



**Better Buildings Residential Network
Peer Exchange Call Series:
*Beyond Hunches: Using Science to
Drive Behavior Change***

January 25, 2018

Call Slides and Discussion Summary

Agenda and Ground Rules

- Agenda Review and Ground Rules
- Opening Polls
- Residential Network Overview, and Upcoming Call Schedule
- Featured Speakers:
 - **Dr. Carl Marci**, Chief Neuroscientist, Nielsen Consumer Neuroscience
 - **Jennifer Tabanico**, President and Owner, Action Research
 - **Kat Donnelly**, Ph.D., P.E., CEO of Azentive (*Network Member*)
- Closing Polls and Announcements

Ground Rules:

1. **Sales of services and commercial messages are not appropriate** during Peer Exchange Calls.
2. Calls are a safe place for discussion; **please do not attribute information to individuals** on the call.

Better Buildings Residential Network

Join the Network

Member Benefits:

- Recognition in media and publications
- Speaking opportunities
- Updates on latest trends
- Voluntary member initiatives
- Solution Center guided tours

Commitment:

- Members only need to provide *one number*: their organization's number of residential energy upgrades per year

Upcoming calls:

- February 1: [Achieving Results in the Multifamily Sector: Strategies that Hit Home](#)
- February 8: [Going for Gold: Medal-Worthy Approaches to Energy Efficiency from Around the Globe](#)
- February 15: [New Tools in the Toolbox: A Fresh Take on Financing](#)
- February 22: [Kick the Cold: The Intersection of Healthy Homes and Energy Efficiency](#)

Peer Exchange Call summaries are posted on the Better Buildings [website](#) a few weeks after the call

For more information or to join, for no cost, email

bbresidentialnetwork@ee.doe.gov, or go to energy.gov/eere/bbrn & click Join

Dr. Carl Marci
Chief Neuroscientist
Nielsen Consumer Neuroscience





HOW CONSUMERS MAKE DECISIONS:

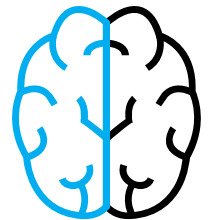
Demystifying Consumers to Drive Behavior Change



January 25th, 2018
DOE Peer Exchange Conference Call

CONTENTS:

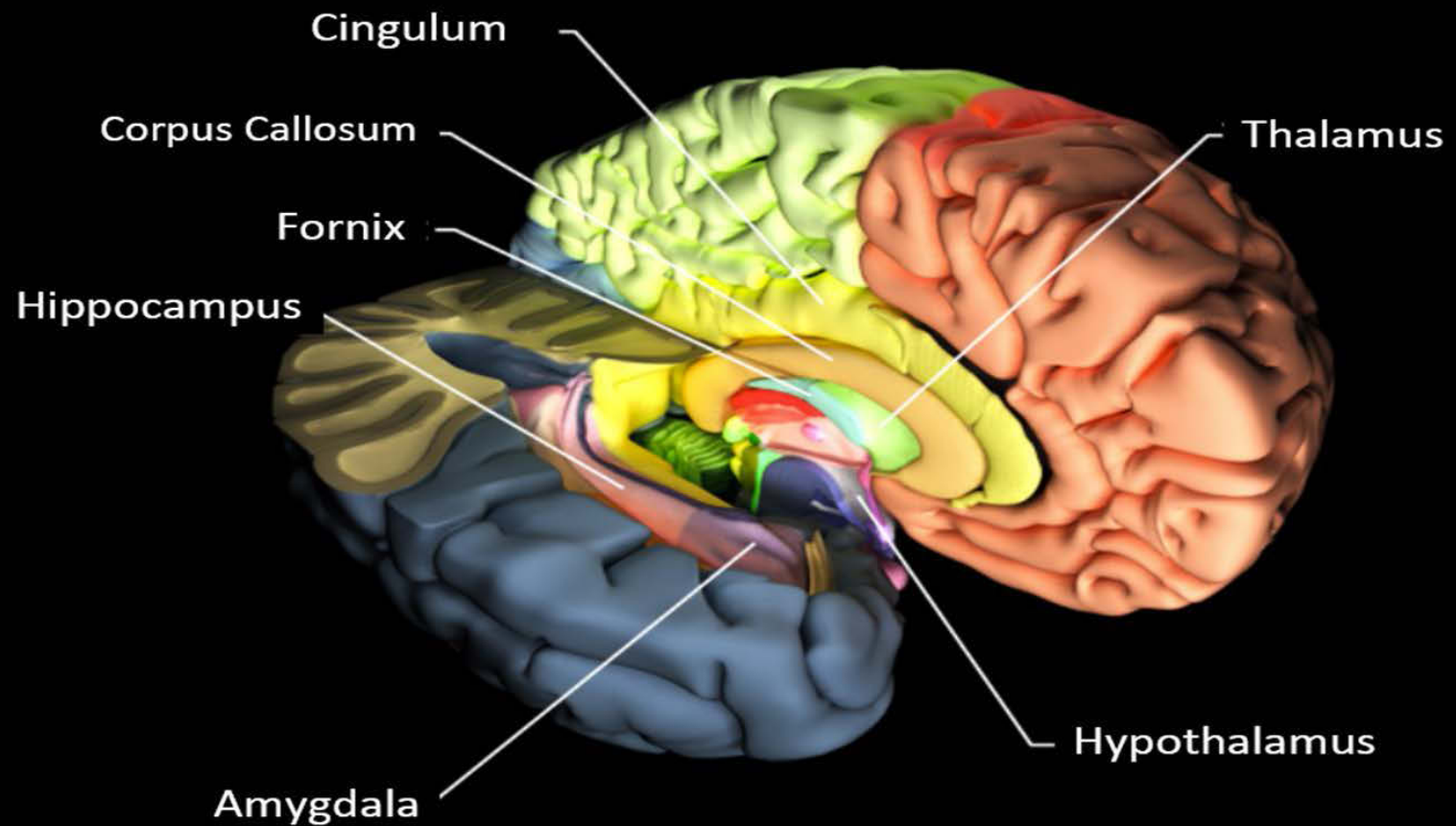
- 1 What is Consumer Neuroscience?
- 2 How Do Consumers Make Decisions?
- 3 Barriers to Changing Brains
- 4 Engagement Matters: Attention, Emotion, Memory
- 5 Conclusions



WHAT IS CONSUMER NEUROSCIENCE?



THE HUMAN BRAIN



THINKING



Based on D. Kahneman, *Thinking, Fast and Slow* 2011

CONSUMER NEUROSCIENCE



Application of neuroscience knowledge and techniques applied to market and media research questions for a deeper understanding of consumer attitudes and behaviors.



