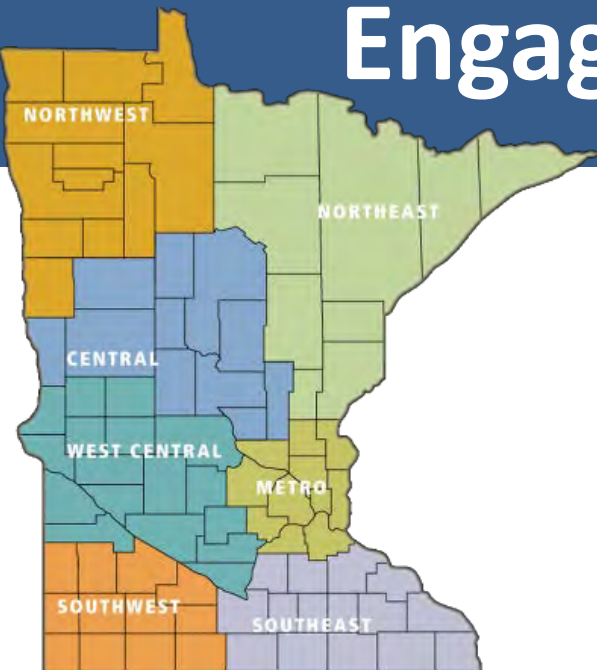




Get Results with Your Energy Work: Engage People Effectively



Alexis Troschinetz

Lissa Pawlisch

Clean Energy Resource Teams

Energy Design Conference

February 24th, 2015 10:30 am – 12:00 pm

In accordance with the Department of Labor and Industry's statute 326.0981, Subd. 11,

“This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying **1.5 hours** of credit toward **Building Officials and Residential Contractors** continuing education requirements.”

For additional continuing education approvals, please see your credit tracking card.

Today's Talk



- Introductions
- What is CERTs?
- Behavior Change Science*
- Understanding Your Audience
- Behavior Change Frameworks*
- CERTified Campaigns
- Behavior Change in Your Work*
- Wrap-up*



Learning Objectives



1. Describe the role of CERTs
2. Describe why behavior change science is useful
3. Define behavior
4. Explain the importance of identifying and tailoring your strategy to the intended audience
5. Differentiate among behavior change frameworks
6. Identify behavior change strategies in CERTs campaigns
7. Assess behavior change strategies in your work

Look for:



Introductions



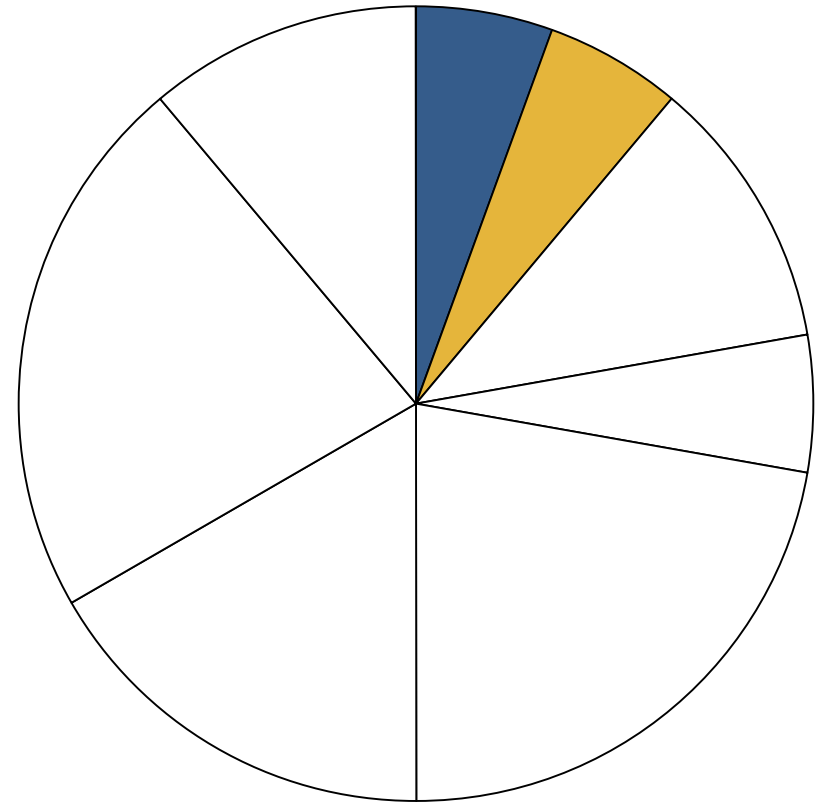
- General contractor, Builder
- Designer, Engineer, Architect
- Utility representative
- Energy Auditor, Weatherization specialist
- Plumber, Electrician, HVAC installer
- Solar/renewables installer
- Non-profit, NGO representative
- Government official



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CERTs:

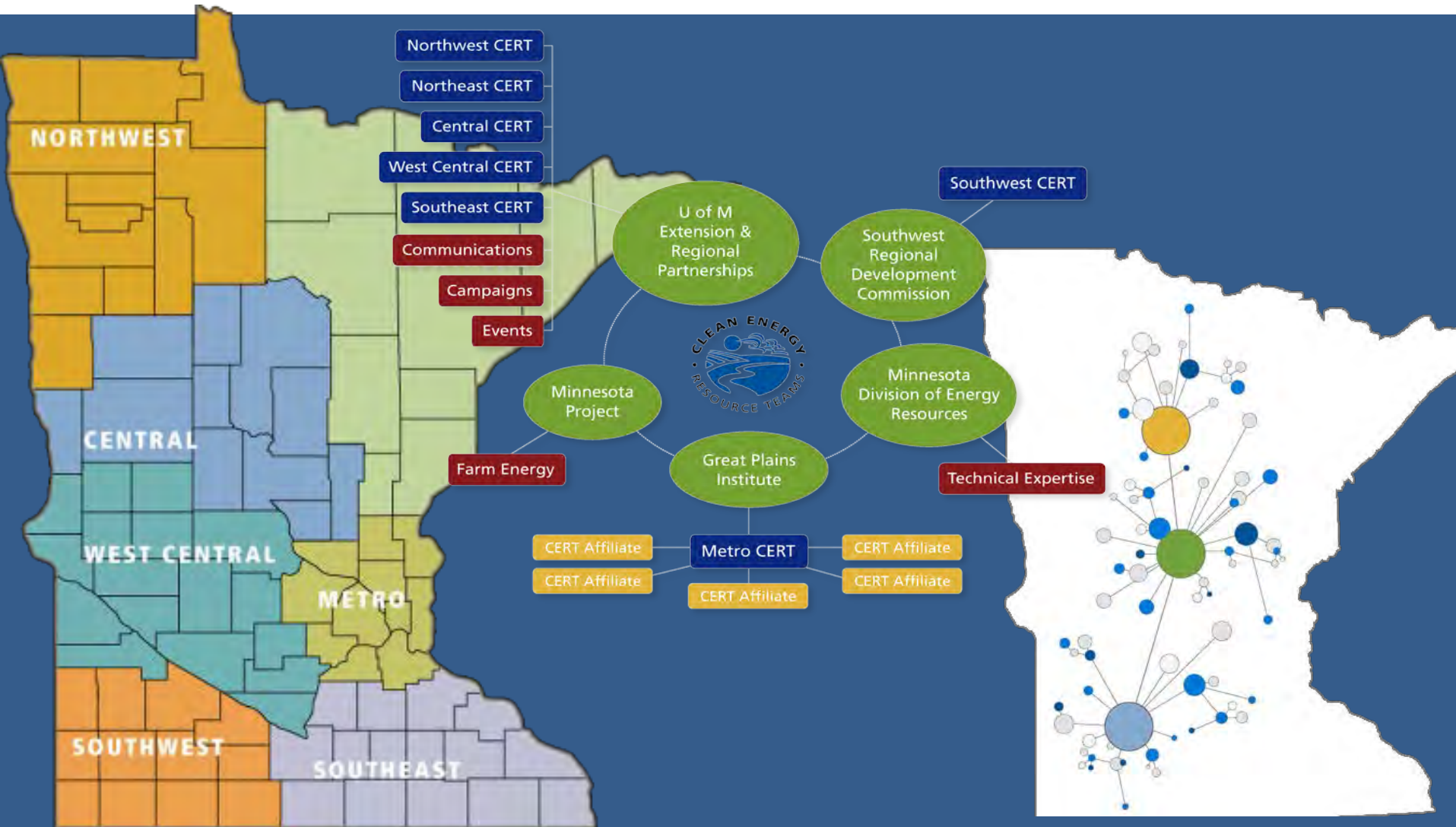
Minnesotans Building a Clean Energy Future



Mission: We connect individuals and their communities to the resources they need to identify and implement community-based clean energy projects



Statewide, Partnership, Collaboration



What Does CERTs Do?

#1

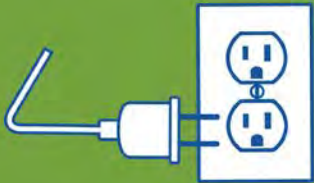


LEARN



Write blog posts & case studies
Create educational guides
Manage diverse web-based tools

CONNECT



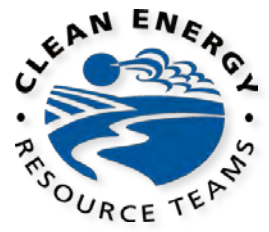
Host events, tours, and conferences
Help with community organizing
Connect people to technical resources

ACT

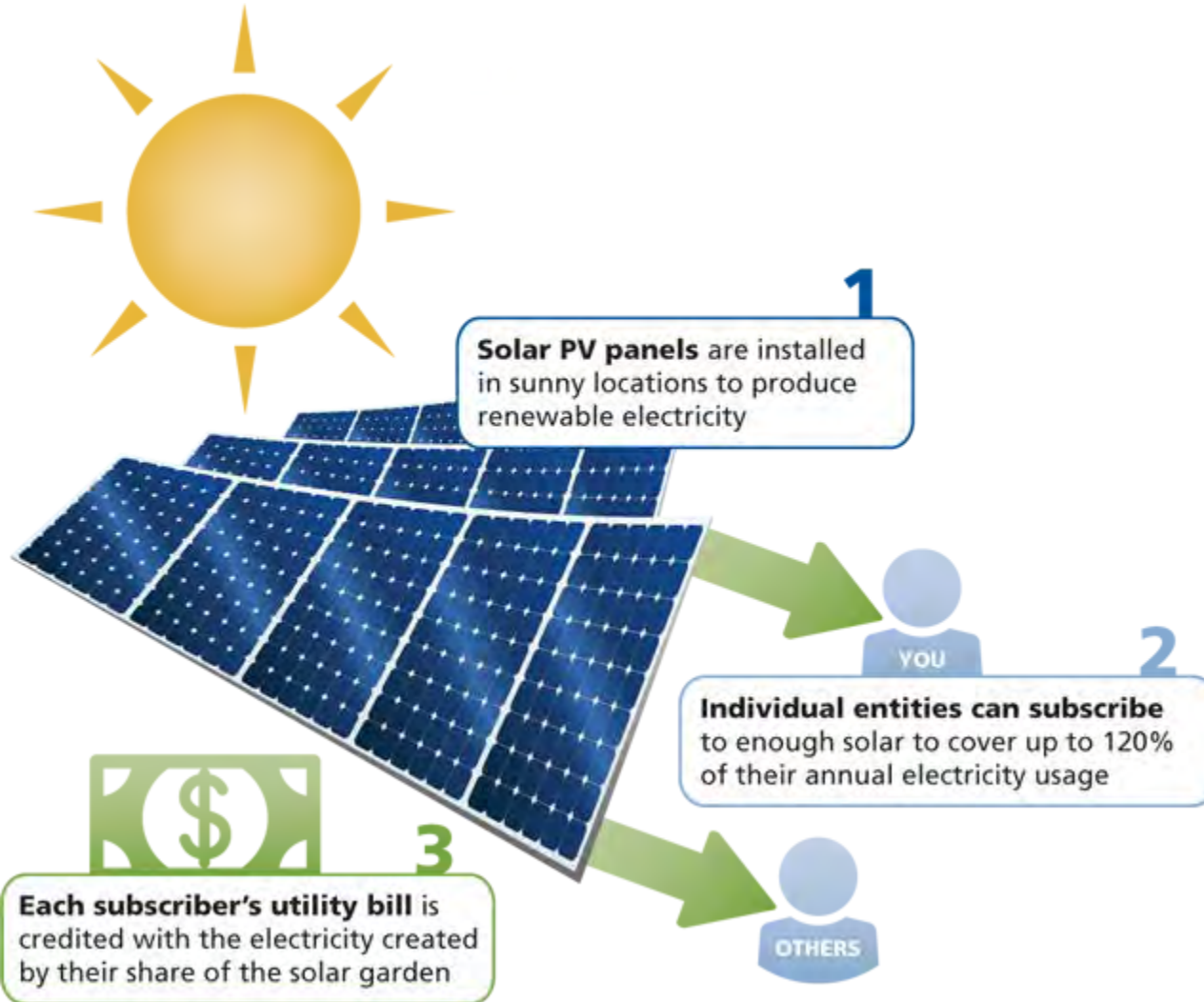


Provide seed grant funding and more
Deliver research-based campaigns
Spur other statewide programs

