



THE ADOLESCENT YEARS OF BEHAVIORAL PROGRAMS

Optimizing Behavioral Program Design through
Energy Savings Persistence

December 8, 2014



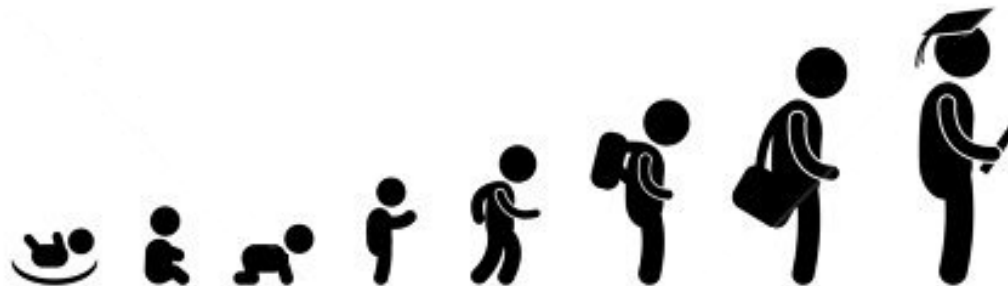
Program design is a moving target

- In some jurisdictions, behavioral program participants have reached their adolescent years
- ‘Adolescent’ behavioral programs require different approaches to optimize results
- One of the main questions that program administrators ask is:
 - How long do we need to treat participants?
 - How often do participants need feedback?
 - How should we continue to treat participants?



We know what to expect on an annual basis, but we are still learning about what to expect over the long-term

- Programs are moving from infancy (measured in months), to adolescence (measured in years)
- Program designers and evaluators need to shift focus from an **annual** perspective to a **multi-year** perspective
- Presentation focuses on:
 - Stages of Development – What do we know from persistence studies?
 - Optimizing Program Design – What can we take from this knowledge to optimize program design?
 - Setting the Course – What can we do moving forward?



Stages of Development

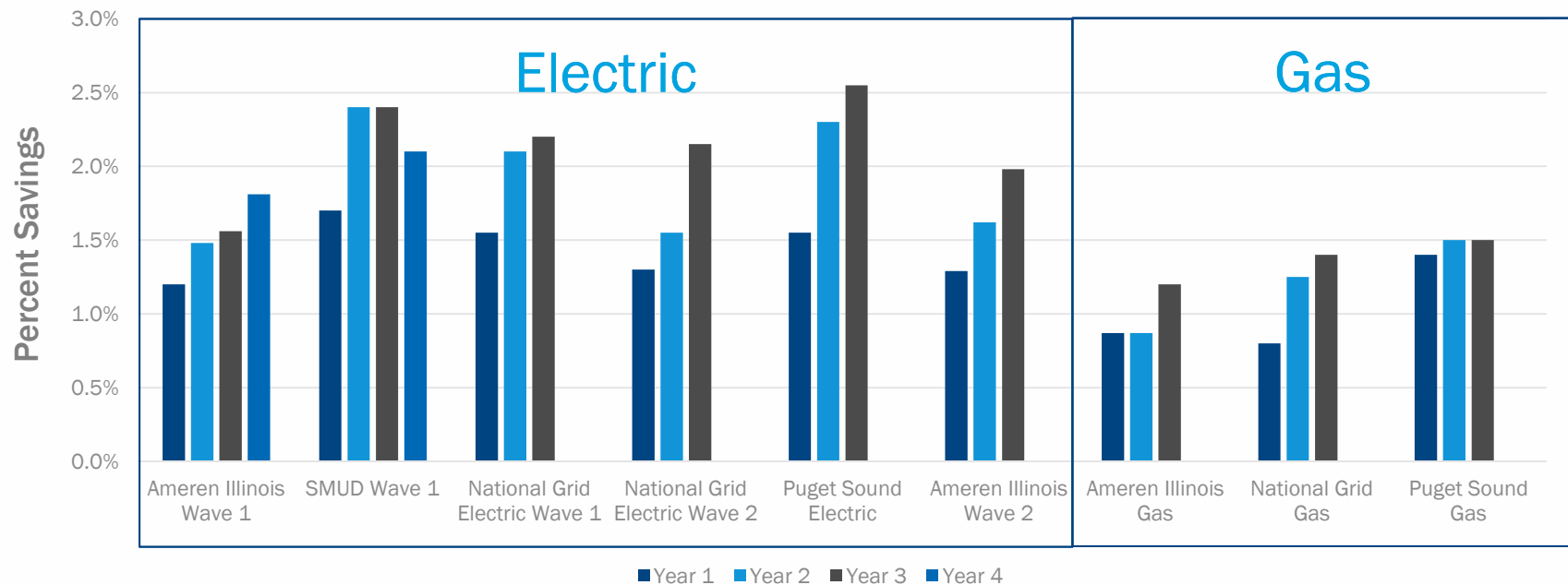
What do we know from persistence studies?



