THE CHALLENGE – MOTIVATING “GREEN BEHAVIORS”

CBSM Approach

Focus on behavior change
Common Elements

**Commitments**
- Public
- Specific
- Memorable
- Leave behinds

**Prompts**
- At the site of action
- Durable

**Feedback on Progress**
- Door hangers
- Email/phone calls
- Public newsletters

**Competitions / Challenges / Incentives**

**Personal Interaction / messaging**
MILITARY- Operation XYZ

Region-wide conservation / efficiency / sustainability program pilot
OPERATION XYZ - How it started

- Designed from literature by intern/staff
- Comprehensive handbook
- Established table of 100+ behaviors
- Focused on water, energy, and trash
- Developed posters and a PowerPoint to deliver to installation command along with handbook
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**Energy and Water Saving Actions**

- Close all roll-up bay doors when HVAC is on
- Configure furniture to not hinder air flow thru registers
- Dress appropriately for comfort
- If you have thermostat access keep it set with applicable policy
- Keep blinds closed when extremely hot or cold
- Keep windows closed if HVAC is on
- Capitalize on daylighting
- Turn off lights in unoccupied rooms
- Set fridge to 38 and freezer to 5 degrees
- Unplug chargers after charging is complete
- Purchase ENERGYSTAR™ labeled equipment
- Avoid electric space heater use, if a space heater is used, provide documentation that a work order/complaint has been filed to address thermal comfort
- Set up computer power save
- Turn off computer at end of day and unplug any unneeded equipment over weekends
- Unplug unused equipment (Work station and Other Electronic Equipment)*
- Use laptops as opposed to desktop when possible and LCDs instead of CRTs
- Request CFL for lamp desk and use lower wattage task lighting when possible
- Sign up for workspace energy audit conducted by local Energy Expert, recruit volunteers to assist in effort

**Water Savings Actions**

- Always run full loads in dishwashers and clothes washers
- Do not irrigate landscaping between 10am and 6pm
- Don’t leave water running while brushing teeth or washing hands
- Keep water bottle in fridge instead of running water until it gets cold
- Limit time spent in shower
- Report leaks to building manager
- Take combat showers
- Use broom instead of hose to clean sidewalks
- Install water saving shower heads

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**Recycling / Waste Reduction Actions**

- Choose deconstruction and reuse first
- Design for longevity, durability, etc.
- Divert a minimum of 75% of all construction & demolition waste
- Establish contracts for recycling in building and demolition
- Design spaces to be flexible
- Utilize deconstruction practices and reuse maximum amount of materials
- Utilize lean construction techniques
- First, determine if purchasing equipment is necessary for job
- Deliver undesired equipment to X facility
- Deliver old furniture to X facility
- Purchase furniture made with durable low maintenance materials
- Compost landscaping materials
- Utilize removed trees for mulch on site
- Dispose in accordance with protocol
- Look for non-hazardous options
- Reduce consumption of hazardous waste
- Recycle on site or bring to X facility
- Combine trash from bins into one bag
- Request supplies be shipped in the minimum number of shipments (janitorial supply equipment, office supplies)*
- Install low energy hand dryers
- Minimize variety cleaners used on site
- Utilize washable cloths in lieu of paper towels
- Limit purchase of water bottles
- Compost food scraps
- Compost single use wares
- Donate unused food
- Bring a personal thermal mug
- Use personal non-disposable napkins
- Utilize washable plates, cups, utensils
- Utilize cloth rags in lieu of paper towels
- Consider requesting a free rechargeable battery storage container
- Set up computer power save
- Print only when absolutely necessary
- Print only when absolutely necessary
- Purchase supplies from one vendor when possible (office & janitorial supplies)*
- Reduces size of office trash cans
- Double sided printing as default
- Print only when absolutely necessary
- Purchase supplies from one vendor when possible (office & janitorial supplies)*
- Reduce print defaults from 600 DPI to 300 DPI
- Utilize electronic documents whenever possible
- Buy in bulk
- Choose devices that don’t use batteries
- Request minimal packaging (office supplies, janitorial supplies, furniture, equipment)

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- Reuse office supplies
- Utilize rechargeable batteries
- Recycle all plastic, recycle cardboard
- Store pallets and request driver take them back or store and deliver to X facility
- Unpack pallets and request driver take them back
- Request minimal packaging (office supplies, janitorial supplies, furniture, equipment)
OPERATION XYZ

Save Our Water for the Fight!

Did You Know?

1. All our facilities have low-flow shower heads
2. All of our gray water gets reused
3. Our high efficiency toilets use 20% less water
4. We’ve saved more than 1,800 gallons of water in the last six months!
5. Less than 3% of the Earth’s water supply is fresh water
OPERATION XYZ:
When we came in..

Tools

- Surveys
- Focus Groups
- Colleague Meetings
- Lit Review
- Data Analysis
OPERATION XYZ: When we came in.

