

# Using behavioral science to promote the adoption of green technologies

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<3% of new car sales



<11% of energy consumption

**Behavior** change is a central challenge for new innovations

# MIT

# Applied Cooperation Team

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# ACT's Mission

**Apply** behavioral science to **promote** contributions to **public goods**

**Distill** and **communicate** behavioral science so that others can do the same



DEPTH  
GAUGE  
90 ft







# Three core principles

- ✓ **Increase observability**
- ✓ **Eliminate plausible deniability**
- ✓ **Communicate expectations**



Sustainability



Philanthropy  
&  
Volunteering



Health



Digital Economy



**Sustainability**



Philanthropy  
&  
Volunteering



Health



Digital Economy



Supply Demand

kW



MAY JUN JUL AUG SEP OCT



Your Code: [code]

[Name]  
Or Current Occupant  
[Address]  
[Address]  
[City, State, Zip]  
[Barcode]

Dear [Name],

We have teamed up with your building's management to offer Pacific Gas and Electric Company's SmartAC™ program to you and your neighbors. Please take a moment to read about the program and let us know whether you'd like to participate.

**The power is in your hands.**

It has been said that one small action can cause a ripple effect that results in a dynamic change, like the idea that a butterfly flapping its wings can set off the winds that change the weather on the other side of the planet.

A ripple effect happens in California when temperatures rise and thousands of individual air conditioners start operating at the same time. This can strain California's energy resources and can create peak conditions that result in summer heat power interruptions.

Just like the idea that a butterfly's wings have the power to change the weather, you too have



