

# The Building Blocks of Behavior Change



# Dr. Beth Karlin Seechange





**NEW YORK** 

STATE OF OPPORTUNITY,



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BC Hydro

We specialize in

- Research
- Strategy
- Design, and
- Evaluation

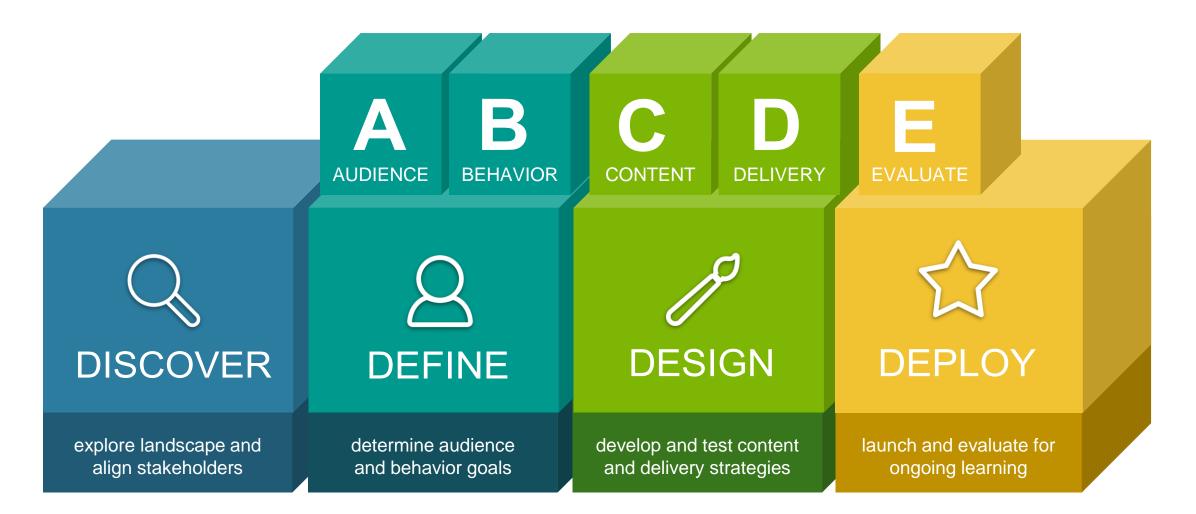
of energy, health, & media behavioral programs.

CEES SM Consortium for Energy Efficiency

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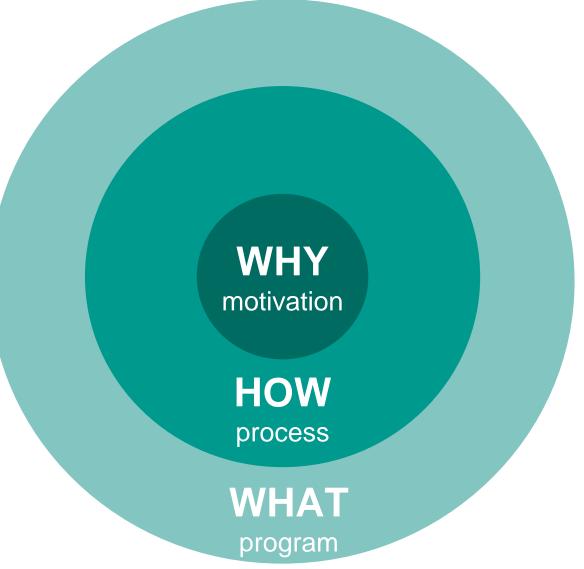


### The Building Blocks of Behavior Change





### But First....







### What's the Alternative?







### From Categories to Characteristics

Nutrition Facts		AUDIENCE	CONTENT	EVALUATION	
1 4013		Demographics	Message	Metrics	
5 servings per program <b>Serving size (1 city)</b>		Psychographics	Strategy	Methods	
		Context	DELIVERY	Type (Process,	
		Culture	Medium	outcome)	
		BEHAVIOR	Messenger	Nutrition Fact	
kWh saved per serving:	80	Туре	Timing	A control to termine a control	
		Number		Subject for 00 of 10 of	
		Frequency		Controlyment (%) 445 (control) (cont	
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### Does it Work?