COMPREHENSIVE VIEW OF ENGAGEMENT



EEG

32 sensors collect data 500 times every second to fully capture activity across all brain regions



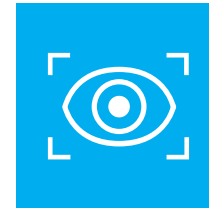
BIOMETRICS

Overall level of emotional engagement, the most and least engaging moments.



FACIAL CODING

Discrete facially expressed emotions, such as surprise, confusion, joy and sadness.



EYE TRACKING

Pinpoint visual attention to content, including specific areas that attract the most and least attention.



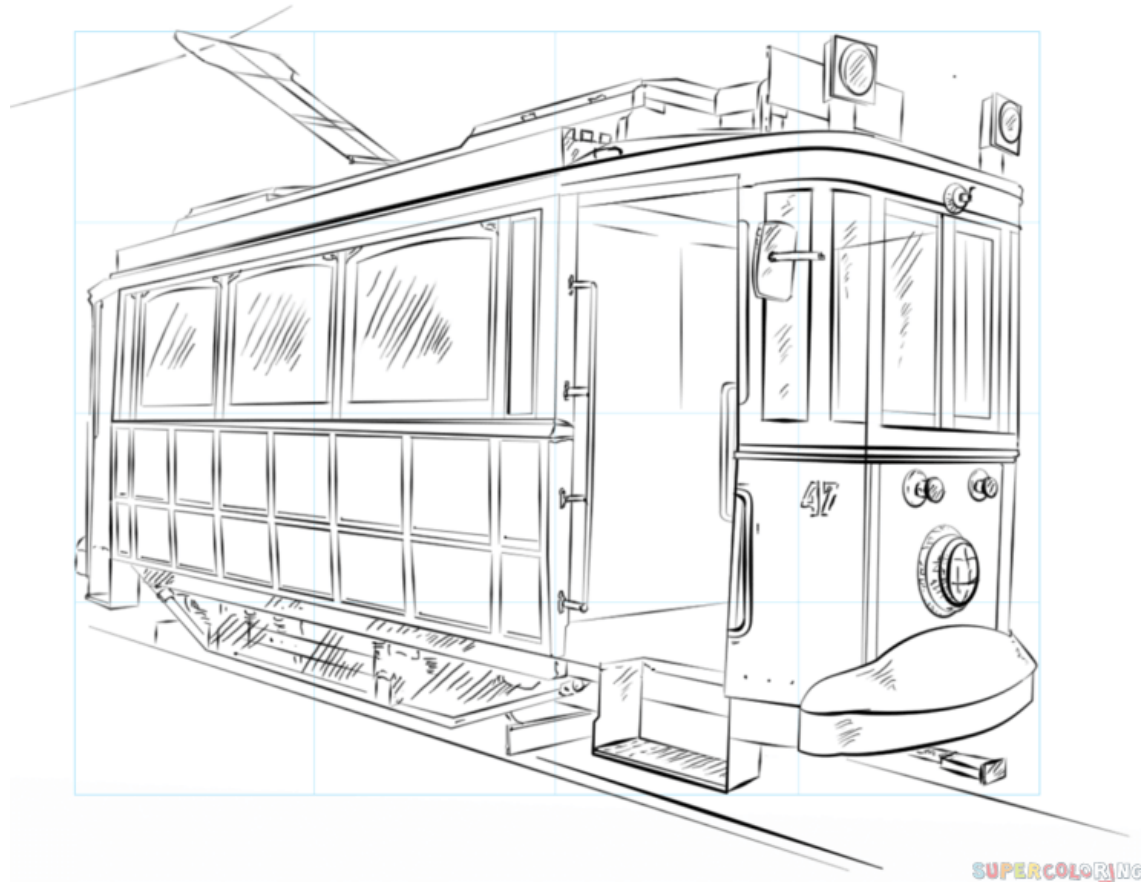
SELF-REPORT

What consumers say they think, do or plan to do.

HOW DO CONSUMERS MAKE DECISIONS?



TROLLEY CAR EXPERIMENT



MOTIVATION THEORY BETS ON THE DEVIL



APPROACH AND FRONTAL EEG ASYMMETRY: APPLICATIONS TO SHOPPER MARKETING



- Pack Design
- Shelf Assortments
- Aisle Design
- End Caps
- Merchandising Displays
- POS Signage
- Online Shopping