We start with Teams



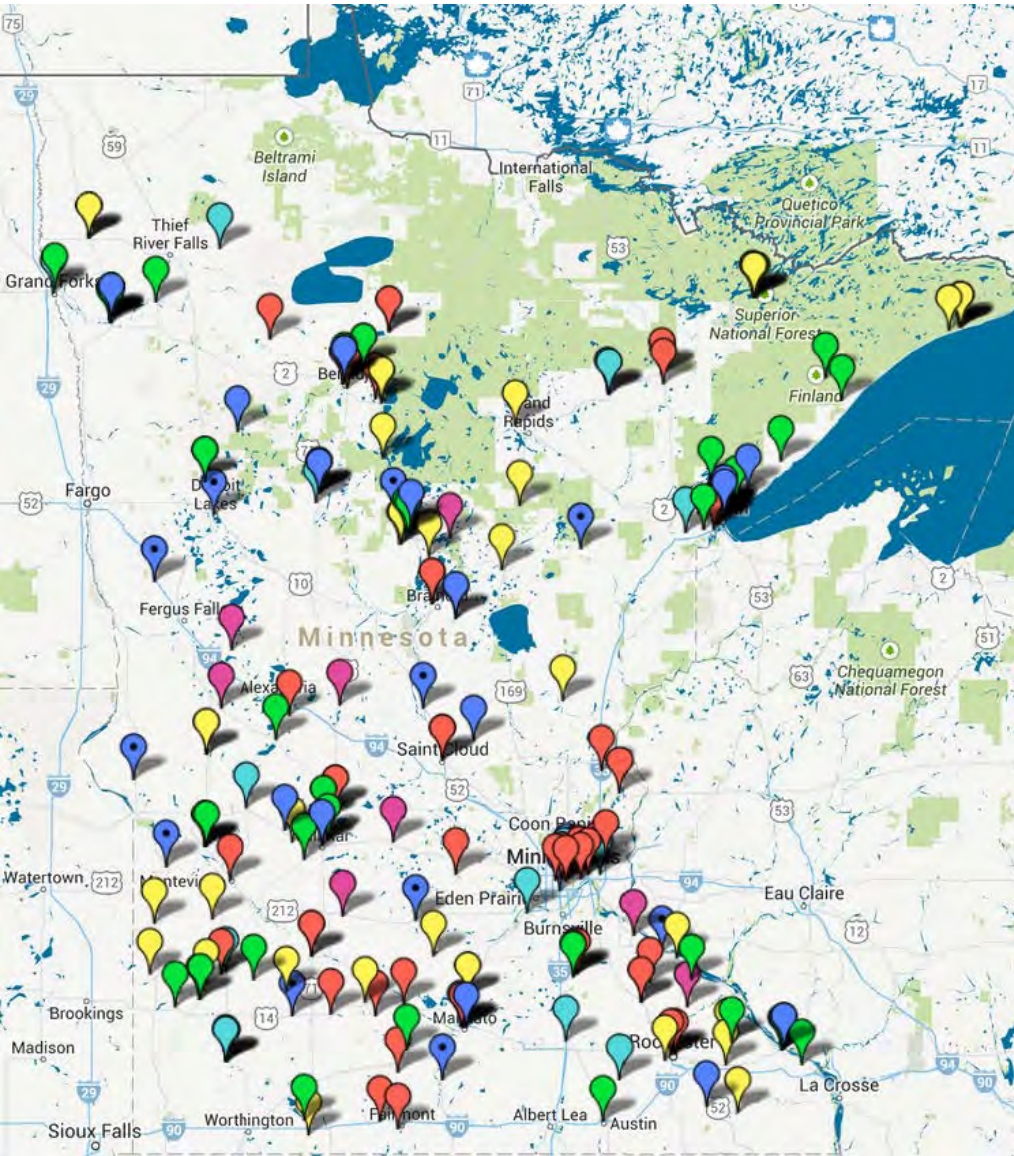
Develop Informational Tools



Get People Together



Seed a Bit of Innovation



Catalyzing grants for community-based clean energy projects in MN

Past funding: Over 223 projects have received seed grants since 2006



Encourage CERTified Actions



Campaigns: Clear, actionable ways to save energy



CleanEnergyResourceTeams.org/Turkeys



CleanEnergyResourceTeams.org/LEDCanopy

Major Accomplishments



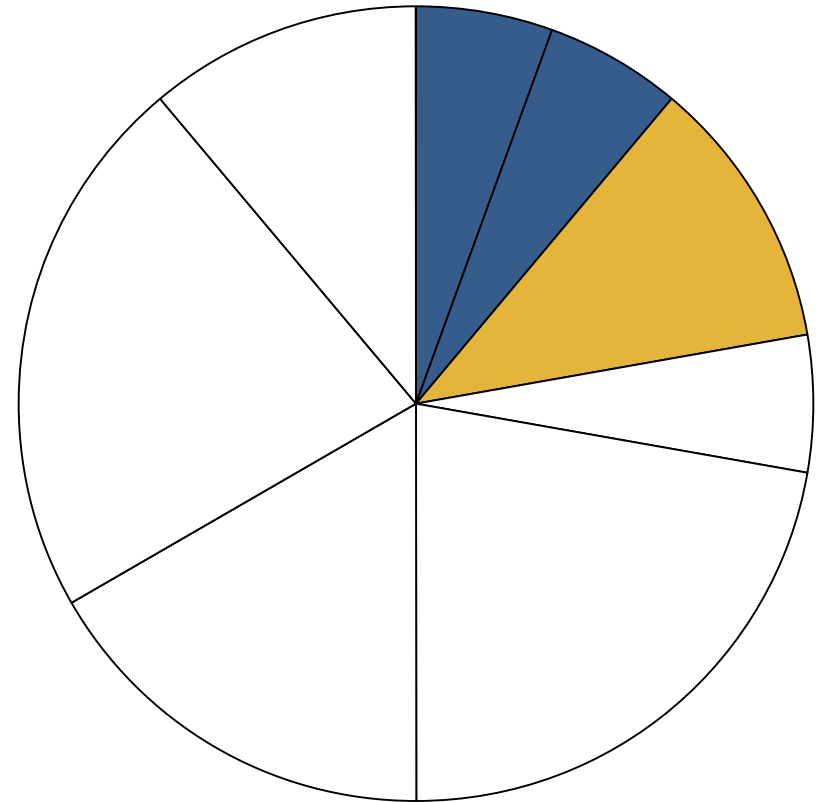
- Helped Minnesotans save 109 billion BTUs of energy and avoid \$1.7 million in energy costs
- Awarded over \$930,000 in seed grants to 230 clean energy projects
- Impacted 121,000 people through grants, events, and programs

Action

Today's Talk



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- Wrap-up*



Behavior Change Science



- Applying concepts from social science and psychology fields to understand why we do (or don't) take action
- Identifying what...
 - motivates us
 - stands in the way



Why Behavior Change Science?



- Info-only not effective
- Economic self-interest
 - Assumes: rational thinking
 - Reality: impulse & convenience
- Knowledge → Attitudes → Behavior
 - Not always true
 - Not needed to spur behavior change



Group Input: Define Behavior



- What do you think of as a “behavior”?
- How would you define behavior?
- Does installing technology count as a behavior?



VS




Define Behavior



- One-time vs. repeat
- End-state
- Non-divisible





Right Light Guide for General Use Bulbs

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STEP 1 Decide How Much Light You Need

Focus on Brightness. Different amounts of light are needed for different uses. Instead of thinking about light bulbs based solely on the amount of energy they use, focus on their brightness level.

Lumen is the measurement of brightness. Higher lumen bulbs produce brighter light.

Watt (W) is the measure of power consumption. Lower wattage bulbs can lower your electric bills.

If you like your bulb's current brightness, choose a CFL or LED with similar lumens to reduce your energy use. You may also consider a bulb that is less bright to save more.

Brightness	Incandescent	CFL	LED
450 lumens	40W	9-13W	4-8W
800 lumens	60W	13-16W	8-13W
1100 lumens	75W	17-23W	11-15W
1600 lumens	100W	23-28W	16-20W

← Least Efficient → Most Efficient →

STEP 2 Decide What Color Light You Want

Choose Light Appearance. You'll be pleased with your new bulb by choosing a light appearance that you like. All of these colors are available for LEDs and CFLs and at most brightness levels.

Note: Choose warm or soft white (2700-3000 K) to match the color of incandescent bulbs.

Soft White, Warm White
Living Room, Bedroom

2700K 3000K

Bright White, Cool White
Kitchen, Bathroom, Dining Room

3500K 4100K

Natural, Daylight
Office, Laundry, Workshop, Garage

5000K 6500K

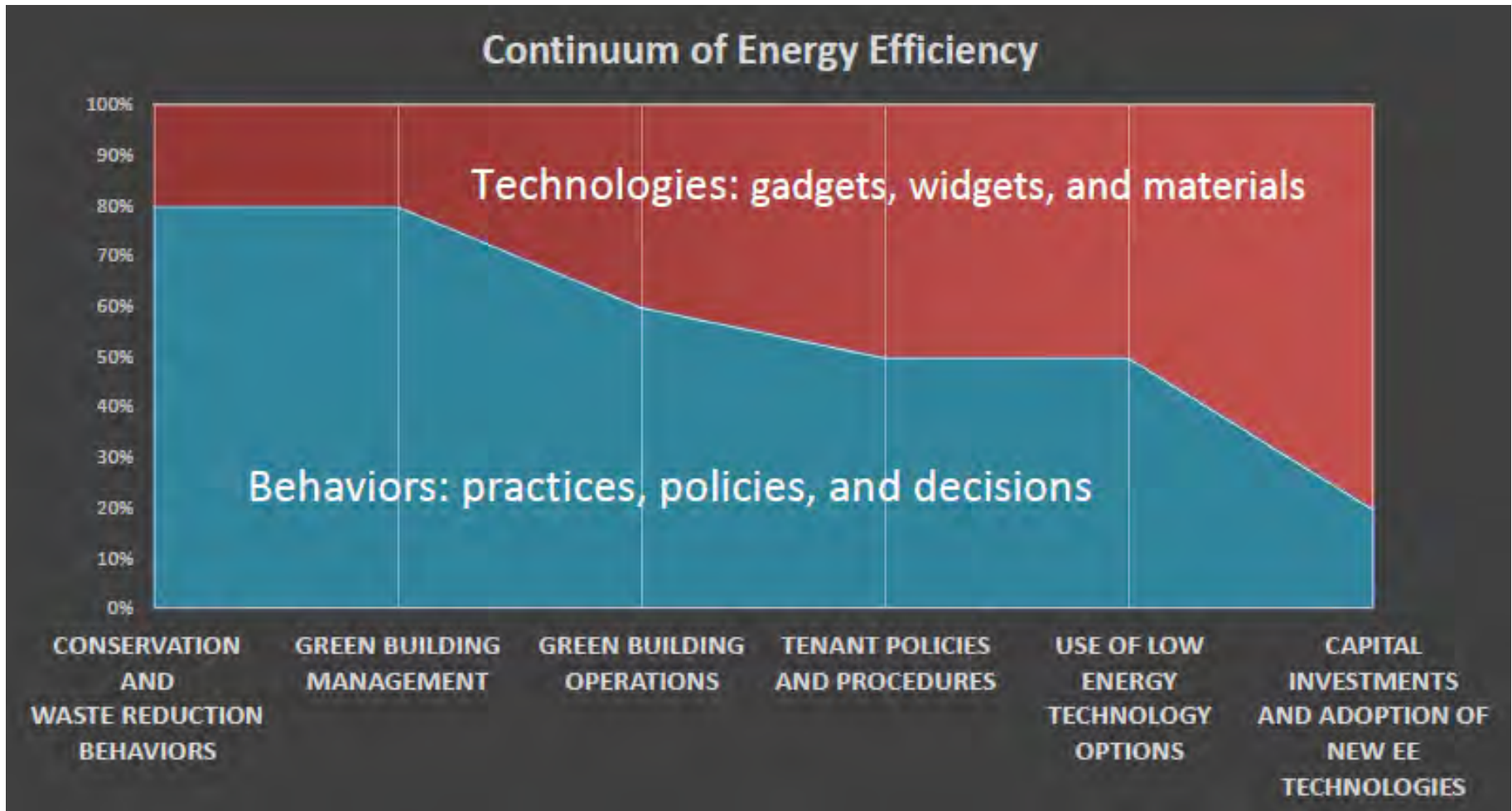
← Warm Color → Light Appearance → Cool Color →