# **HOW** Does it Work?

### Your Program



### Ingredients



### **Activities/Processes**

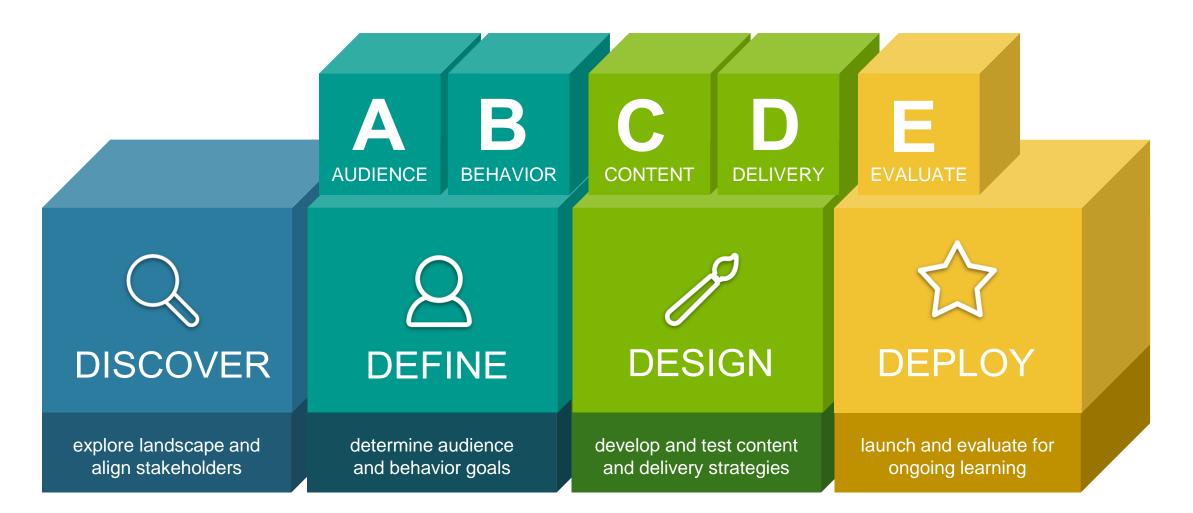


### **Metrics**

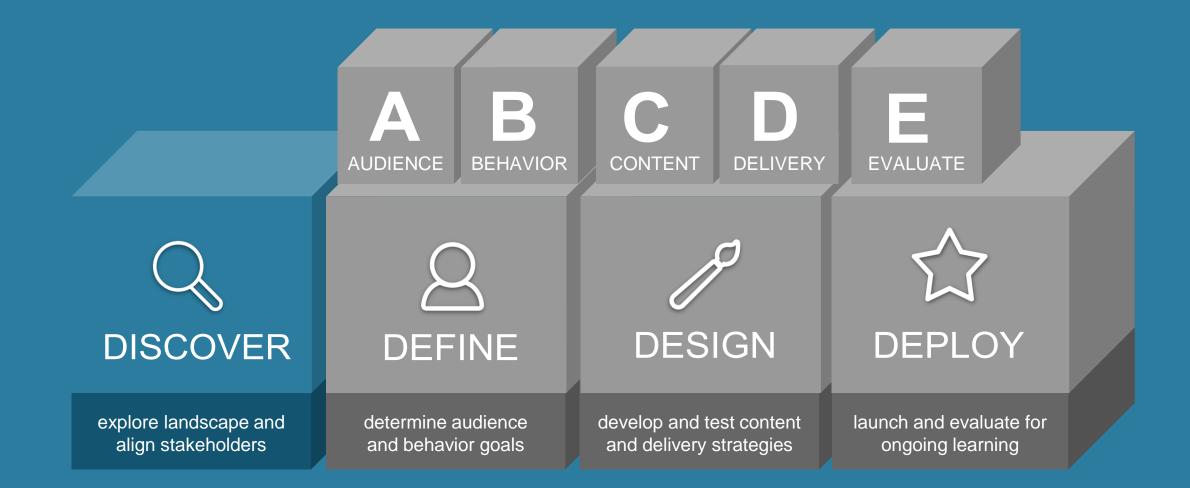




### A Process for Behavior Change







### **Explore Landscape**

I will adopt Best Practices will adopt Best Practices I will adopt Best Practices will adopt Best Practices I will adopt Best Practices



- Literature Review
- Market Assessment
- Behavior Audit



### Literature Review: Energy Feedback

- 100+ studies conducted since 1976
- Total n = 256,536 (mean 119/study)
- Mean r-effect size = .1174 (p < .001)
- Average energy savings: 9%

Significant variability in effects (from negative to over 20% savings)

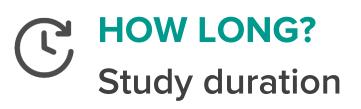
Karlin, Ford & Zinger. (2015) The Effects of Feedback on Energy Conservation: A Preliminary Theory and Meta-Analysis. Psychological Bulletin



### Literature Review: Energy Feedback

**Moderators identified in meta-analysis:** 







### WHAT TYPE?

Feedback medium

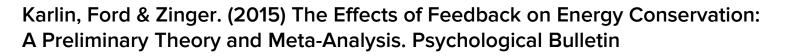


### WHAT LEVEL?

Disaggregation







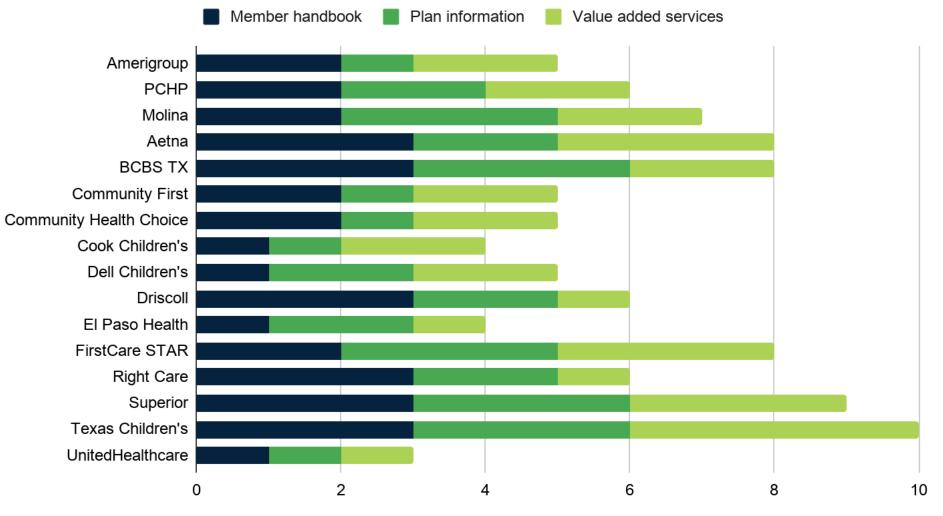


### Market Assessment: Medicaid Enrollment

	Material Type	Compared features		
Channel	Website	Usability, design		
	Social Media	Presence or absence, following, uses		
Materials	Presentation of membership plans	Design, accessibility on website, handbook		
	Presentation of value-added services	Design, monetary framing, number of services offered		
	Online Handbook	Presence or absence, design, monetary framing		
Advertising	Commercials, promotional videos, flyers	Presence or absence, design, message framing, cultural congruence		



### Market Assessment: Medicaid Enrollment



Total number of clicks to access information



### **Behavior Audit:** Medicaid Enrollment

#### Engage

Use of imagery is relevant to target demographic and look genuine



### For the care you need at a price you can afford, lean on Molina.

Marketplace plans with preventive care from quality doctors you can trust.





**Posed** image

People prefer photos that look genuine, rather than posed



### **Behavior Audit:** Medicaid Enrollment

Quick Tips

#### Confusion

Unclear what "your medical home" means Unclear call to action-What are members supposed to do?

#### Image not relevant

Children leaving school not related to medical check-ups

Engage Strategic use of icons, bolding, bullet points, and lists

#### Too much text

Text paragraphs are too long and font is too small

#### Member Handbook A character of part Association in the neutral content of the history of the content of the part of and the own. Then is the international sectors of the content of the co Popular stells to pour Princes Care Princips and the interruption and Parameters and the Second Sec are free. Robon, christens, and has a strand church Fortune ( but an installing) Wheel you need you, taily on Providents phone in a size on your Bidh 10 Typer: 2 years, 2 minutes, 4 reveales, 8 Augustus, cost Name (Performance with plus the set later di second her Widows of Incontinue, but Sections. for more effectively please refly to payr marries fundamin. to Aylene. 12 months, 12 months, 10 months. 24 mariles, Wirecontes, System, Agener Tra 30 percent Archaelly within 30 days of Sections www.parklandhma.org

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#### Non-to-renew

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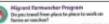
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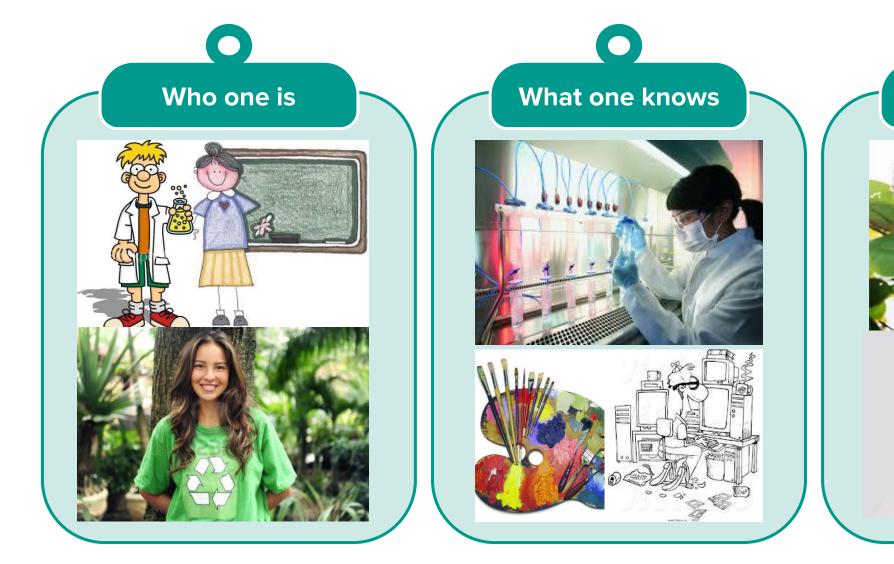