BARRIERS TO CHANGING BRAINS

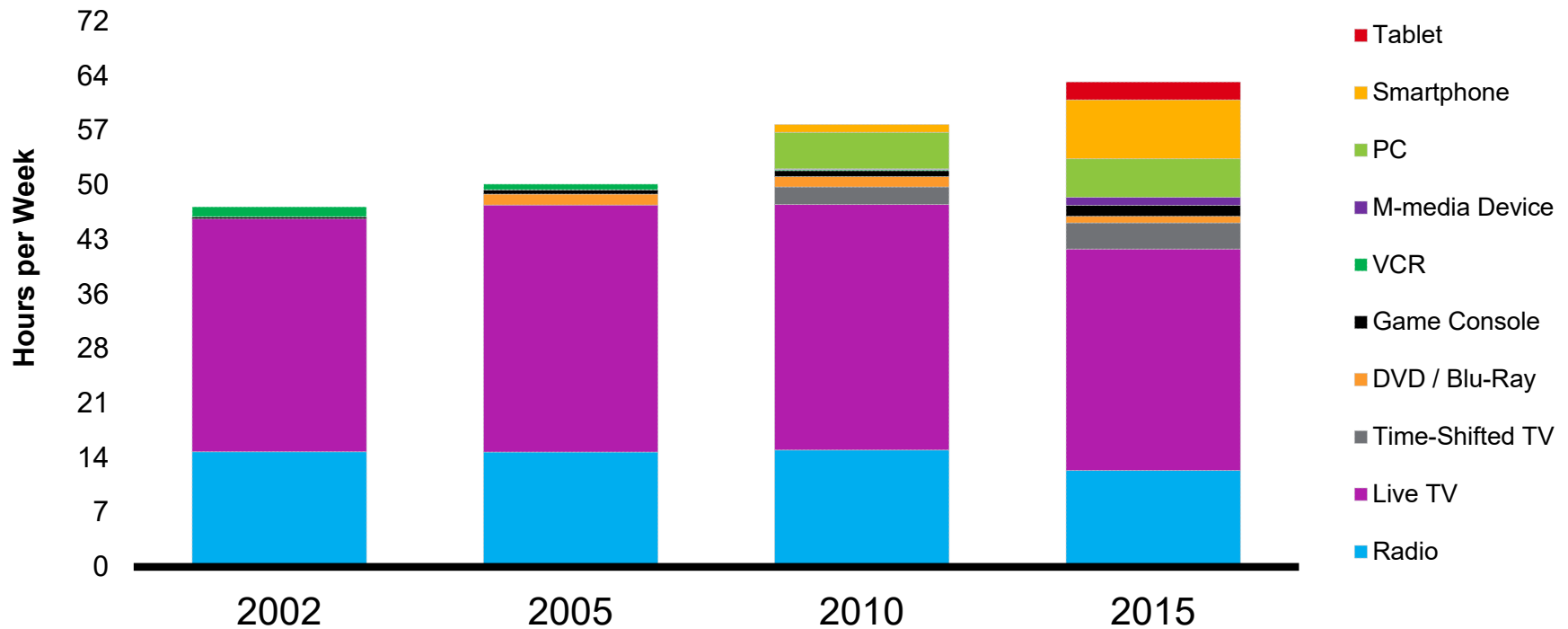


ENGAGING IN THE AGE OF DISTRACTION



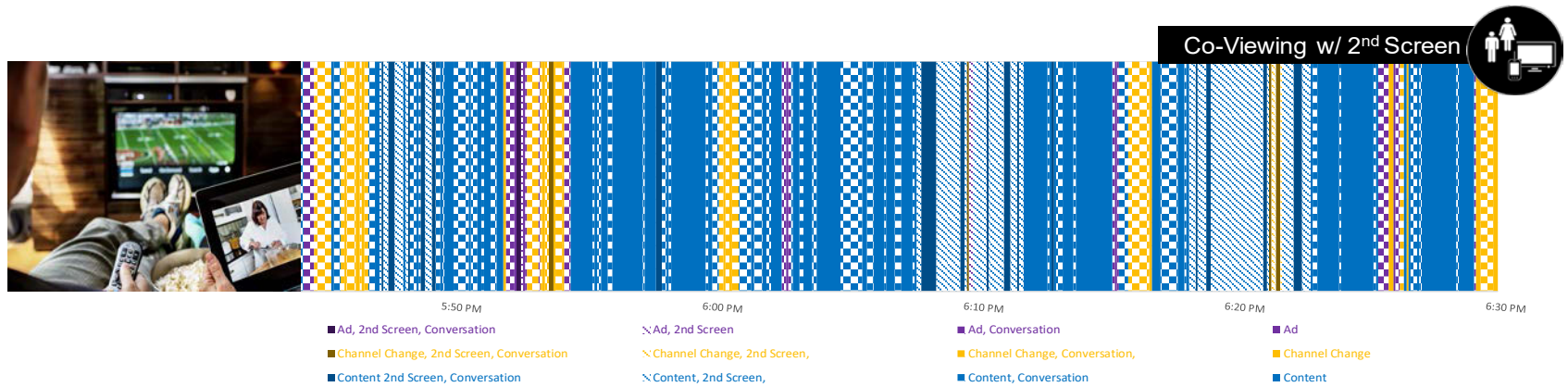
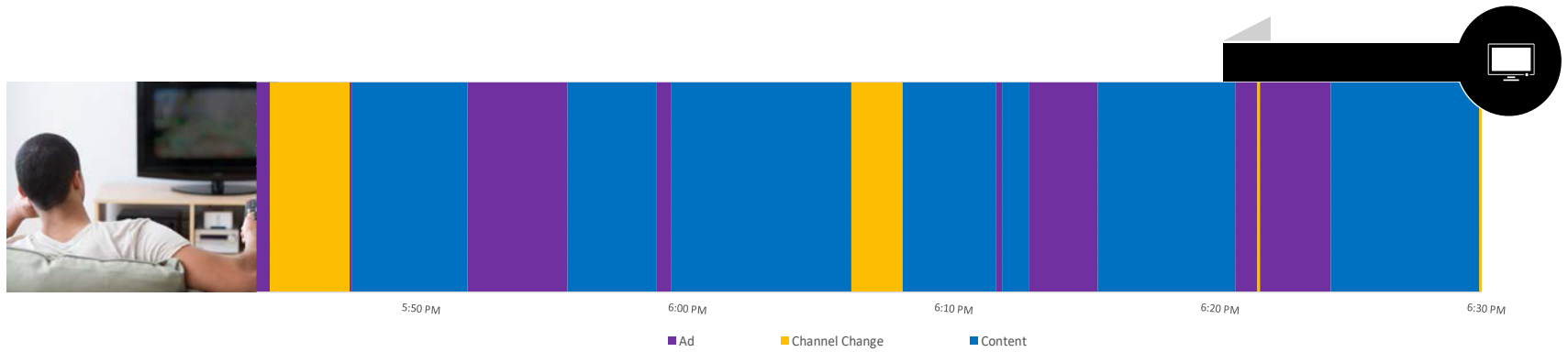
OVERALL MEDIA USAGE IS INCREASING

Weekly Time Spent Based on the Total US Population – Based on Qtr 2, P18+



VIEWING BEHAVIOR WITH 2ND SCREEN

Sample Individual Participants During Natural Viewing Behavior





ENGAGEMENT MATTERS: ATTENTION, EMOTION AND MEMORY IN MARKETING



TRADITIONAL VIEW

THINK

DO

FEEL

If this is true,
our goal is to
persuade.

NEUROSCIENCE VIEW

FEEL

DO

THINK
Rationalize Our
Decisions

If this is true,
our goal is to
engage & persuade.

HOW ADVERTISING CREATIVE CAN BUILD BRAND SUCCESS



1

Engage

Captivate, emotionally attract, and deliver associations and brand-relevant imagery

2

Message

Deliver and/or reinforce relevant associations and messages

3

Brand

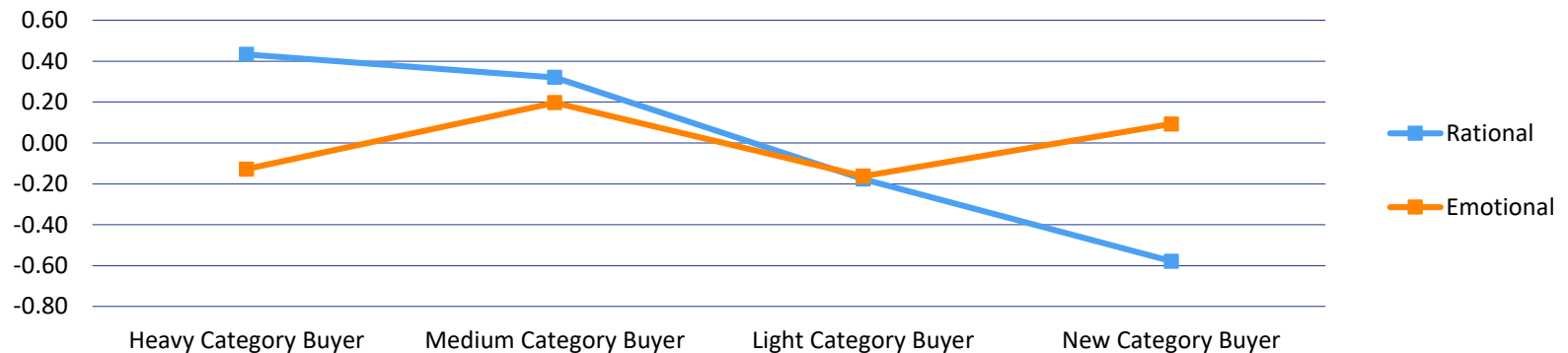
Link imagery and associations distinctively to your brand