Savings grow after the first year in multi-year programs, but may plateau

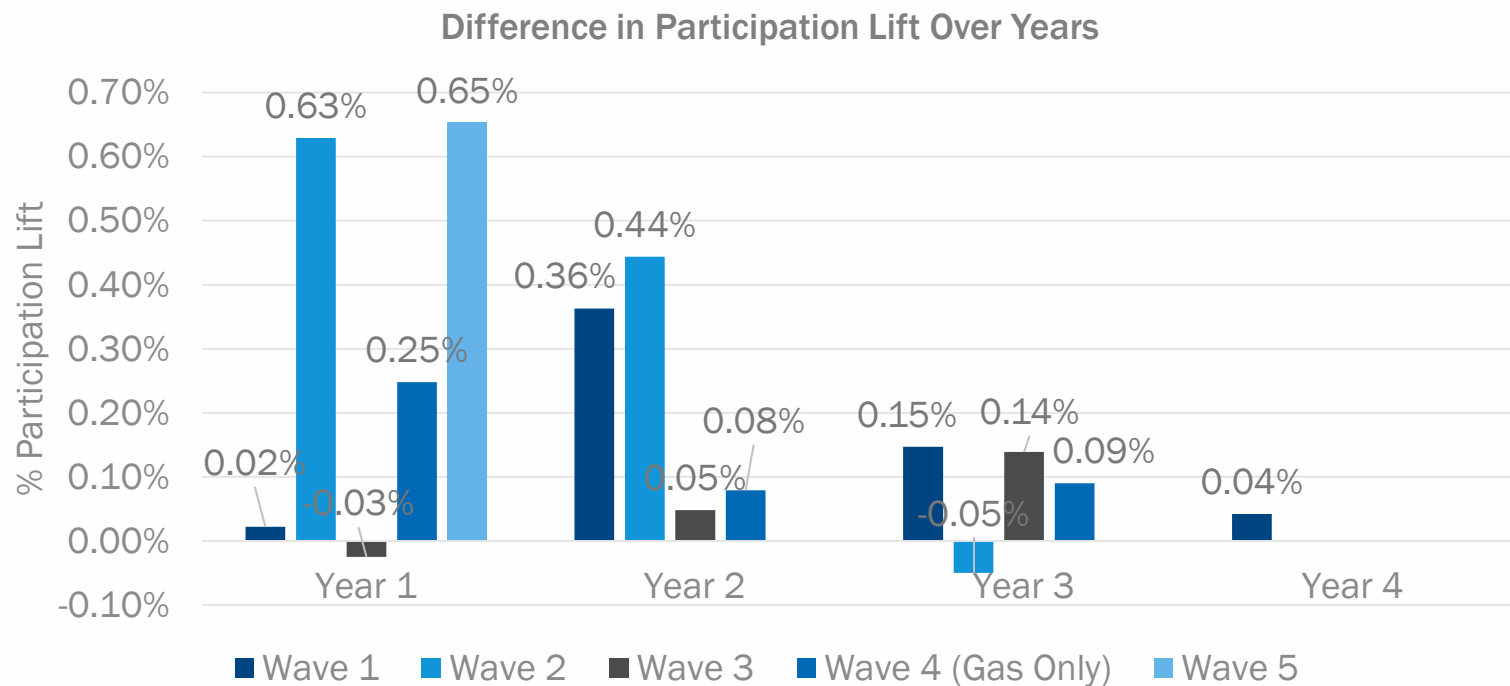
- For Home Energy Reports, we know how much energy they save in the first 1-2 years, generally see savings plateau after Year 2