**You have the power to make a difference.**

- It's free
- It's easy
- It's good for California
- You have the power

**N=1408 CA residents**

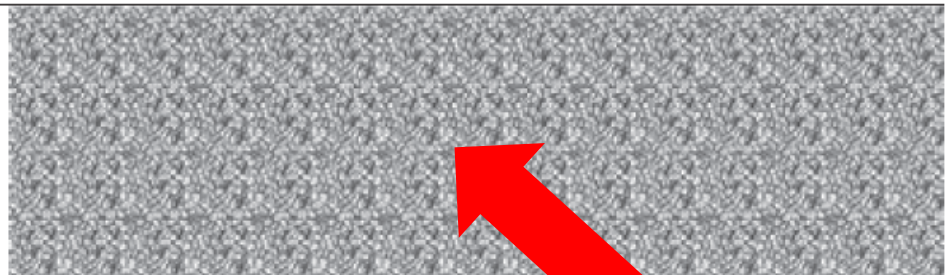




**Pacific Gas and Electric Company®**

# SmartAC<sup>®</sup> SIGN-UP SHEET

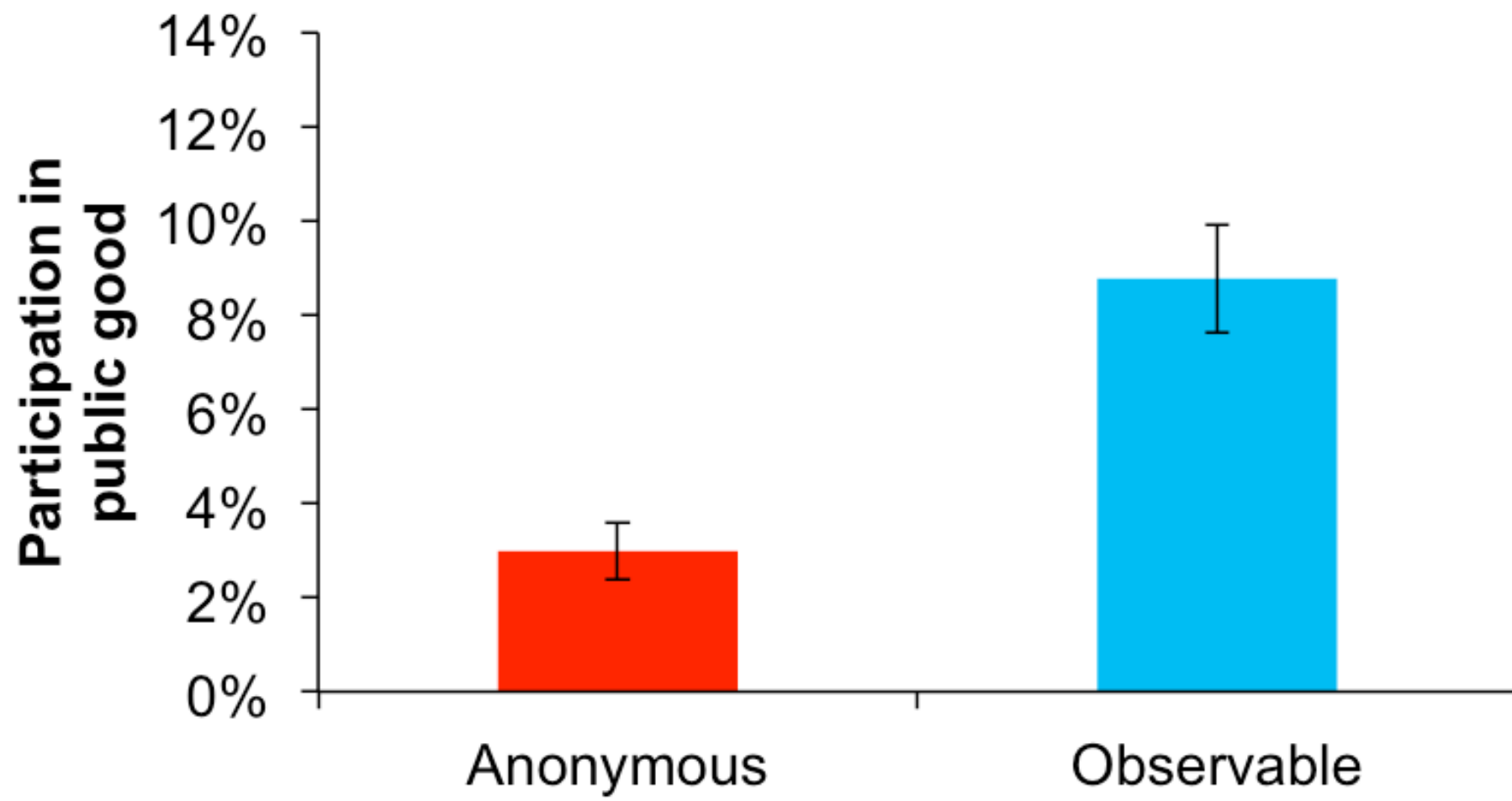