WHEN EMOTION REALLY MATTERS

Rational appeals are more effective with heavy category buyers

Emotional appeals are better with new category buyers

Emotional vs Rational By Category Spend



CONCLUSIONS



NEUROSCIENCE HELPS CRACK THE NUT OF CONSUMERS



The background of the entire image is a vibrant blue with a 3D, wavy, undulating texture that resembles water or a topographical map. The waves are layered, creating a sense of depth and movement. In the center of this background, the word "nielsen" is written in a clean, white, lowercase serif font. Below the letters of "nielsen", there is a horizontal row of nine white dots, each centered under a letter, serving as a decorative underline.

nielsen
• • • • • • • • •

Presentation Highlights: Nielsen Consumer Neuroscience (1 of 2)

- **From rational to emotional marketing:**
 - Past marketing focused on authoritative, rational, and persuasive messages.
 - These days consumers want to feel they are making the decision to move forward. They need authentic messages that engage them first on an emotional level.
- **Neuroscience research suggests using a three-part strategy to effectively engage and trigger behavior change:**
 - **Feel:** First, catch residents' attention with emotionally-relevant content.
 - **Do:** Second, communicate in ways that are relevant and meaningful in order to sustain their attention and motivate them to act.
 - **Think:** Third, include more rational messages that strengthen and reinforce behavior change attitudes.

Presentation Highlights: Nielsen Consumer Neuroscience (2 of 2)

- **Rational vs. emotional communication:**
 - **Heavy category “consumers”** (e.g., already into energy efficiency, having completed deep energy upgrades) are more likely to listen to rational messages.
 - **Light category “consumers”** (e.g., self-conscious about energy efficiency like switching off lights, but not fully aware of all energy efficiency measures) will be persuaded by emotional messages.
- **Cost can be a barrier, even when messages are engaging:** Communicating the long-term benefits of home energy upgrades (e.g., energy and cost savings, health benefits) can help overcome this challenge.
- **Messages that are perceived as inauthentic or manipulative** most likely have crossed some line, and are not presented in a way that engage consumers.

Jennifer Tabanico
President and Owner
Action Research



Beyond Hunches: Using Science to Drive Behavior Change



DOE Peer Exchange Call
January 25, 2018

Presented by: Jennifer J. Tabanico, MA
President and Owner



Science and Behavior Change

- ❑ Behavior Matters
- ❑ Behavior Can Change
- ❑ Social Science Can Help



Community-Based Social Marketing

Select Behavior



```
graph TD; A[Select Behavior] --> B[Barriers & Benefits]; B --> C[Develop Strategy]; C --> D[Pilot Test]; D --> E[Implement Broadly & Evaluate];
```

The diagram illustrates a five-step process for Community-Based Social Marketing. Each step is represented by a colored rectangular box, with arrows pointing downwards from the bottom of one box to the top of the next. The steps are: 1. Select Behavior (green box), 2. Barriers & Benefits (orange box), 3. Develop Strategy (yellow box), 4. Pilot Test (grey box), and 5. Implement Broadly & Evaluate (teal box). The boxes are arranged in a descending staircase pattern from top-left to bottom-right.