### **Align Stakeholders**





### **Align Stakeholders**



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Whom one knows

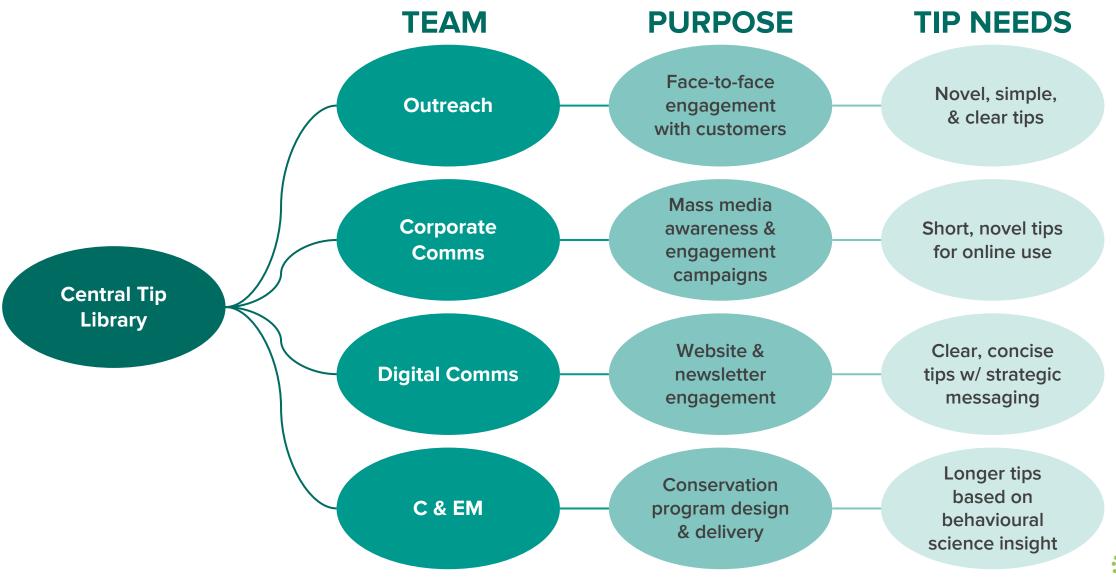
Katz, 1957

# Case Study: Tip Library

Sector Categorization (Res or Commercial)	Category	Subcategory	Keyword	Savings (\$%)	PRIMARY HEADLINE	ALTERNATIVE HEADLINE	Tip	Details/ Source Copy
сом	Cooling	Optimization	Optimize Temp settings		Optimize cooling systems		cool your building to no lower	<ul> <li>Start morning pre-cooling so that the building is 26°C (78°F) when occupants arrive at the first hour of occupancy.</li> <li>Keep the outdoor air damper fully open during the summer cooling season.</li> <li>Where applicable, install adjustable speed drives on fans, chiller water pumps and heating pumps.</li> <li>Maximize the use of outdoor air for space cooling using existing system capabilities and during the summer cooling season, flush the building during the night with cooler outdoor air.</li> <li>Consider converting constant air volume systems to variable air volume systems.</li> <li>Consider converting dual duct systems to single duct systems.</li> </ul>
сом	Heating	Optimization	Optimize Temp settings		Optimize heating systems		During winter (heating season) heat your building to a maximum of 21°C (70°F) when occupied, 16°C (61°F) when unoccupied. Heating and cooling set points must be set 2-3°C (3-5°F) apart so that the air conditioner does not cycle (turn on and off) frequently.	<ul> <li>Start the morning temperature pick-up with outside air dampers closed so that the building is at 18°C (65°F) when occupants arrive.</li> <li>Complete the warm-up during the first hour of occupancy. Similarly, set back the temperature for the last hour of occupancy.</li> <li>Keep the outdoor air damper closed during the morning warm-up in winter</li> <li>Where applicable, install adjustable speed drives on fans, chiller water pumps and heating pumps.</li> <li>Consider converting constant air volume systems to variable air volume systems.</li> <li>Consider converting dual duct systems to single duct systems.</li> </ul>
сом	Heating/cooling	Minimize Heat Loss	heat loss		Minimize heat loss		If your building's ceiling is higher than 3.0 meters (10 feet), consider installing ceiling fans to force the warm air down to the occupied level. As the temperature gradient will be minimal, the heat loss will be reduced.	Office areas in buildings with high-ceilings (like warehouses) need their own ceilings, not just wall partitions. Otherwise, warm air rises to the high ceiling, causing the heater to run constantly. If your building's ceiling is higher than 3.0 meters (10 feet), consider installing ceiling fans to force the warm air down to the occupied level. As the temperature gradient will be minimal, the heat loss will be reduced.