Sign Me Up!	Personal Code (From your letter)	Date (MM/DD)
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	____/____
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	____/____
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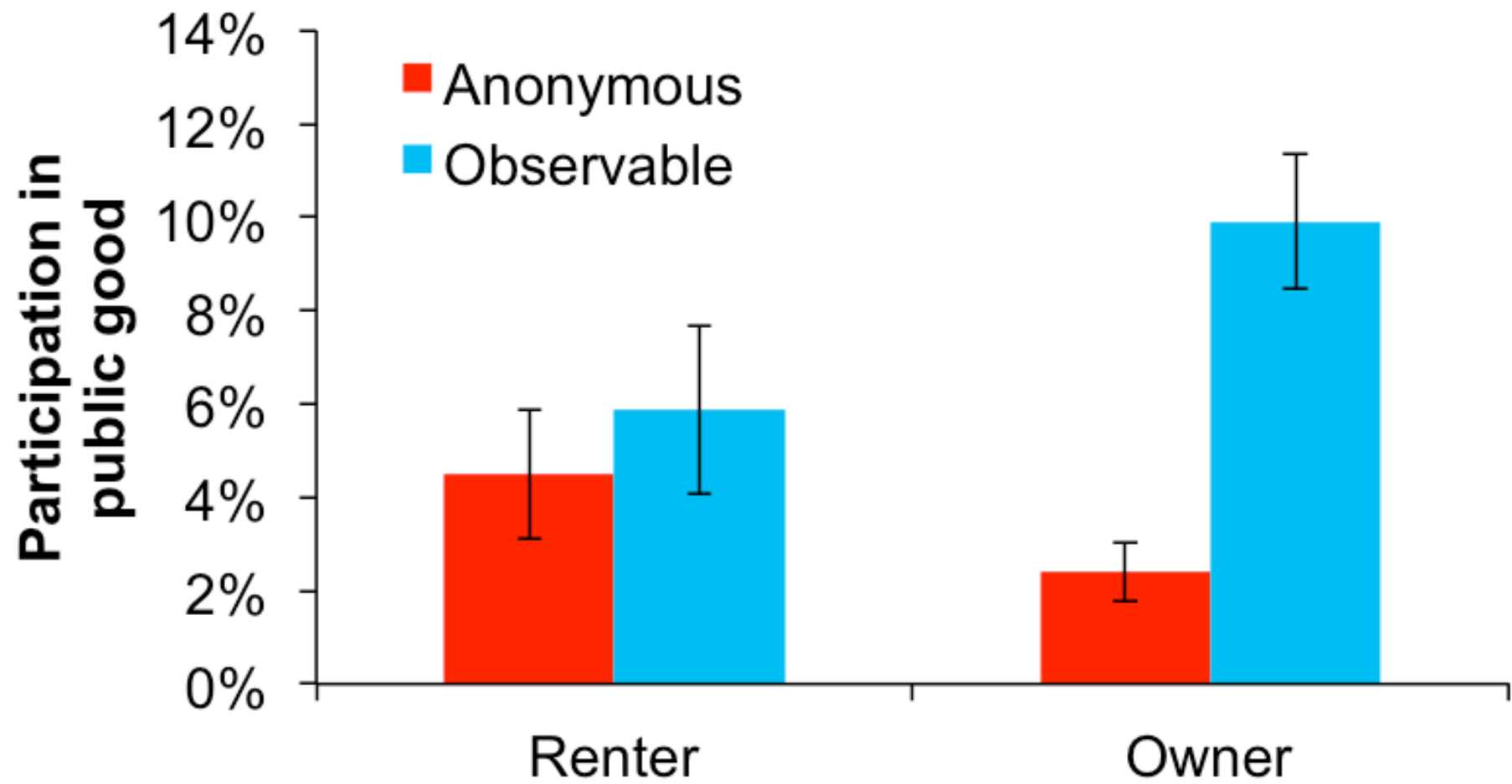
**Pacific Gas and Electric Company®**