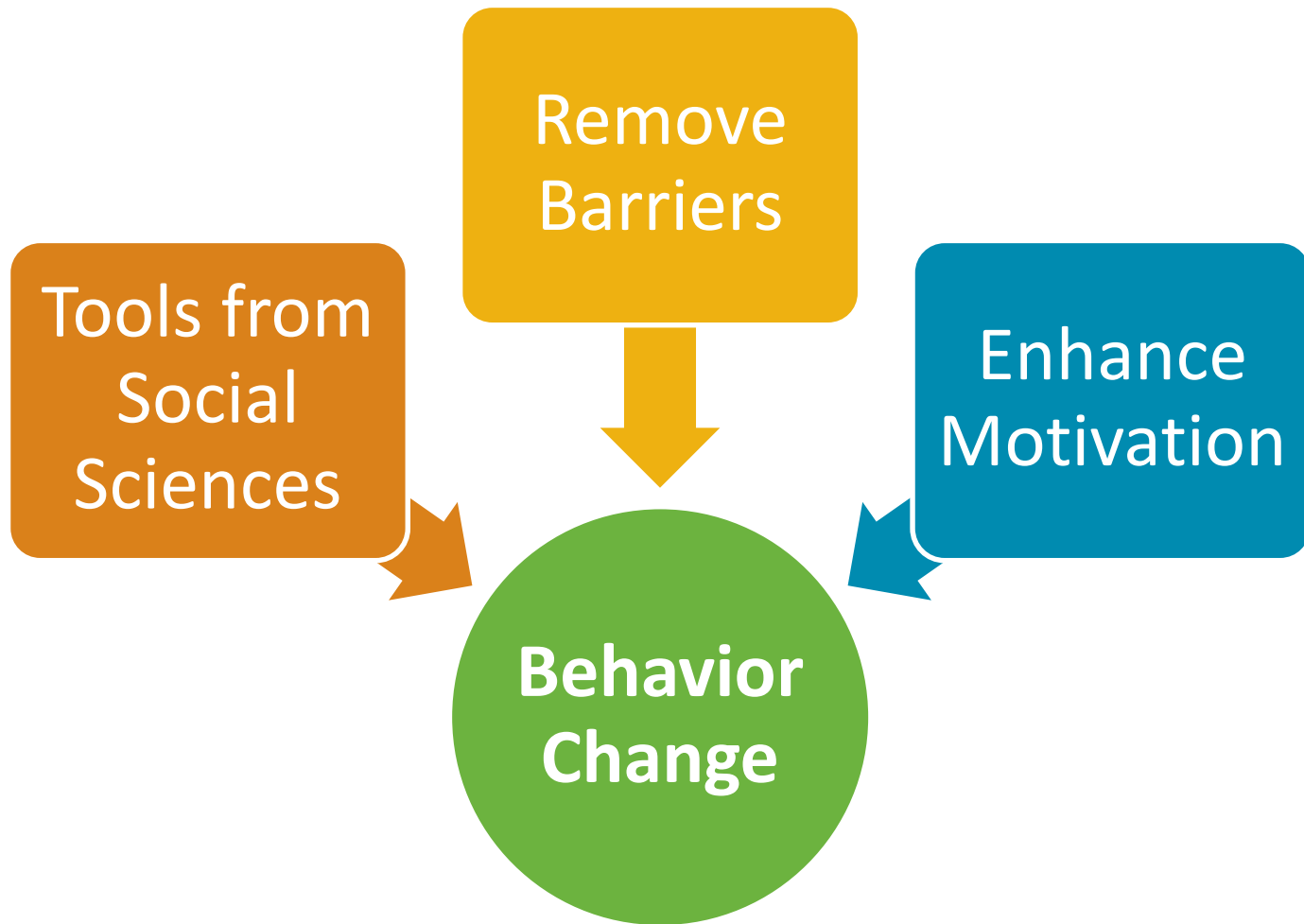
Barriers & Benefits

Develop Strategy

Pilot Test

Implement Broadly & Evaluate

Strategies Grounded in Social Science



Social Science Tools

Commitments

Social Norms

Prompts

Feedback

Incentives

Cognitive
Dissonance

Social
Diffusion

Goal Setting

Commitments

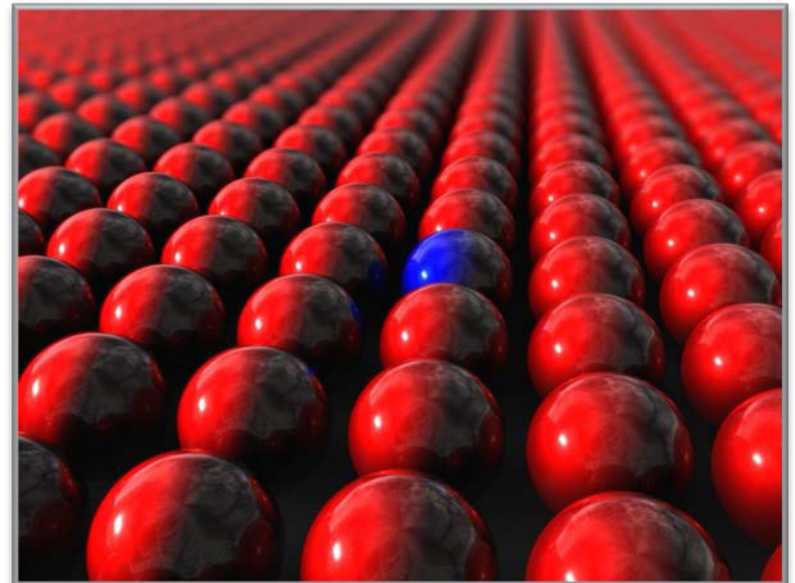
- ❑ Self-Perception Theory
- ❑ Use for Audience that is Motivated but Not yet Engaged
- ❑ Most Effective When
 - ❑ Written
 - ❑ Public
 - ❑ Durable



Urban Sustainability Directors Network – 2013
Municipal Employee CBSM Pilot

Social Norms

- ❑ Normative Social Influence
- ❑ Use for Audience that is not Motivated
- ❑ Most Effective When
 - ❑ Highlight desired behaviors
 - ❑ Close referent group



Social Norms

cool is clean
Get Clothes Clean And Save Energy
By Using Cold Water!

Clean Clothes
Change temperature, not brand. You don't need a special detergent to get your laundry clean in cold water. Consumer Reports gave these detergents high marks for cleaning in all temperatures.

Detergent Brand	Trick Per Load	Washer Model
Tide for Cold Water	18¢	Top-Load
Up & Up Ultra Concentrated (Target)	10¢	Top-Load
Tide Ultra plus Bleach*	23¢	Front-Load
Tide Pods	22¢	Front-Load
Sears Ultra Plus Concentrated 9879	13¢	Front-Load

*Top-rated detergent overall

Save Energy
90% of the energy used to wash a load of laundry goes to heating the water. Source: ENERGY STAR

\$265 → **\$16**

Hot/Warm Wash 68¢ per load \$265 per year*
Cold/Cold Wash 4¢ per load \$16 per year*
*Based on average electricity costs and about 300 loads per year.

Ask Your Neighbors
Results from a recent survey in your neighborhood found that:

- Over 1/2 of your neighbors say they are using all or mostly cold water for their laundry.
- Those who wash in cold water feel strongly that it:
 - is better for the environment
 - saves energy
 - makes clothes last longer
 - saves money

“I have always washed with cold water, even my two boys' clothes, and our clothes have been clean, and last much longer. Stains are also easier to remove in cold water. I would tell all my neighbors to forget the idea that whites need to be washed in hot water, since no one has ever commented that our whites weren't so white.” —Gretchen Lewis, Asheville

“I've been washing our laundry in cold water for over 10 years. We save energy and have lower utility bills without sacrificing anything, since we never noticed any problems with our clothes. You can lower your costs, and be good stewards of the environment at the same time.” —Grace Curry, Asheville

Cool Is Clean and Clean Is Cool

Ask Your Neighbors

Results from a recent survey in your neighborhood found that:

- **Over 1/2** of your neighbors say they are using all or mostly **cold water** for their laundry.
- Those who wash in cold water feel strongly that it:



“

• “I have always washed with cold water, even my two boys' clothes, and our clothes have been clean, and last much longer. Stains are also easier to remove in cold water. I would tell all my neighbors to forget the idea that whites need to be washed in hot water, since no one has ever commented that our whites weren't so white.” —Gretchen Lewis, Asheville

• “I've been washing our laundry in cold water for over 10 years. We save energy and have lower utility bills without sacrificing anything, since we never noticed any problems with our clothes. You can lower your costs, and be good stewards of the environment at the same time.” —Grace Curry, Asheville

”

Prompts

- ❑ Visual or Auditory Reminder
- ❑ Use for Audience Already Motivated but that Forgets
- ❑ Most Effective When
 - ❑ Repetitive Behavior
 - ❑ Close in Space
 - ❑ Close in Time
 - ❑ Emphasize Correct Action



