



## New Insights for Home Energy Reports: Persistence, Targeting Effectiveness, and More

Bruce Cenicerros  
Sacramento Municipal  
Utility District



May Wu  
Integral Analytics  
Prime



Pete Jacobs  
Building Metrics  
Engineering



Patricia Thompson  
Sageview  
Advisor



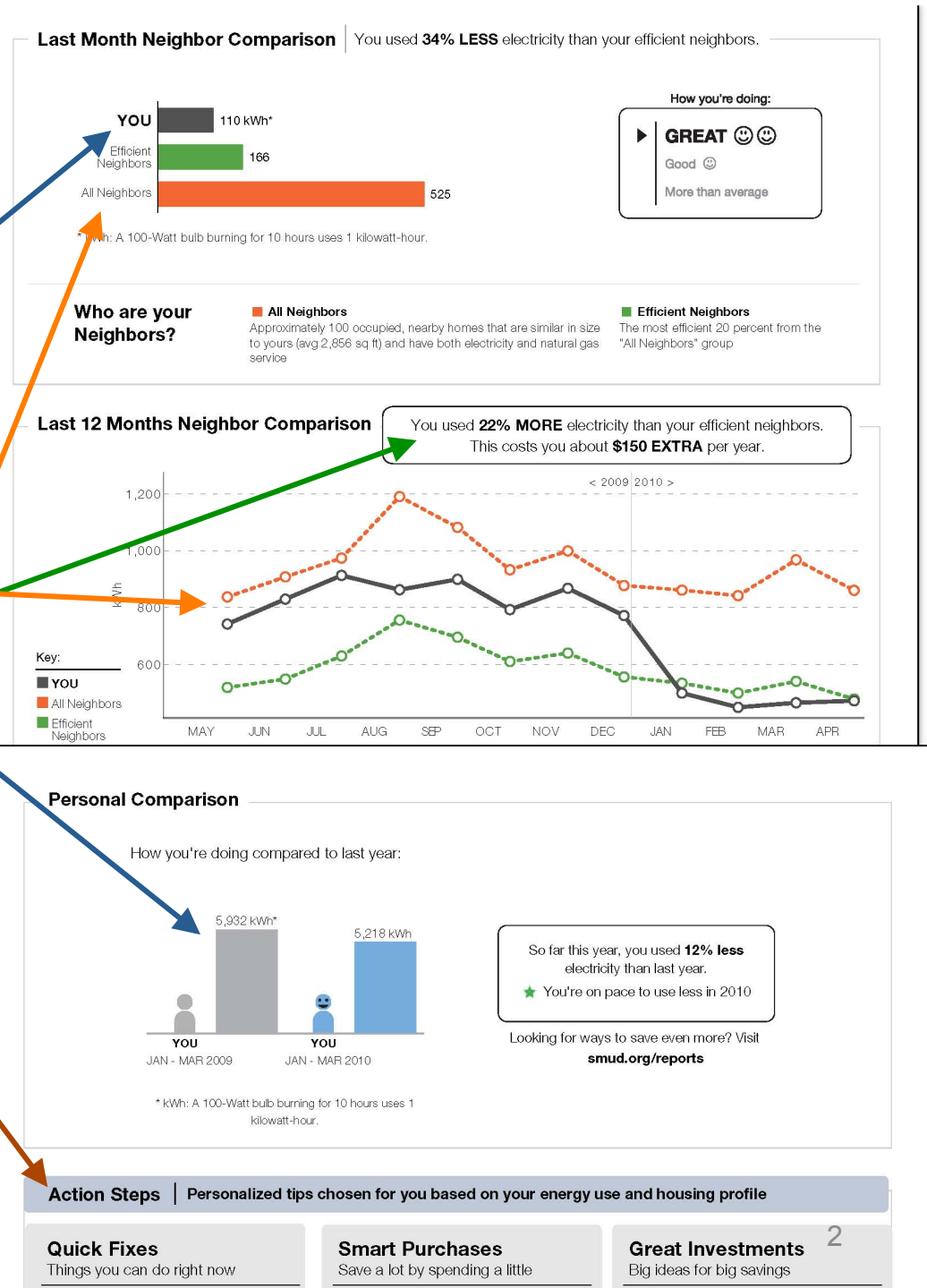
# Reports leverage tools from the social sciences:

## Mailed reports:

- Feedback
- Normative messaging
- Loss-aversion
- Make it easy

## Web tools

- Reminders
- Goal setting
- Commitments



# Web tools

The screenshot displays the SMUD website interface. At the top, the SMUD logo is on the left, and user information "Welcome, Bruce F" with links for "My Report Profile" and "Sign Out" is on the right. A navigation bar includes "Home", "My Energy Use", "My Plan", and "Ways to Save". A "Welcome" banner is below the navigation. The main content area is titled "How you're doing: Sep 8—Oct 8" and reports "You used 37% less electricity than your efficient neighbors." A horizontal bar chart compares energy usage: "You" (366 kWh), "Efficient neighbors" (583 kWh), and "All neighbors" (1,193 kWh). A performance summary shows "Great" (two smiley faces), "Good" (one smiley face), and "More than average". A "Who are my neighbors?" section includes an "Explore my usage" button. Below, "Steps you can take right now" lists four tips: "Turn off lights when not needed" (653 people), "Turn off your computer at night" (535 people), "Use computer power-saving modes" (497 people), and "Maximize air flow from vents" (376 people). Each tip has an "Undo" button. A "More ways to save" button is at the bottom. A sidebar on the right offers "See the best ways to save for your area" with links for "Free steps to take", "Smart purchases", "Great investments", and "View all tips".

**SMUD**™ Welcome, Bruce F | [My Report Profile](#) | [Sign Out](#)

[Home](#) [My Energy Use](#) [My Plan](#) [Ways to Save](#)

Welcome

How you're doing: Sep 8—Oct 8

You used 37% less electricity than your efficient neighbors.

Category	Usage (kWh)
You	366
Efficient neighbors	583
All neighbors	1,193

Who are my neighbors? [Explore my usage](#)

Steps you can take right now

- Turn off lights when not needed  
653 people do this  
 Added to your completed tips [Undo](#)
- Turn off your computer at night  
535 people do this  
 Added to your completed tips [Undo](#)
- Use computer power-saving modes  
497 people do this  
 Added to your completed tips [Undo](#)
- Maximize air flow from vents  
376 people do this  
 Added to your completed tips [Undo](#)

[More ways to save](#)


Your insights

See the best ways to save for your area

- Free steps to take
- Smart purchases
- Great investments
- View all tips




# Electronic reports

**SMUD**  
SACRAMENTO MUNICIPAL UTILITY DISTRICT  
The Power To Do More.®


Your Home Electricity Report  
Acc # 1XXXXXX7890

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BOB SMITH, Your energy analysis for Aug 1 – Aug 31 is now [available online](#)

 How you're doing: **Good**  
You used less than average but 13% more electricity than your efficient neighbors.


[Click here to see how you compare online »](#)



[Explore my energy use](#)

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We're here to help

**Find the best ways to save energy**

- View [tips for your household](#), like setting the thermostat to an energy-saving level.
- See [what's popular in your community](#), like turning off your computer at night.
- Explore tips and [make a plan to save](#).

Already do a lot to save?  
[Tell us online](#)

Don't miss out. Join your neighbors in [saving](#) »

- Email summary sent each month
- Customer can click-through to log-in page for web tools.

# Research questions

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- How well do savings hold up over time?
- How much savings persists after reports are stopped?
- What actions account for the savings?
- How much of savings is from behavior versus equipment?
- How much of the savings resulted from participation in other SMUD programs?
- Can we effectively target customers likely to save more?