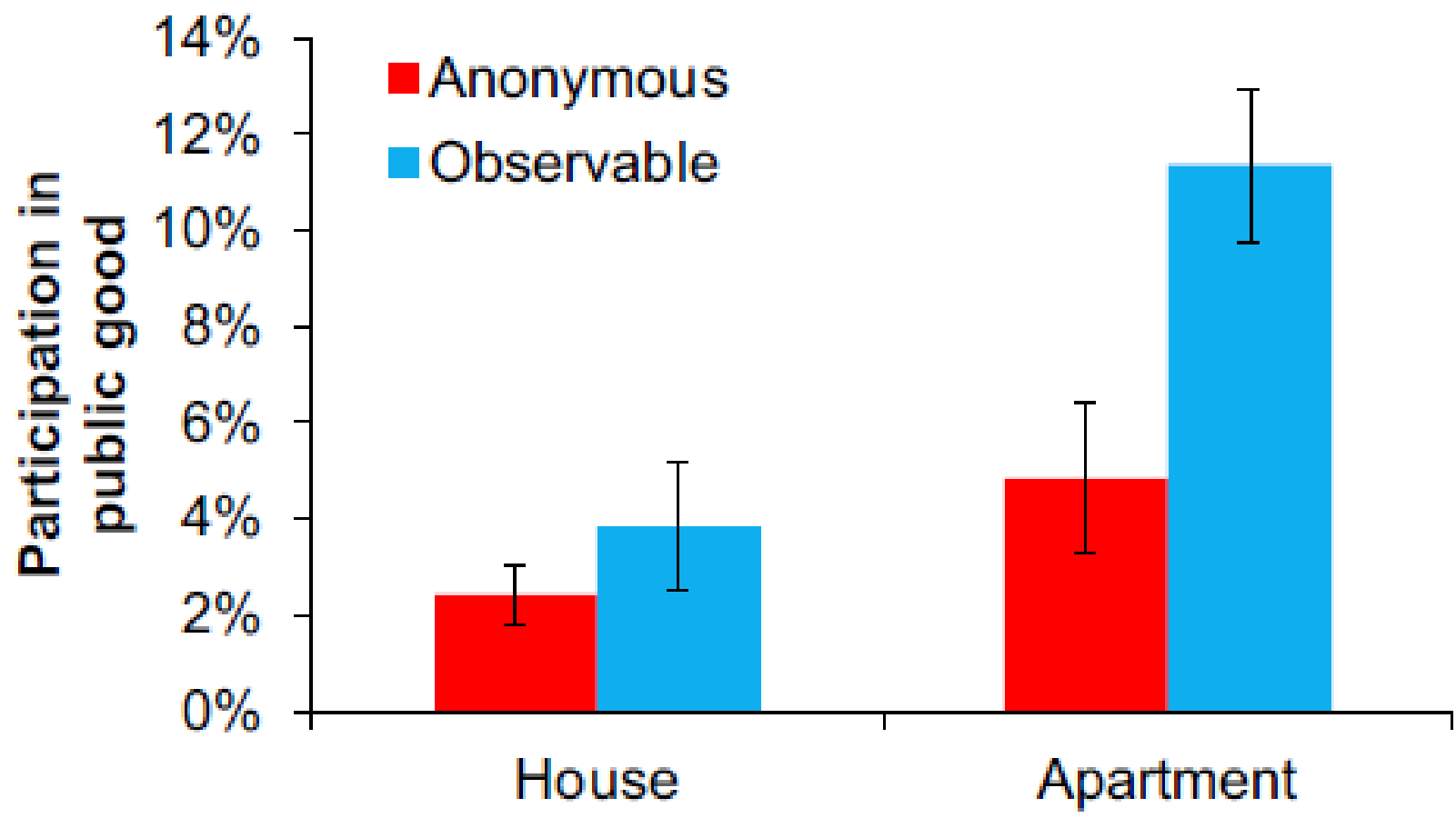
# SmartAC<sup>®</sup> SIGN-UP SHEET

Sign Me Up!	Personal Code (From your letter)	Date (MM/DD)	Apt. # (Please Print)	First Name (Please Print)	Last Name (Please Print)
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	____/____	_____	_____	_____
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	____/____	_____	_____	_____
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	____/____	_____	_____	_____
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	____/____	_____	_____	_____









# Public good frame



Your Code: [code]

[Name]  
Or Current Occupant  
[Address]  
[Address]  
[City, State, Zip]  
[Barcode]

Dear [Name],

We have teamed up with your building's management to offer Pacific Gas and Electric Company's SmartAC™ program to you and your neighbors. Please take a moment to read about the program and let us know whether you'd like to participate.

**The power is in your hands.**

It has been said that one small action can cause a ripple effect that results in a dynamic change, like the idea that a butterfly flapping its wings can set off the winds that change the weather on the other side of the planet.

A ripple effect happens in California when temperatures rise and thousands of individual air conditioners start operating at the same time. This can strain California's energy resources and can create peak conditions that result in summer heat power interruptions.