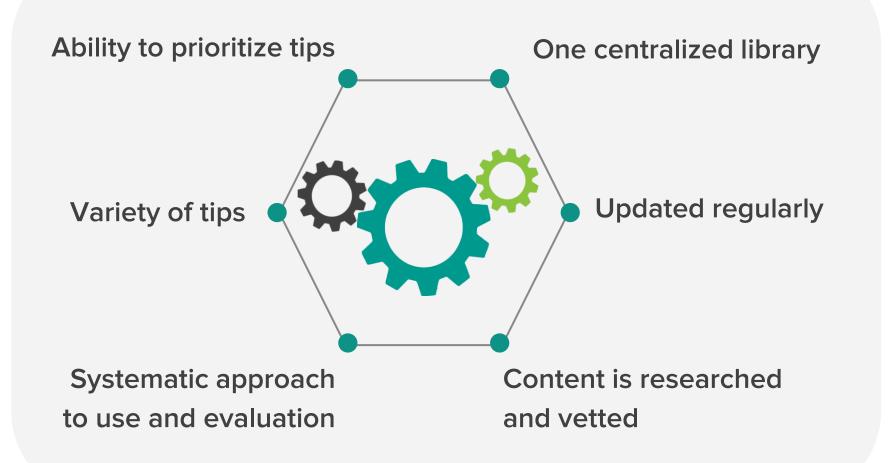


# Case Study: Tip Library



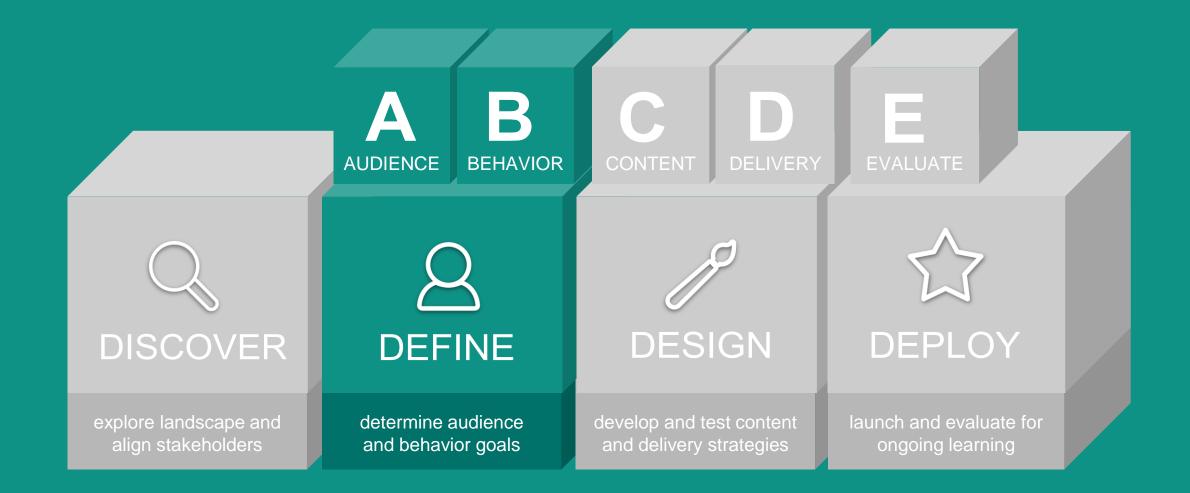


# Case Study: Tip Library

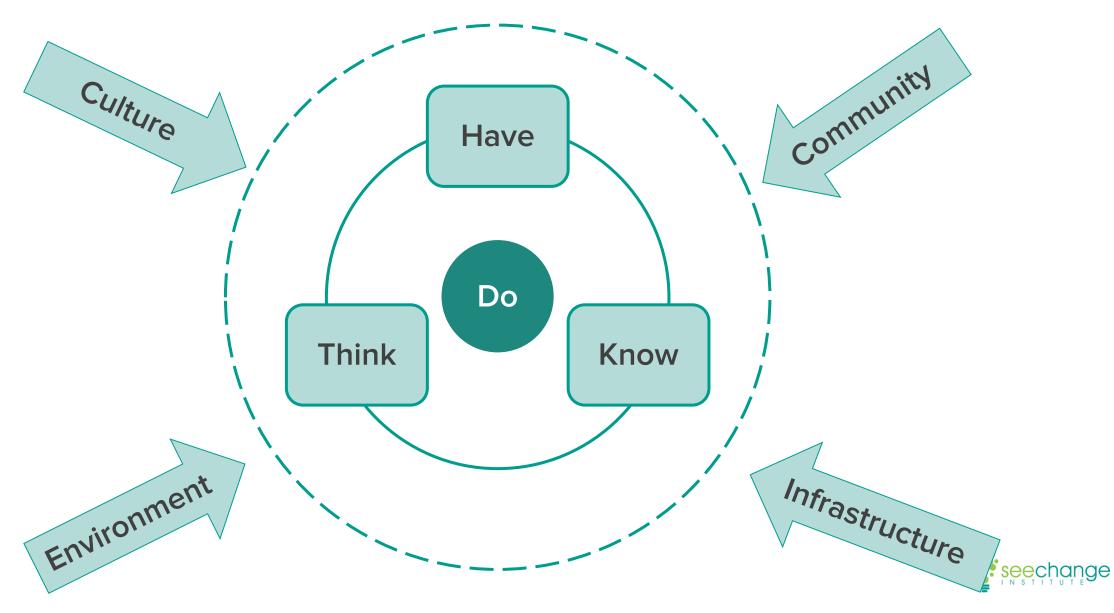








### **Audience and Behaviors**



### Listening to Your Audience

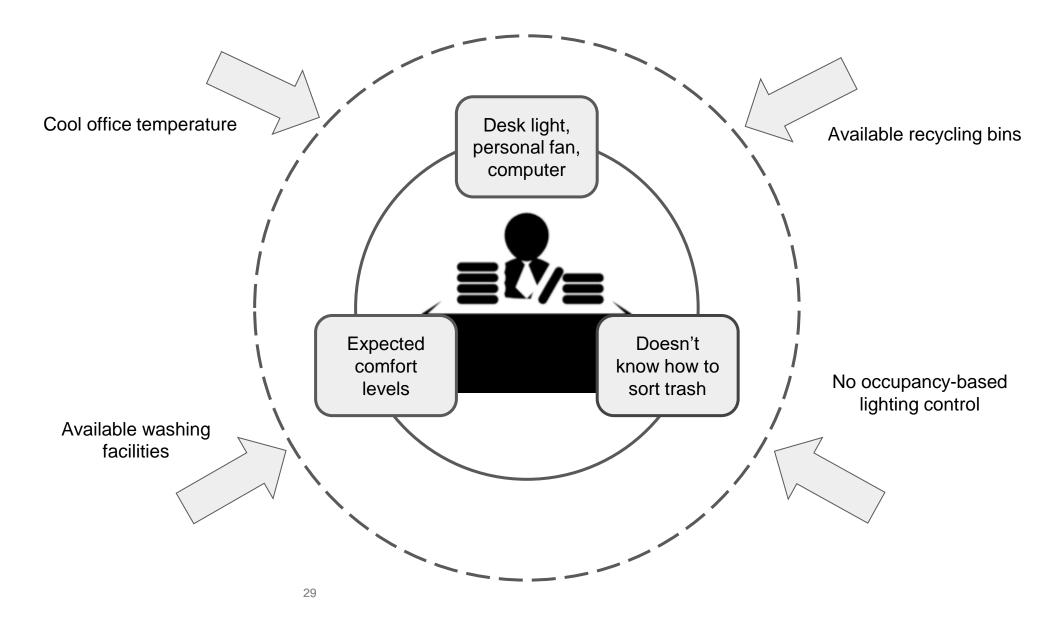


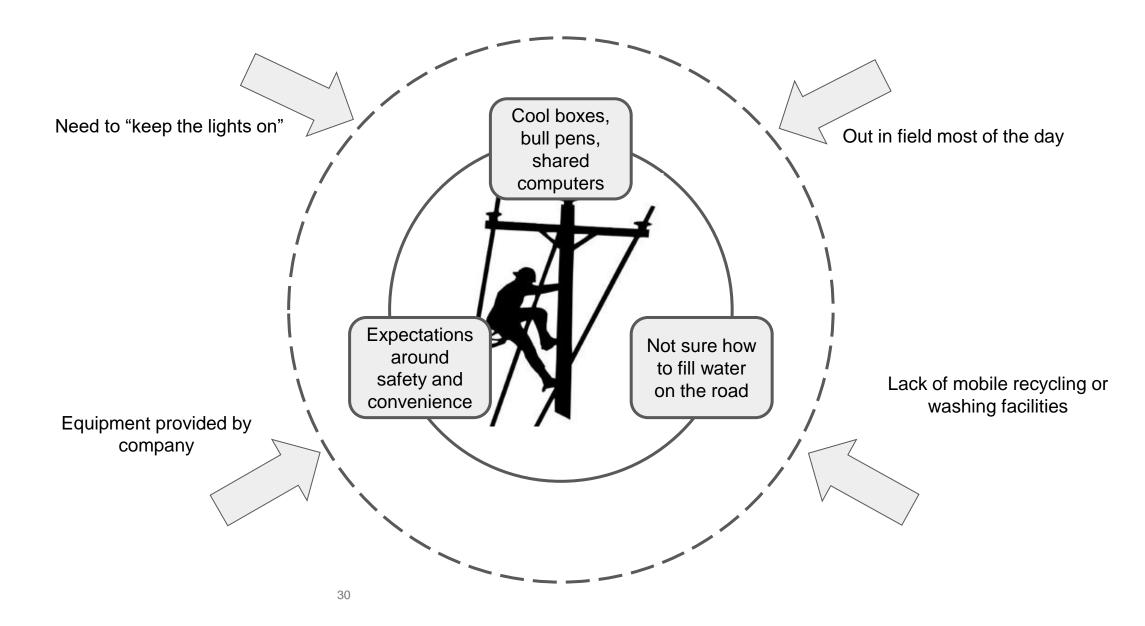
"What if, and I know this sounds kooky, we communicated with the employees."