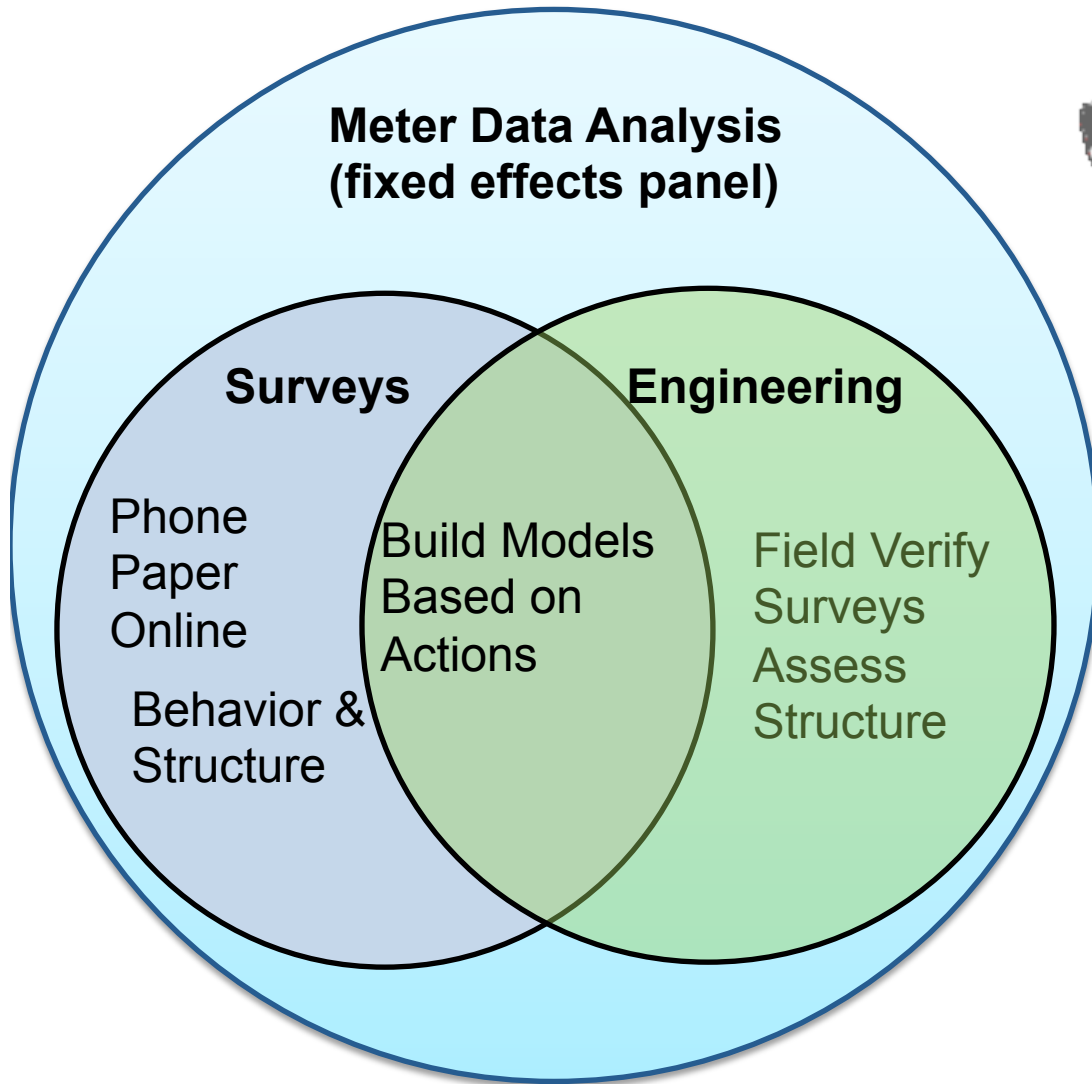
# Treatment groups and sizes

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Treatment Group	Objective	Number
<u>Wave 1: 4/08-9/12</u>		
Legacy group (Pilot)	Track savings over 3 ½ years	33,968
Persistence group (selected from legacy group)	Measure savings that persist when reports stopped	9,965

# Treatment groups and sizes

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<u>Wave 2: 10/10-9/11</u>		
UCLA selection	Identify and target high savers	3,359
SMUD segmentation	Identify and target high savers	3,250
High users	Identify and target high savers	3,292
Electronic report recipients	Test efficacy of sending content electronically	5,930
Seasonal burst recipients	Test efficacy and peak savings from sending reports only in summer	4,976



**Models Include**  
Weather, Structure of Home, Program Participation, Economy, Behavior & Structural Changes



**Meter & Program Data**  
How much electricity was actually used.

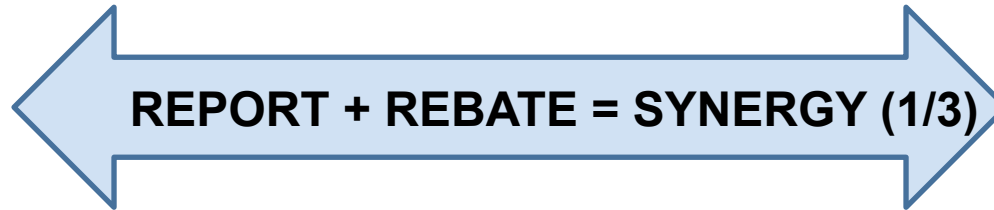


**Engineering**  
what we can see/  
validate/model



**Surveys** what people say they did.





## Behavior

- Preferred. Self Reports: House Temp /laundry

## Bottom Line

- 60% of the savings on a kWh basis
- Most impactful behavior actions – changing house temp settings & pool pump run times