Energy Star

800 lumens
Energy Cost \$1.14
16kWh
22.8 years



Behavior vs. Technology

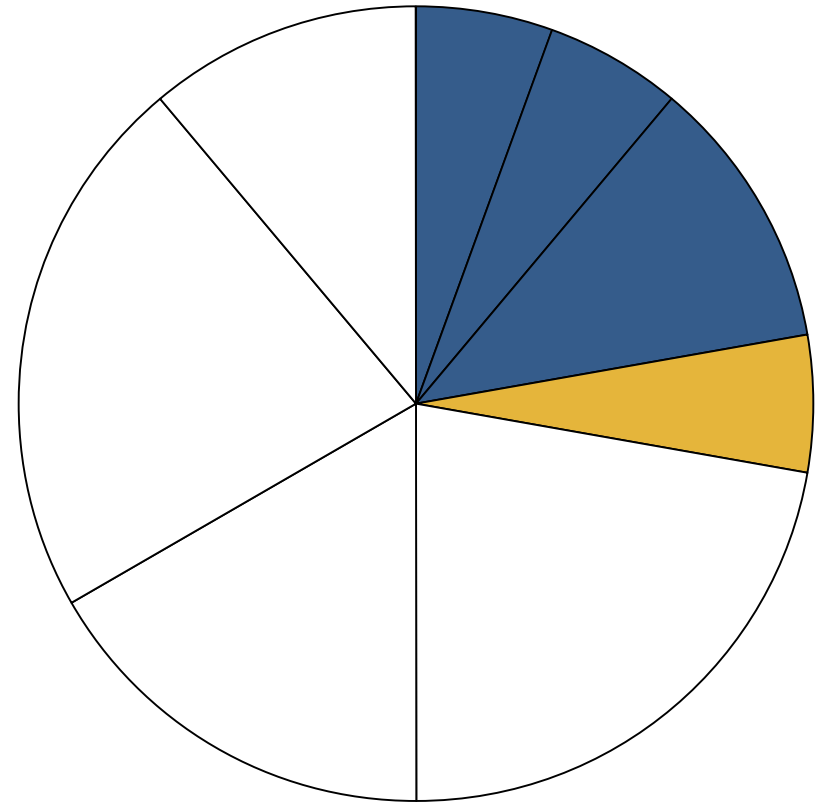


Source: K. Ehrhardt-Martinez

Today's Talk



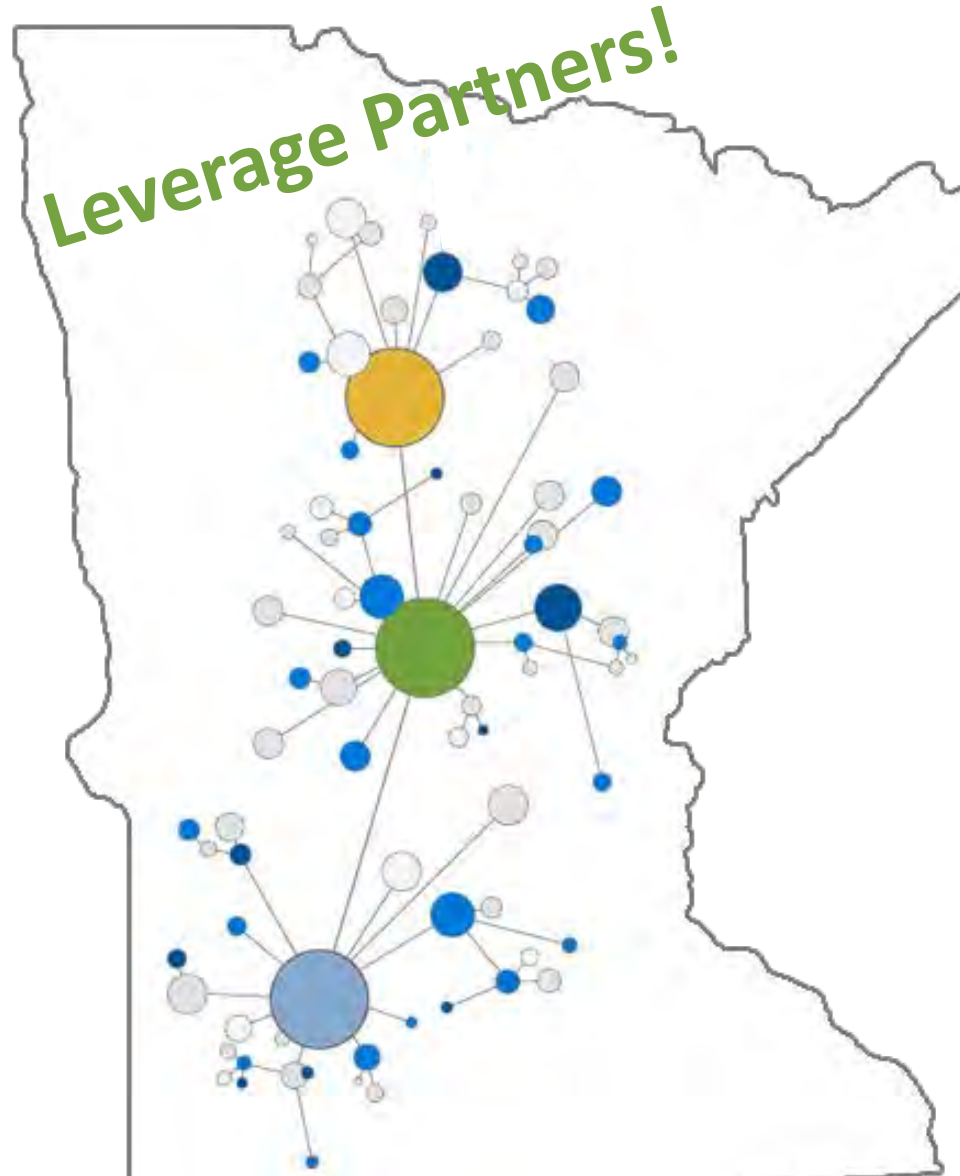
- ✓ Introductions
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Define & Access Audience



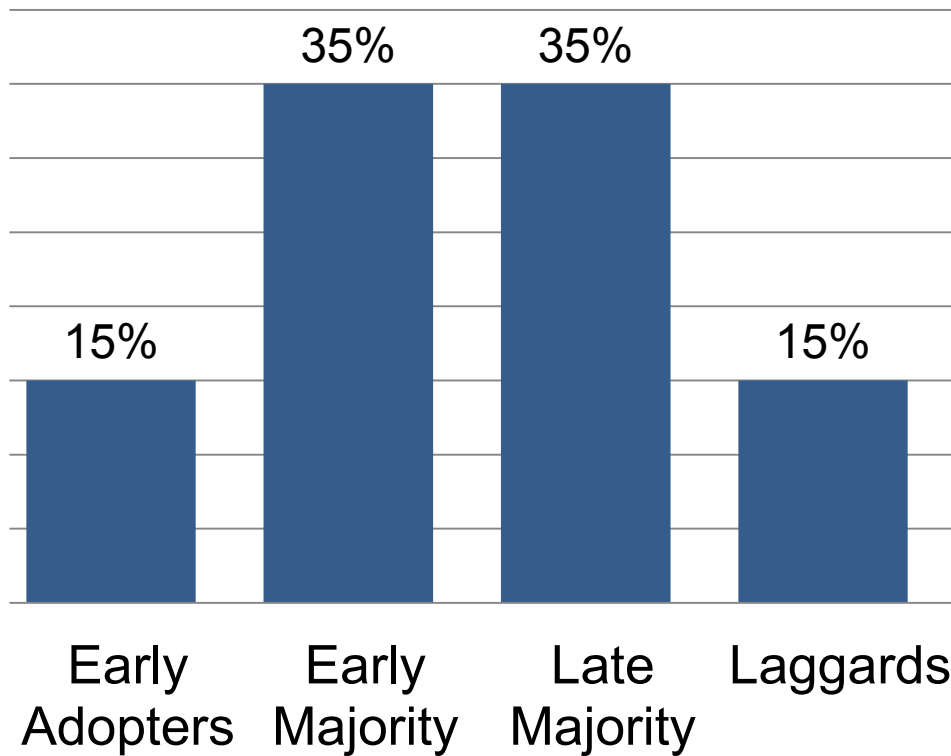
- Demographics
- Customer type
- Shared circumstances/obstacles
- Geographic area
- Existing networks
- “In-community”: live, work, play
- Meet people where they are
- Online, In-person, Both



Types of People



Innovation Diffusion Strategy



Source: D. Gershon

American Climate Change Perspectives

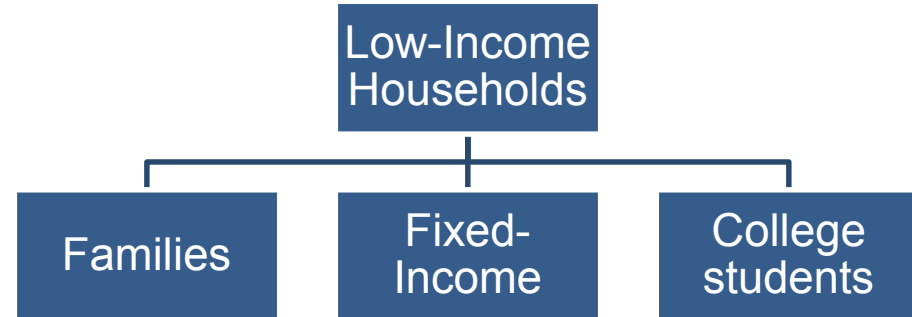


Source: C. Manning

Why Audience is So Important



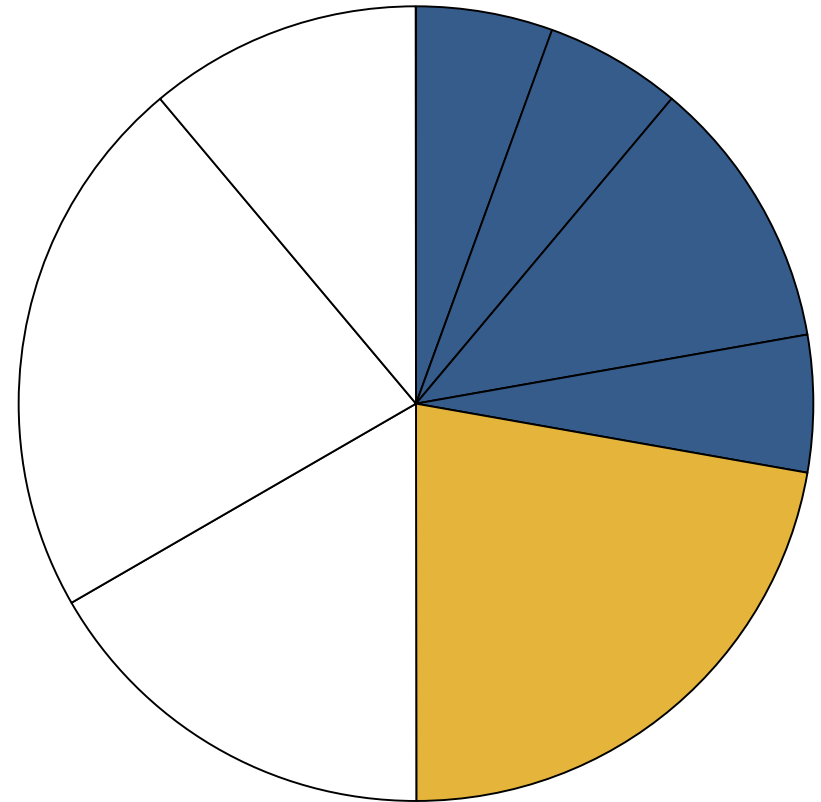
- Sub-groups
- Relevant messaging
- Tailored actions
- Evaluation



