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# A River of Energy Solutions

## *ATTITUDES, BEHAVIOR, & CULTURE: THE ABC'S OF THE HUMAN ELEMENT OF ENERGY EFFICIENCY*

Lisa A. Skumatz, Ph.D., Skumatz Economic Research Associates

# *ATTITUDES, BEHAVIOR, & CULTURE: THE ABC'S OF THE HUMAN ELEMENT OF ENERGY EFFICIENCY*

- *Using Attitudes, NEBs, & CBSM to Influence Consumer Behavior – Beyond “Efficiency”*

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# *OVERVIEW OF PRESENTATION*

- Attitudes / self-efficacy
  - ➔ Linkage getting them ready to hear / adopt
- Bundles of features & value / NEBs
  - ➔ figuring out what to “sell”
- Marketing culturally / socially
  - ➔ marketing for behavior adopting & retention

# *INFLUENCING BEHAVIOR*

- Marketing “efficiency” using standard outreach is likely NOT efficient!
  - Bottom line to the talk – Don’t sell “efficiency” - sell what they want to buy!!
  - ... how do we find that out??? Affected by specific attitudes, behaviors\*, culture (ABC)
- Our Goals
  - Help utilities and cities identify best “bang for the buck” in effective expenditures
  - Research and analysis of best practices
  - Energy efficiency & Recycling applications

# *BACKGROUND – TRADITIONAL TO ENHANCED METHODS*

- Traditional education / outreach / advertising to move residents from:  
*Unaware → aware → consider → intent → purchase/modify behavior*  
(assumption last step)
  - Led to focus on awareness-product basis
  - Missed behavior / purchase influence
  - Step beyond → Research on the “human” side
- 3 areas of research provide motivation insights beyond focus on efficiency or recycling and savings
  - Self-efficacy attitudes
  - Omitted / indirect effects & values (NEBs)
  - Community Based Social Marketing (CBSM)

# *BRIEFS ON OTHER WORK / LITERATURE REVIEW (100+)*

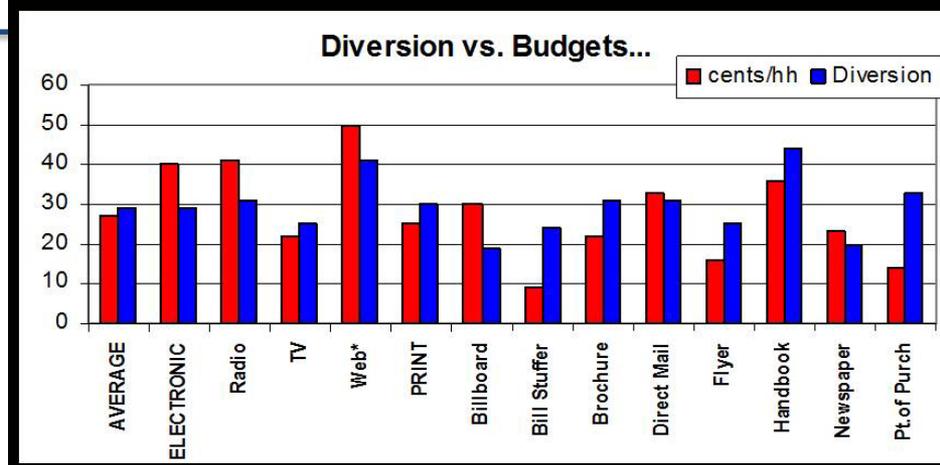
	<b><i>Elements</i></b>	<b><i>Effects</i></b>
Energy	Reliable techniques (pre-post, control/treatment) Influencing factors; limited work on outreach methods; small sample issue.	0-12% savings; most 4-7%. Higher (13-15%) from feedback; increase in satisfaction
Advert.	Focus, survey methods; Success at "decision point" / intention. Track quality of copy, "hits". Control/test.	Intent & recall but little quantitative work on purchase or behavior change
Recycl.	Pre/post, seldom control; CBSM non-quantitative; primitive analyses	2-12% diversion; 0-50% target material, other effects (HHW)

Source (SERA 2000)



→ *Limited sample size; data / market complexities;*  
→ *Attribution; Little analysis of retention*

# EVALUATING OUTREACH



- Measurement hard – not 0/1 like “widgets”, and *quality* matters
- Study of recycling outreach campaigns
  - (Skumatz & Green for Iowa DNR 2000)
- Data and results:
  - 120 outreach campaigns; regressions
  - recycling performance vs. program factors, demographic, outreach program dollars and types
  - Found 1-3 percentage point increase with \$1/hh/yr increase (higher if lower spending a priori) all else constant; variations by outreach type (above)

# SELF-EFFICACY

— *Perception of impact of personal actions / empowerment... affect behavior*

## **'How Bad For The Environment Can Throwing Away One Plastic Bottle Be?' 30 Million People Wonder**

WASHINGTON—Wishing to dispose of the empty plastic container, and failing to spot a recycling bin nearby, an estimated 30 million Americans asked themselves Monday how bad throwing away a single bottle of water could really be.

"It's fine, it's fine," thought Maine native Sheila Hodge, echoing the exact sentiments of Chicago-area resident Phillip Ragowski, recent Florida transplant Margaret Lowery, and Kansas City business owner Brian

McMillan, as they tossed the polyethylene terephthalate object into an awaiting trash can. "It's just one bottle. And I'm usually pretty good about this sort of thing."

"Not a big deal," continued roughly one-tenth of the nation's population.

According to the inner monologue of millions upon millions of citizens, while not necessarily ideal, throwing away one empty bottle probably wouldn't make that much of

see **ENVIRONMENT**, page 7



A local resident discards a plastic bottle—just as he has done his whole life—with no perceivable effect on the environment.

# *SELF-EFFICACY*

- Traditional “unaware to purchase” on product basis...
  - Consider attitudes as underlying factor to reach “next level” of potential participants – beyond traditional demographic stratification
- Self-efficacy: participant has ability, skill, knowledge, experience to contribute to change / empowerment
- Scaled attitudes – specialized statistical analysis method:
  - What I do makes a difference; future, etc.

# HIGHER SELF-EFFICACY – WHAT THEY DO...

- ➔ Participate more - TVA Renewables (Peters)
  - Early sign-ups 90%+ agreed/strongly “my actions can make a difference”; 57% disagreed with “only a difference if others do it too”
- ➔ Conserve energy – Northeast (SERA) –
  - SE scores higher for participants in 1) Renewables program & 2) ESTAR appliance purchasers compared to non-participants
  - PV: “make a difference”, “impact on future”, “using energy too fast”; ESTAR less broad empowerment
- ➔ Recycle more - Utah (SERA)
  - 11% higher recycling for : “each responsible”, conservation “easy, common sense to reduce resource use”

# HIGHER SELF-EFFICACY – WHAT THEY DO...

- ➔ Take more green actions - Cool the Earth (SERA)

Self Efficacy / Empower	# Green Actions Pre	# Green Actions During
High scores	5.5	7.7 (25% increase)
Low scores	4.3	4.8 (12% increase)

## Shorter Showers 350 lbs!

Lessen your time in the shower by **just 2 minutes**. (Even if it means asking your kids to cut their Miley Cyrus repertoire in half.)

What does water have to do with carbon? Plenty! just think about how much energy it takes to **collect, filter, pump and heat** the water.

Buy your family a shower "timer" to keep **everyone** on the new schedule.



### Shorter Showers

Student: \_\_\_\_\_

Room # / Teacher \_\_\_\_\_

Parent Signature \_\_\_\_\_

I pledge to take shorter showers all year \_\_\_\_\_

**cool the earth**

Return 1 coupon per child.

OUR PROGRAM
WHY PARTICIPATE
ACTION COUPONS
CLIMATE 101
WHO WE ARE
ENROLL NOW

## earth

COOL THE EARTH... BECAUSE every action counts

**our story** →

What is Cool the Earth? Read all about our beginnings, our mission, and our program.

**how it works** →

Take a tour and learn how parents are bringing Cool The Earth to their child's school.

**get started** →

Enroll now! Bring Cool the Earth to your child's school and see how every action does count.