## Structural

- Less common. Self Reports : CFLs, efficient TVs, using power strips

## Bottom Line

- 40% of the savings on a kWh basis
- Most impactful measure – in total contribution upgrade refrigerator



# Wave 2 Summary Results

Wave 2 Subgroups	Average Use (kWh/mo)	Treatment group Size	% Usage Change	Annual Usage Change (kWh/yr)
UCLA	1,025	3,360	-2.2%	-265
SMUD Segmentation	1,240	3,250	-1.7%	-256
High Use	<b>1,343</b>	<b>3,290</b>	<b>-2.7%</b>	<b>-435</b>
E-Reports	772	5,930	-1.8%	-168
Seasonal Burst	1,203	4,980	-1.2%	-177

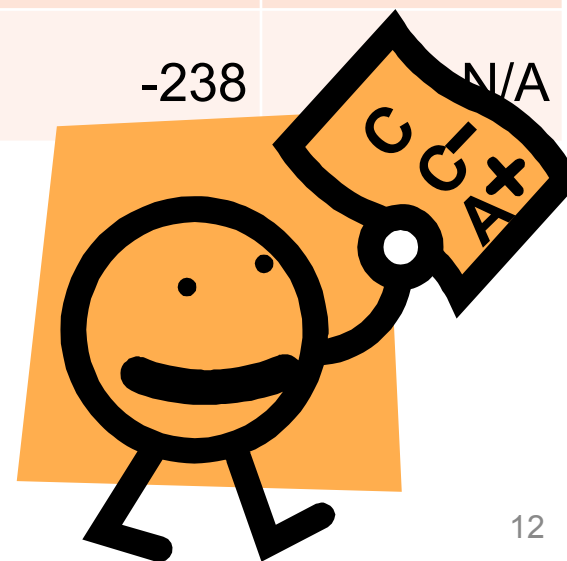
# Wave 2 Targeting Results

Wave 2 Subgroups	Average Use (kWh/mo)	Treatment group Size	% Usage Change	Annual Usage Change (kWh/yr)	Projected Usage Change (kWh/yr)
UCLA	1,025	3,360	-2.2%	-265	-528
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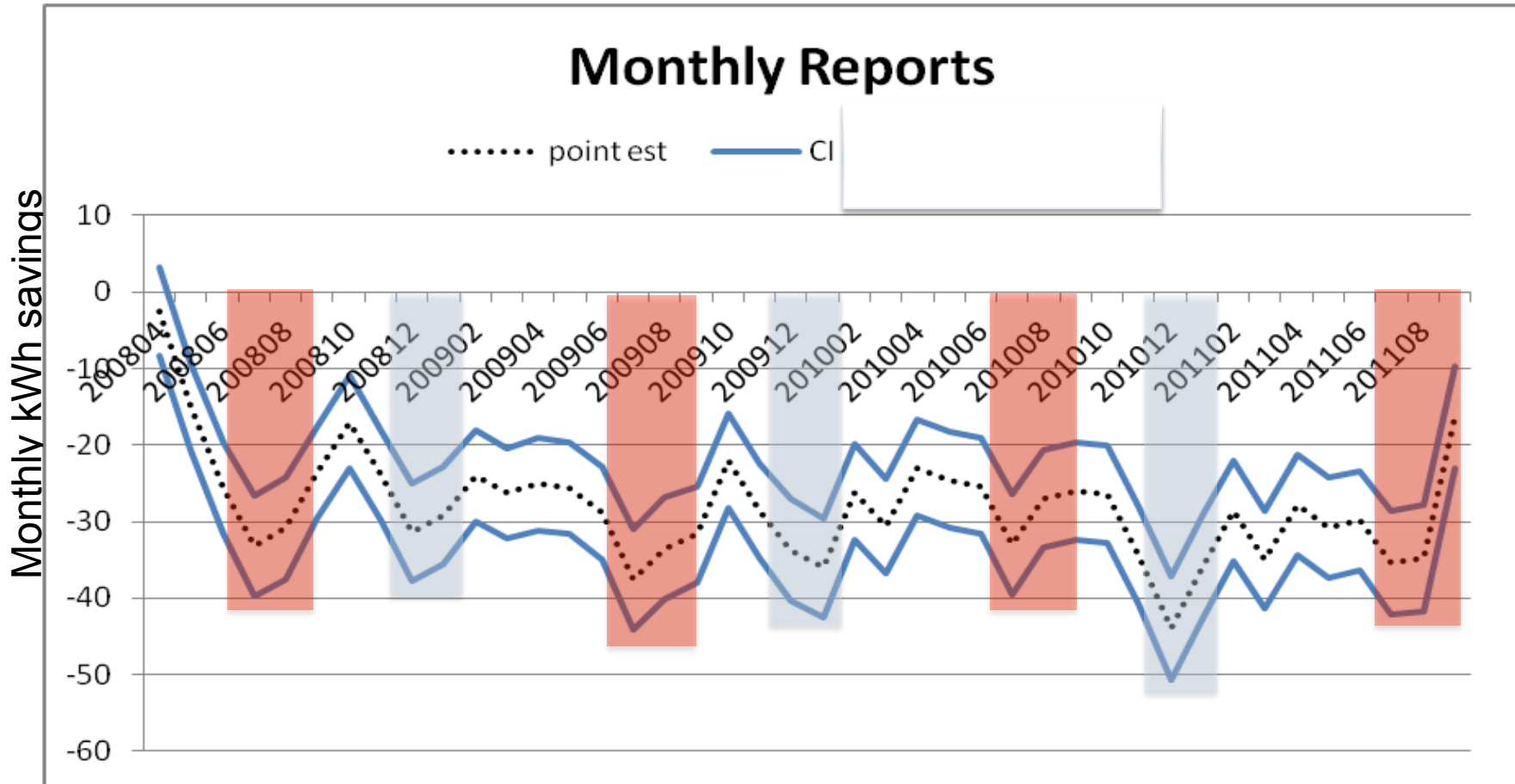
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Random Selection*	947	34,000	-2.1%	-238	N/A