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Behavior Change Frameworks



Community-Based Social Marketing



Six Key Principles of Influence



Social Change 2.0



Fogg Behavior Model

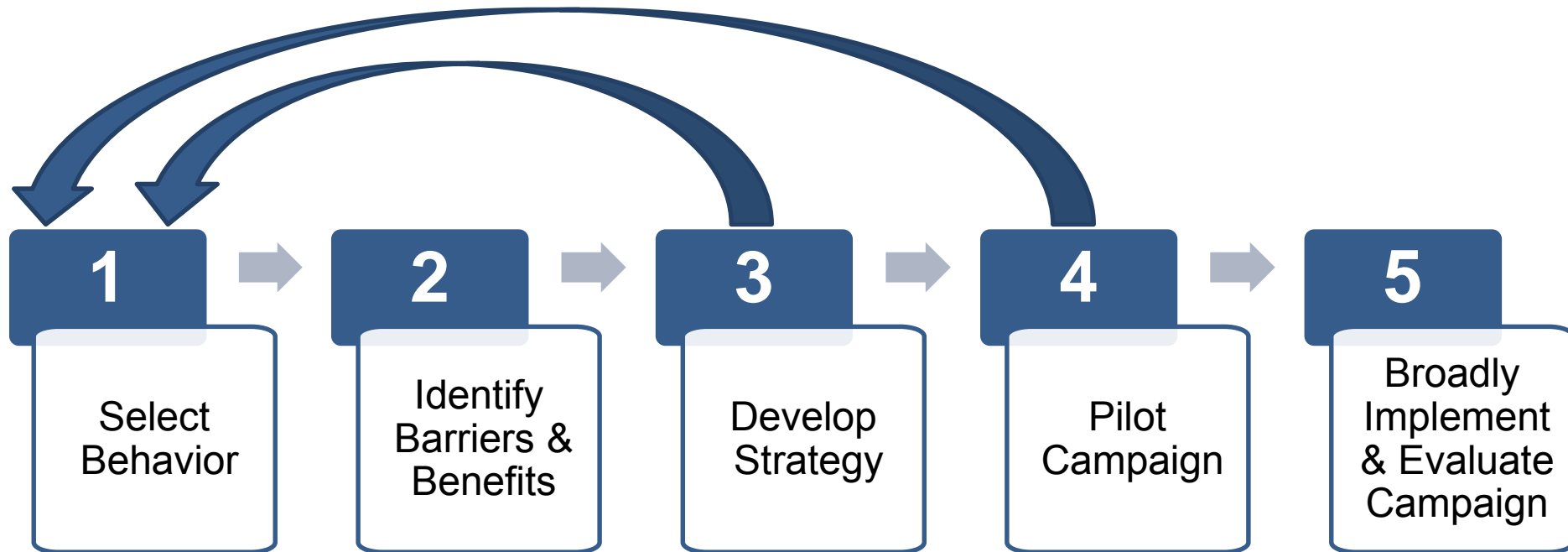


Behavior Change Frameworks

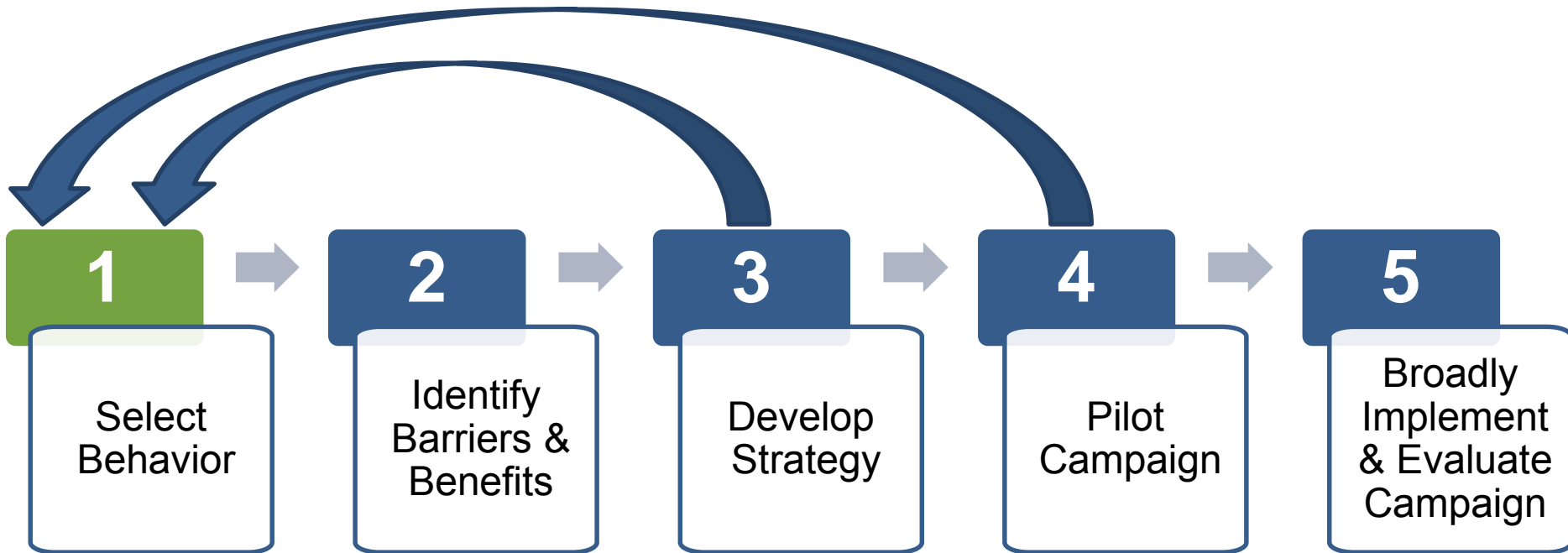


Community-Based Social Marketing (CBSM)

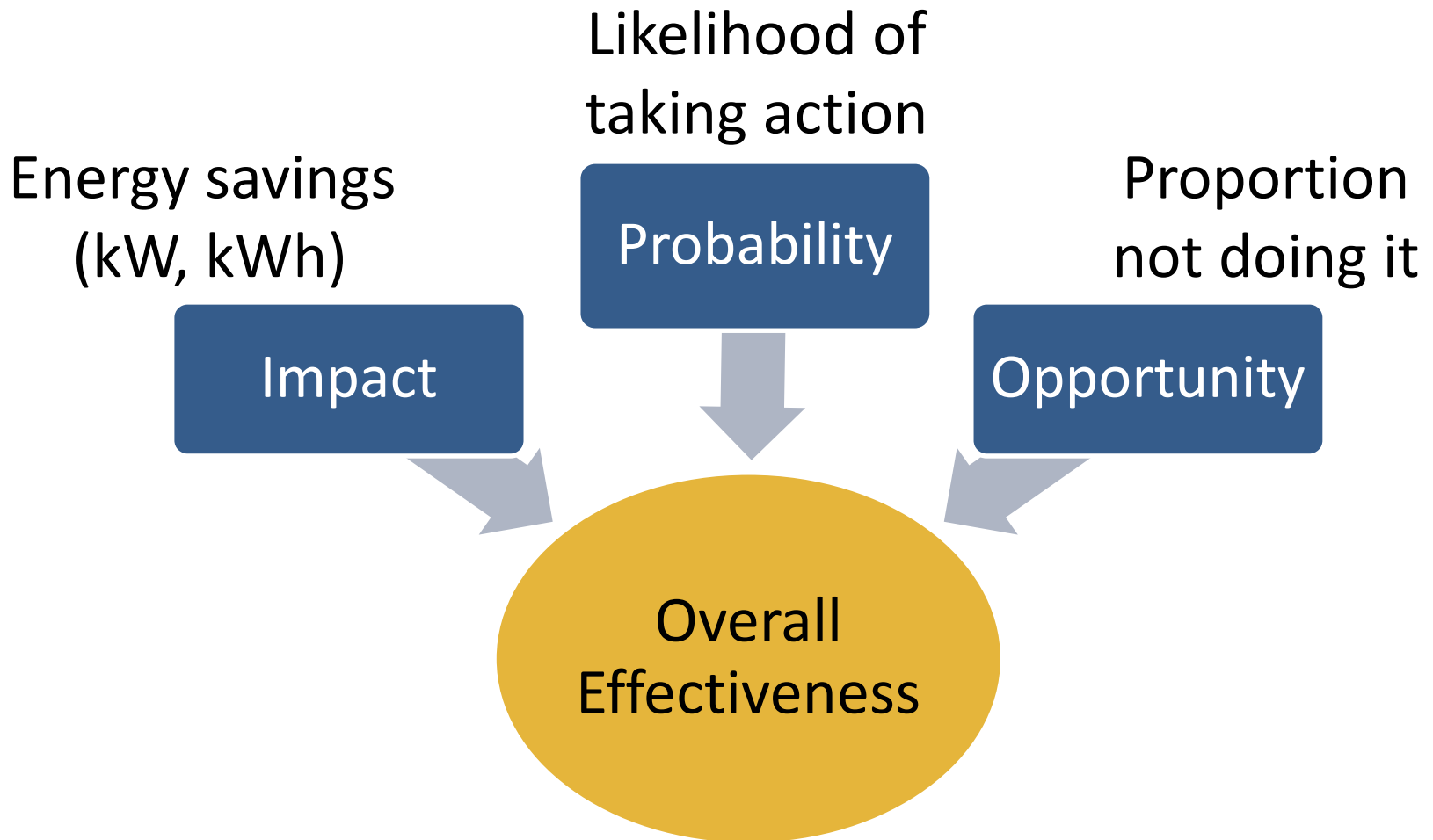
Doug MacKenzie-Mohr



CBSM



Select Behavior

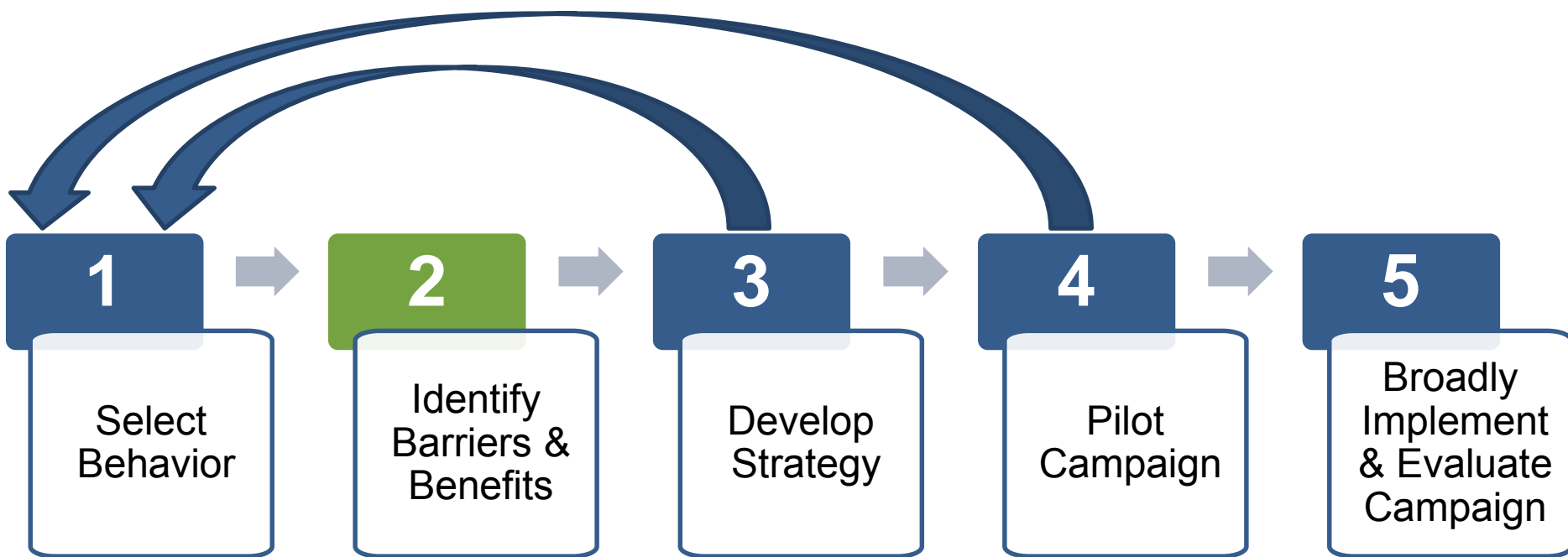


Select Behavior



Behaviors for Residential Households	Already engaged (0-100%)	Opportunity (100 Minus Engaged)	Energy Savings per household per year	Likelihood (0-4)	Relative Score or Weight	Rank
Purchase green power	3%	→ 97	X 8700	2.15	= 1,814,385	1
Cold water wash	38%	→ 62	X 450	3.09	= 86,211	3
Increase use of clothes line	8%	→ 92	X 200	3.07	= 56,488	3
Install 10 CFLs	23%	→ 7	X 700	3.03	= 163,317	2
Install low-flow showerhead	61%	→ 39	X 215	2.5	= 20,963	3

CBSM





Identifying Barriers/Benefits

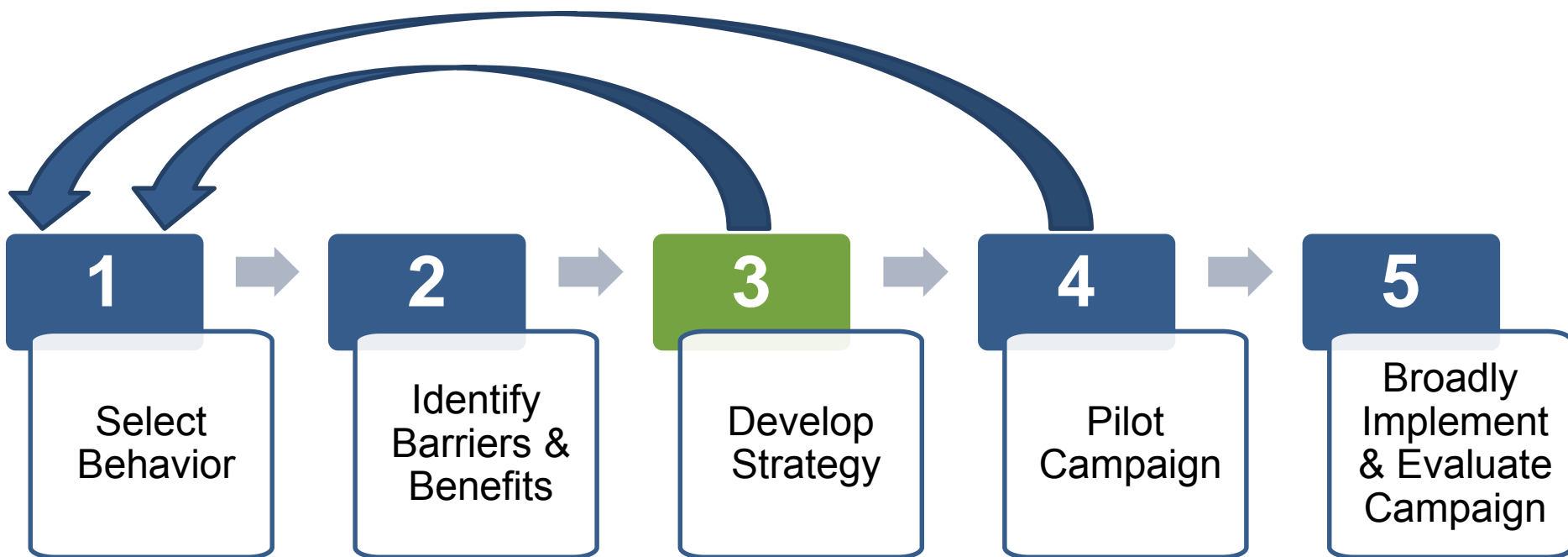
- Research
- Observation
- Focus Groups
- Surveys

Specific Behavior	Barriers	Benefits
Encourage	↓	↑
Discourage	↑	↓

What prevents your target audience from engaging in this behavior? What do they find challenging about it?