Annual Savings with Continued Treatment



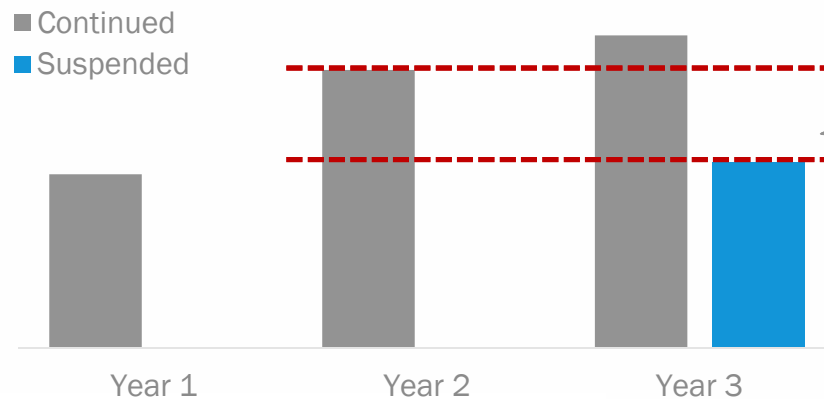
Participation in DSM programs are accelerated compared to control group customers, but converge over time

- Participants tend to participate in DSM programs:
 - More than the control group, but over time this difference gets smaller
 - In the **first year**, and tend to participate in summer for electric cohorts and winter for gas only cohort
 - At a **faster pace** than control



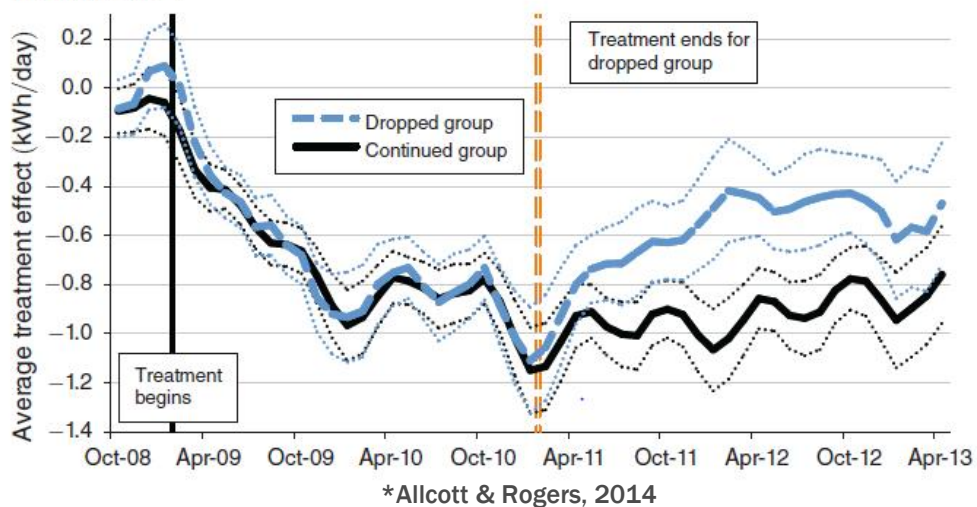
Savings persist with decay after treatment stops

- A few multi-year programs **suspended** treatment for some customers, and found **persistence with decay** after reports are suspended at year 2



Nearly 67-80% of treatment effect may remain 12 months after suspended treatment*

