CUWCC Potential Best Management Practices Report: Customer Water Use Messaging

INTRODUCTION:

ADDRESSING HUMAN BEHAVIOR AS A STRATEGY FOR EFFICIENT USE OF RESOURCES HAS BEEN UTILIZED IN THE ENERGY SECTOR SINCE 2008, FOR WATER USE EFFICIENCY, WE CAN DRAW CONCLUSIONS FROM THESE ENERGY PROGRAMS.

SOCIAL NORMS BASED EFFICIENCY PROGRAMS RELY ON RESEARCH THAT SUGGESTS WHEN CUSTOMERS ARE SHOWN THEIR ENERGY (OR WATER) USE IS OUT OF LINE COMPARED TO THEIR SIMILAR NEIGHBORS, THEY TEND TO BE MOTIVATED TO CONSERVE.

Social Norms Based Efficiency Programs

- Using lessons from behavioral economics and social psychology can provide insight for behavioral changes in resource efficiency programs.

- The larger field of Community Based Social Marketing (CBSM) incorporates a variety of social marketing "tools" to motivate and engage homeowners to change behaviors and save energy (and water). These tools include:

CBSM Tools:

CBSM programs can motivate behavior change beyond what financial incentives can sustainably effect.

- Commitment – such as a "pledge" to save.
- Social Diffusion – how we follow signals from trusted peers.
- Social Norms – refers to the tendency to want to "fit it"
- Prompts – signs or other reminders to take an action.
- Communication – providing relevant and impactful messages in a vivid and personal way.
- Incentives – in the form of financial awards.
- Convenience – lowering the barrier to taking a perceived inconvenient action.
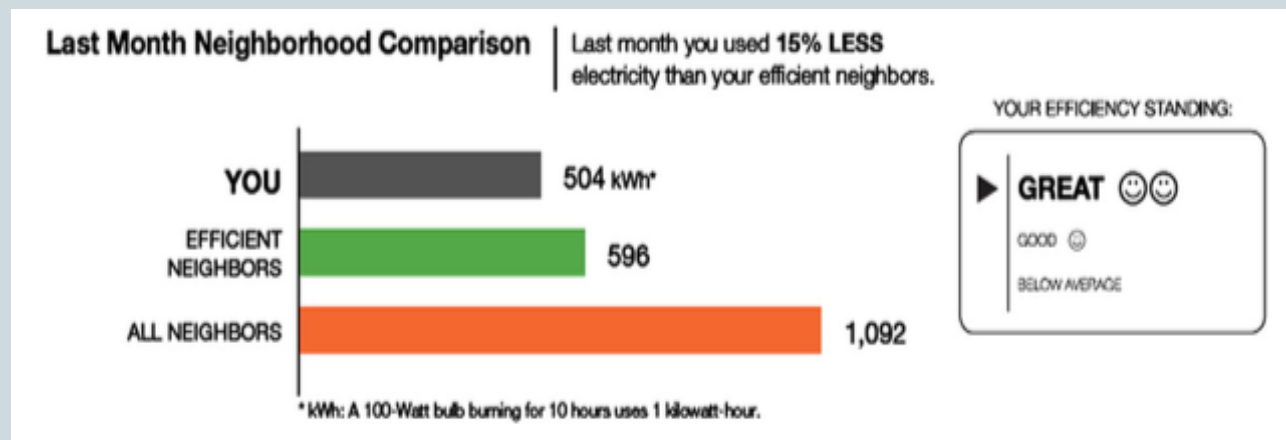
Social Norms Messaging

- Two types of social norms:
  - Descriptive – doing what everyone else does
  - Injunctive – whether a behavior will be approved of or not
- A powerful tool:
  - People want to do what is considered socially acceptable
  - When presented with credible information that they consume more than their neighbors and that use is socially undesirable, the individual will seek to change his or her behavior (use less energy or water)
- Level of comparison matters (2008 Towel Reuse study):

Type of Message	Rate of Participation
Environmental	35.1%
Descriptive Norm	44.1%
Descriptive Norm + Room Number	49.3%

Lessons from the Energy Sector: Opower Home Energy Reports

- In use for almost a decade
  - Delivered to millions of electricity customers since 2008.
- Randomized Control Trials (RCTs)
  - RCTs yield unbiased results and provide credible evidence of program results.
- Social Comparison Module
  - Uses injunctive norms (i.e., "great", "good", or "below average")
- Action Steps Module – provides relevant energy savings tips

Last Month Neighborhood Comparison | Last month you used **15% LESS** electricity than your efficient neighbors.