Just like the idea that a butterfly's wings have the power to change the weather, you too have the power to reduce the ripple effect air conditioners have on our power system. You can help ensure we have sufficient energy resources when demand is at its highest.

**Sign up for the SmartAC program.**

If you sign up, PG&E will install a radio-activated switch on or near your air conditioning unit. When activated, the switch slightly reduces your air conditioner's electricity consumption while still keeping you comfortable. The SmartAC switch is activated only in the event of an energy supply emergency, and never for more than six hours a day.

**Get paid \$25 for signing up.**

To thank you for being a part of the SmartAC program, PG&E will even send you a \$25 check for each SmartAC switch installed at your home.

**Signing up is easy.**

Installation is free and takes about 10 minutes. There's no appointment necessary, and you don't even have to be home if we have safe and easy access to your air conditioner. Signing up is easy, too. Just follow the directions on the enclosed instruction card.

The SmartAC switch comes with PG&E's free technical support and customer service, [as long as you remain enrolled in the program]. Thank you for considering the SmartAC program.

Sincerely,



Susan Norris  
SmartAC Senior Program Manager  
Pacific Gas and Electric Company



**You have the power to make a difference.**


**And make \$25 with SmartAC.**

- It's free
- It's easy
- It's good for California
- You have the power

the power of you

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# Non-public good frame



Your Code: [code]

[Name]  
Or Current Occupant  
[Address]  
[Address]  
[City, State, Zip]  
[Barcode]

Dear [Name],

We have teamed up with your building's management to offer Pacific Gas and Electric Company's SmartAC™ program to you and your neighbors. Please take a moment to read about the program and let us know whether you'd like to participate.

**Sign up for the SmartAC program.**

If you sign up, PG&E will install a radio-activated switch on or near your air conditioning unit. When activated, the switch slightly reduces your air conditioner's electricity consumption while still keeping you comfortable. The SmartAC switch is activated a few times a year at most, and never for more than six hours a day.

**Get paid \$25 for signing up.**


To thank you for being a part of the SmartAC program, PG&E will even send you a \$25 check for each SmartAC switch installed at your home.

**Signing up is easy.**


Installation is free and takes about 10 minutes. There's no appointment necessary, and you don't even have to be home if we have safe and easy access to your air conditioner. Signing up is easy, too. Just follow the directions on the enclosed instruction card.

The SmartAC switch comes with PG&E's free technical support and customer service, [as long as you remain enrolled in the program]. Thank you for considering the SmartAC program.