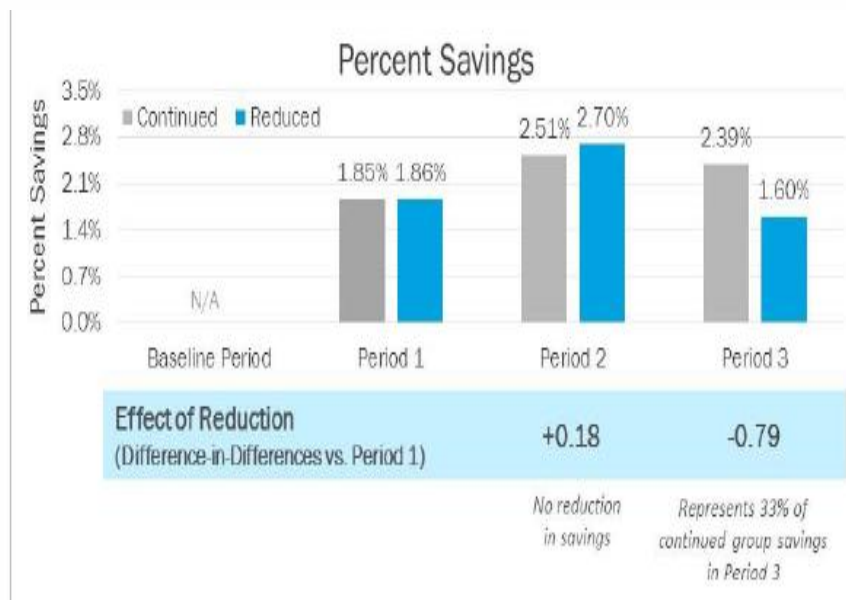
Panel A. Site 1



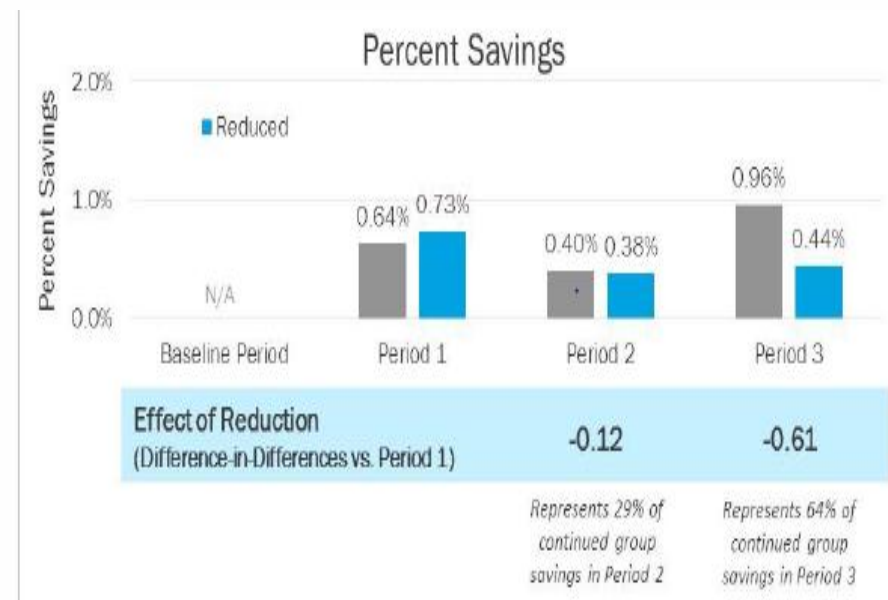
Savings persist with decay after treatment is reduced

- A Northeast utility program **reduced** treatment for some customers, and found **persistence with decay**
 - 33% reduction in savings for electric, 64% reduction in savings for gas when compared to continued group

Electric Reduced Treatment Group Results



Gas Reduced Treatment Group Results



Recent results suggest savings are derived primarily from behaviors

- Recent studies indicate:
 - Spike in response after receiving reports (days)*
 - Behavior is not habituated in first year of reports (months)**
 - It takes time to habituate EE behaviors, but appears to occur after first two years (years)***
 - Savings from DSM programs are fraction of overall savings