IN THE SPOTLIGHT

Featured School  
**Ithan Elementary School**  
Bryn Mawr, PA  
Total Actions: 656  
Carbon Saved: 510,527 lbs  
Cars Canceled: 43  
[See a complete list of participating schools.](#)

WE'RE MAKING A BIG DIFFERENCE

Total Actions	<b>67,942</b>
Carbon Saved	<b>51,881,084 lbs</b>
Total Schools	<b>181</b>
Total Students	<b>23,512</b>

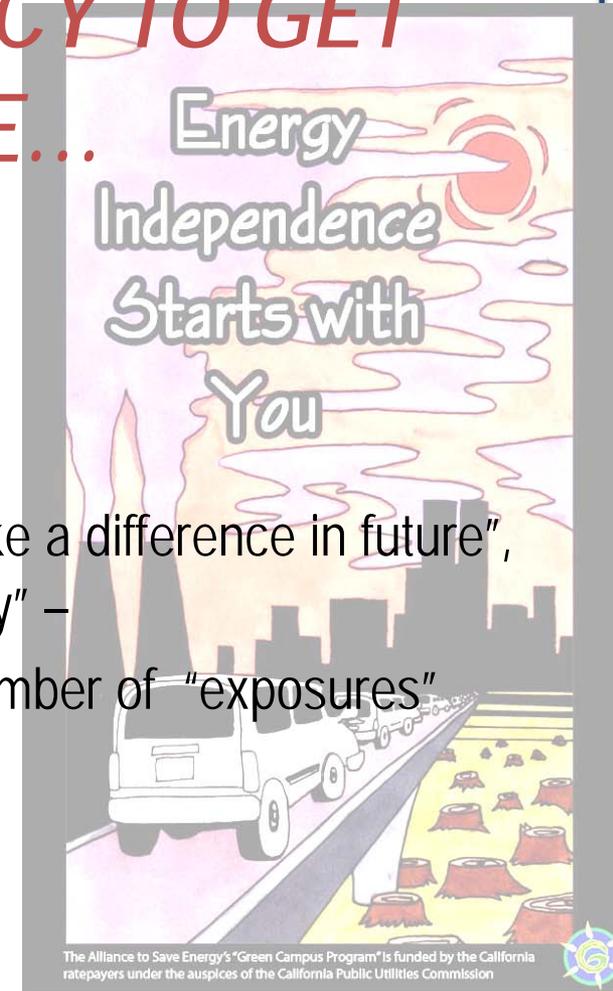
NEWS & ANNOUNCEMENTS

- ➔ Converge Magazine - November 16, 2009, "Going Green from the Ground Up"
- ➔ The Daily Journal - San Mateo - October 08, 2009, "Walking for Health, to be Green"
- ➔ The Daily Record - October 03, 2009, "Morriston, New Jersey School Launches "Cool the Earth.""

[More News](#) >>

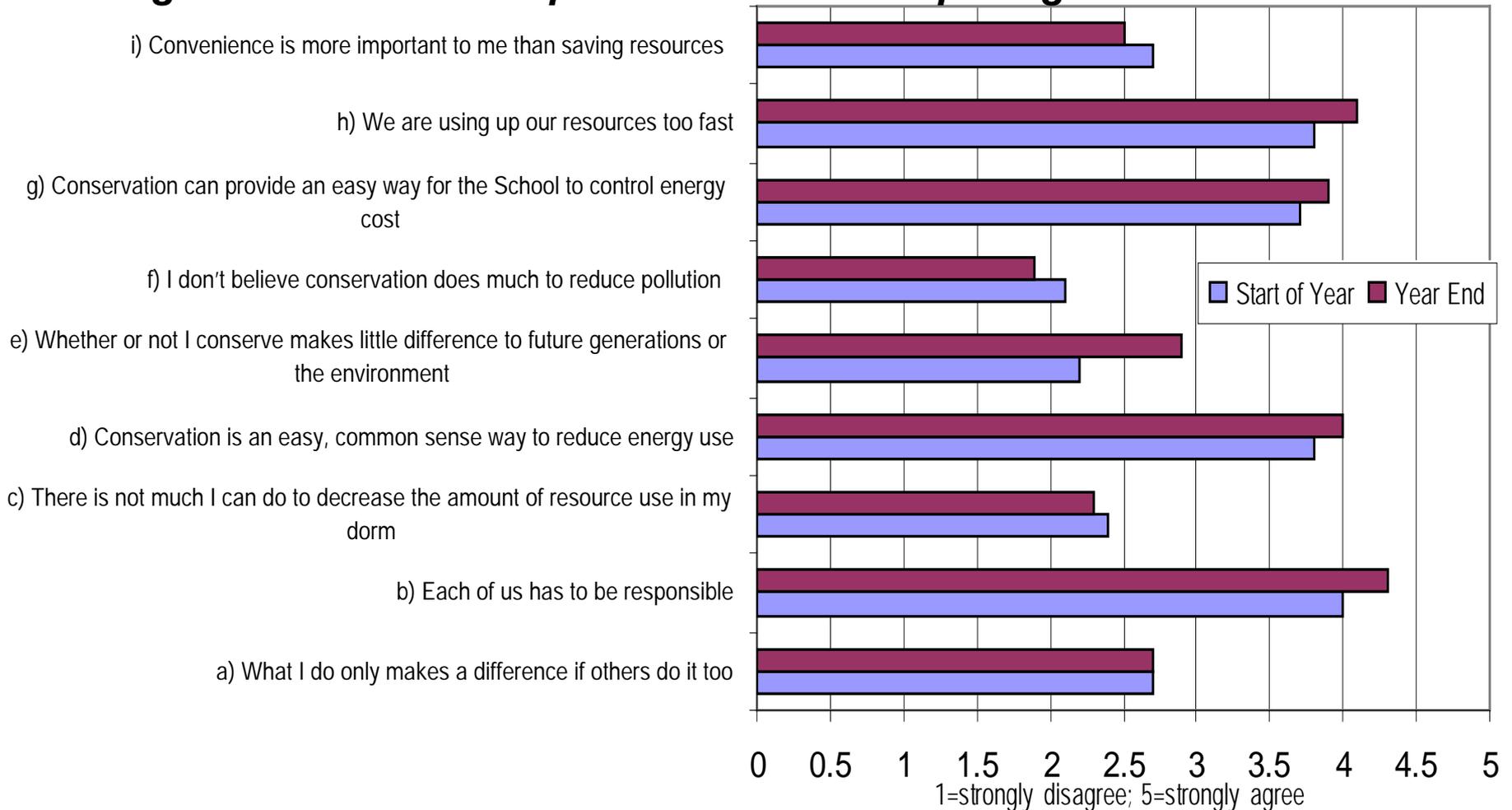
# *MOVE THEIR SELF-EFFICACY TO GET THEM TO DO MORE...*

- ASE Green Campus Program (SERA)
  - Intern-delivered program
  - 9 attitudinal statements; causal models
  - Strongest behavior change/influence from “make a difference in future”, “each responsible”, “using resources too quickly” –
  - → Impacts BEYOND quality of information, number of “exposures”

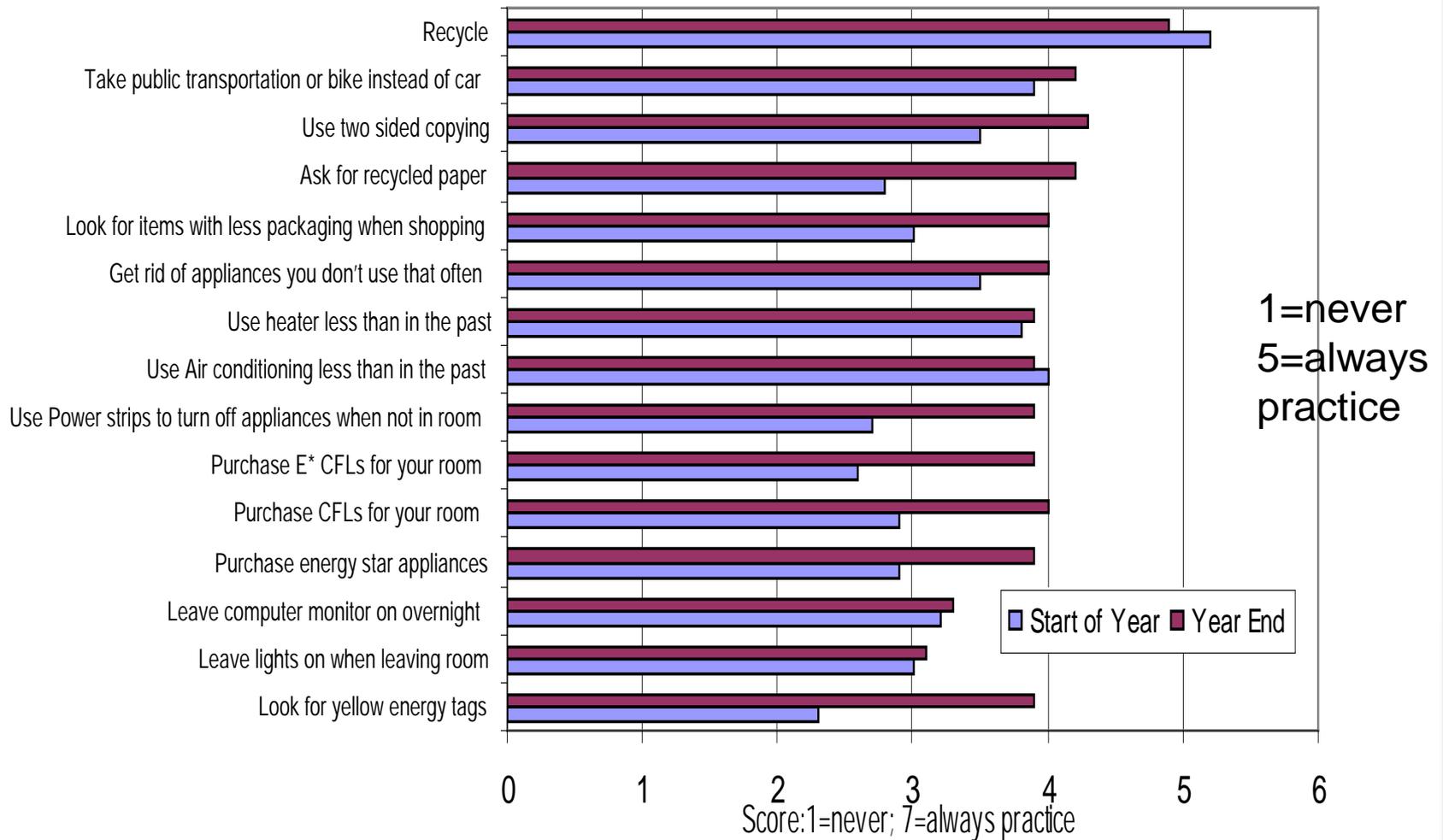


# GREEN CAMPUS COLLEGE PROGRAM - SELF-EFFICACY INCREASED OVER YEAR...

**Program actions moved positive SE scores up / negative down...**



# ... AND MOST GREEN ACTIONS INCREASED (GREEN CAMPUSES)



# SELF EFFICACY CONCLUSIONS

- BEYOND basic demographics / strata -- high SE means more likely to purchase EE or recycle
  - Those who feel: 1) what they do makes a difference regardless of what others do; 2) amount of energy / waste has impact on future generations; 3) using resources too fast
- → Consider advertising local actions to encourage feelings of empowerment to move toward converted – especially for those on edge