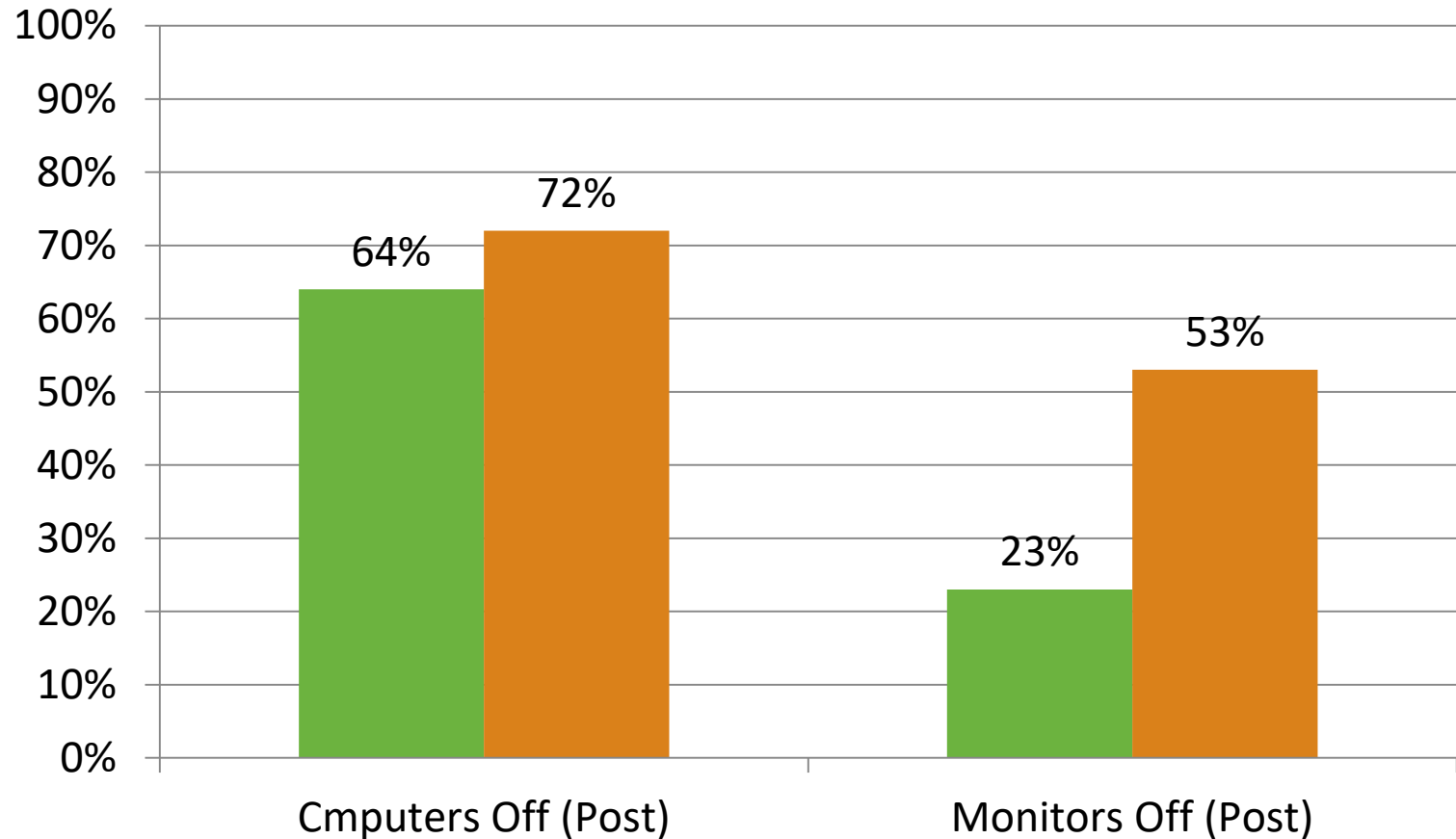
Urban Sustainability Directors Network – 2013
Residential Energy CBSM Pilot

Prompts



Computer & Monitor Shutdown Rates at Post Test

■ Control ■ Treatment



Incentives

- ❑ Extrinsic Motivation
 - ❑ Reward for desirable action
 - ❑ Avoid consequence for undesirable action
- ❑ Use for Audience at any Level of Motivation
 - ❑ Several limitations
- ❑ Most Effective When
 - ❑ One-Time Behavior
 - ❑ Cost is a Barrier



CBSM Resources

❑ Websites

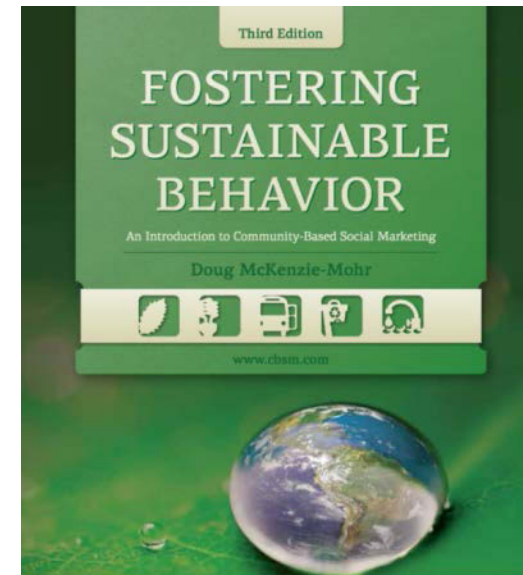
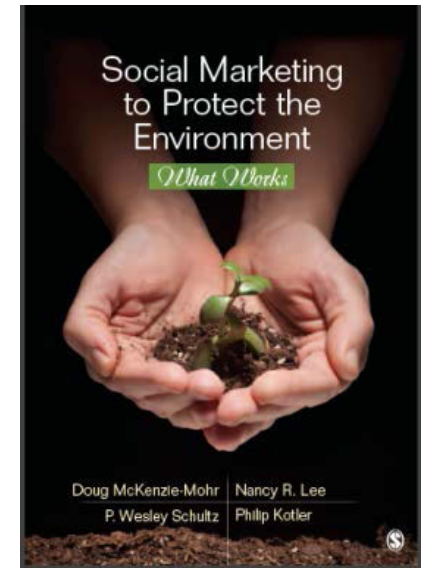
- ❑ www.cbsm.com
- ❑ www.toolsofchange.com

❑ Discussion Forums/List Serves

- ❑ Fostering Sustainable Behavior (www.cbsm.com)
- ❑ Social Marketing Association of North America (SMANA)

❑ Books/Guides

- ❑ Fostering Sustainable Behavior
- ❑ Social Marketing to Protect the Environment
- ❑ Social Marketing (Lee & Kotler)
- ❑ DOE CBSM Toolkit: <https://energy.gov/eere/better-buildings-residential-network/downloads/community-based-social-marketing-toolkit>



Oceanside, CA – New York, NY – Washington, D.C.

www.actionresearch-inc.com



sparking behavior changes for good

Presentation Highlights: Action Research (1 of 2)

- **Social science tools are context-specific** and are most effective when used for appropriate barriers and motivations.
- **Commitments** work best when people have some level of motivation, but have not yet been involved in that action.
 - For example, a multi-city pilot achieved energy savings by encouraging municipal employees to shut down their computers and monitors at the end of the workday through a pledge card attached to each computer.
- **Prompts** should be used for an audience that's already motivated to act, but needs a reminder.
 - For example, in an energy efficiency campaign, prompts were posted on washing machines reminding residents to switch to cold water.