Panel B. Quarterly: First four reports

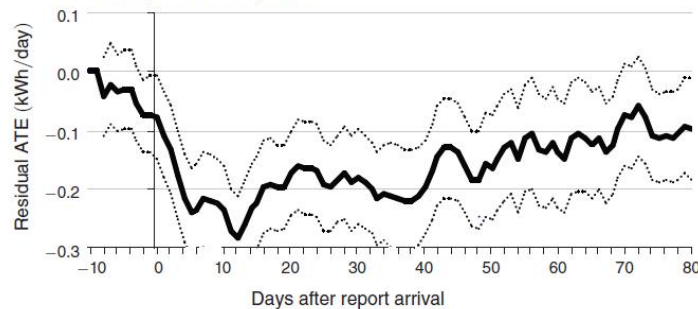
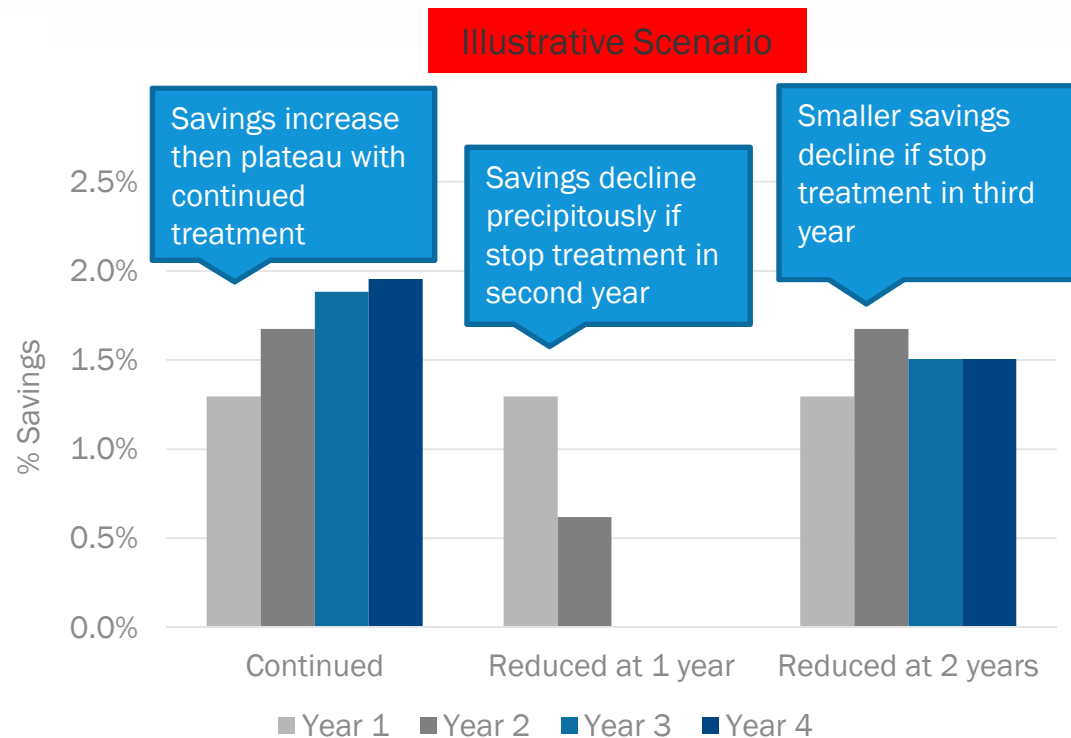