YOUR EFFICIENCY STANDING:

YOU — 504 kWh*
EFFICIENT NEIGHBORS — 596
ALL NEIGHBORS — 1,092

▶ GREAT ☺☺
GOOD ☺
BELOW AVERAGE

* kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

Lessons from the Energy Sector: Opower Reports, cont.

Three savings phases became evident during treatment:

1. Savings increase rapidly during the first six to 12 months of program participation as utility customers assimilate HER information and begin to conserve energy.
2. Over the next 12 to 24 months, savings continue but at a lower rate than during the first 12 months (this is the period where customers start to form energy-saving habits).
3. In program years 3 and 4 savings maintain or increase at a very slow rate as customers continue to receive reports that reinforce conservation habits.

"There is no evidence to indicate that average savings decrease in later treatment years because customers tire of or stop paying attention to the reports." Khawaja & Stewart, 2014.

Energy Savings and Cost Effectiveness
Opower HERs

◆Energy conservation programs are generally compared on a basis of program implementation cost per kilowatt-hour of electricity saved.

◆Opower's Home Energy Reports have been reported to have cost-effectiveness ranging from 1.3 to 5.4 cents per kilowatt-hour which is <u>comparable to traditional energy efficiency programs</u>.

◆A second comparison is to calculate the energy price changes that would induce the same changes in demand. Studies show the effects of sending Home Energy Reports are equivalent to an 11% to 20% short-run price increase or a 5% long run price increase.

"Taken as a whole, these effects are remarkable: simply sending letters can significantly and cost-effectively affect energy use behaviors." (Allcott, 2011).

Programs in the Water Sector

- ## Vendor Designed/Implemented Programs
  - WaterSmart Software Home Water Reports
  - Alliance for Water Efficiency Home Water Calculator
  - MuniApp for Water Utilities
  - DropCountr
  - Droplet Technologies

- ## In-House Programs
  - North Marin Water District
  - Cobb County Water Systems

Injunctive Norm ⇒

Message in gallons ⇒

Suggestions that are quantified ⇒

Customer Portal allows for interaction ⇐

WaterSmart Software Home Water Report

Within the report:

City Water
WaterSmart Program
123 Main Street
Anytown, CA 98765

☎ 415.555.5555   ✉ info@citywater.com

YOUR HOME WATER REPORT
THIS IS AN INFORMATIONAL REPORT AND NOT A BILL.

SERVICE ADDRESS: 456 Washington St., Anytown
ACCOUNT NUMBER: 123873124-01

SIGN UP TO GET THIS REPORT VIA EMAIL:
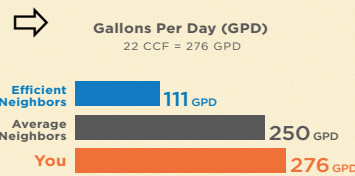**citywater.com**

Blair Jones
456 Washington St.
Anytown, CA 98765

Your WaterScore
AUG 1 to SEP 30, 2015

You used **more water** than most of your neighbors.

Gallons Per Day (GPD)
22 CCF = 276 GPD

Efficient Neighbors — 111 GPD
Average Neighbors — 250 GPD
You — 276 GPD

Surprised by your WaterScore?
Your WaterScore compares your use to others in City Water District who also have **3 occupants** and a **2,000 to 4,000 sq. ft. yard**. Is your household different? Log on to tune your Profile and see adjusted comparisons.

💻 **citywater.com**

Focus on your outdoor use
An estimated **65%** of your annual use is for irrigation.

Indoor / Irrigation

Water-saving actions just for you
Selected assuming your home has 2 occupants and a 2,000 to 4,000 sq. ft. yard.
💻 Log on to correct us!