\*Differences: partial year and third year in market



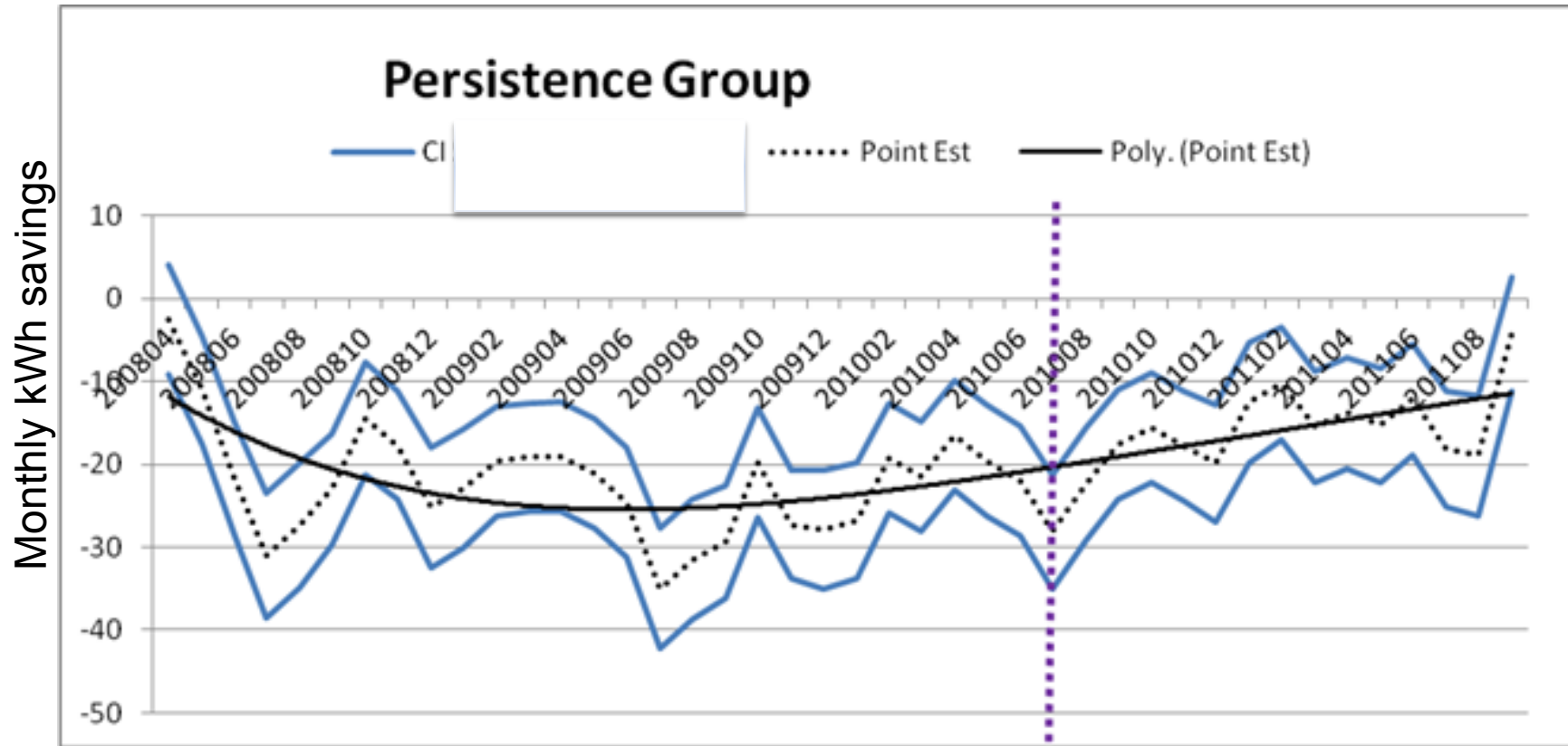
# Saving by month (Cont'd)