Sincerely,



Susan Norris  
SmartAC Senior Program Manager  
Pacific Gas and Electric Company

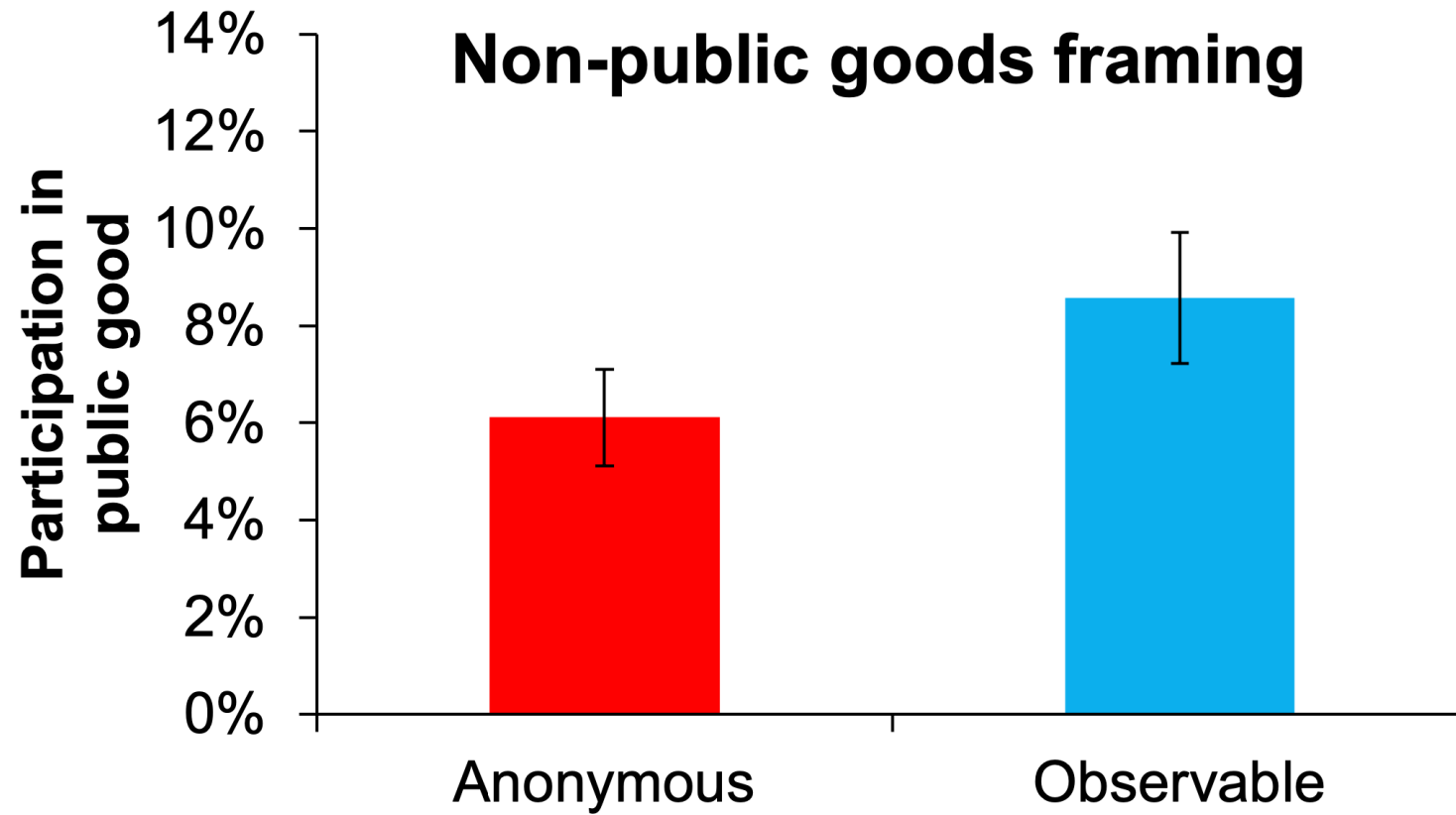


**Make \$25 with SmartAC.**

- It's free
- It's easy

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## Non-public goods framing



N=1,005



# Solarize CONNECTICUT



# What makes ambassadors **effective**?

Charismatic

Popular

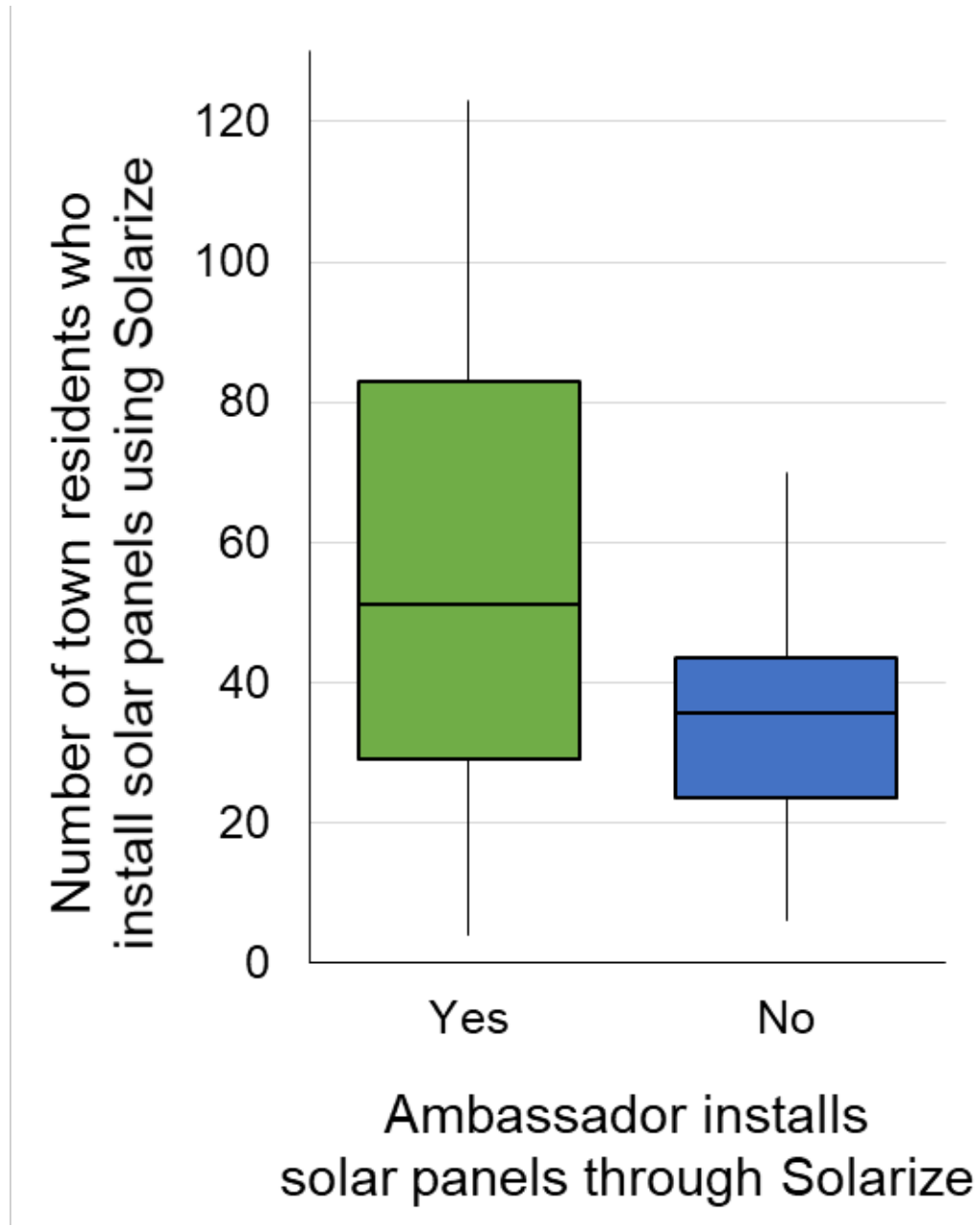
Respected

Attractive

Knowledgeable

Passionate

Did they install through the program **themselves**?



Number of towns: 18 40

63% more installations!

Instrumental variables regression suggests a causal effect



# Further experiments

Survey experiments of homeowners from across the US

Demonstrate causal effect of ambassador adoption on installation intentions

Illuminate mechanism:

- Dislike of hypocrites? NO
- Simple imitation of non-installation? NO
- People think that the ambassadors who don't install themselves don't actually believe the program is a good idea



# Home Water Reports along with...

## PUBLIC



It's Our Environment



**Excess water use harms our waterways.** Find customized tips on how you can save water and benefit Connecticut's environment.