FIGURE 3A. HIGH-FREQUENCY EFFECTS IN EVENT TIME



*Allcott & Rogers, 2014, **NMR Group, 2014, *** Allcott & Rogers, 2013

Optimizing Behavioral Programs for Adolescents

The Adolescent: Strategies, Timing and the Individual

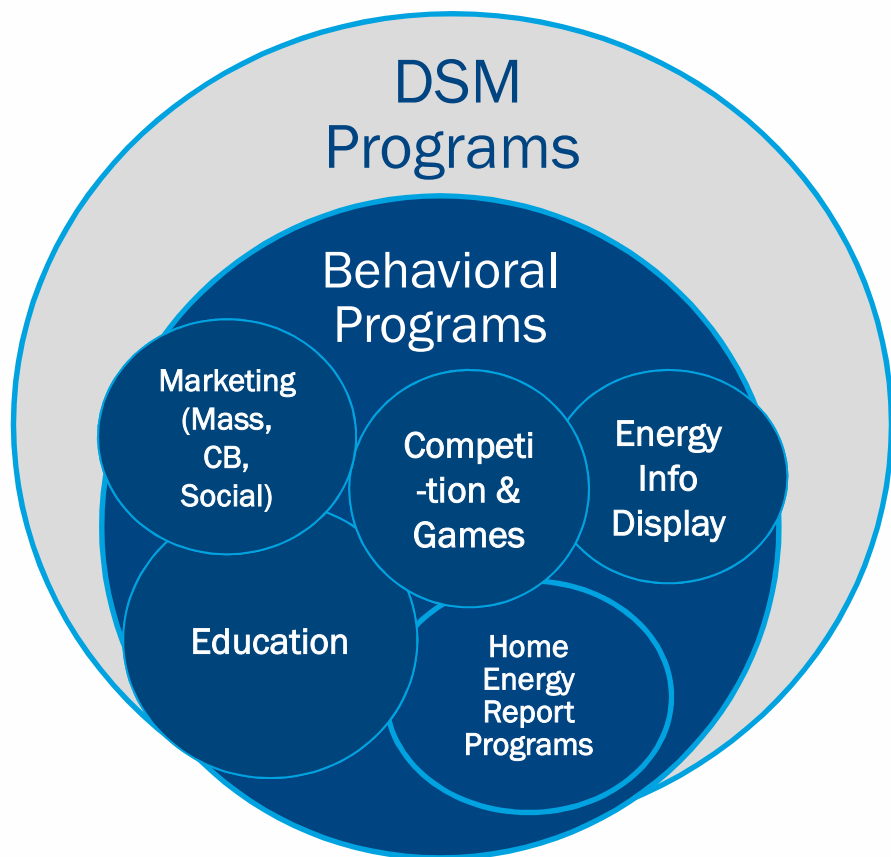


Things to think about when understanding an adolescent

- **Changing Strategies**
 - What are the right ways to engage?
 - Are there new strategies we need to try given the stage of development?
 - What sort of services are administrators in a position to provide that might increase savings?
- **Picking your Moments**
 - When is the right time?
 - For messaging? For intervention?
 - Will they remember the earlier messages we taught them at those critical moments?
- **Nature versus Nurture**
 - Every child (or household) may be unique
 - Speaking to the individual
 - Picking your audience, knowing your audience



Changing Strategy – Variation in Interventions



Program Type	Electric Savings Per Participant
Home Energy Reports	1.4% to 2.8% annual kWh reduction per household
Energy Information Display /HAN/IHD	2.3% to 9.3% annual kWh reduction per household*
Education & Training	2.5% - 4.4% annual kWh reduction per household; 300-515 kWh per participant
Competition & Games	1.9% annual kWh reduction per household; ~200 kWh per participant
Marketing (Community Based, Social Media, Mass Marketing)	Not typically estimated