What does your target audience perceive as the benefit of engaging in this behavior? What do they like about it?

CBSM



Develop Strategy

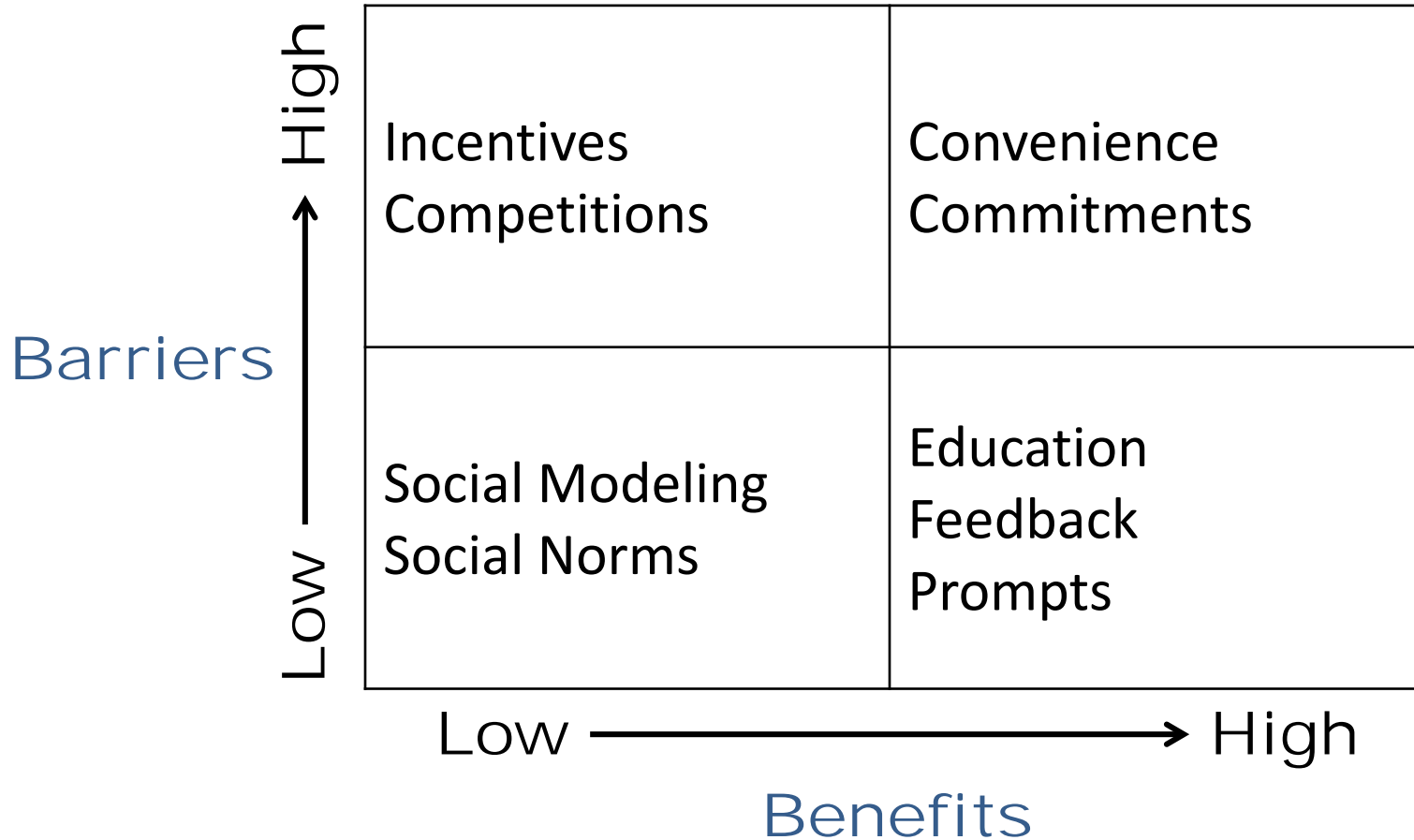


Behavior change tools that affect barriers & benefits:

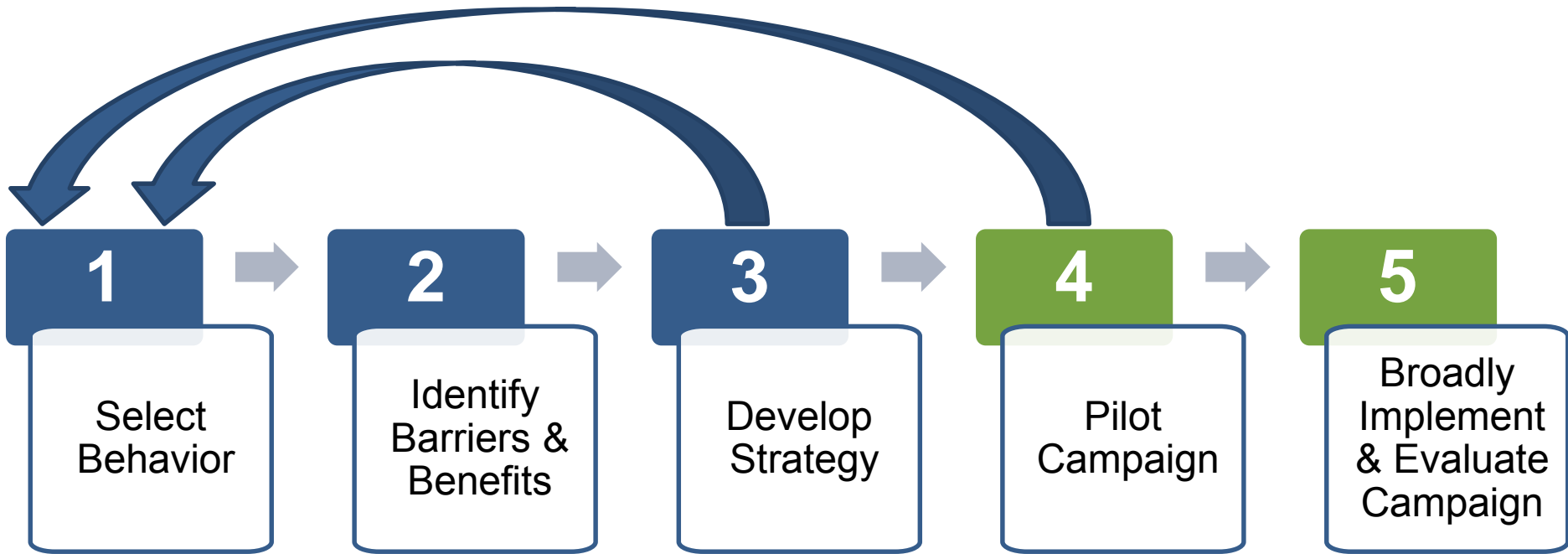
- Attitudes
- Branding
- Commitment
- Communication
- Convenience
- Education
- Feedback
- Framing
- Goal Setting
- Incentives
- Norms
- Prompts
- Social Diffusion

Stack Strategies!

Effectively Use Strategies



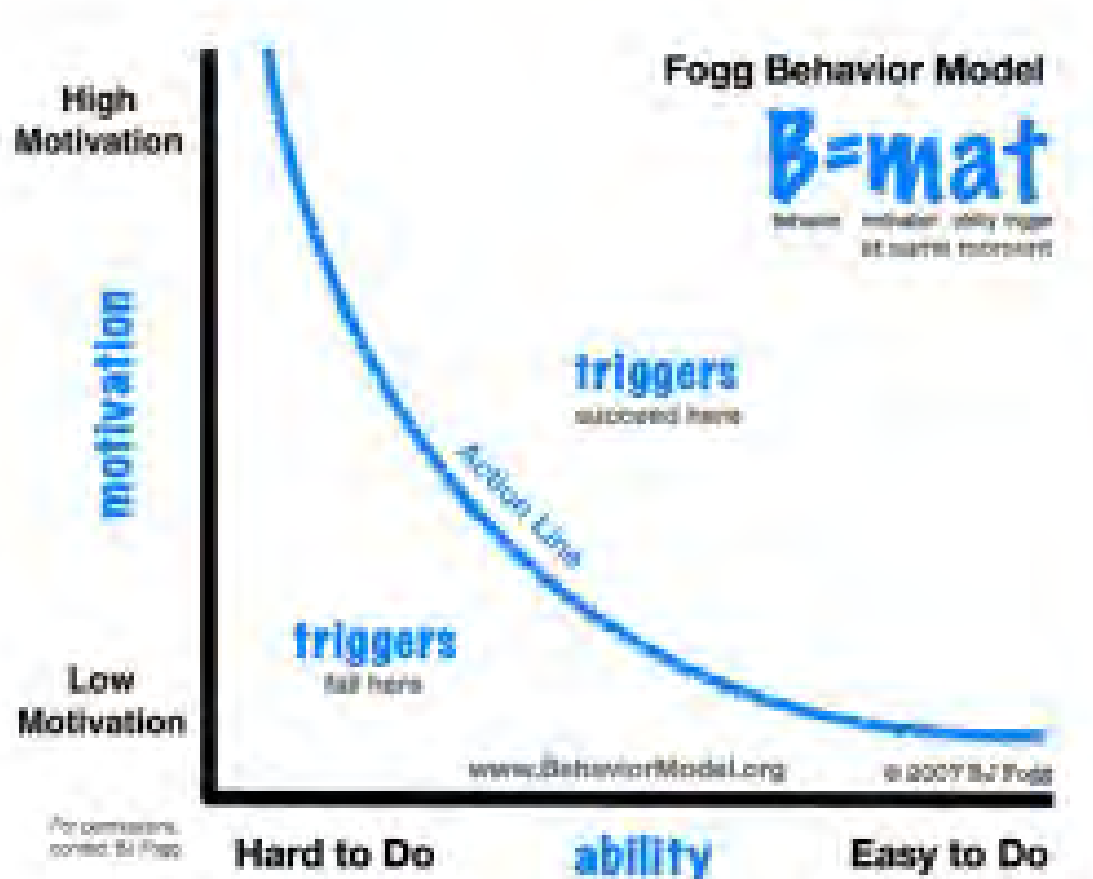
CBSM



Behavior Change Frameworks













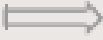







Fogg Behavior Model and Grid
Stanford Persuasive Tech Lab



Fogg Behavior Grid



	GREEN Do new behavior	BLUE Do familiar behavior	PURPLE Increase behavior intensity	GRAY Decrease behavior intensity	BLACK Stop existing behavior
 DOT One time	 GREEN DOT <i>Do a new behavior one time</i>	 BLUE DOT <i>Do familiar behavior one time</i>	 PURPLE DOT <i>Increase behavior one time</i>	 GRAY DOT <i>Decrease behavior one time</i>	 BLACK DOT <i>Stop behavior one time</i>
 SPAN Period of time	 GREEN SPAN <i>Do behavior for a period of time</i>	 BLUE SPAN <i>Maintain behavior for a period of time</i>	 PURPLE SPAN <i>Increase behavior for a period of time</i>	 GRAY SPAN <i>Decrease behavior for a period of time</i>	 BLACK SPAN <i>Stop behavior for a period of time</i>
 PATH From now on	 GREEN PATH <i>Do new behavior from now on</i>	 BLUE PATH <i>Maintain behavior from now on</i>	 PURPLE PATH <i>Increase behavior from now on</i>	 GRAY PATH <i>Decrease behavior from now on</i>	 BLACK PATH <i>Stop behavior from now on</i>

Fogg Behavior Grid

www.behaviorwizard.org



I want to

STOP
or DECREASE
a behavior

START
or INCREASE
a behavior



GreenPath Behavior Overview

If you want someone to **commit to a new behavior** for the **long term**, you are seeking a Green Path Behavior.

Examples include:

- *Health:* **Agree to consume flax seed oil each morning, from now on.**
- *Environment:* **Resolve to always use fluorescent light bulbs.**
- *Commerce:* **Decide to buy a new brand of toothpaste from now on.**
- *Relationships:* **Get married.**

Green Path Behaviors imply a life change. The change can be big, like marriage. Or it can be small, like deciding to bring your own bags to grocery store. Either way, Green Path Behaviors have two challenges: commitment (agreeing to the change) and fulfillment (behaving in new ways).

In our view, the fulfillment part is much like a Blue Path Behavior (because the behavior will soon become familiar). So here we focus on the unique aspect of Green Path Behaviors: **Getting people to commit to a lifelong change.**

As with the 14 other behavior change types, Green Path Behaviors are the result of three elements: Motivation, Ability, and Triggers. As the [Fogg Behavior Model](#) describes, you must **Trigger** the behavior when the person is both **Motivated** and **Able** to perform it. The specific steps

1. Boost motivation (if needed)
2. Enhance ability by making the commitment act simple
3. Issue the trigger when #1 and #2 are in optimal states.