Potential savings if you:

Install a faucet aerator
22 GALLONS PER DAY
$82 DOLLARS PER YEAR

Upgrade irrigation timer
53 GALLONS PER DAY
$148 DOLLARS PER YEAR

Change grass to native plants
78 GALLONS PER DAY
$242 DOLLARS PER YEAR
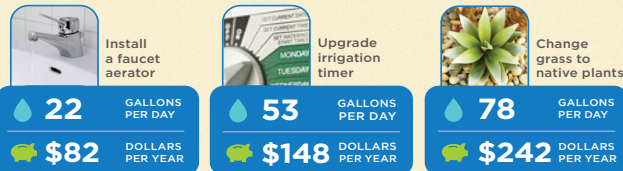
Log On
Take the guesswork out of saving water. See:
• Where you're using the most
• All actions relevant to you
• Step-by-step tips and rebates

citywater.com

Registration Code: XYZXYZ
Zip Code: 98765

A **free** service offered by your water utility and powered by WaterSmart Software

EBMUD WaterSmart Software Home Water Reports Pilot Study

Goal: Explore whether treatment effects differed when HWRs were provided to an entire community with similar characteristics as opposed to randomly selected households across a service territory.

- First large scale SNB efficiency program implemented by a large urban water utility.
- Randomized Control Trial design
- Reports delivered via mail or electronically on a bi-monthly basis.
- Initial savings for customers receiving HWRs compared to those who do not is 5% reduction in water use.

Group	Total Sampling Population	Size of Treatment Group	Size of Control Group	Savings
Random	3,286	1,710	1,576	4.6%
Castro Valley	9,300	8,000	1,300	6.6%

✓Households receiving HWRs are more likely to participate in other water agency programs:

- ✓ 6.2 times more likely to participate in audit programs.
- ✓ 1.7 times more likely to participate in rebate programs.

✓Receiving HWRs did not increase customers knowledge about how much water they actually use.

- EBMUD HWRs Pilot Study Outcomes:
  - Households in top quartile of water use saved, on average, 1% more than other quartiles.
  - Estimates for saved water ranged between $250 and $590 per acre-foot.
  - Reports delivered on paper via mail saved about 1% of mean household use more than households receiving electronic reports delivered via email.

Cobb County Water System/Georgia State University

Random Control Trial with a single message

Group	Message	Total Population	Water Savings (1-4 months after treatment)
T1 –Technical Advice	Tip sheet listing ways to reduce water use	11,700	
T2 – Weak Social Norm	Augmented T1 asking customers to "do their part"	11,700	2.7%
T3 – Strong Social Norm	Augmented T2 with comparison	11,700	4.8%
T4 – Control	No treatment	71,600	

Example of Strong Social Norm Message

Your own total consumption June to October 2006:   **52,000 gallons**

Your neighbors' average (median) consumption June to October 2006:   *35,000 gallons*

You consumed more water than 73% of your Cobb County neighbors.

CCWS/GSU, cont.

- Findings
  - Persistence Effects - two years after messaging:
    - Weak social norm message had no detectable effects
    - Strong social norm had detectable savings
  - Four years after messaging treatment effects persisted for the strong social norm message
  - Cost Effectiveness:
    - CCWS initially thought the program would be cost effective at $.58 per thousand gallons saved.
    - With persistence, program costs were reduced 50%

UC Merced/UC Irvine Water Battle

- Uses an online water-monitoring dashboard that incorporates social networks, and educational concepts to motivate students through behavioral changes (i.e., shorter showers, full loads of laundry, etc.).

- Relies on real-time water use data from Aquacue Barnacle, attached to water meters, allowing for all participants to track water use.

- UC Merced (no water agency partnership) saved 44,000 gallons during the 2013 competition.

- UC Irvine/IRWD saw water use decline during the competition, but savings were not sustained.

Conclusions and Recommendations

- Social norms messaging programs:
  - Appear to be an effective tool to reduce energy and water use, especially when customers are shown a comparison with their closest neighbors.
  - Appear to be cost effective.
  - Must be done with the right time frames.
  - Must take into account persistence effects.
  - Must use RCT design so outcomes are transferable to the population at large.
  - Can engage customers as active participants in the management of their water use.
  - Do not help households understand how much water they really use.

- More studies are needed.
- Customer water use messaging should be presented in terms that are easy to understand.
- Water saving recommendations should be easy to implement, quantifiable, and contain a limited number of choices.
- Water agencies should explore the potential to collaborate with academia to design and deliver social norms messaging programs.
- Social norms messaging should be considered a pBMP.

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