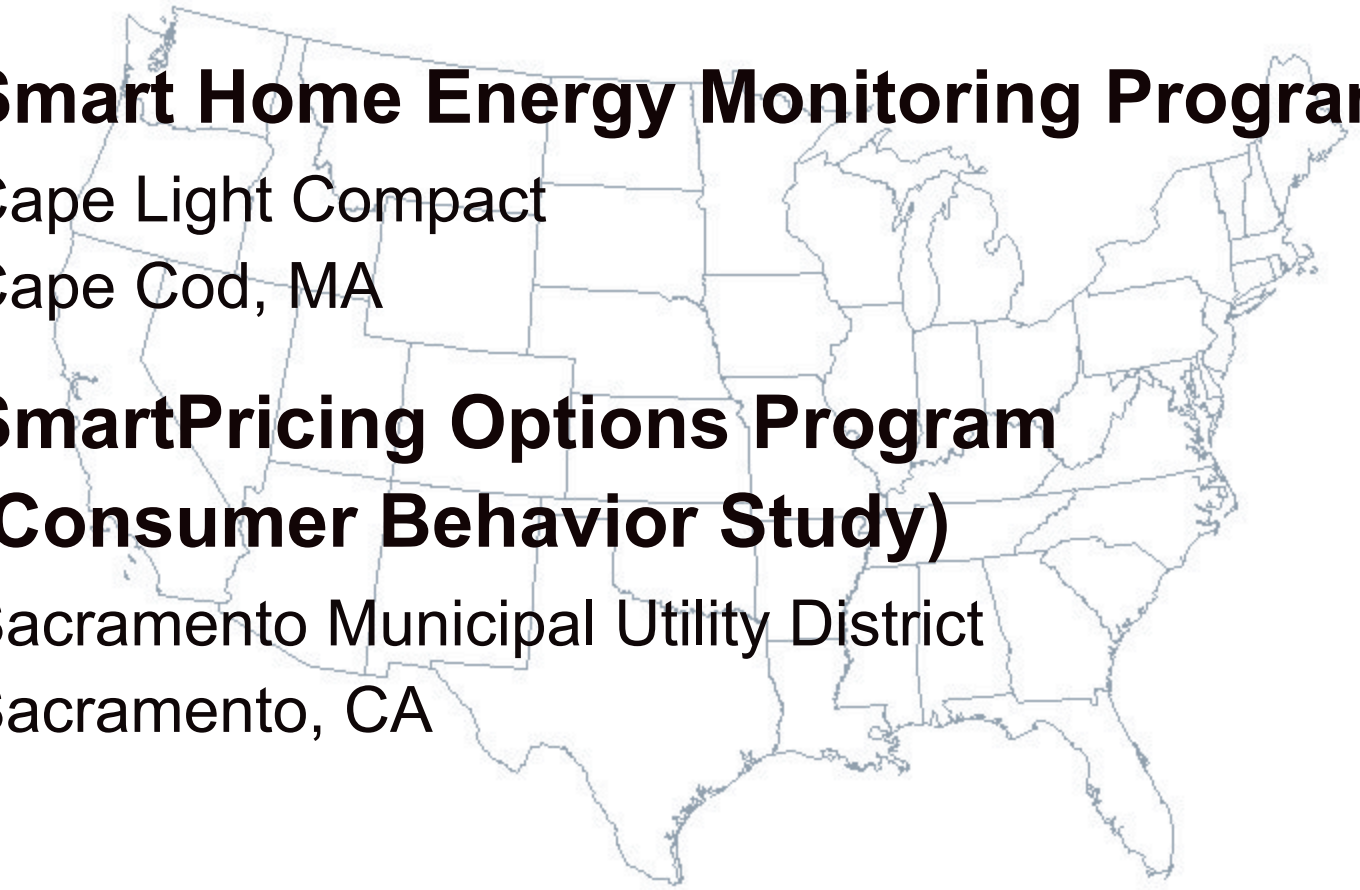
Outward ← Shell of home



Shell of home → Inward



Program Examples



- **Smart Home Energy Monitoring Program**

  Cape Light Compact

  Cape Cod, MA

- **SmartPricing Options Program (Consumer Behavior Study)**

  Sacramento Municipal Utility District

  Sacramento, CA

Smart Home Energy Monitoring

Cape Light Compact

- **Location**: Cape Cod, Massachusetts
- **Dates**: 2009-2012 (Phase 1, Phase 2)
- **Technology**: Real-time monitor, wireless gateway
- **Interface:** In-home display and web portal (real-time data)
- **Participants**: 243 Residential (intended 15 Commercial)
- **Behavior Insights**: Social Norms, loss aversion, prompts

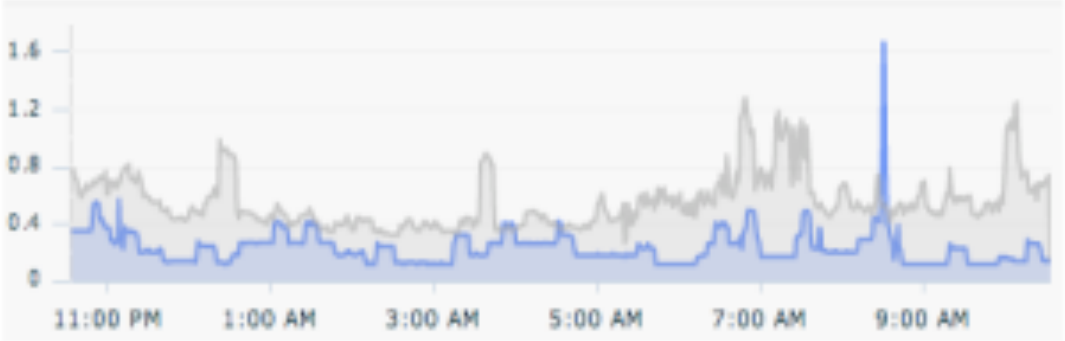
Cape Light Compact

Welcome **paulcole** | 10:34 AM 0.14 kW | 906 points | sign out

DASHBOARD | TAKE ACTION | PROFILE | SAVINGS & GOALS | Snapshots | User Guide | Help | Settings | Resources | Feedback