For example,

- A. Couple the **trigger** with an existing habit
- B. Increase the perceived **ability** (self-efficacy) by making the behavior easier to do
- C. Reduce **demotivation** by making the behavior more familiar

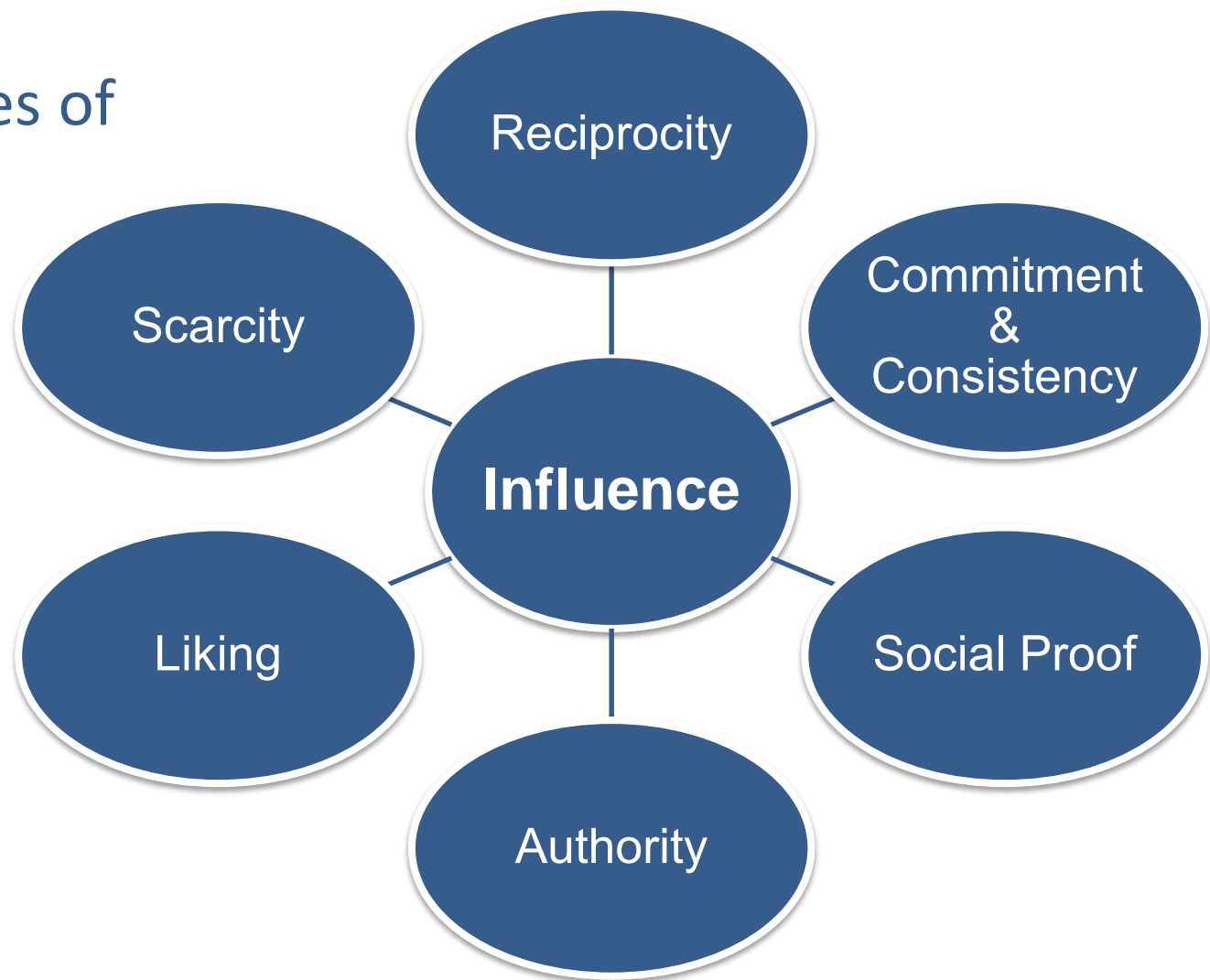
	GREEN Do New Behavior	BLUE Do Familiar Behavior	PURPLE Increase Behavior	GRAY Decrease Behavior	BLACK Stop Behavior
DOT One Time	GREEN DOT	BLUE DOT	PURPLE DOT	GRAY DOT	BLACK DOT
SPAN Period of Time	GREEN SPAN	BLUE SPAN	PURPLE SPAN	GRAY SPAN	BLACK SPAN
PATH From Now On	GREEN PATH	BLUE PATH	PURPLE PATH	GRAY PATH	BLACK PATH

Behavior Change Frameworks



Six Key Principles of Influence

Robert Cialdini



Six Key Principles of Influence



- **Liking** - Easily persuaded by people we like.
- **Social Proof** - People do things they see others doing.
- **Authority** - People tend to obey authority figures.
- **Reciprocity** - People tend to return a favor.
- **Commitment and Consistency** - Likely to honor commitments; want to be consistent with self-image.
- **Scarcity** - Perceived scarcity generates demand and interest.

Behavior Change Frameworks

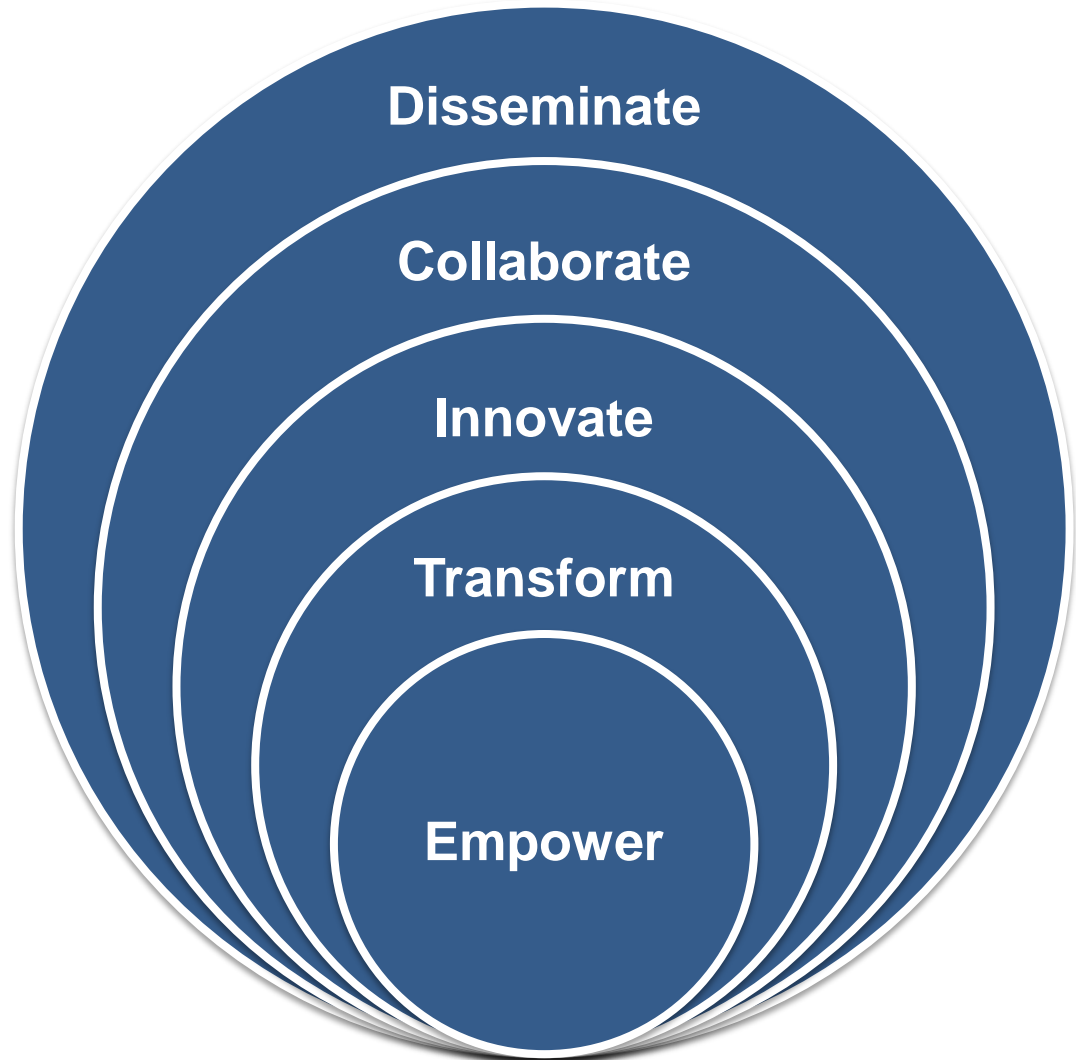


Social Change 2.0 Framework

David Gershon

4 Key Questions

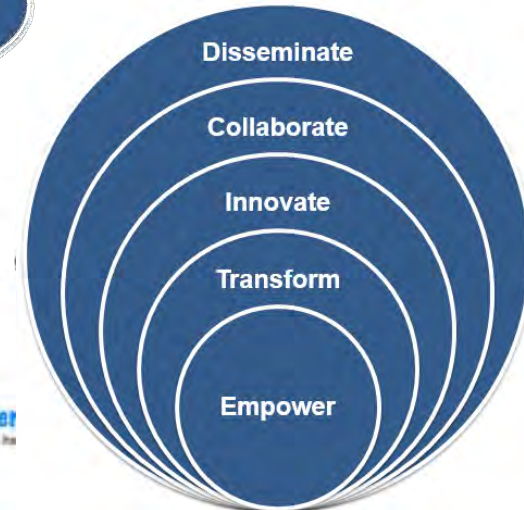
1. *Where do I start?*
2. *What are the important actions?*
3. *How do I do them?*
4. *If I do them, what impact will it make?*



Group Input: Reflect on models



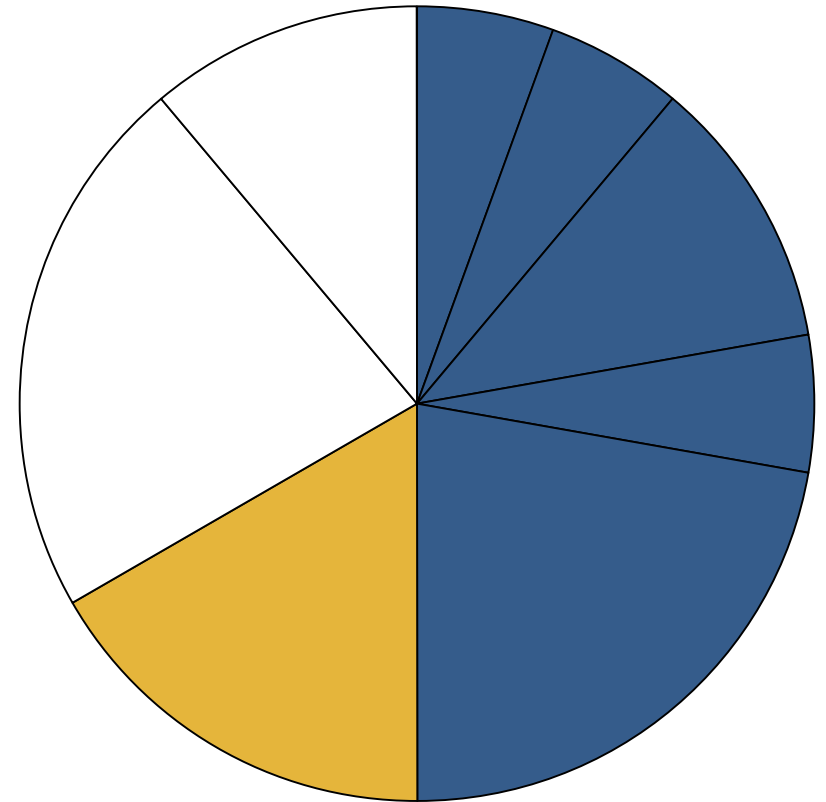
- What aspects of these frameworks are you already using?
- Which of your activities would benefit from these frameworks?



Today's Talk



- ✓ Introductions
- ✓ What is CERTs?
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CERTified Campaigns



Behavior Change Science in Action!



Right Light Guide for General Use Bulbs

Today there are many lighting options available. The right bulb for you depends on how much light you need, what color light you want, and its costs and features.

STEP 1 Decide How Much Light You Need

Focus on Brightness. Different amounts of light are needed for different uses. Instead of thinking about light bulbs based solely on the amount of energy they use, focus on their brightness level.

Lumen is the measurement of brightness. Higher lumen bulbs produce brighter light.

Watt (W) is the measure of power consumption. Lower wattage bulbs can lower your electric bills.

Brightness	Incandescent	CFL	LED
450 lumens	40W	9-13W	4-8W
800 lumens	60W	13-16W	8-12W
1500 lumens	75W	17-20W	11-15W
1600 lumens	100W	23-28W	16-20W

Least Efficient ← → Most Efficient

STEP 2 Decide What Color Light You Want

Choose Light Appearance. You'll be pleased with your new bulb by choosing a light appearance that you like. All of these colors are available for LEDs and CFLs and at most brightness levels.