(Source: SERA 2004)



Messaging crafted to increase self-efficacy on a HH level

RECYCLING ONE 4-FOOT STACK OF NEWSPAPERS SAVES THE EQUIVALENT OF ONE 44 FOOT FIR TREE



HOW YOU CAN HELP:

# *INDIRECT EFFECTS / NON-ENERGY BENEFITS (NEBs)*

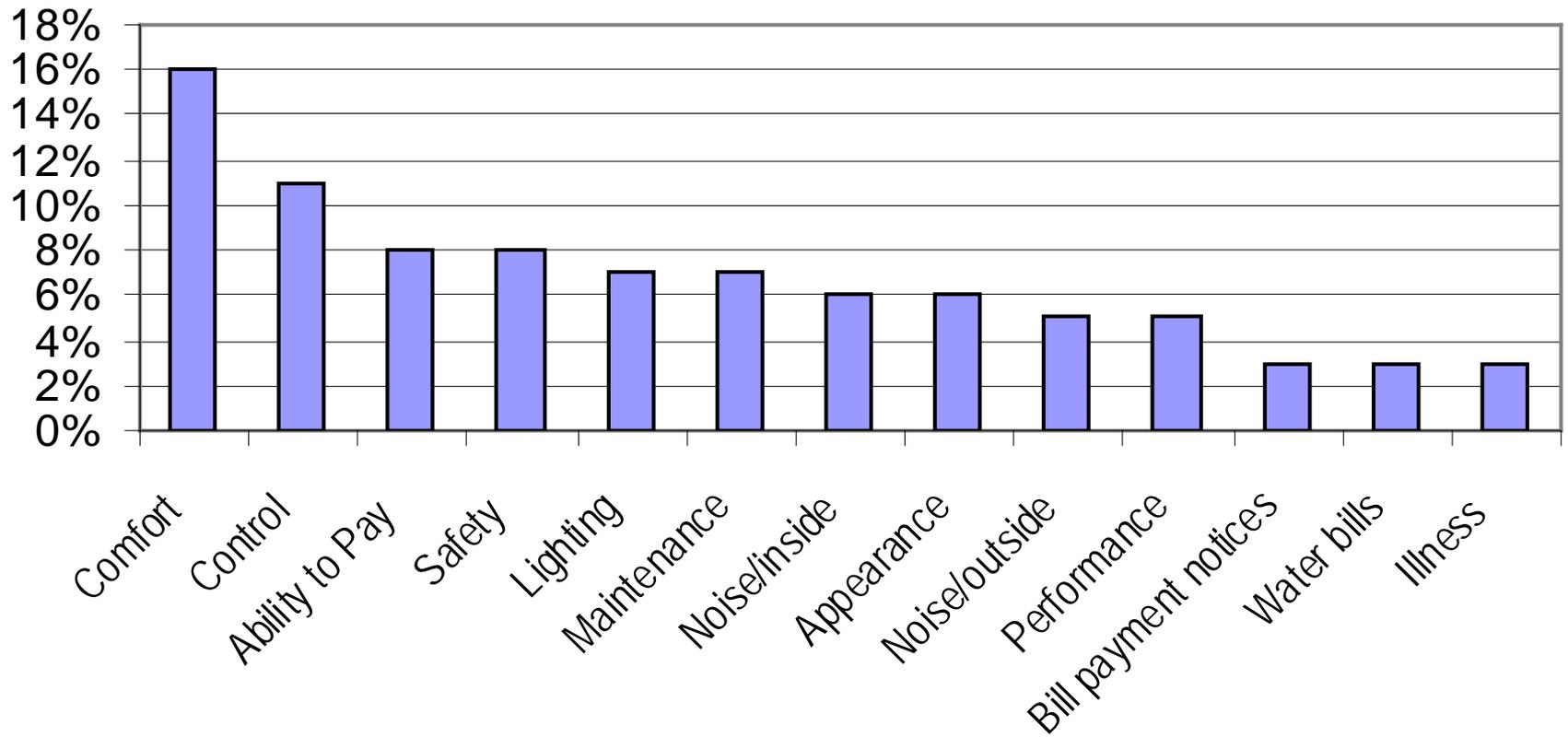
- *Effects beyond energy savings or recycling tons (or direct impacts) attributable to the program*
- *What participants get is NOT only energy savings or recycling*

# INDIRECT EFFECTS / NON-ENERGY BENEFITS (NEBs)

- What are NEBs? – same concepts transfer...
  - Bundle of features associated with measures or programs;
  - Positive & negative
  - Measurement
- Motivating consumers... what do they value?
  - Bundle and services, not just your program goals (energy savings, recycling).  
Varies by program audience, measures, region (SERA research)

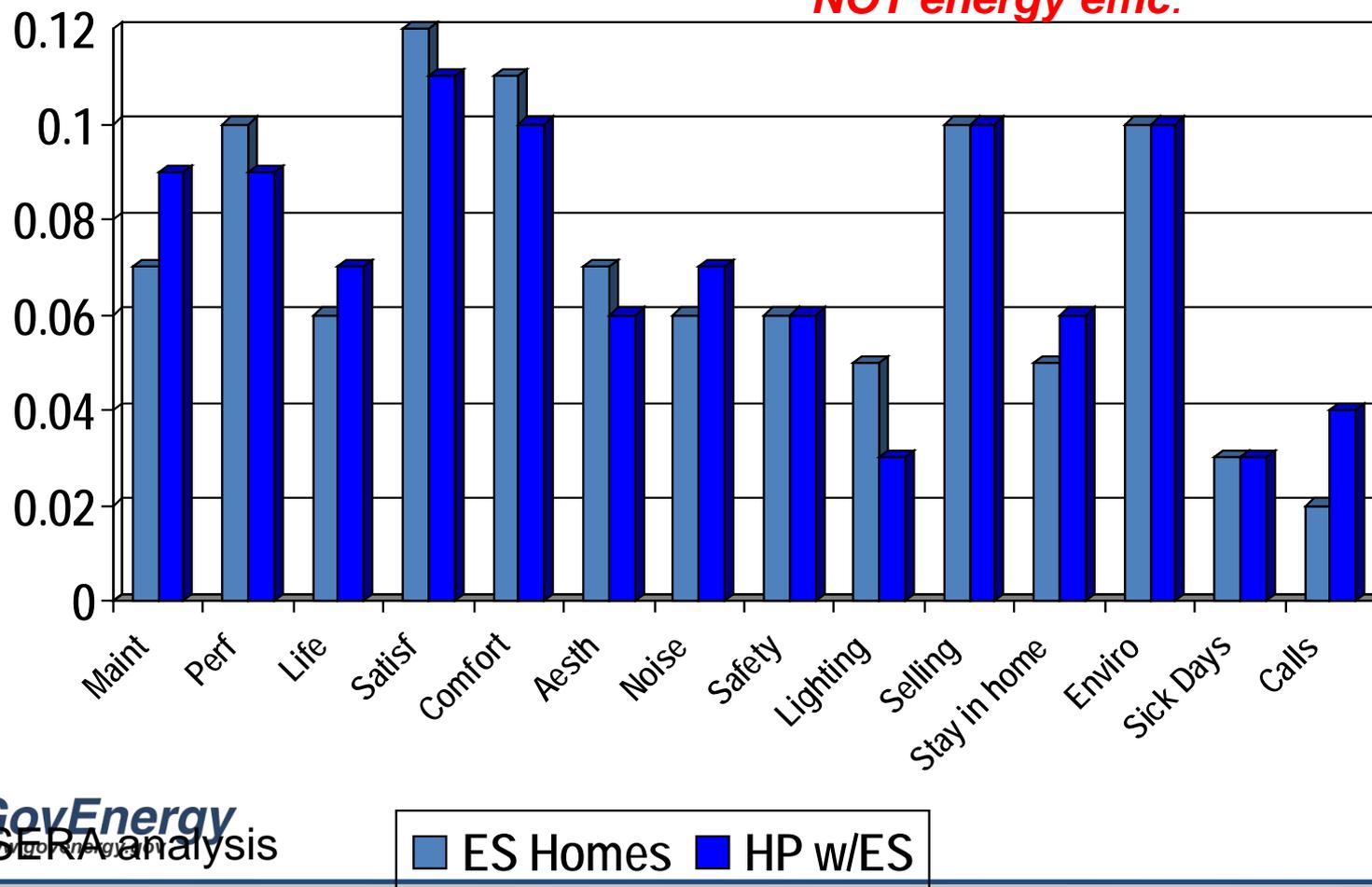
# LOW INCOME WEATHERIZATION

→ Market on comfort, and Ability to control bill– NOT energy efficiency.