Presentation Highlights: Action Research (2 of 2)

- **Social norms** are mostly effective when people are not already motivated. People mirror other people's behavior.
 - For example, communicate how people are doing in terms of residential energy savings compared to their peers.
 - **Avoid the “magnetic middle,”** when people are aware of the average behavior of others and tend to lean towards it.
 - **Focus on injunctive norms for the higher achievers:** For example, give them a “smiley face” without information on how their energy savings compare to others.
- **Incentives** tend to be effective when cost is a barrier for people to act, but are expensive to maintain for a long time.

Kat Donnelly

Ph.D., P.E., CEO

Azentive (*Network Member*)





DOE Peer Exchange Call

Beyond Hunches: Using Science to Drive Behavior Change

Kat A. Donnelly, Ph.D., P.E., CEO
January 24, 2018

HEALTHY



PROFITS



PEOPLE



PLACES



Social Science Basics

- Our decisions are ruled by social, cultural, and emotional factors
- When a program or initiative works **with** human nature, it can take root faster and make a bigger impact



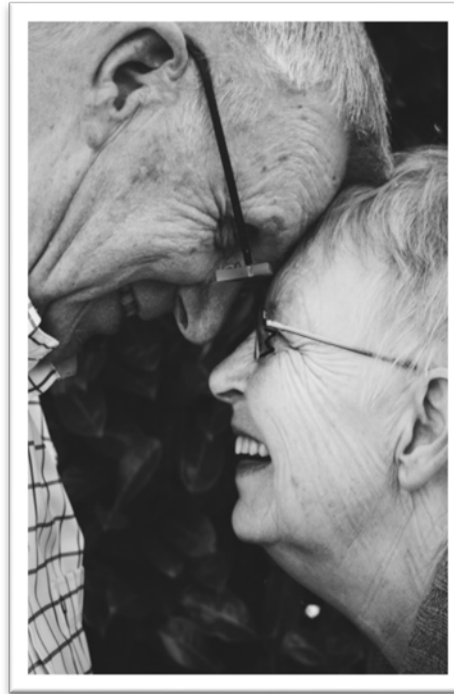
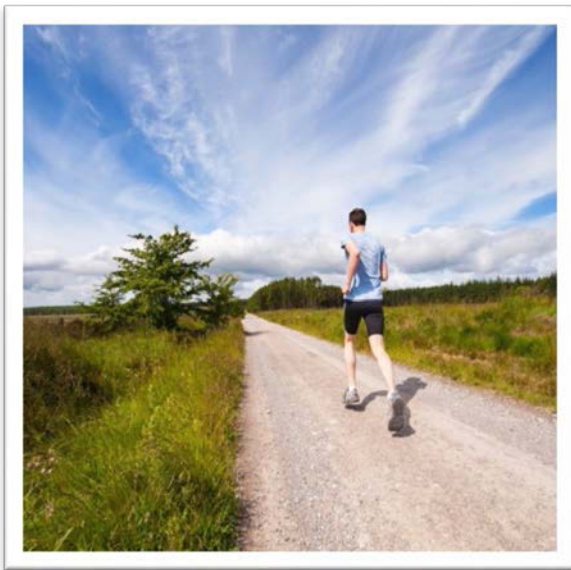
We are social creatures

- We respond to the influence of peers and trusted advisors
- We do what other people do



People need a reason

- Core values and emotional ties influence decision-making
- Find the why

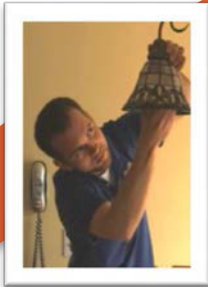




A Typical Residential Energy Efficiency Journey



#1 Sign Up / Learn About



#2 Easy Behaviors / One-Time Actions



#3 Home Energy Audit



#4 Home Upgrades / Electrical Vehicle



#5 Install Solar / PV

Based on: the Connecticut Neighbor to Neighbor Energy Challenge, a DOE Better Buildings Neighborhood Program (2010 to 2013)

Case Study: Step Up and Power Down



- Partnership between cities, PG&E, and Empower Efficiency (now AZENTIVE)
- Community-Based Social Marketing approach
 - Encourage conservation behaviors
 - Increase engagement in efficiency programs
 - Support local Climate Action Plans
- Initiated the journey to energy audits and home upgrades

Making the Pitch

- Behavior science gives us tools and techniques to make energy efficient behaviors desirable



Psychology of the Pitch

Social
Pressure

Loss
Aversion

Reciprocity

F.A.C.S. &
Mimicry





Pitch Perfection

Pitch A

We want to educate and empower you about your energy use and help you save money.

Do you know about Woodland, Step Up and Power Down?

LED light bulbs will last for more than 11 years.

Running a second refrigerator may be wasting energy in your home.

Pitch B (stronger)

We want to help you stop energy waste in your home. Let's make your energy work for you!

Have your friends told you about Woodland, Step Up and Power Down?

If you install LEDs you won't replace another bulb until your kid turns 25!

If you take your old fridge to the dump, they will charge you \$10; if you have PG&E recycle it for you, they will **PAY YOU \$50!**

Tips for “Perfecting” the Pitch

1. Assess the person before you engage
2. Develop a social or emotional connection
3. Break down barriers and boost motivation
4. Get them to take a first step on the spot





• Promoting Widespread Involvement through CBSM (Based on Doug McKenzie-Mohr)

- **Putting individual and group triggers into action**
 - Motivates, Enables, and Engages (continuously)

- **Targeted** at people who
 - Have a reason to care
and
 - Are ready for change



- **Change works on the installment plan by**
 - **Goal setting and commitment**
 - **Comparisons to social groups**
 - **Engaging people in small, actionable steps**



Kat A. Donnelly

Presentation Highlights: Azentive

- **Having a pitch for every step in the energy efficiency journey is key** in ensuring residents remain motivated and any of their concerns along the way are being addressed.
- **People need a reason:** Understand and tap into their intrinsic motivation to trigger behavior change.
- **Communicating through trusted, local sources** can help gain the community's trust and increase interest in the program.
 - For example, a home energy upgrade tour held by a local politician that was promoted through various media channels led to increased awareness around residential energy efficiency in that specific community.
- **To avoid fatigue when engaging your audience,** allow some time for behaviors to settle in between outreach periods.

Additional resources

- [**DOE Community-Based Social Marketing Toolkit**](#) provides practical guidance and examples for applying community-based social marketing to increase the number of homes that are energy efficient.
- [**Neuropsychanalysis Association**](#) (NPSA), an international network of non-profit organizations that support a dialogue between the neurosciences and psychoanalysis.
- [**Consumer Neuroscience**](#) (MIT press): This book, which includes Dr. Carl Marci as a contributor, describes how consumers develop implicit associations with a brand, perceptions of pricing, and how consumer neuroscience can encourage healthy behaviors.
- [**Fostering Sustainable Behavior**](#) by Doug McKenzie-Mohr. This book provides a comprehensive overview of the five steps of community-based social marketing, and how the method is being applied throughout the world to foster sustainable behavior.