- Observation
- Interviews
- Focus groups
- Survey







**HAVE:** Personal electronics and disposable items

**THINK:** Low understanding of the right actions to take.

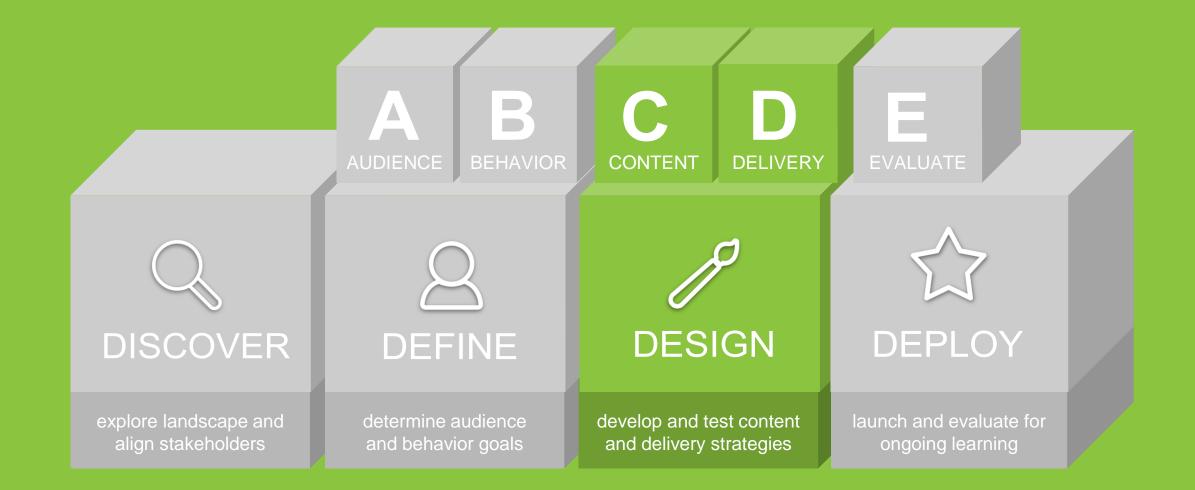
**KNOW:** Aware of corporate values.

**DO:** Different work schedules for office / field staff.

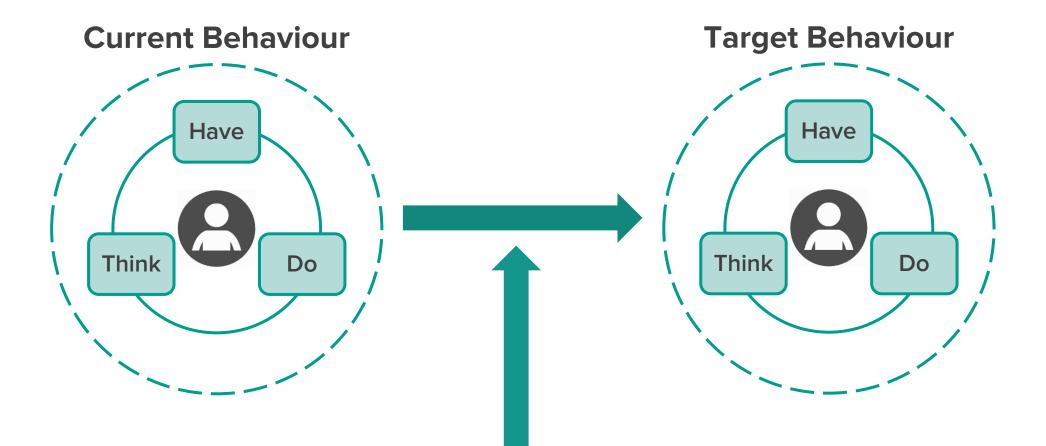
Target Audience: All staff in 3 service centers