Note the clear seasonality observed in the savings.



# Saving by month – Persistence Group



**Reports  
stopped here**

Trend line was fit to current data.

But given that savings are structural and behavioral actual decay may be longer than 2 years.

**Conclusion - Longer observation is needed**

# Results boost program cost-effectiveness

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Evaluation	Period	Target	Net Savings (kWh/yr)	UTC Lev. Cost (¢/kWh) *
2010 ADM	4/2008-3/2009	Wave 1	160	5.1
2012 IA	4/2008-12/2008	Wave 1	210	4.0

\* Ignores value of any natural gas savings. Program costs were projected based on scaling each trial to 50,000 recipients, and were normalized based on actual 2011 program expenses.

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2012 IA	4/2008-9/2011	Wave 1	250	3.2

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2012 IA	10/2010-9/2011	Wave 2	320	2.8

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2012 IA	10/2010-9/2011	High Users	430	2.0

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2012 IA	10/2010-9/2011	Wave 2	320	2.8
2012 IA	10/2010-9/2011	High Users	430	2.0
(2012 IA)	Projected	High Users rotated every 2 years	520	1.7

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# Home energy reports can serve different strategic roles in a DSM portfolio

Program Goal	Strategy	Customer Reach	Tradeoffs
Community-wide engagement	Send to all customers	98%	Least cost-effective strategy
Resource acquisition	Target high users to maximize cost-effectiveness	5-20%	Narrow reach, higher dissatisfaction
Capture synergistic benefits	Target participants in other utility programs to reduce “take-back” & enhance savings	20-40%	Moderate cost-effectiveness, requires disciplined research, ignores unengaged customers
Gateway to unengaged customers	Target only customers that do not participate in other utility programs, web tools	50-80%	Lower savings but some may take first-ever action that leads to more
Peak demand savings	Target customers with highest peak demand, target capacity-constrained areas	10-30%	Miss benefits from broader strategies.

# Recommendations for future study

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- Test other ways of segmenting and targeting
- Better understand segments whose energy use goes up or stays flat
  - Who are they?
  - What factors explain their lack of response, or negative response, to the reports?
  - What different messages may motivate them to save?
  - Would other strategies be more effective with them?
- What mix of energy-saving tips achieve the greatest impacts?
  - *Structural vs. behavioral tips*
  - Easy, low-impact tips vs. hard/expensive high-impact tips
  - Quantity and sequencing of tips. Can we leverage the “gateway” effect?
- What happens when customers receive E-reports?

## For More Info, copy of report:

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Bruce Cenicerros, SMUD (916) 732-6747

[Bruce.Cenicerros@smud.org](mailto:Bruce.Cenicerros@smud.org)

Patricia Thompson, Sageview (925) 552-7335

[patricia.thompson@sage-view.com](mailto:patricia.thompson@sage-view.com)

May Wu, Integral Analytics (513) 828-7555

[may.wu@integralanalytics.com](mailto:may.wu@integralanalytics.com)

[Download the report at](#)

<http://integralanalytics.com/ia/smud.aspx>

# Summary Results for Wave 1

Report Waves & Subgroups	% Usage Change	Annual Usage Change kWh	Monthly Average Use (kWh)	Treatment group size
Wave 1 (pilot)	-2.2%	-249	947	33,968
Wave 1 2008	-1.8%	-207		
Wave 1 2009	-2.4%	-275		
Wave 1 2010	-2.4%	-270		
Wave 1 2011*	-2.1%	-237		
Persistence **	-1.6%	-179	948	9,965

\* Partial Year Projection

\*\*Persistence group stopped receiving reports after July 2010