Upcoming Seasonal Messaging Opportunities

Now is the time to start planning energy efficiency messaging!



April 11

National Pet Day



April 22

Earth Day



[Direct Energy Blog Post](#)



[Utilitywise Poster](#)

Explore the Residential Program Solution Center

Resources to help improve your program and reach energy efficiency targets:

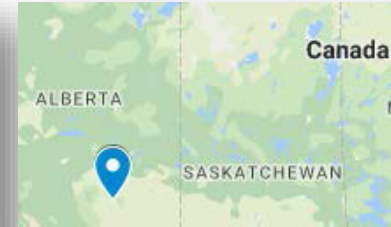
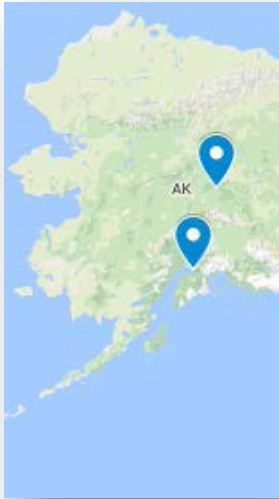
- [Handbooks](#) - explain *why* and *how* to implement specific stages of a program.
- [Quick Answers](#) - provide answers and resources for common questions.
- [Proven Practices](#) posts - include lessons learned, examples, and helpful tips from successful programs.
- [Technology Solutions](#) **NEW!** - present resources on advanced technologies, **HVAC & Heat Pump Water Heaters**, including installation guidance, marketing strategies, & potential savings.



<https://rpssc.energy.gov>

Addenda: Attendee Information and Poll Results

Call Attendee Locations



Call Attendees: Network Members (1 of 2)

- Alaska Housing Finance Corporation
- American Council for an Energy-Efficient Economy
- AppleBlossom Energy Inc.
- Azentive (formerly known as Empower Efficiency)
- Bridging The Gap
- Build It Green
- Center for Energy and Environment
- Center for Sustainable Energy
- City of Berkeley (CA)
- City of Fort Collins (CO)
- City of Fremont (CA)
- City of Kansas City (MO)
- City of Providence (RI)
- CLEAResult
- Cleveland Public Power
- Cold Climate Housing Research Center
- Connecticut Green Bank
- Cool Choices
- Earth Advantage Institute
- Efficiency Maine
- Emerald Cities Seattle
- Energize New York

Call Attendees: Network Members (2 of 2)

- Energy Smart Colorado - Walking Mountains Science Center
- Erase40.org
- Focus on Energy
- Fort Collins Utilities
- GoodCents
- Group14 Engineering Inc.
- High Country Conservation Center
- Honeywell International, Inc.
- International Center for Appropriate and Sustainable Technology (ICAST)
- Local Energy Alliance Program
- New York State Energy Research & Development Authority (NYSERDA)
- Research Into Action, Inc.
- The E2e Project
- The Environmental Center
- TRC Energy Services
- Vermont Energy Investment Corporation (VEIC)
- Wisconsin Energy Conservation Corporation

Call Attendees: Non-Members (1 of 5)

- ABCD Action for Boston Community Development
- Action Research
- AECOM
- Appalachian State University
- Arizona State University
- BAE Systems
- Ballarat Consulting
- Bank of Montreal
- Better Climate.info
- BRANZ
- Bright HF Limited
- Cadmus Group
- California Public Utilities Commission
- Cann Geothermal Plus
- CenterPoint Energy
- City of Ann Arbor (MI)
- City of Boulder (CO)
- City of Longmont (CO)
- City of San Jose (CA)
- Climate Smart Missoula
- CoilPod LLC
- Cormack Construction Management
- CURENT (University of Tennessee)

Call Attendees: Non-Members (2 of 5)

- Eco'Diagnostic Consulting
- Enbridge Gas Distribution
- Energy Outreach Colorado
- Energy Performers
- Energy Solutions Professionals
- Energy Wise Alliance
- ETHZurich
- Frederick County Government
- Frontier Energy
- Green Compass Sustainability
- Green Spaces Chattanooga
- Habitat Studio & Workshop Ltd.
- Home Energy Analytics (HEA)
- Home Office Training & Technology
- ICF
- Idaho Power
- Johnson Controls
- L'Image Home Products (LHP)
- Lafayette College
- Local Government Commission
- Lockheed Martin

Call Attendees: Non-Members (3 of 5)

- Los Alamos National Laboratory
- Los Angeles Department of Water and Power
- Lower Valley Energy
- LWrNrG Energy Management Services
- Malis Photography
- McKenzie-Mohr Associates
- Mercy Housing Management Group
- Michigan Environmental Council
- Mid Michigan Community Action Agency
- Milepost Consulting
- Missouri University of Science and Technology
- New Ecology
- New York City Housing Preservation and Development
- New York State Department of State
- Nielsen Consumer Neuroscience
- Northwest Energy Efficiency Council

Call Attendees: Non-Members (4 of 5)

- Oakland Livingston Human Service Agency
- Opportunity Council
- Oregon Institute of Technology
- Pearl Home Certification
- PlugInConnect
- Presidio Trust
- Proctor Engineering
- Project Neutral
- Project Open Hearts
- Root Solutions
- Sarasota County
- Scalable Strategies
- Seattle City Light
- Sierra Club
- Snohomish County
- Solar Habitats, LLC.
- South Burlington Energy Committee
- Southwest Energy Efficiency Project
- Stewards of Affordable Housing for the Future (SAHF)
- StopWaste
- Sustain3

Call Attendees: Non-Members (5 of 5)

- Sustainable Design + Behavior
- The Energy Challenge of Central Oregon
- The South-Central Partnership for Energy Efficiency as a Resource (SPEER)
- Therma-Stor LLC
- Universidade Federal De Santa Catarina
- University of Michigan
- University of Minnesota - Center for Sustainable Building Research
- Utah Governor's Office of Energy Development

Opening Poll

- Which best describes your organization's experience with strategies that use science to drive behavior change?
 - Limited experience/familiarity – **40%**
 - Some experience/familiarity – **28%**
 - Very experienced/familiar – **19%**
 - No experience/familiarity – **11%**
 - Not applicable – **2%**

Closing Poll

- **After today's call, what will you do?**
 - Seek out additional information on one or more of the ideas – **57%**
 - Consider implementing one or more of the ideas discussed – **38%**
 - Make no changes to your current approach – **5%**
 - Other (please explain) – **0%**