## PRIVATE

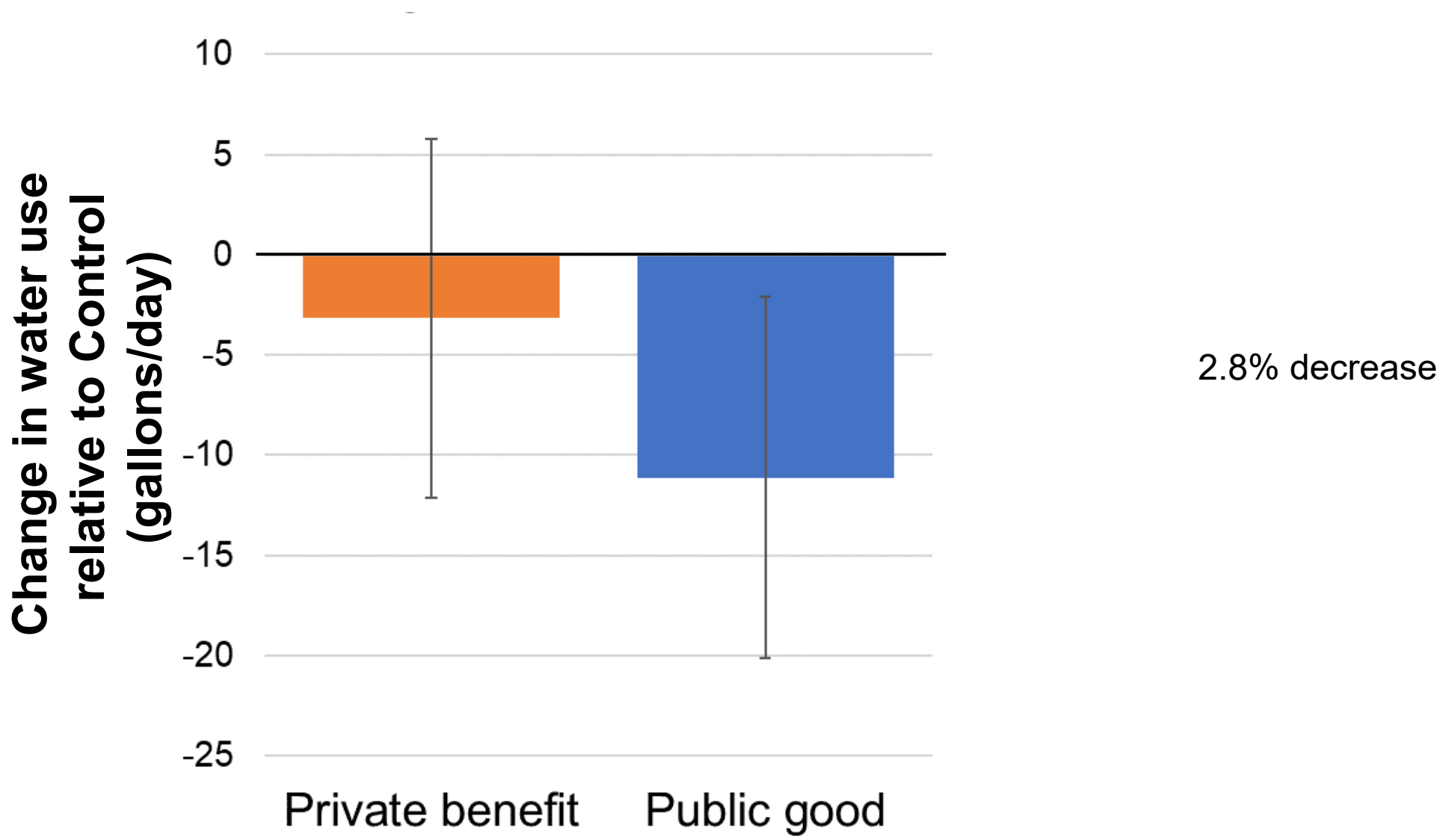


It's your money



**Excess water use wastes your hard earned money.** Look below for customized tips on how you can save water and benefit your wallet!

10,500 households from wealthy suburban areas in Connecticut



**Behavior** change is a central challenge for new innovations

Behavioral **science** can deliver large returns at essentially **zero** cost

Want to try it out?