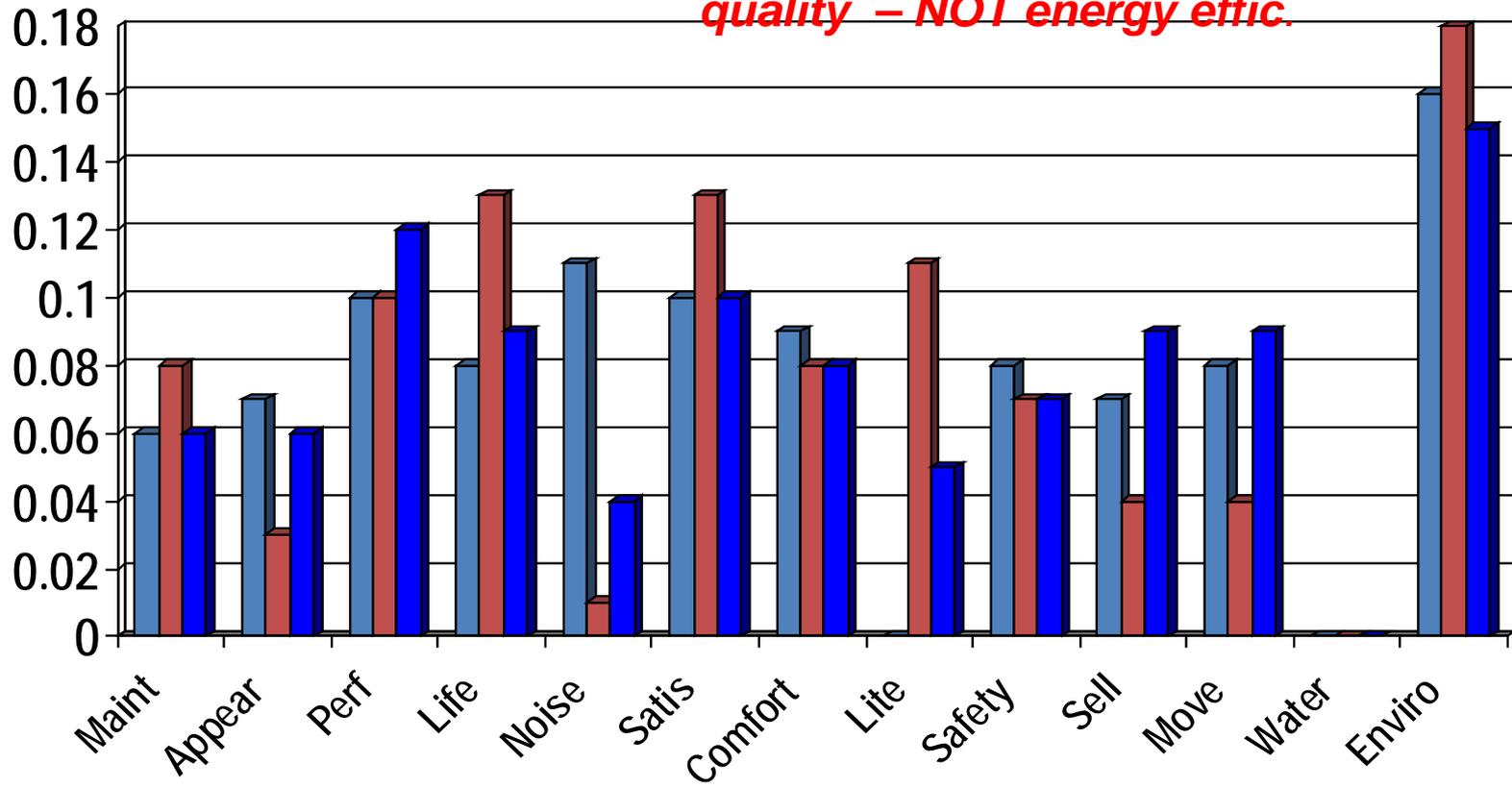
# ESTAR HOMES

→ Market homes & repair on:  
Comfort, ability to sell,  
Environment, maintenance,  
NOT energy effic.



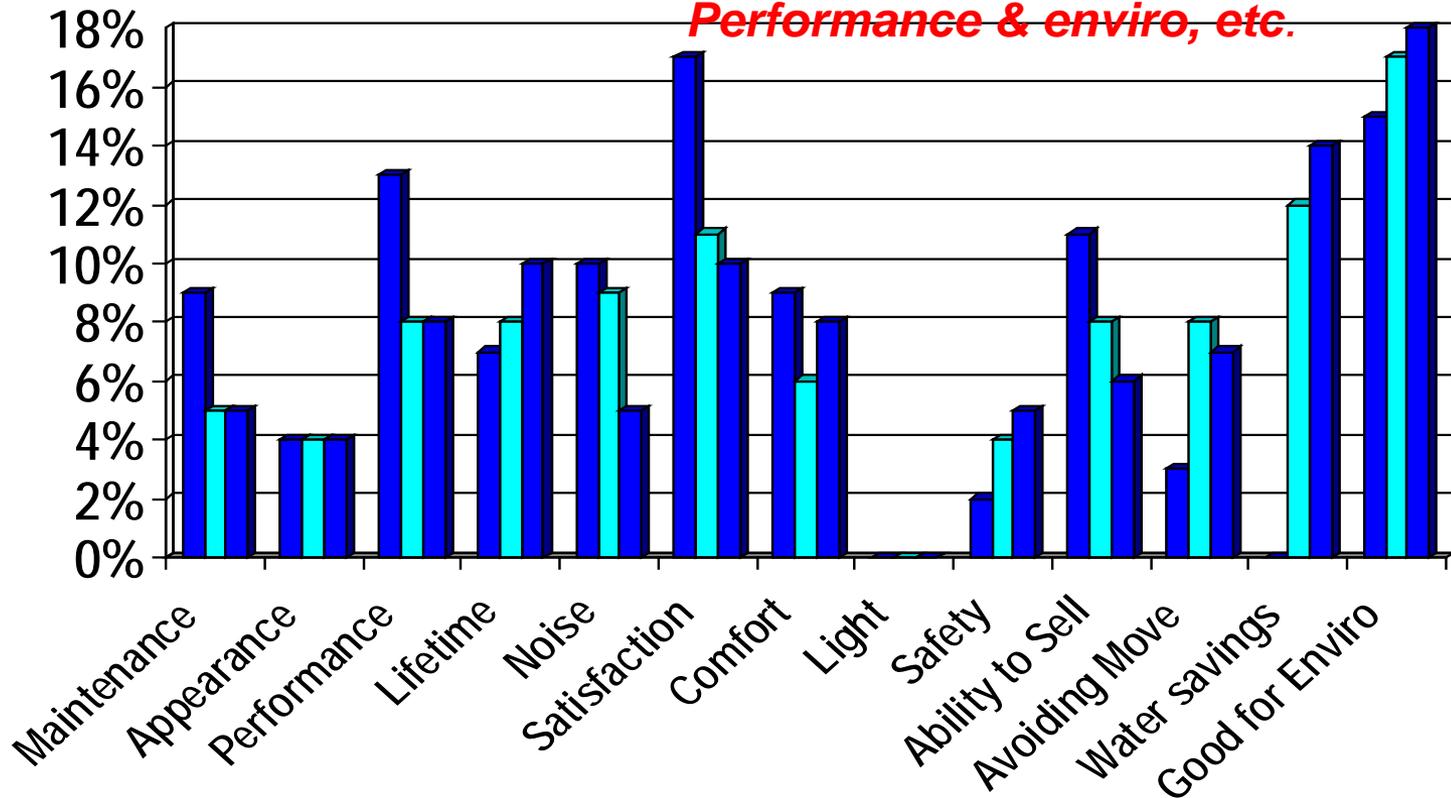
# ENERGY STAR APPLIANCES

→ Market all on enviro; Market A/C on noise, CFL on lifetime / maintenance, quality – NOT energy effic.



# ENERGY STAR APPLIANCES

→ Market EE washers on water savings,  
NOT energy. Market refrigerators on  
Performance & enviro, etc.



■ Refrigerator ■ Dishwasher ■ Clothes Washer

# COMMERCIAL NEBS RESULTS

- Motors
  - Lighting
  - Commissioning
  - New construction
  - Builder / designer training
  - Audit / tech assistance
  - Schools & grocery daylighting
  - And many more...
- 
- Dozens of types of programs – res, com'l, renewables, etc...