Your Home Recent use in kW

1 wk | 1 day | 12 hrs | 6 hrs | 3 hrs | 1 hr



New! take a snapshot

Home Monitor | Similar Households

Your Actions

view your actions

Unplug chargers when not in use

Are you still commited to this habit?

Yes | No

Install CFLs in your outdoor light fixtures

Are you still commited to this habit?

Yes | No

News Feed

Goals: 7 out of a total of 15 similar households as you are on track to meet their goal this month. That's only 46% of households, could be better!

about 5 hours ago

Your Current Use

10:34 AM

0.14 kW

is Less than Similar Households: 0.15 kW

0 | 0.25 | 0.5 | 0.75

Monthly Summary

Oct 09

Oct Goal	535 kWh
Oct Projected	226 kWh
Oct So Far	109 kWh

You are going to reach your goal for October at your current daily rate of 6 kWh

Your Total Savings

$ | kWh | CO2

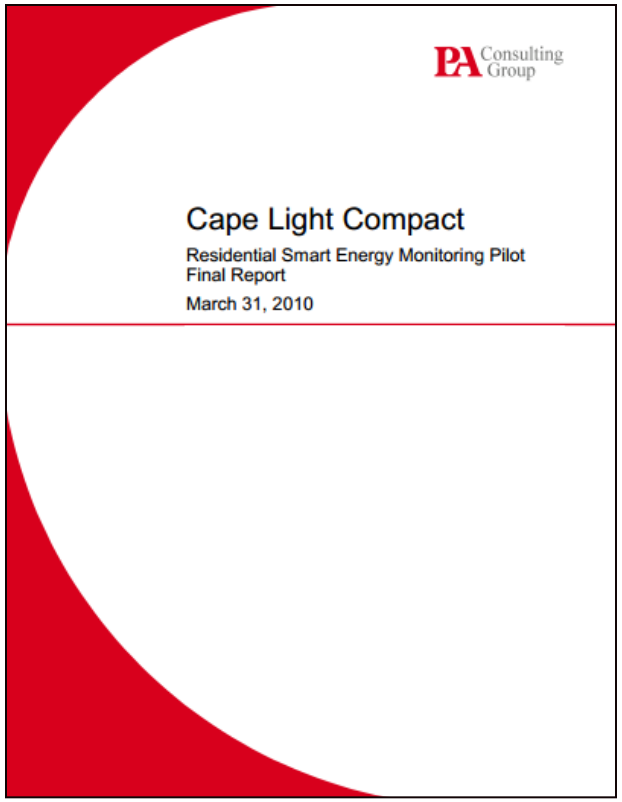
$201.22

Community Total: $1,305.53

Smart Home Energy Monitoring
Cape Light Compact

Evaluation Findings

- **Process**
  - 90% of participants "very satisfied" with home installation
  - 90% "very interested" in keeping technology beyond 1 year initial period
- **Impact**
  - Average program savings: 9.3%*
  - 75% of participants reduced energy use during the program
- **Persistence**: customers still logging in
- Final Impact Evaluation due end of year



**this data was weather-normalized and excludes impacts attributable to other, simultaneous Cape Light Compact programs*

SmartPricing Options
Sacramento Municipal Utility District (SMUD)

- **Location**: Sacramento, CA
- **Dates**: June 2012-October 2013
- **Technology**: ZigBee SEP 1.0, Silver Springs Network
- **Interface:** In Home Displays
- **Information provided**: energy usage and energy cost
- **Participants**: 4,270 residential customers
- **Behavior Insights**: prompts, anchor bias, loss aversion

SmartPricing Options

Sacramento Municipal Utility District (SMUD)

Early Learnings

- Bids stated months for shipping!
- 10% (420 customers) experienced connectivity issues
- Pre-provisioning IHDs before sending to customers was very important and successful
- 2nd tier support notably exceeded planned hours
- New product for SMUD: define roles and responsibilities

SmartPricing Options
Sacramento Municipal Utility District (SMUD)

Takeaways

- Whatever you plan on for IT work, **double your estimate.**
  - Systems are complicated, integrated, and new processes
- Recruit a group of “friendlies”- employee customers
  - Can assist in end-to-end testing

Overall Key Takeaways

- Lessons learned
  - Technology: +/-
    - Opportunity: high interest/enrollment, info capabilities
    - Challenges: installation, overloading, etc.
    - Technology insufficient by itself
  - Social interaction/engagement vital
    - Social media
    - Social comparisons
    - Social interaction
- Opportunities
  - Growing interest in this area
  - Smart phone apps, learning thermostats, etc.
- Future research
  - Cost-effectiveness
  - Claiming savings

Looking Ahead

Upcoming Evaluation Results

- Cape Light Compact: December 2012
- SMUD's: March 2013

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