1. Meetings/ Training
2. Reviewed documents / Tours
3. Organized focus groups
4. Current data and control group
5. Surveys- Pre and Post
6. Pre- billing data
7. Revisions of program / design / outreach*
8. Recommended program & manual changes*
9. Post data

*Recommendations NOT implemented before pilot.
FOCUS GROUPS – PRIORITY BEHAVIORS

Feedback: Already doing many... More manageable list!!

Highest ranking energy use reduction strategies
- Turn off lights in occupied rooms
- Avoid space heater use
- Turn off computers at end of day / set up computer powersave
- Lower-ranked strategies included: Capitalizing on daylighting and closing rolldoors when HVAC is on

Highest ranking water conservation strategies
- Don’t leave the water running while brushing teeth or washing hands
- Limit time spent in shower
- Report leaks to building manager
- Take combat showers (tie).

Highest ranking waste reduction strategies
- Double sided-printing as default
- Recycling plastic
- Utilizing electronic documents when possible
# PRE/POST SURVEY RESULTS
**(SELF-REPORT)**

<table>
<thead>
<tr>
<th>Action</th>
<th>Pre (n=73)</th>
<th>Post (n=29)</th>
<th>Control (n=17)</th>
<th>% Change Post vs. Pre</th>
<th>% Diff. Post vs. Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Took a combat shower or a shower that was less than five minutes long.</td>
<td>29%</td>
<td>36%</td>
<td>14%</td>
<td>24%</td>
<td>-61%</td>
</tr>
<tr>
<td>Used washable plates, cups, utensils as opposed to single use disposable options.</td>
<td>49%</td>
<td>66%</td>
<td>65%</td>
<td>35%</td>
<td>-2%</td>
</tr>
<tr>
<td>Used a recycling container on the Drill floor area.</td>
<td>67%</td>
<td>73%</td>
<td>58%</td>
<td>9%</td>
<td>-21%</td>
</tr>
<tr>
<td>Capitalized on day-lighting (open blinds in day and turn off lights)</td>
<td>48%</td>
<td>64%</td>
<td>71%</td>
<td>33%</td>
<td>11%</td>
</tr>
<tr>
<td>Used a broom instead of a hose to clean sidewalks.</td>
<td>65%</td>
<td>69%</td>
<td>72%</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>Used a space heater.</td>
<td>28%</td>
<td>16%</td>
<td>12%</td>
<td>-43%</td>
<td>-25%</td>
</tr>
<tr>
<td>Used a recycling container in the office area.</td>
<td>76%</td>
<td>84%</td>
<td>63%</td>
<td>11%</td>
<td>-25%</td>
</tr>
<tr>
<td>Recycled paper and cardboard.</td>
<td>81%</td>
<td>86%</td>
<td>81%</td>
<td>6%</td>
<td>-6%</td>
</tr>
<tr>
<td>Turned off lights in unoccupied rooms.</td>
<td>76%</td>
<td>80%</td>
<td>78%</td>
<td>5%</td>
<td>-3%</td>
</tr>
<tr>
<td>Closed all roll-up bay doors when HVAC is on.</td>
<td>82%</td>
<td>85%</td>
<td>85%</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>Printed double sided documents.</td>
<td>49%</td>
<td>48%</td>
<td>70%</td>
<td>-2%</td>
<td>46%</td>
</tr>
<tr>
<td>Kept water off when brushing teeth/shaving</td>
<td>68%</td>
<td>71%</td>
<td>70%</td>
<td>4%</td>
<td>-1%</td>
</tr>
<tr>
<td>Unplugged any unneeded equipment over weekends.</td>
<td>38%</td>
<td>41%</td>
<td>30%</td>
<td>8%</td>
<td>-27%</td>
</tr>
<tr>
<td>Recycled plastic containers and/or aluminum cans.</td>
<td>74%</td>
<td>81%</td>
<td>70%</td>
<td>9%</td>
<td>-14%</td>
</tr>
</tbody>
</table>
Monthly Usage Pre v. Post (Jan 2013) – Aggregated Pilot and Control Usage – normalized

ELEC

GAS

Water
ELECTRICITY & GAS SAVINGS ANALYSIS

<table>
<thead>
<tr>
<th>Pre-Post vs. Control Pre-Post Results. Q1 2013 (Post) Use compared to ==</th>
<th>Post compared to Average Q1, 2011&amp;2012</th>
<th>Post compared to Q1 2012</th>
<th>Post Compared to Q1 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Pre-post change in Electricity Use</td>
<td>11.6%</td>
<td>18.7%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Net Pre-post change in Gas Use</td>
<td>-2.1%</td>
<td>18.3%</td>
<td>-13.7%</td>
</tr>
<tr>
<td>Net Pre-post change in Water Use</td>
<td>13.2%</td>
<td>4.1%</td>
<td>22.7%</td>
</tr>
</tbody>
</table>

The pre-post vs control pre-post show net reductions in the gas bill, but not electricity or water.
FOCUS GROUP RESULTS

Motivations

- Right thing to do; easy/convenient;
- Mandates
- Facility savings / rewards
- Feedback (if sensible metrics); Saving a soldier’s job; safety
- Environment (for outdoor soldiers)
- Applies to facility
- Explored slogans – “Save Resources for the Fight” best response

Barriers

- Split incentives / lack of incentives
- Already behind in labor
- Not “Mission Critical” or contrary
- Convenience
- Training day soldier buy-in (short term)
- ILLEGAL (contracts, more windows!)
- Credibility - who gets savings
- Unclear who’s responsible
FOCUS GROUPS: POSTER COLLATERAL FEEDBACK...