# NEBS FOR INFORMATION ON VALUED FEATURES & BARRIERS

Negative NEB values / cost of barrier	Solar Water Heat NZ\$ / Euros	Solar Design NZ\$ / Euros
<b>Appearance (NZ\$ / Euros)</b>	<b>-14 / -7</b>	<b>-3 / -2</b>
<b>Maintenance (NZ\$ / Euros)</b>	<b>-9 / -5</b>	<b>-5 / -3</b>
<b>Other (NZ\$ / Euros)</b>	<b>-</b>	<b>-3 / -2</b>
Total value of Negative NEBs for Measure (and share of energy savings)	-23 / -12 (0.79)	-11 / -6 (.06)

*Negative perceived NEBs are a quantitative assessment of program or measure “barriers” – tell you what to address  
In program or outreach...*

# NEBS CONCLUSIONS

- NEB Results:
  - Negative NEBs → barriers to be addressed; value of intervention (real vs. perceived)
- → Positive NEBs imply - Sell on features people want to buy – Tide™ example
  - EE are “already converted” (and even they aren’t always sure of savings!)
  - Use to craft outreach
  - KNOW your audience. What do they want to “buy”? Sell that / no shame. (NEBs as enhanced market research)

# *SOCIAL MARKETING*

- Using effective and targeted marketing techniques to influence behaviors for positive change*
- Use culturally-, individually- sensitive links*

# COMMUNITY BASED SOCIAL MARKETING (CBSM)

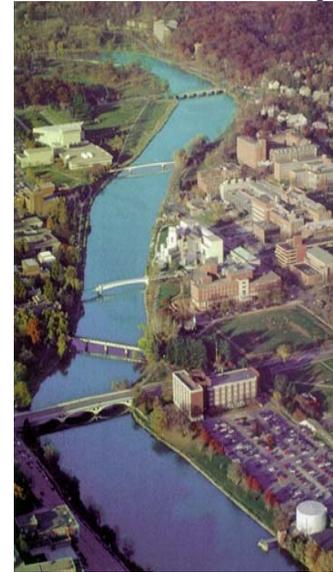
- Traditional education / outreach / advertising to move residents from:
  - Unaware → aware → consider → intent → purchase/modify behavior
  - Led to focus on awareness-product basis
- CBSM approach / focus – incorporate culture, interactions, feelings to encourage behavioral change
  - Address barriers to change
  - Personal approach
  - Pledges and honor commitments
  - Limited quantitative

# COMMUNITY BASED SOCIAL MARKETING (CBSM)

- Recommends 5 elements:
  - Commitments to behavioral change
  - Prompts
  - Norms
  - Incentives
  - Communication
- Argues greater...
  - Participation and behavior change
  - Unconverted
  - Retention
- Impacts
  - CFLs in South Africa
    - 100% increases each of 5 years
  - Door to door about education about upcoming program changes – forum for public feedback
    - Pre-post showed 10% increase in savings
  - → Interventions in other fields / consider approach
    - Pledges (paint)
    - Personal (grocery)
    - Outreach tailoring

# LITERATURE REVIEW

- Over 100 previous studies reviewed
  - It works! But there are some “gaps”
- Pallak, Cook & Sullivan, Iowa City 1973
- Save the Bay Foundation, MD 2008
  - Save the crabs-
  - Then eat’ em
- **BIG** Literature gaps
  - Cost-effectiveness
  - Retention



# SOCIAL MARKETING – RECENT RESULTS

A Social Marketing Project in Colorado  
targeting energy & recycling behaviors

SAVE ENOUGH ENERGY  
TO POWER A TV  
FOR THREE HOURS BY  
RECYCLING ONE CAN



BE SMART  
FILL YOUR CART



# PROJECT DESIGN

- Almost 1,600 Single family residents in Broomfield, CO
- Chosen for convenient location & ability to accurately measure trash/recycling
- Relatively homogeneous
- 2 impact, 1 "control"
- Design & measurement



# EXPERIMENTAL DESIGN

- Route 1
  - Control group – VERY important
- Route 2 – PARTIAL TREATMENT
  - Social marketing, expanded outreach, door hangers
- Route 3 – FULL
  - Add site visits

## TREATMENT

Monday Routes 331, 332, 416



# ***BASIC CBSM STEPS***

- Background research
- Set goals
- Identify audience/Barriers
- Develop message/interventions
- Deliver and monitor (pilot)
- Evaluate
- Go full scale

# BACKGROUND RESEARCH - FOCUS GROUPS, BASELINE, & SURVEYS

- Field measurements
- Focus groups
  - Barriers, resonant words / goals, etc.
- Baseline measurement
  - Surveys (behaviors, attitudes) – no kWh
  - Trash / recycling / composition
- → Goals, basics of messaging, market research, barriers to address



Recycling Barriers	Energy Barriers
<ul style="list-style-type: none"> <li>• Unaware of what materials can/can't be recycled</li> <li>• Not sure that collected materials are actually being recycled</li> <li>• Lack of self-efficacy</li> <li>• Lack of room to store recyclables/carts</li> </ul>	<ul style="list-style-type: none"> <li>• Not sure what actions to take</li> <li>• Cost</li> <li>• Lack of self-efficacy</li> <li>• Challenges in undertaking the behavior</li> </ul>

# *PROJECT CONTACTS – MORE OUTREACH THAN OPTIMAL...*

- Survey postcards
- Handbills / pamphlets / direct mail
- Commitment cards
- DTD (or door-hangers)
- Reminder behavior postcards
- Bumper stickers, decals
- 2 contests
- Phone calls on “house tightening week” / reminders
- Surveys, phone, mail
- Monitoring
- ➔ To allow us to measure separate impacts & costs

# CBSM TOOLS

- Vivid Message



The City/County of Broomfield and Western Disposal are teaming up with Broadlands residents to increase recycling and conservation in your neighborhood. Join the project and help make the Broadlands a **GREEN** leader in the State!

The word GREEN was identified by the focus groups as a good motivator.

Recycling is one of the best ways individual households can save our country's natural resources!

Messaging crafted to increase self-efficacy on a HH level

RECYCLING ONE 4-FOOT STACK OF NEWSPAPERS SAVES THE EQUIVALENT OF ONE 44 FOOT FIR TREE



## HOW YOU CAN HELP:

- Remember to recycle cardboard, cereal box-type packaging, catalogs, junk mail, and other paper
- Install compact fluorescent lights and you can replace your lights less often and save an estimated \$30 over the life of the bulb
- Use power strips to turn off computers and TVs to reduce "phantom load". Electronic equipment on "stand-by" uses 10-15% of your home's energy !!
- Join the challenge at [www.mygreenbroadlands.org](http://www.mygreenbroadlands.org)

Action items

Includes pictures and graphs for different choices



## THE CHALLENGE:

Your neighborhood's recycling rate is 23%, if your house recycles just 7lbs more per week we can reach the goal of a 50% increase in recycling!

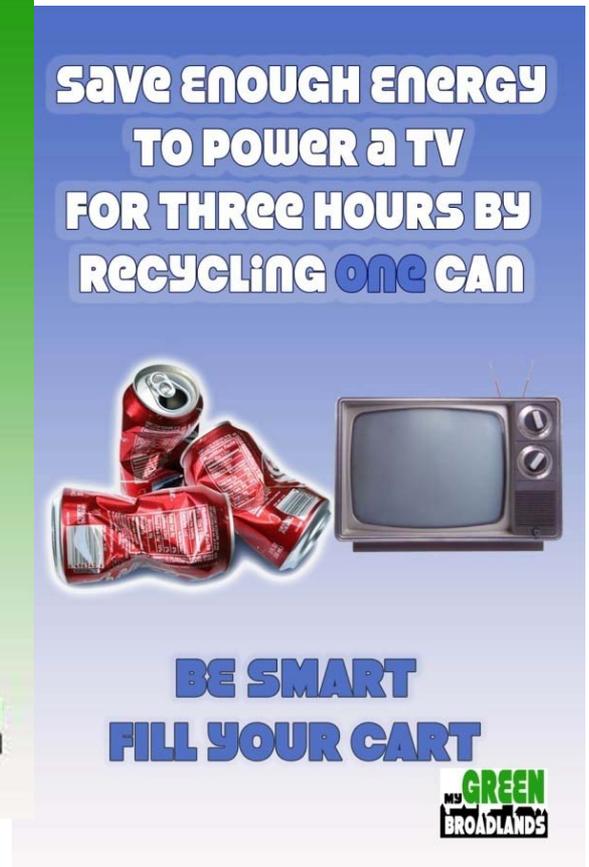
Clear goal

Log on to [www.mygreenbroadlands.com](http://www.mygreenbroadlands.com) to join the Broadlands Recycling Club



# CBSM TOOLS

- Prompts
- Feedback on pro...