### **Target Behaviors:**





### **Content and Delivery**

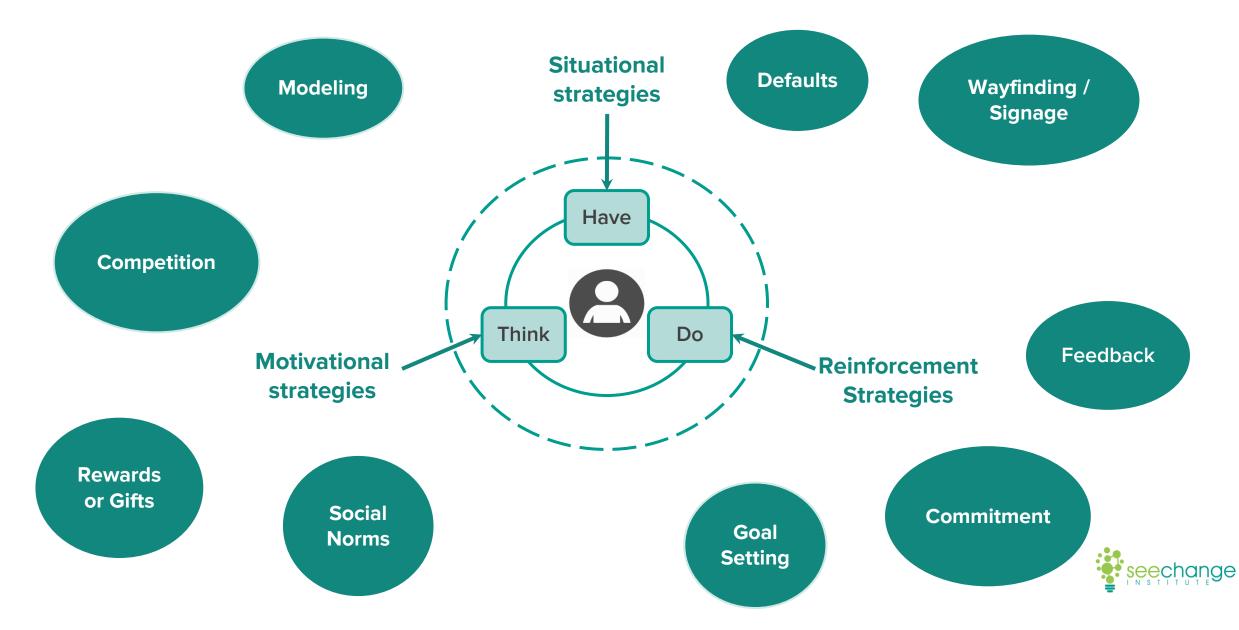


### **Your Program Here**

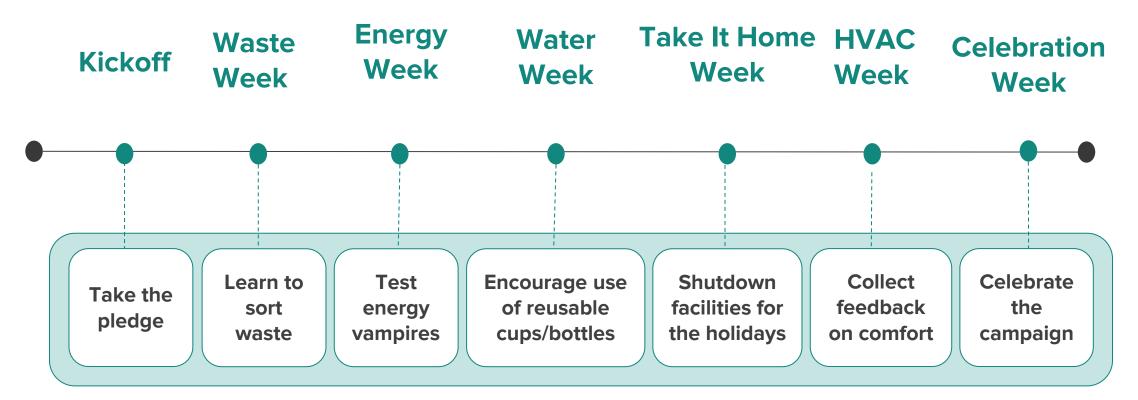
Change what people **do** by addressing barriers in terms of what they **have**, **think**, **know**, or by changing the **context** 



### Link Strategies to Barriers









# Case Study: Step Up and Power Down





## Testing, Testing



## **UX Testing**

Prototyping Qualitative Hypothesis generation



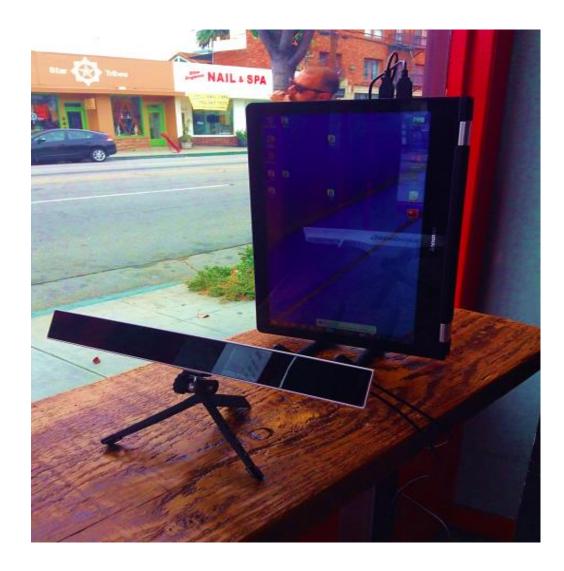
## A/B Testing

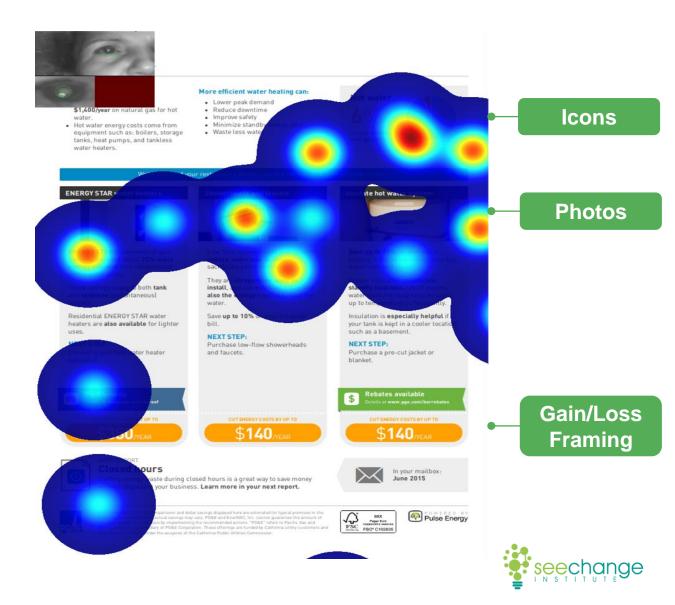
Pretotyping Quantitative Hypothesis testing





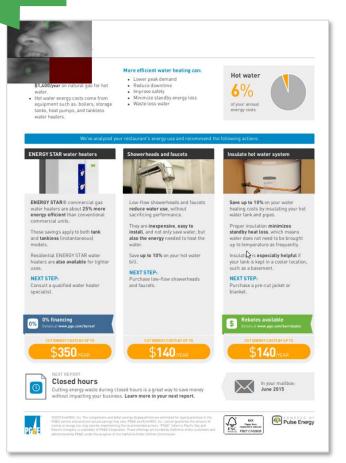




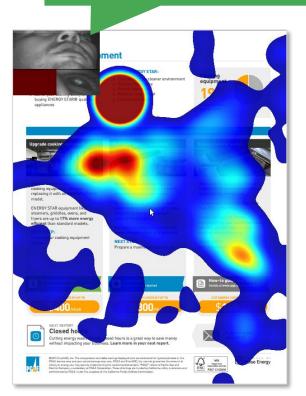


"It would be helpful to have someone **show me what I can change** here."





"I just scan this and then **throw it out**. Sorry."