Different Colors, Same Brightness

Color	Light Appearance	Color
Soft White, Warm White	Bright White, Cool White	Natural, Daylight
2700K	3000K	3500K
3500K	4100K	5000K
5000K	6500K	

Energy Cost \$270 total cost

Facts per bulb: 800 lumens, Energy Cost \$1.14, 15 years, 22.8 years, 9.9 watts

ENERGY STAR

www.mncerts.org/Lighting



www.mncerts.org/Turkeys



www.mncerts.org/LEDCanopy

Right Light Guide



Education

Right Light Guide for General Use Bulbs

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STEP 2: Decide What Color Light You Want

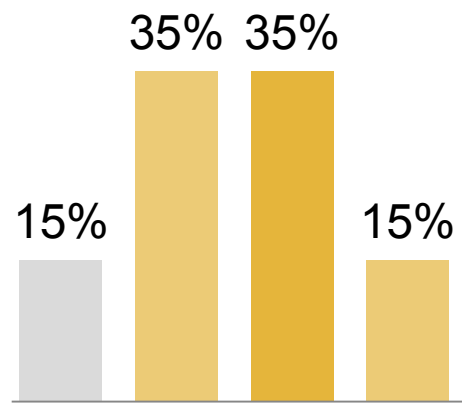
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Different Colors, Same Brightness

Color	Light Appearance
Soft White, Warm White (Living Room, Bedroom)	Warm Color
Bright White, Cool White (Kitchen, Bathrooms, Dining Room)	Light Appearance
Natural, Daylight (Office, Library, Workshop, Garage)	Cool Color

2700K 3000K 3500K 4100K 5000K 6500K

Innovation Diffusion Strategy



Early Adopters
Early Majority
Late Majority
Laggards

Pilot

Right Light Guide

1. Where do I start?



CLEAN ENERGY RESOURCE TEAMS

Right Light Guide for General Use Bulbs

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Note: Choose warm or soft white (2700-3000 K) to match the color of incandescent bulbs.

Different Colors, Same Brightness

Light Appearance	Color Temperature
Soft White	2700K
Warm White	3000K
Neutral White	3500K
Daylight	5000K
Very Daylight	6500K

Social Change 2.0

2. What are the important actions?

- STEP 1** Decide How Much Light You Need
- STEP 2** Decide What Color Light You Want
- STEP 3** Think About Costs and Benefits
- STEP 4** Find Rebates and Resources

Right Light Guide



3. How do I do them?

Social Change 2.0

Lighting Facts Per Bulb	
Brightness	800 lumens
Estimated Yearly Energy Cost	\$1.14
Based on 3 hrs/day, 11¢/kWh Cost depends on rates and use	
Life	22.8 years
Based on 3 hrs/day	
Light Appearance	
Warm	Cool
2700 K	
Energy Used	9.5 watts



4. If I do them, what impact will it make?

Cost Over 20 Years	Bulb(s)	Energy	Pros (+) and Cons (-)
LED	1 bulb in 20 years	\$40 total cost	<ul style="list-style-type: none"> + Saves 85% of energy use over incandescent + Lasts 25 times longer than incandescent + Great for dimmed, recessed, or enclosed fixtures + Performs well in cold temperatures - Higher bulb cost
CFL	3 bulbs in 20 years	\$50 total cost	<ul style="list-style-type: none"> + Saves 75% of energy use over incandescent + Lasts 10 times longer than incandescent - Recessed & enclosed fixtures reduce bulb life - Performs poorly in cold temperatures - Contains mercury (recycling required)
Incandescent	22 bulbs in 20 years	\$270 total cost	

Note: Cost comparison is based on a 20-year life and takes into account power consumption, hours of use per day, residential electric cost, bulb cost, and replacement cost. For detailed cost calculations and a full pro/con list, visit <http://Lighting.MnCERTs.org>.

Right Light Guide

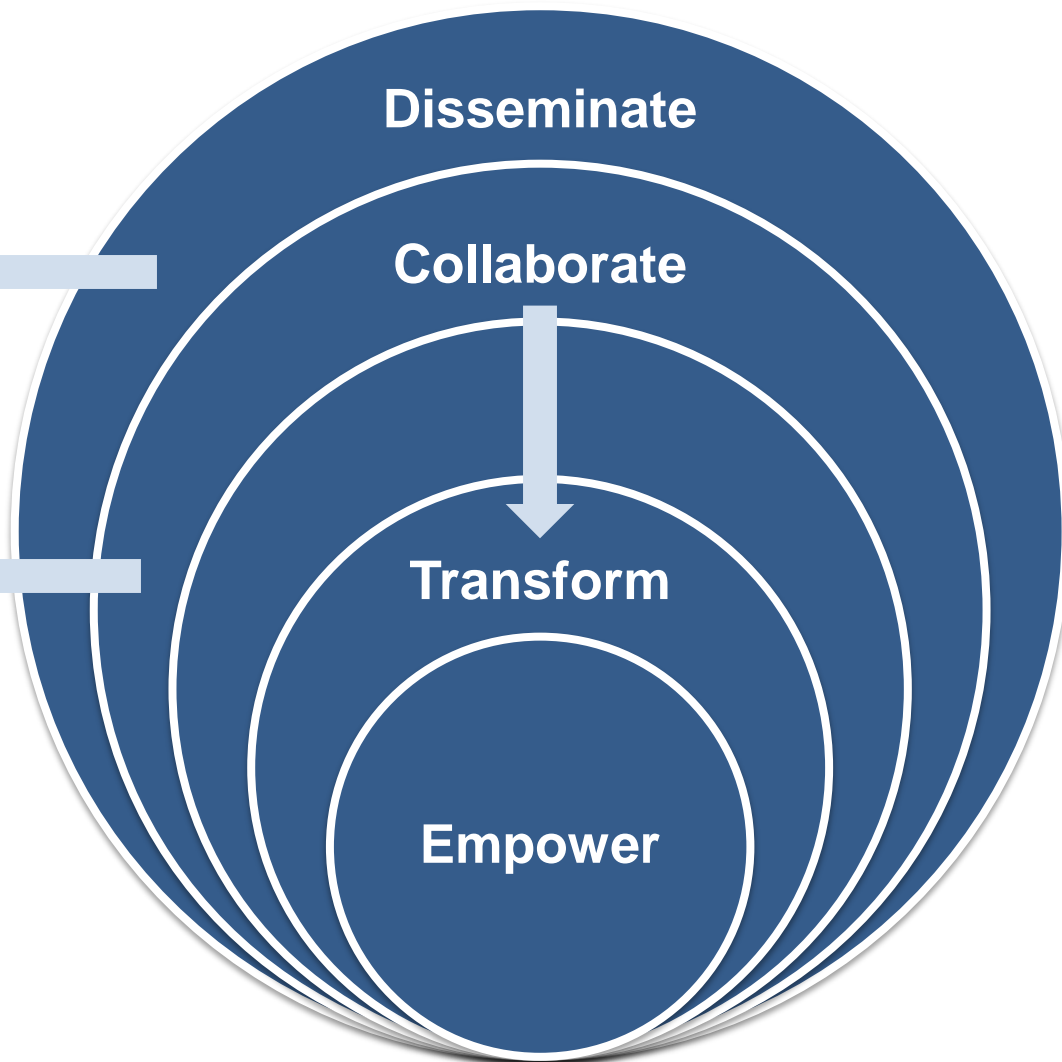
Social Change 2.0

250 downloads
3,000 State Fair

60+ MN Utilities
100,000 customers

Scarcity

Incandescent bulb phase-out



Do Your Homework



Conservation Applied Research
& Development (CARD) Program

FINAL REPORT



Improving Energy Efficiency in Convenience Stores

Prepared for: Minnesota Department of Commerce, Division of Energy Resources

Prepared by: Michaels Energy



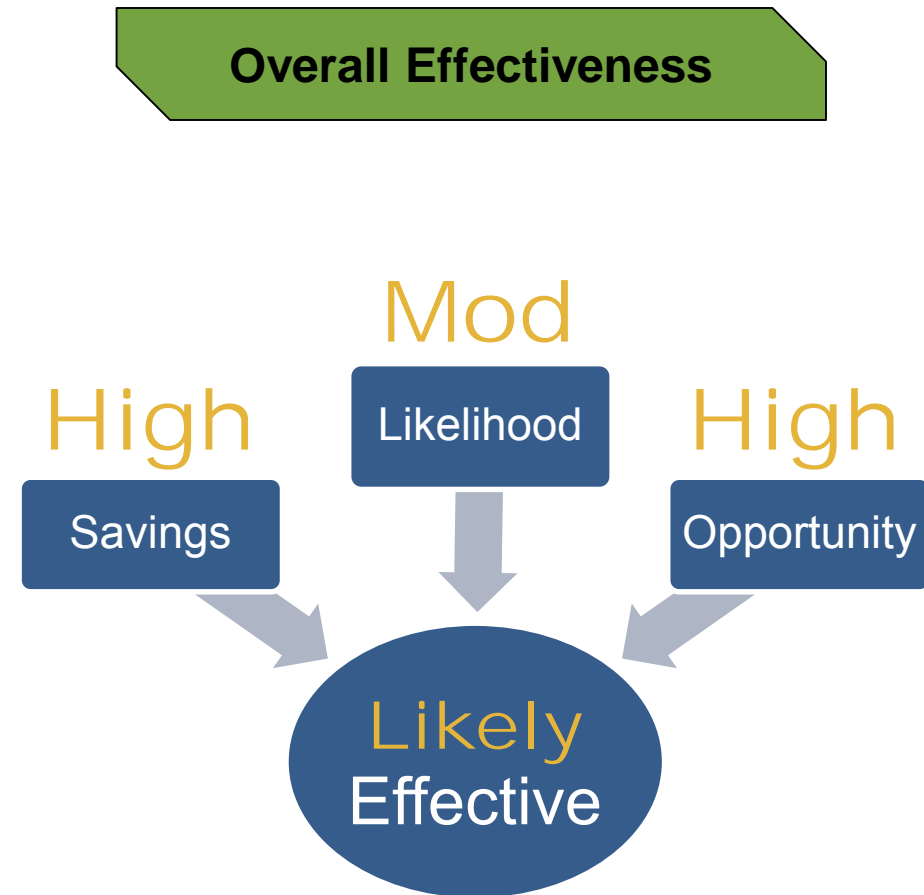
MichaelsEnergy

AUGUST 2013
COMM/OES-04042011-36538

Light Up Your Station & Save Research



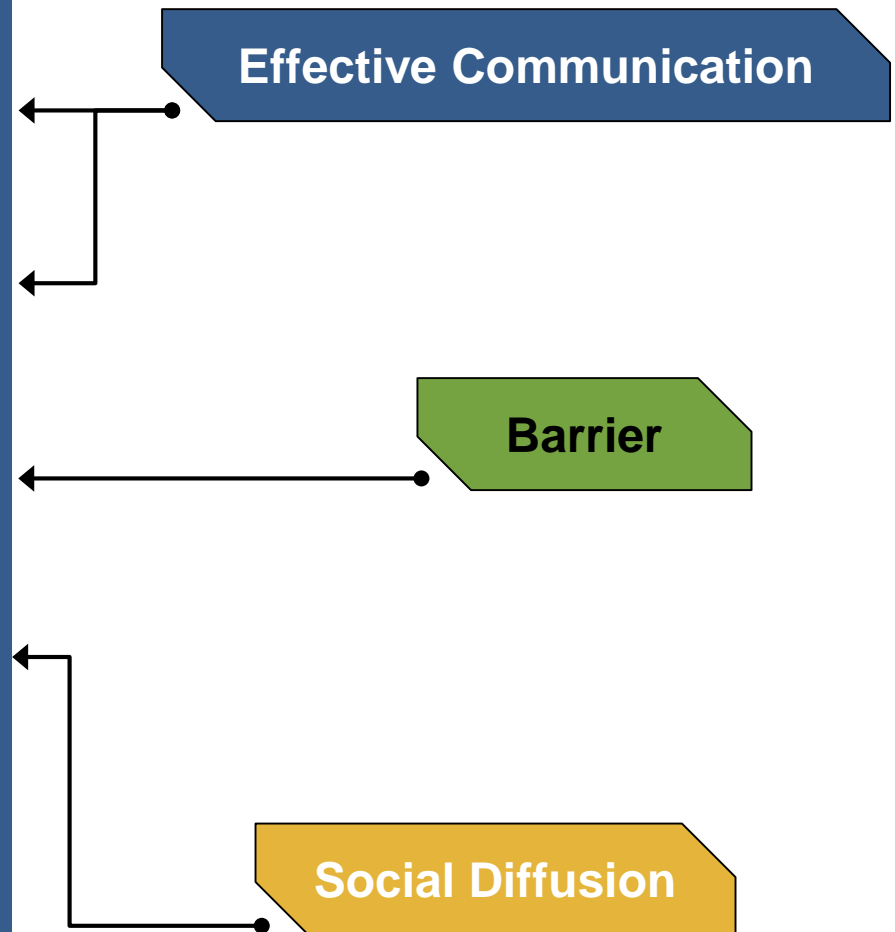
- Opportunity:
 - Only 2 out of 21 independent gas stations have LED canopy lighting
- Savings:
 - Lighting 28% of electricity
 - 2,000+ stations in MN
 - Average 17 hours lighting (range of 10 - 24 hours depending on season)