# CBSM TOOLS

- 2 Contests
- Social Norms
- Recognition, rewards, incentives



# CBSM TOOLS

- Commitments (and reminders)
- Home visits (pairs, CFL, recy)
- Phone calls



## Thank you for taking the My Green Broadlands Challenge!

Please commit to at least 2 of the following **recycling actions** by checking the box next to the action:

- I pledge to recycle 7 lbs more per week
- I pledge to recycle all of my cardboard, paper, and junk mail
- I pledge to talk to one other Broadlands resident about recycling
- I pledge to use one re-useable bag while shopping

Please commit to at least 2 of the following **energy saving** actions by checking the box next to the action:

- I pledge to install one compact fluorescent light bulb (CFL)
- I pledge to use a power strip to turn off my electronics in stand-by
- I pledge to turn off my car if it is idling for 30 sec. or more
- I pledge to use cold water for half my laundry loads

- I am making the pledge alone
- My entire household is making the pledge (if yes, how many people \_\_\_\_)

Please print your name \_\_\_\_\_

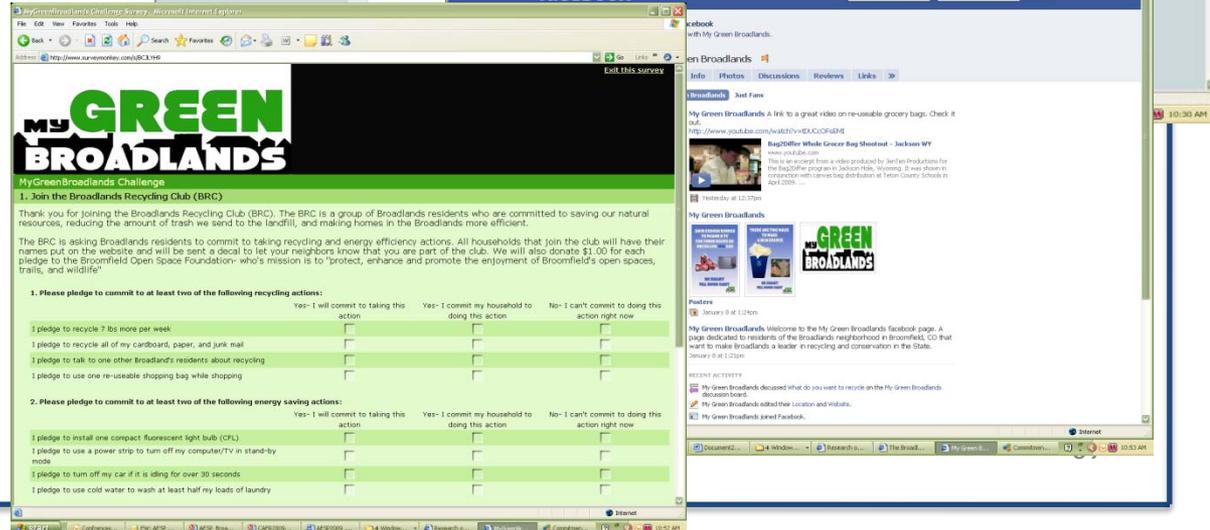
Signature \_\_\_\_\_ Email \_\_\_\_\_

Check here if you don't want your name listed with others on [www.mygreenbroadlands.com](http://www.mygreenbroadlands.com) as a recycler taking the pledge -



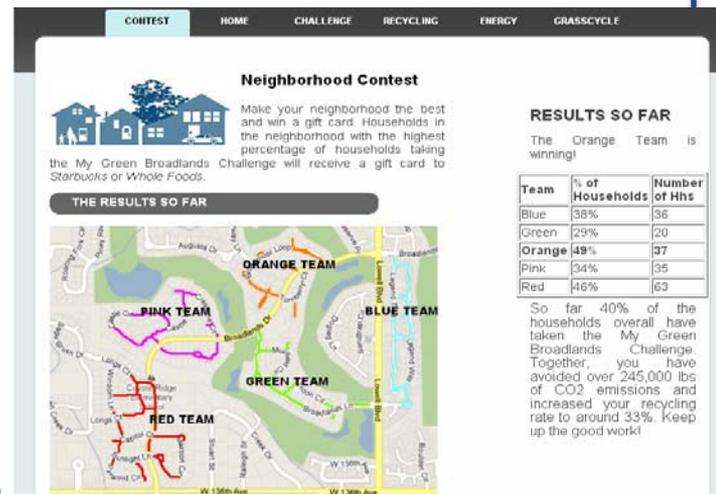
# CBSM TOOLS

- Website
  - On-line commitment
  - Prompts
  - Feedback
  - On-line community/ Facebook
  - Quiz
  - Tips, etc.

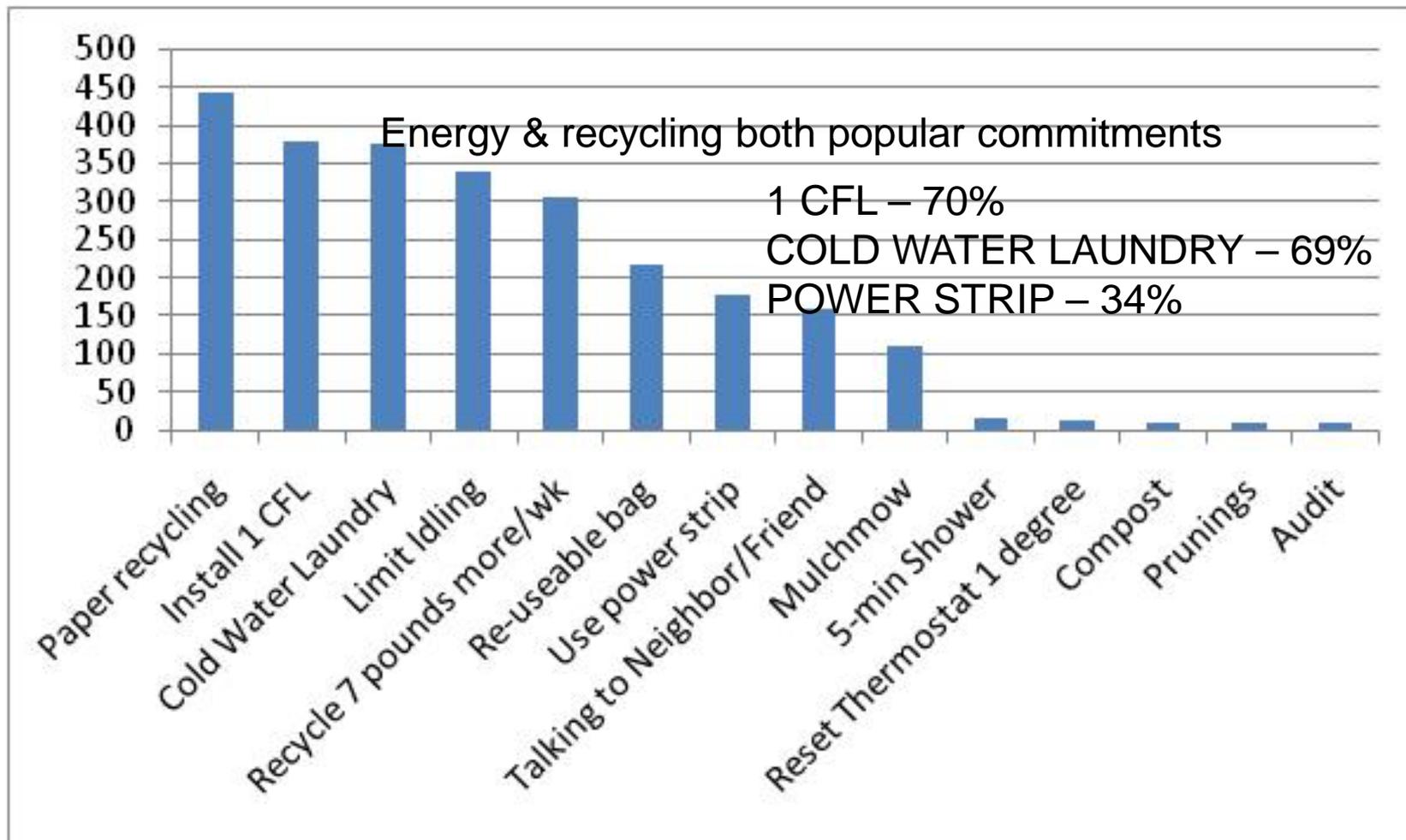


# IMPACTS AND MEASUREMENT

- Committed Actions
  - Over 500 people committed to almost 2,400 actions (4%, 40%, 60+%)
  - Over 500 MTCE avoided to date
- Behaviors
- Costs, cost per impact