### FOGUS ON Heating

gas for heating.

You don't need to heat your building

the same when it is unoccupied. At

night, lower the thermostat 7-10°F

If you can do this 8 hours per day.

Consider installing a 7-day

don't currently have one.

you will save as much as 10% on

programmable thermostat if you

Adjust your thermostat set points.

How-to guide available Ostais e utilico.putsee eras

CUT ENERGY COSTS BY UP TO \$680»

from its normal setting.

your heating costs.

NEXT STEP:

### Cost of heating:

More efficient heating: You currently spend about · Requires less maintenance \$7.100 year on electricity and natural Beduces ceak demand. Increases occupant comfort · Heating costs come from equipment · Reduces downtime such as: furnaces, space heaters, · Requires less space in mechanical boilers, and heat pumps. rooms





Photos

### Programmable thermostats Maintain heating system





Regular maintenance of the freating system will increase its energy efficiency and your comfort.

Have a licensed HVAC contractor check your heating and duct system for leaks.

Sealing and insulating ducts can improve the efficiency of your heating system by 2%.

\$130<sup>~</sup>

NEXT STEP: Contact an HVAC contractor.



Variable speed drives

### Ventilation systems do not normally require that fans operate at full speed at all times. Consider adding variable speed drives (VSDs) to fan motors.

In your mailbox:

Jan 2015

VSDs match fan speed to the actual requirements at different times of the day. They can reduce your ventilation electricity use by \$172 per hp of fan size.

NEXT STEP: Contact your equipment supplier.





NEXT REPORT Maintenance ×

Want to lower your bill without upgrading costly equipment? In your next report, learn more about energy-saving equipment maintenance

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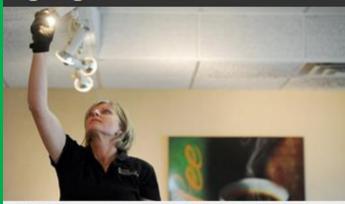


Make sure that bulbs, fixtures, lamps, and reflective surfaces are **cleaned regularly**.

By removing dust and grease, you can increase the output of your lights. Without maintenance, light levels can fall by more than 50% in 2-3 years.

A basic maintenance program can reduce lighting electricity costs **by up to 15%**.

### **Lighting maintenance**



Make sure that bulbs, fixtures, lamps, and reflective surfaces are **cleaned regularly**.

By removing dust and grease, you can **increase the output** of your lights. Without maintenance, light levels can fall by more than 50% in 2-3 years.

A basic maintenance program can reduce lighting electricity costs by up to 15%.



### Programmable thermostats



You don't need to heat your building the same when it is unoccupied. At night, **lower the thermostat 7-10°F** from its normal setting.

### NEXT STEP:

Adjust your thermostat set points.

# SAVE UP TO

### **Programmable thermostats**



You don't need to heat your building the same when it is unoccupied. At night, **lower the thermostat 7-10°F** from its normal setting.

### NEXT STEP:

Adjust your thermostat set points.