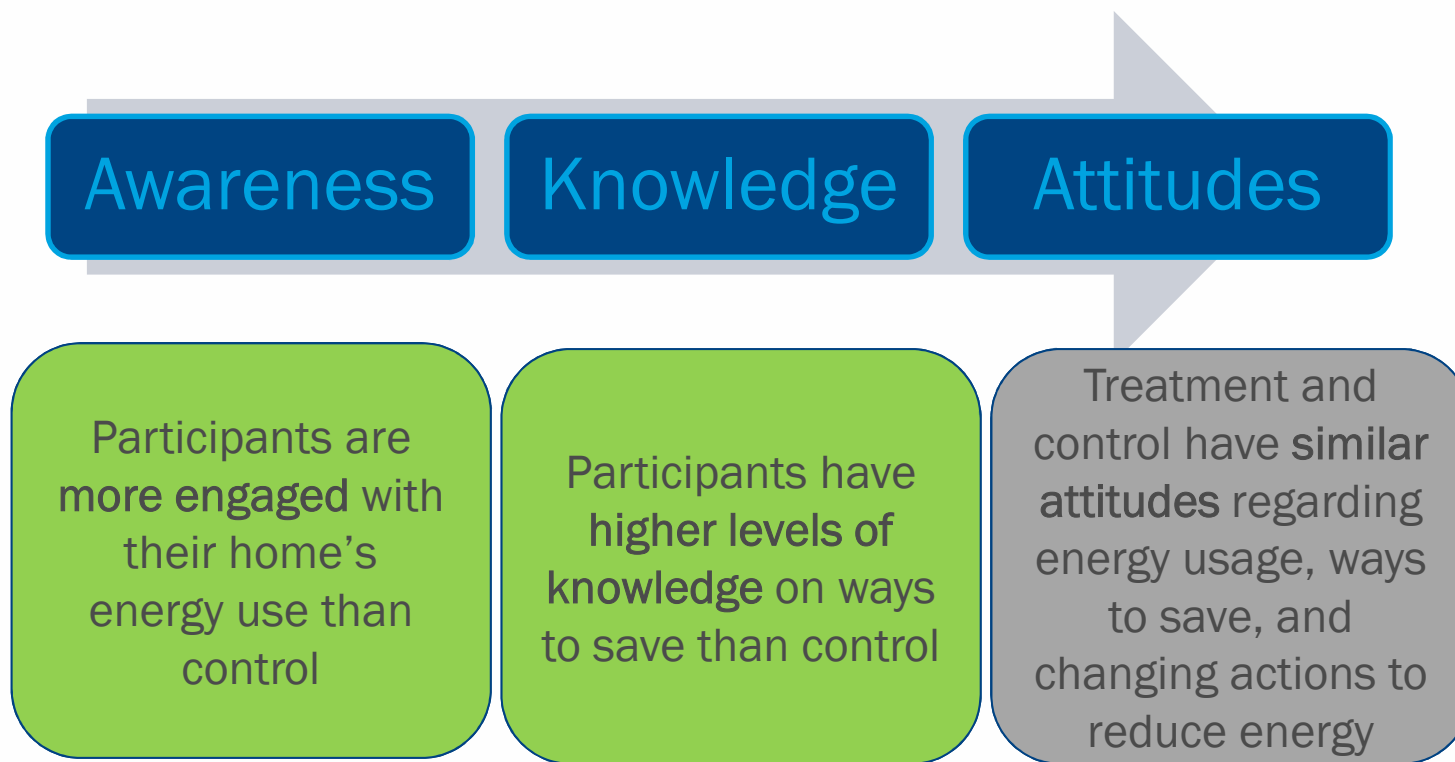
Pick Your Moments

- Findings from persistence studies also highlight how varied responses can be to reports and what they convey over time
 - **Duration of Exposure:** Don't Stop Providing Treatment Too Soon, or else you may not have sufficient habituation
 - **Seasonality & Fuel Type:** Reduced treatment study found 33% reduction in savings for electric, and 64% reduction in savings for gas when compared to continued group
 - **Timing :** Provide direct feedback to move off peak or at other key moments (POS) when it matters most



Nature vs. Nurture – Design Customer-Centric Interventions

- Optimization depends on the customer profile (i.e., who, what and when customers take action)



Setting the Course

What can we do moving forward?





Re-Orient Program Design to Customer Perspective

- Customers are not monolithic, and should be viewed both **across each other** and **over time**
- Over the next few years, need to re-orient program design to take a customer perspective to effectively reach and engage them in a customized way
- Design should consider:
 - Alternative intervention strategies
 - When changes occur
 - Customer-centric interventions

How do you optimize?
“To find out what happens when you change something, it is necessary to change it.” George Box

There are many options for future research

Research Area	What it may tell us
“Stop treatment” experiments	<ul style="list-style-type: none">• Long-run persistence under different program designs & different audiences
Frequency & duration experiments	<ul style="list-style-type: none">• Help estimate decay rate• Indication that habituated behaviors and/or measures have accumulated to a point where persistence effects could kick in
Assess actions taken	<ul style="list-style-type: none">• End-uses driving savings, and demand shift• Potential for measure savings• Bottom-up estimate (or adjustment) to persistence
Profile Customers	<ul style="list-style-type: none">• Understand which customers drive high savings, low savings• Couple with survey research/AMI/disaggregation to understand what actions are driving these results, and how messaging can be tailored to engage customers over time• Understand customer motivation and action (test messaging)



Thank you!

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Persistence References

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