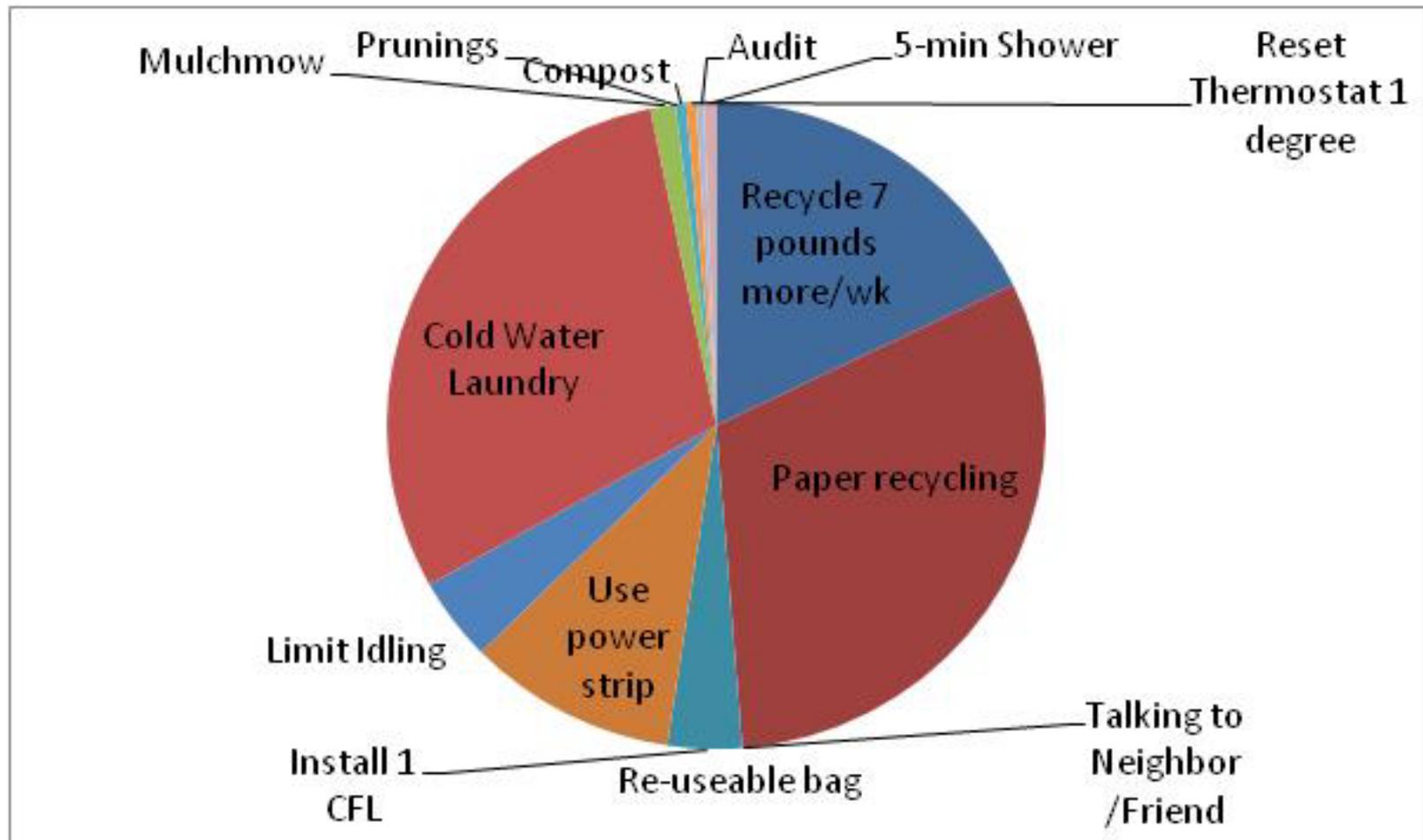


# COMMITMENTS BY TYPE



Source: Skumatz Economic Research Associates,  
(SERA), DRAFT Report, 2010

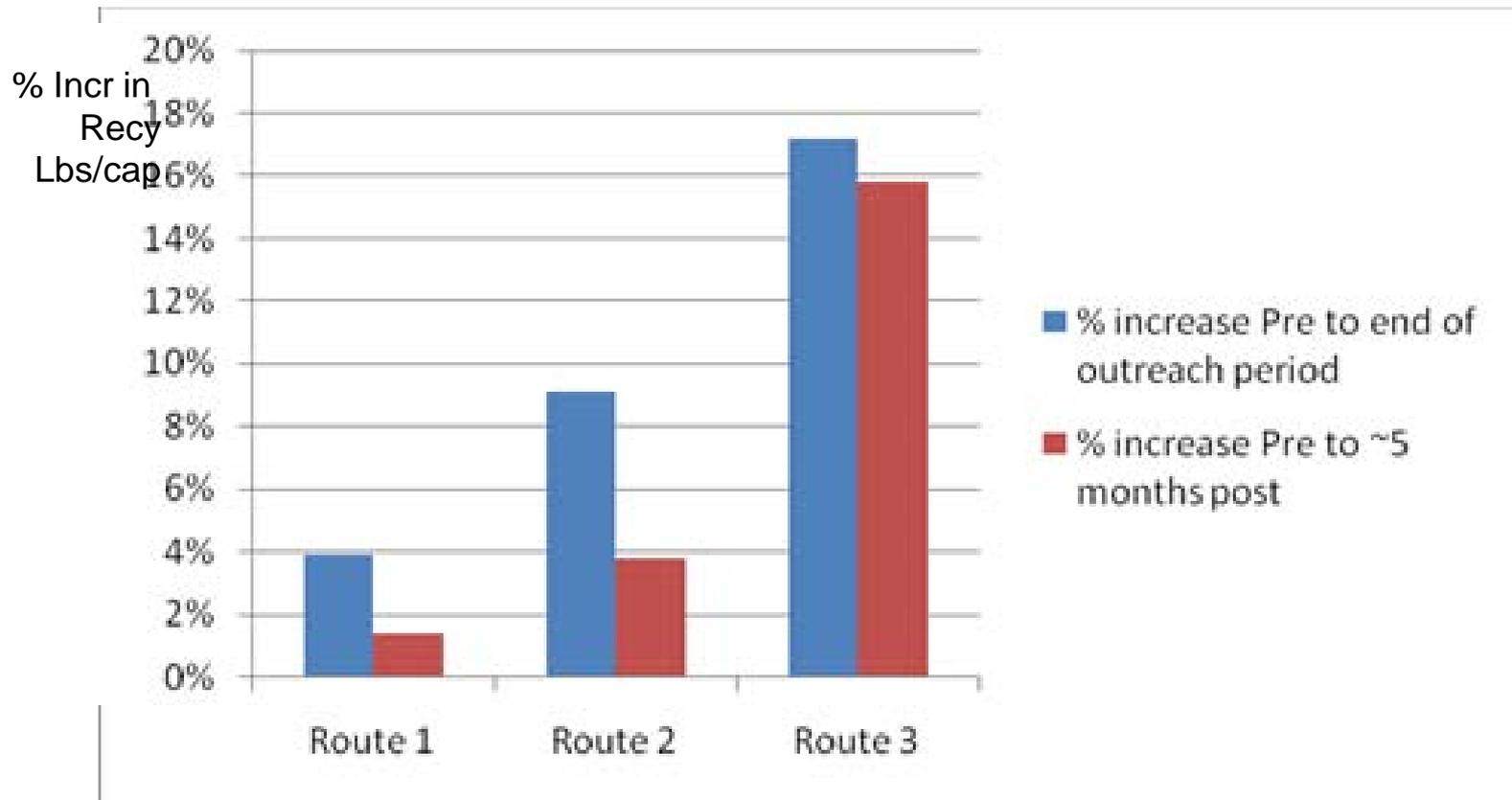
# SHARES OF GHG REDUCTIONS FROM COMMITMENTS MADE



# ENERGY BEHAVIORS

	Route 1 (control)	Route 2 (partial treatment)	Route 3 (full treatment)
Number of last 2 loads of laundry that were rinsed in cold	n/a	1.48	1.76 (19% more than low treatment group)
Turned off power strip yesterday (% yes)	11.3%	17.6% (56% more than control group)	20.5% (81% more than control)
Adjusted thermostat up one degree in summer and/or down one degree in winter (% yes)	41.9%	54.5% (30% more than control)	55.3% (32% more than control)
Installed caulking in the last year (% yes)	n/a	11.8%	36.8% (312% more than low treatment group)