### CUT ENERGY COSTS BY UP TO

.200 YEAR











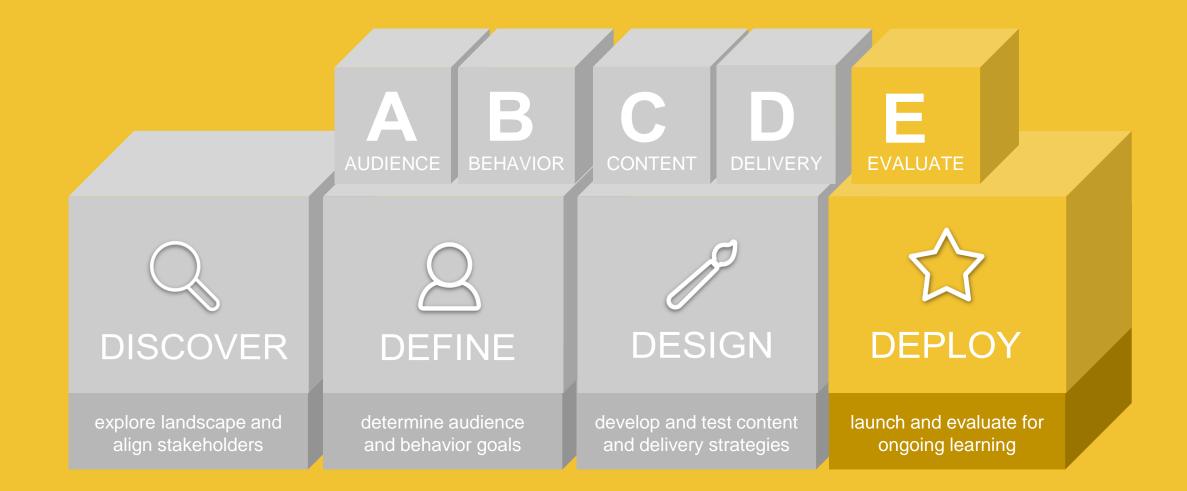


More at: <u>http://homeenergy.org/show/blog/id/917/</u>

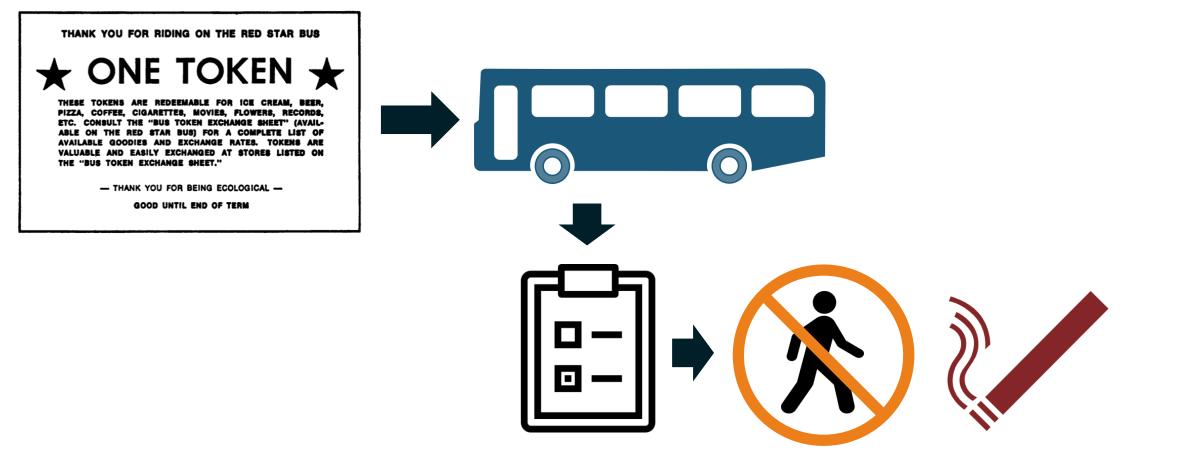








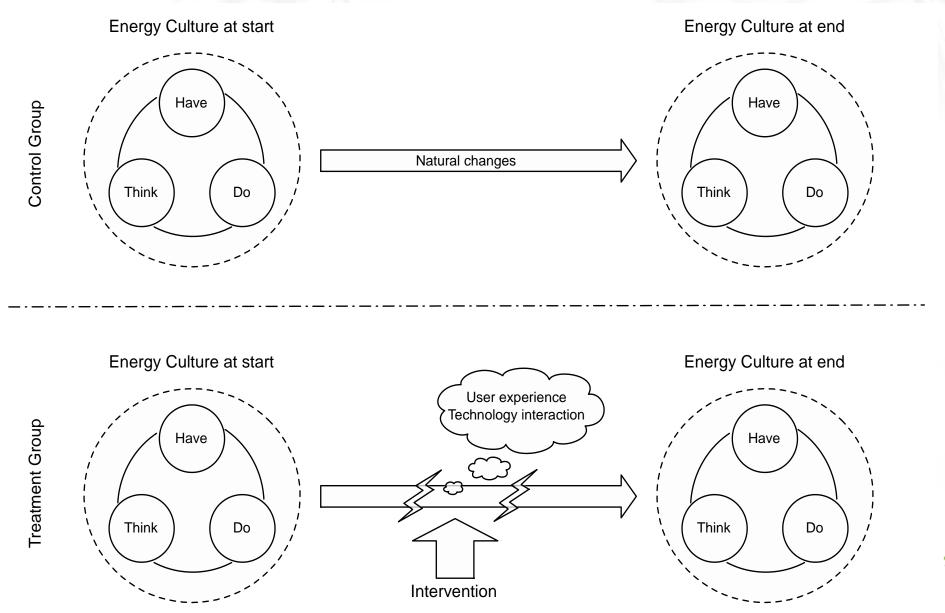
## The Importance of Asking Questions





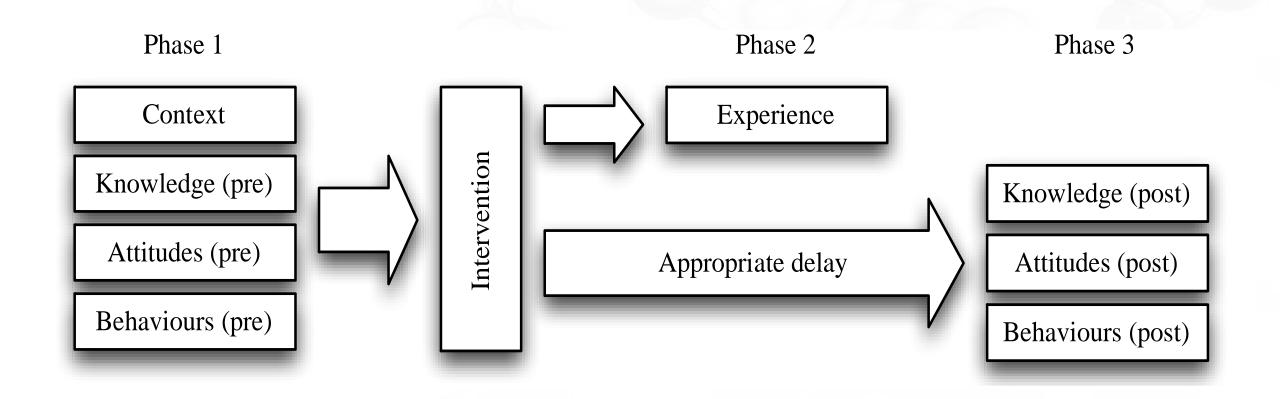
Everett, Hayward, & Scott (1974). The effects of a token reinforcement procedure on bus ridership. Journal of Applied Behavioral Analysis, 7, 1-9.

## **Evaluation Beyond kWh**





## **Evaluation Beyond kWh**



Karlin, B., Ford, R., & Frantz, C.M., (2015). Exploring Deep Savings: A Toolkit for Assessing Behavior-Based Energy Interventions. Proceedings of the International Energy Program Evaluation Conference. Long Beach, CA: IEPEC.



# **Types of Metrics**

Descriptive

## What happened?

(e.g. attendance, call volume, website visits)

Perception

## What did people think about what happened?

(e.g. ratings, surveys, Customer Satisfaction (CSAT))



## What happened as a result of what happened?

(e.g. sales, energy/cost savings, customer retention)



## Case Study: Step Up and Power Down

Goal 1 Employee engagement

- Qualitative employee feedback
- Enrolment Data
- Campaign Feedback Survey

Goal 2

Goal 3

Increases in knowledge Changes in attitude Sustainable behaviour

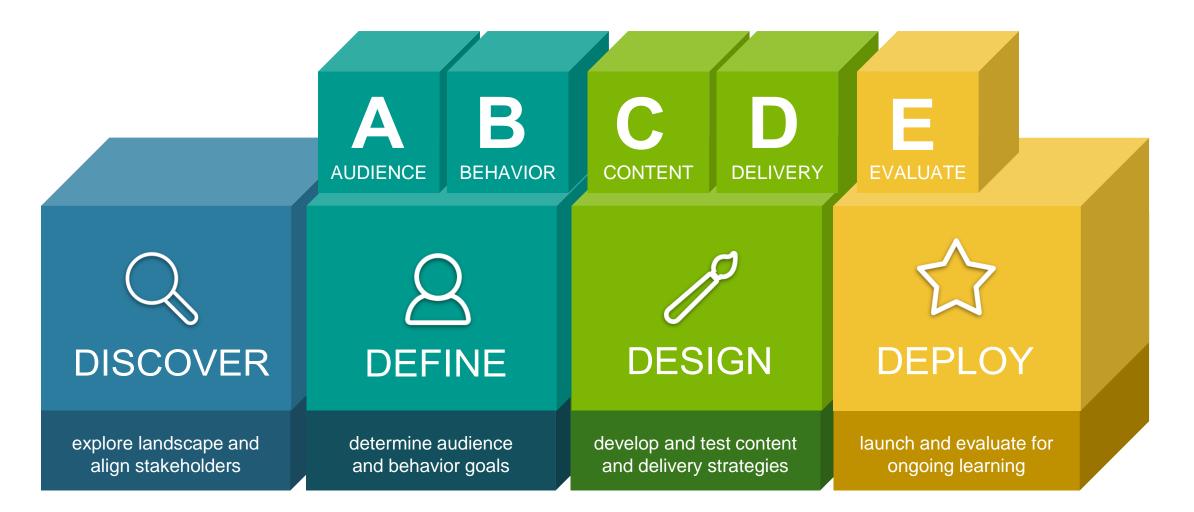
- Pre-Post Tests
   (1 week pre, 1-month post)
- Weekly observational walkthroughs

Decrease in resource use

Meter and purchasing data



## The Building Blocks of Behavior Change









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