- Unclear desired behaviors; photos don’t reinforce;
  - “Would like to see pictures of soldiers saving resources / doing the recommended- targeted”
- Makes it look like already done
- Message and photos need to be localized, relatable
- Random pix
  - “Insulting...why is the Humvee stuck in the mud”
  - “Posters are a joke, we just cleaned 10 years off walls”
  - “No one takes them seriously”
- Not at site of activity
SUMMARY RECOMMENDATIONS

- Capitalize on peer-to-peer conversations
- Focus on program brand / positive perception
- Focus on options that minimize workload
- Prompts need redesign
- FEWER BEHAVIORS
- Feedback; local benefits
- Better metrics
- Credibility w/mission
- Revise Handbook & Rollout

- Recommended delay of roll-out to incorporate
LOW INCOME -

In Sink Food Waste Diversion Project
PROGRAM SET UP

- City in upgrading and expanding wastewater treatment plant.
- In this community the Streets Department collected more than 500,000 tons of residential waste each year.
- Some 10 percent of the city's residential waste was food waste.
- It delivers to disposal facilities at a cost of about $59 per ton.

- Demonstration project, installing disposers in 173 homes.
- Selected two neighborhoods of owner occupied housing.
- Free for participants
- Citywide education campaign
- Offered all residents citywide incentive to purchase or upgrade disposals.

Feeding Disposers...
**Process**

**Design**
- City partnered with disposal company
- Worked with community groups in each area to help with initial identification and continued outreach
- Asked disposal recipients to participate in action and data collection
- Outreach - door to door, local events, information through street department and disposal company
- Set up surveys and focus groups

**Measurement**
- Waste composition audit before and 1 year later.
- Water dept monitored water usage in neighborhoods
- 75 Post surveys assessing self-reported activities and behavioral changes
- Conducted two focus groups
Surveys and Focus Groups

- Disposal usage patterns, amount and frequency
- Program Impacts
- Trash
- Cooking oil
- Back yard composting
- Satisfaction
- Outreach
- Barriers
- Additional benefits

- Focus groups also addressed motivations by participants and non-participants.
- Messaging exercises
# Motivations
- Thought that they could reduce trash
- The program was free
- Help reduce odors in the trash / kitchen / house
- Stop freezing food before setting it out for trash day
- Buy less bleach for the trash cans
- Reduce issues with pests and rodents

"They are beautiful."

# Barriers - why might not participate
- Did not believe it was really free
- Wanted to know what was the ‘catch’
- In order to get the disposer installed they would have to make major and costly upgrades to their plumbing, and spend lots of money to get something that was free
- Did not trust the City
- Did not want strangers in their home doing the installations
- Did not own their home
- People are just lazy

‘Once you have a disposer you can’t live without one’.

'I used to put out trash every day and now I only put it out every other day'.
RESULTS

Participants

- Increased food scraps going down the disposer
- Self-reported trash decreased 33%
- Overall, 92% of the respondents were very or somewhat satisfied with the program
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- Reduced food waste weight by 34%
- Reduced food waste 1.4 pounds / hh/ wk
- 19,000 ton reduction
- $1.1 million annual savings in disposal fees.
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<th>Worked best</th>
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<tr>
<td>Someone came to my door</td>
<td>75%</td>
</tr>
<tr>
<td>Flyers</td>
<td>66%</td>
</tr>
<tr>
<td>Neighborhood meetings and parties</td>
<td>39%</td>
</tr>
<tr>
<td>City’s robo-calls</td>
<td>16%</td>
</tr>
<tr>
<td>City sponsorship</td>
<td>35%</td>
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Program Comparisons

Similarities?

- Not a lot of time/ resources
- Not sure personal benefit (split incentives)
- Lack ability to control
- Peer to peer conversations effective
- Captive audience
- Design and measurement workshops early on
- Focus groups provided critical feedback
- Control group important for evaluation and analysis
- CBSM steps and tools are applicable to both populations!
Program Comparisons

Differences
- Targeted behaviors
- Direct contact
- Participant status
- Attitudes / Perceptions
- Outreach materials
- Ease of subject analysis
- Feedback

"Resource conservation is contrary to greater production"

"We don't need another state mandated mandatory training for our soldiers."

"Helps me to keep a much cleaner kitchen. I truly thank you and the city so much. I appreciate it every day."

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THANK YOU!!

Questions?

Dana D’Souza  
dsouza@serainc.com

Lisa Skumatz, Ph.D.  
skumatz@serainc.com

Skumatz Economic Research Associates

www.serainc.com  / 303-494-1178
THE CHALLENGE – MOTIVATING “GREEN BEHAVIORS”

Traditional

Unaware → Aware → Consider → Intent → Purchase / Act

Focus on developing awareness and an action