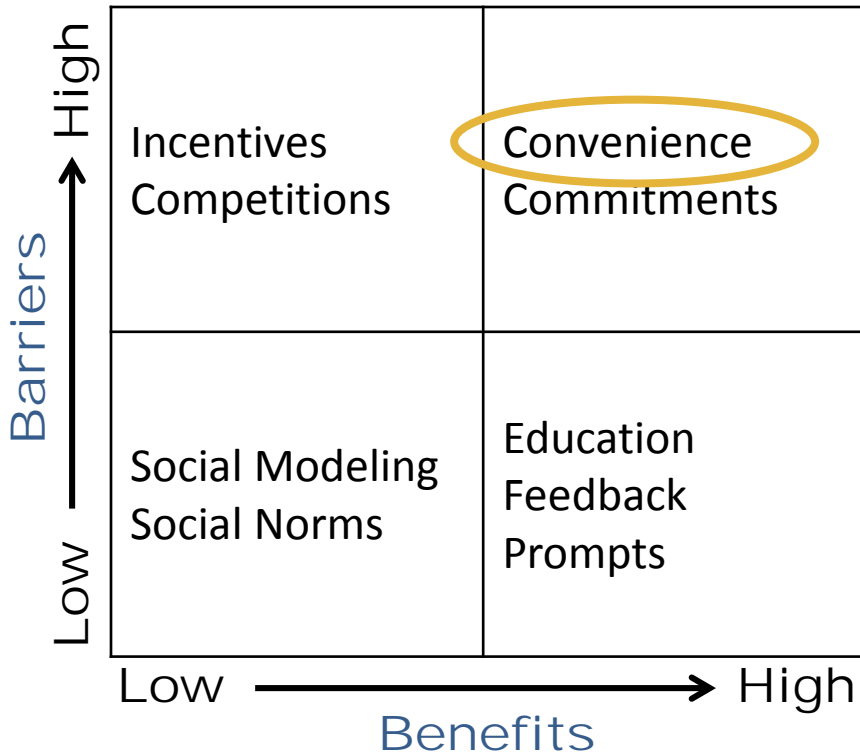
Light Up Your Station & Save Research



- Survey results of 15 independent gas stations
 - Energy = Pay bills and turn things off
 - Financials = Simple payback
 - Need = project management and technical assistance
 - Like to see others' success














Light Up Your Station & Save



CERTs 2015 Conference
Community-Driven Clean Energy
 Join hundreds of Minnesotans at CERTs 2015! [Learn more >>](#)

Sign up for email updates

List of LED Canopy Lighting Products

Product	Contact	Brightness* (lumens)	Power (watts)	Replaces (W MH)	Download Details	USA Made**	Product Cost***
 Cooper Lighting LED Recessed Canopy Models: [LRC]B64H3 or 4-[LED]E1-[MST or VAT or WST] Mounts: Recessed (in single and double deck canopies)	CERTs Alexis Troschinetz 612-626-0455 Email	6,679 8,212	69 88	250 250-320			\$\$\$\$
 CREE CPY250 Models: [CPY250]-[A]-[DM or HC or PD]-[D or F]-[A or B]-[UL] Mounts: direct (surface mount), hook & cord, pendant	CREE's Contacts	7,600 13,000	82 122	250-320 320-400			\$
 GE Evolve Canopy Light (ECSA) Model: ECSA0B57501CWHTXXX Mount: Only surface mount (shown) meets qualifications	Luma Sales Carianne Maki 952-995-6523 Email	7,200	85	320-400			\$
 InternationalLight Technologies Canopy Light-Plus Models: ILTCPYW50H-SD ILTCPYW50H-GD, ILTCPYW50H-GDL ILTCPYW50H-GD[1-7] Mounts: 16.875"-21.50" square, Richmond, Scottsdale	InternationalLight Technologies Pete Couture 978-818-6180*130 Email	8,000	90	320			\$
 Leotek Enduralux LED Canopy Light Models: LCN3-80T-MV-[CW or NW]-5S-WH-[450 or 530 or 700], LCN3-80T-MV-[CW or NW]-5S-WH-[570 or 700], LCN3-120T-MV-[CW or NW]-5S-WH-530 Mount: single skin (flush mount thru	Mike Kealy S&R Sales, Inc 952-884-1144 Email	9,370-13,100 14,860-17,650 20,970	84-131 138-174 191	320-400 400 with more brightness 400 with much			\$ - \$\$

Light Up Your Station & Save



- Target Audience: Independent gas station owners
- Behavior: Upgrade to LED canopy lighting
- Barriers:
 - Technical expertise
 - Upfront capital
- Benefits:
 - Attractive station
 - Low maintenance
 - Operational cost savings



Gobbling Up Savings



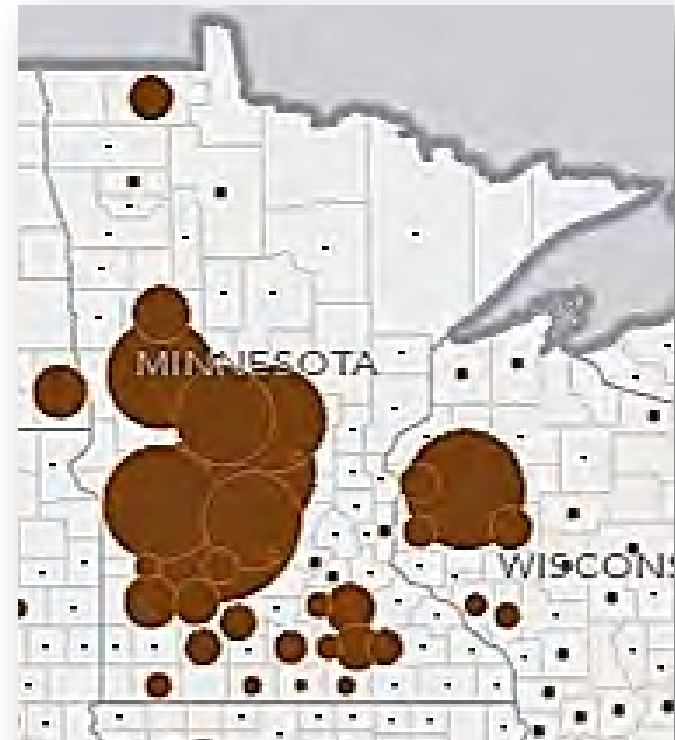
- Target Audience:
Turkey farmers
- Behavior: Upgrade to LED lighting in barns
- Barrier: Upfront capital costs
- Benefits:
 - Operational cost savings
 - Low maintenance
 - Poultry-specific lighting



LED Lighting in Turkey Barns Research



- #1 Turkey Producer in US
- 46 million turkeys raised
- 250 farmers, 600 farms
- Average 13 hours lighting (range of 5 to 24 hours depending on season)
- 77-86% energy savings
- \$1,000 - \$6,000 cost savings/yr



Distribution and Density of Turkey Production

Gobbling Up Savings



Authority



Gobbling Up Savings



GET READY TO GOBBLE UP SAVINGS

Why upgrade to LED lighting?

- Reduce lighting costs by \$1,000s each year
- Save up to 85% on lighting energy
- Pay for project in 3 years or less
- Reduce maintenance time and costs
- Provide lighting designed for turkeys
- Strengthen your business

Proven Results:

LED lighting has been successfully implemented through a study of 23 turkey barns in Minnesota. Farmers observed calmer birds and no measurable poultry production decrease by switching to LED lighting.

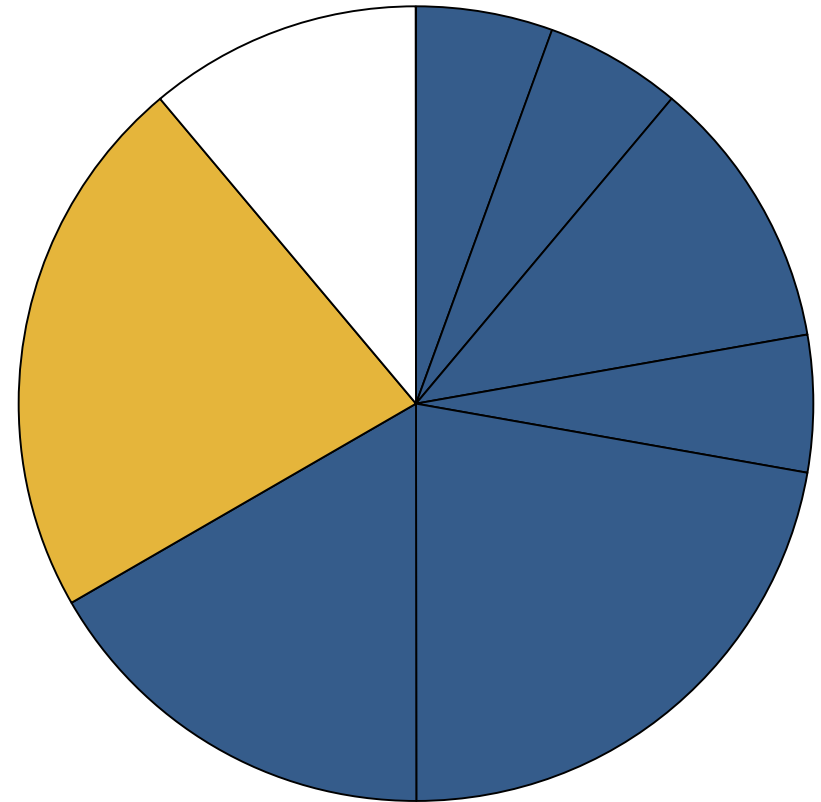
Framing

Social Norming

Today's Talk



- ✓ Introductions
- ✓ What is CERTs?
- ✓ Behavior Change Science
- ✓ Understanding Your Audience
- ✓ Behavior Change Frameworks
- ✓ CERTified Campaigns
- Behavior Change in Your Work*
- Wrap-up*



Behavior Change in Your Work



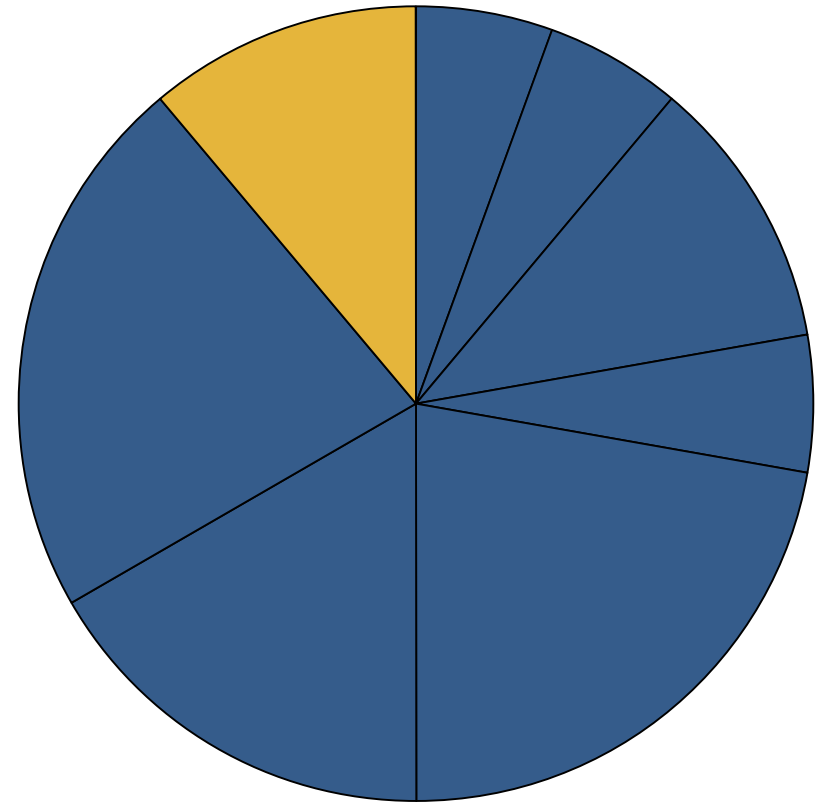
- Break into groups
- Follow worksheet
- Each group gives a 30-second share at the end



Today's Talk



- ✓ Introductions
- ✓ What is CERTs?
- ✓ Behavior Change Science
- ✓ Understanding Your Audience
- ✓ Behavior Change Frameworks
- ✓ CERTified Campaigns
- ✓ Behavior Change in Your Work
- Wrap-up*



Group Input: “Quiz” time

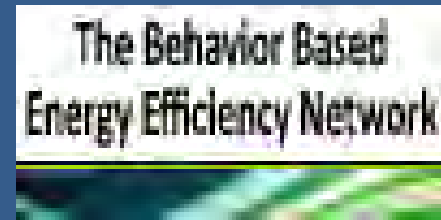


1. Describe the role of CERTs
2. Describe why behavior change science is useful
3. Define behavior
4. Explain the importance of identifying and tailoring your strategy to the intended audience
5. Differentiate among behavior change frameworks
6. Identify behavior change strategies in CERTs campaigns
7. Assess behavior change strategies in your work

Additional Resources



- LinkedIn Behavior-Based Energy Efficiency Network
- Class 5 Energy → MN-based school resources
- American Council for an Energy Efficient Economy
- www.CBSM.com → free online book
- Behavior Energy & Climate Change Conference (& LinkedIn too)
- Clean Energy Ambassadors
- Me!



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“This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying **1.5 hours** of credit toward **Building Officials and Residential Contractors** continuing education requirements.”

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