# RECYCLING AND RETENTION

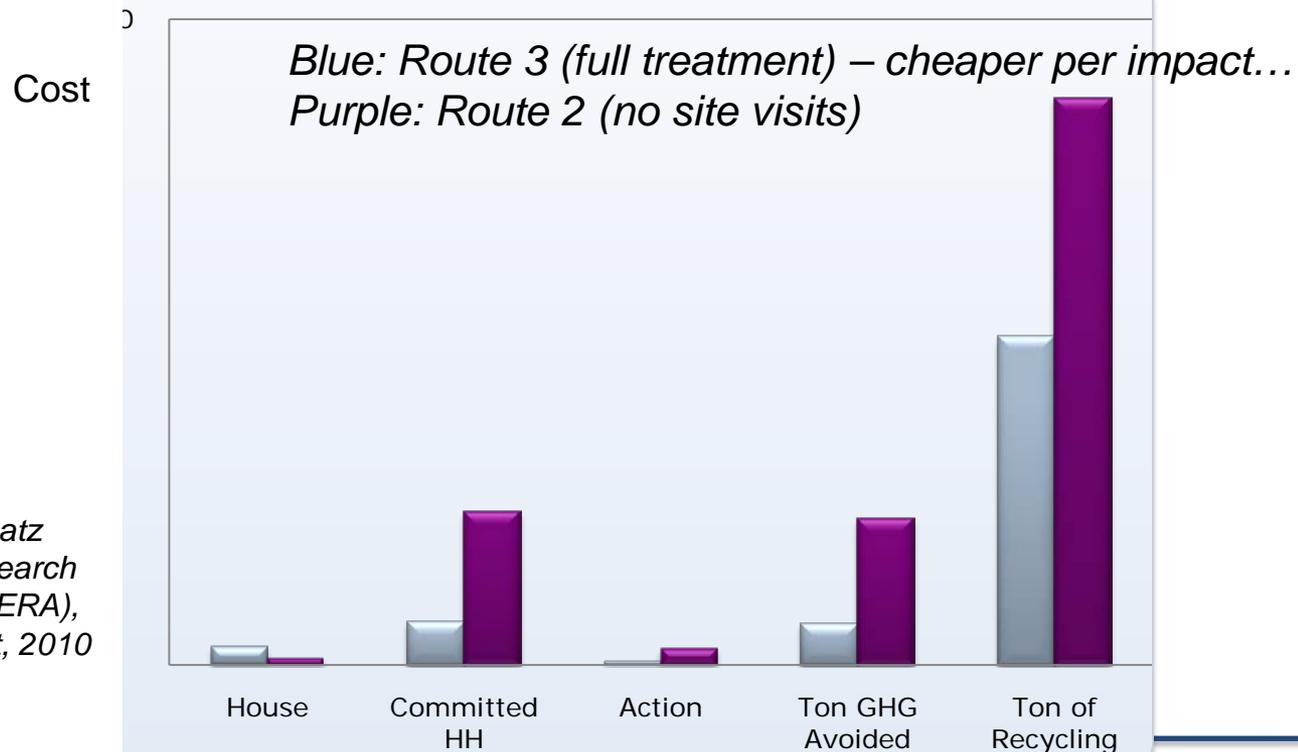


*Control group, not just pre/post is critical in measurement...*

Source: Skumatz Economic Research Associates,  
(SERA), DRAFT Report, 2010

# COSTS

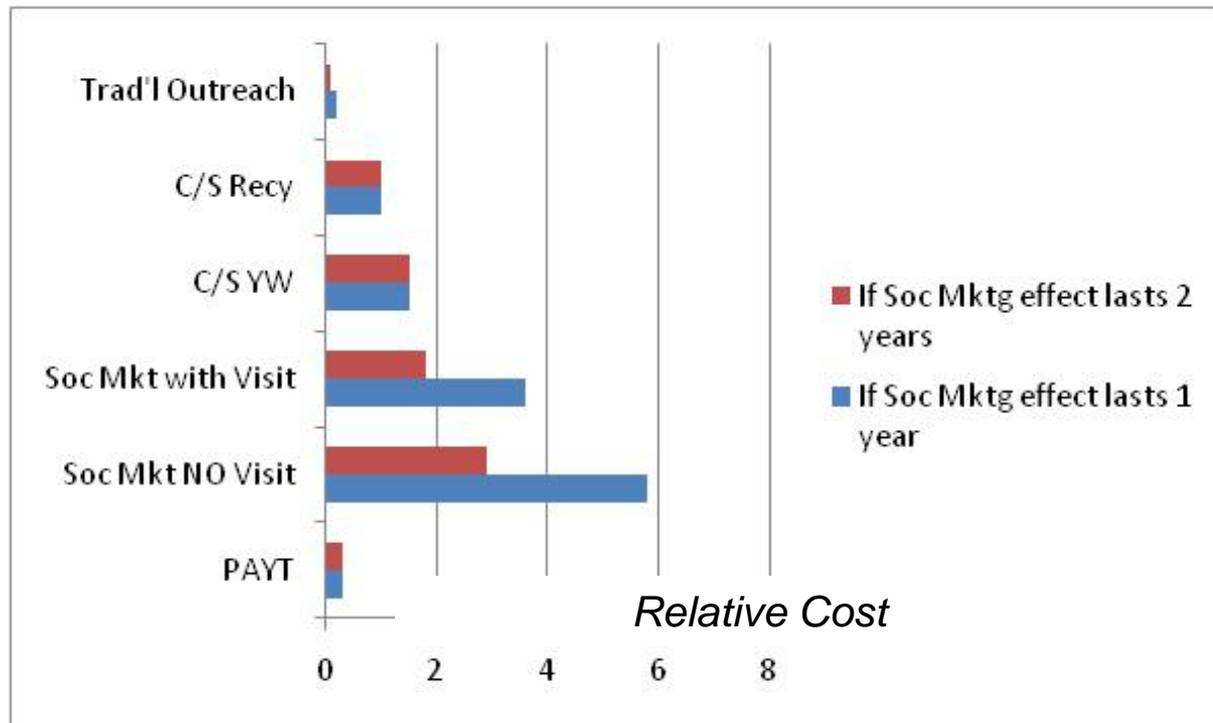
- Cost per HH
- Cost & incremental cost per action
- Costs by type of outreach / intervention
- Cost effectiveness



Source: Skumatz  
Economic Research  
Associates, (SERA),  
DRAFT Report, 2010

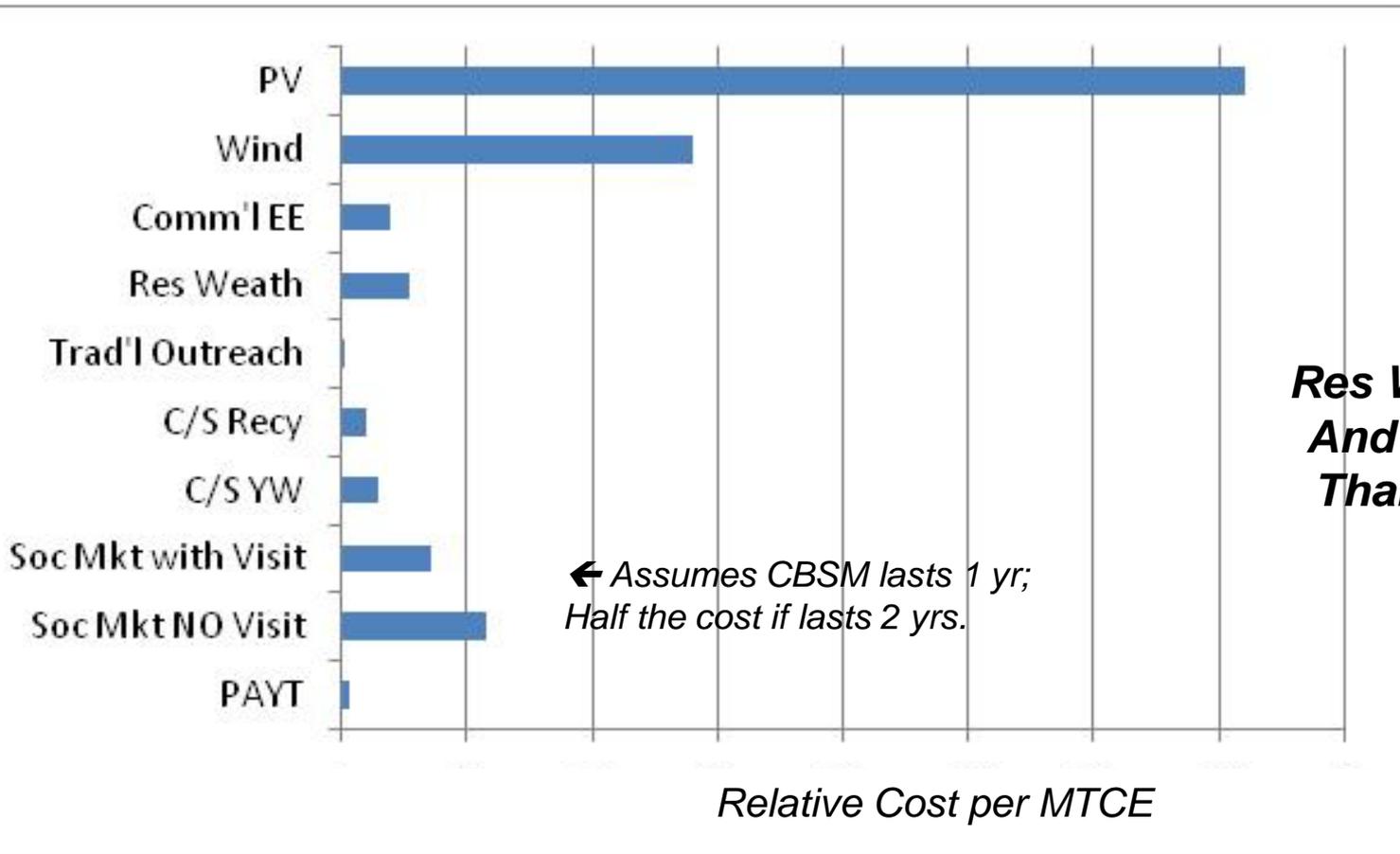
# RELATIVE COSTS FOR RECYCLING IMPACTS

- How CBSM compares to cost of other recycling programs (“widget”) and outreach –
- CBSM on par with recycling programs on cost/ton



Source: Skumatz Economic Research Associates, (SERA), DRAFT Report, 2010

# RELATIVE \$/MTCE GHG FROM "WIDGET" & CBSM PROGRAMS



**Appears that CBSM can be cheaper than Res Wx, Com'l EE – And much cheaper Than renewables...**

# ***SOCIAL MARKETING CONCLUSIONS***

- Powerful
- Cost-effective
- Lasts – behavior persists
  - Strong impacts – on par with other “widget” programs
  - Door-to-door / personal connection cost-effective
  - More expensive than standard outreach, but next step
- *➔ Link to barriers and what they care about in ways they “connect with”.*

# CONCLUSIONS & IMPLICATIONS

- Self-efficacy →
  - “Message” to clarify individual power, linkage to behavior - ready to hear & adopt
- NEBs →
  - What bundle to sell / what they value / want to buy, NOT what you want to SELL
  - Those interested in efficiency already “sold”
- Social Marketing →
  - Personal link increases impacts and possibly retention – add to toolkit
- Theory and results indicate influences beyond demographics and traditional factors...
  - →integrate elements for improved, more effective outreach for long-term behavior change, not repeating to the converted “choir”

# THANK YOU!!

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