

# Impacts of Consumer Education Based Programs

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# Session Outline

- Introduction
- Colorado Program Design
- Colorado Implementation
- Colorado Evaluation
  - Observations and Inspections
  - Client Survey
  - Impacts

# Introduction

- Legislation – Passed in response to energy price increases
- Goal – Furnish “immediate savings to a large group of households”
- Approach – Analysis / Testing / Assessment

# Colorado Program Design

# Program Models Review

- Direct Install
  - Neighborhood Blitz
  - Marketing to Targeted Households
- Workshop
  - Group
  - One-on-One
- Mass Mailing
  - Targeted Direct Mail
  - Targeted Business Reply Card

# Direct Install Models

Design Issues	Approach	
	Blitz	Targeted
Recruitment Cost	Low	Moderate
Delivery Cost	Low	High
Targeting Low Income	Fair	Excellent
Targeting High Users	Poor	Good
Leverage Educator	Poor	Poor
Peer Support	Fair	Poor
Customized Information	Fair	Good

# Workshop

Design Issues	Approach	
	Group	One-on-One
Recruitment Cost	High	Low
Delivery Cost	Low	Low
Targeting Low Income	Good	Good
Targeting High Users	Good	Poor
Leverage Educator	Excellent	Good
Peer Support	Excellent	Poor
Customized Message	Fair	Good

# Mass Mailing

Design Issues	Approach	
	Direct	BRC
Recruitment Cost	Low	Low
Delivery Cost	Low	Low
Targeting Low Income	Good	Good
Targeting High Users	Fair	Fair
Leverage Educator	Excellent	Excellent
Peer Support	Poor	Poor
Customized Message	Poor	Fair

# Program Models Review Evaluation Findings

- Found to be Cost-Effective (Utility Billing Data)
  - Ohio EPP
- Indeterminate Findings (Utility Billing Data)
  - NMPC LICAP Workshop
  - Iowa Workshop/Kit Program
- Projected to be Cost-Effective (Survey/Engineering)
  - Many Program Models

# Recommendations

- Fund Multiple Program Models
- Set Minimum Cost-Effectiveness Guidelines
- For Each Model
  - Assign savings for each measure
  - Assign effective installation rate for each measure
  - Vendors compete on Cost / Approach / Capacity
- Use M&V to Revise Program Parameters & Funding Allocations

# Planning Tools

- Measure Savings Worksheets
  - Saving from Measure
  - Effective Number
    - Percent of Homes with Opportunity
    - Percent of Homes Adopting
    - Percent of Homes Retaining
  - Savings (kWh or Therms)
  - NPV of Savings

# Saving Assumptions

## Direct Install - kWh

	Installed/ Action Taken	Effective Number	Savings/ Home (kWh)	Net Present Value
CFLs	15.0	13.5	729	\$382.17
Turn Up Refrigerator 5 Degrees	.503	.251	31	\$7.74
Turn Off Computer at Night	.125	.100	29	\$7.20
<b>Total</b>			<b>789</b>	<b>\$397.11</b>

# Saving Assumptions

## Direct Install - Therms

	Installed	Effective	Savings/ Home (Therms)	Net Present Value
Showerhead	0.375	0.300	9.90	\$78.36
Lower Water Heater Temperature 10 Degrees	.503	0.251	6.28	\$17.52
Lower Thermostat 5 Degrees	.150	0.075	5.63	\$15.70
Set Back Thermostat 5 Degrees	.250	0.125	3.13	\$8.72
Use Cold Water for Laundry	.250	0.125	12.50	\$34.89
<b>Total</b>			37.44	\$155.19

# RFP Tools

- Cost-Effectiveness Spreadsheets
  - Measure Level
    - Percent of Homes
    - Number of Measures
  - Cost Level
    - Administrative Costs
    - Service Delivery Costs
    - Measures Costs
  - Output: Benefit-Cost Ratio

# Benefits of Approach

- Funds All Models
  - Doesn't exclude promising approaches / vendors
- Common Parameters/Assumptions
  - Doesn't base policy on projections
  - Puts all vendors on equal footing
  - Encourages community based organizations to bid
- M&V
  - Improves long-term cost-effectiveness

# Colorado Program Implementation

# Direct Install - Providers

- Youth Corps service delivery
- GEO sends LEAP lists to the Youth Corps
- 5 subcontractor Youth Corps directly access client lists for their service territories
- Youth Corps call households to set up appointments

# Direct Install – Home Visit

- Install CFLs
- Install showerheads
- Install smoke/CO detectors
- Adjust refrigerator, freezer, hot water, and heating/cooling thermostats
- Provide card to measure refrigerator temperature and hot water temperature
- Educate client on temperature adjustments
- Referrals to Weatherization and United Way

# Direct Install – Data Management

- MHYC hired developer to create and host web-based database
- Extensive data collected and recorded
- Generates reports
- Scheduling tool
- Installation tracking
- Inventory tracking

# Direct Install – Database Fields

- Client name, address, and phone number.
- Client LEAP number
- Home owner/renter
- Date of service delivery
- Youth Corps organization that provided service delivery
- Youth Corps members and crew leader that provided service
- Previously existing bulbs and wattage by room
- Number of installed bulbs by wattage and room
- Water flow in current showerhead
- Number of showerheads provided
- Existing temperature in refrigerator, freezer, hot water, and furnace setting
- Whether an adjustment was made to each of the temperatures
- Number of smoke/CO detectors installed

# Workshop - Providers

- Managed by Energy Outreach Colorado
- One-on-one model
- Services provided by agencies that deliver emergency energy assistance
- 10 agencies around the state

# Workshop - Clients

- LEAP eligible clients are eligible for services
- Agencies can connect to energy providers to look at clients' energy usage
- Energy usage is not used to qualify for program

# Workshop – Service Delivery

- Describe program
- Review energy kit
- Explain connection with bill
- Review education materials
- Discuss measure installation
- Goal is to empower clients

# Workshop – Kits

- 13 watt CFL and 23 watt CFL
- Energy efficient showerhead
- Hot water thermometer
- Refrigerator/freezer thermometer
- Information on how to use the thermometer
- Quick start guide and energy saving tips
- Order form (more CFLs and showerheads)
- Follow-up survey

# Mass Mailing - Providers

	Clients Served By Provider		
	P1	P2	P3
Mass Mailing	9,000	5,500	
Business Reply Card	600		1,600

# Mass Mailing - Providers

	Kit Contents		
	P1	P2	P3
13/15 Watt CFLs	2	2	1/2/0
20/23 Watt CFLs	2	2	3/2/4
Showerhead	1	1	1
Hot water card	1	1	1
Refrigerator card	NO	1	1
GEO brochure	YES	YES	YES
Education/instructions	YES	YES	YES

# Mass Mailing – BRC Response

	First Mailing		Second Mailing	
Date sent	3/28/07		4/20/07	
# postcards mailed	2,000		3,035	
Bad Addresses	900	45%	395	13%
Good Addresses	1,100	55%	2,640	87%
Responses	281	26%	202	8%
Kit 1	30	11%	24	12%
Kit 2	164	58%	107	53%
Kit 3	87	31%	71	35%

# Initial Service Delivery Statistics

	Clients	CFLS			Showerhead	Smoke/ CO
		15 W	20 W	Total		
Direct Install	2,378	9.2	4.0	13.1	0.7	1.0
Workshop	275	1	1	2	1	0
Mass Mailing	10,000	2	2	4	1	0

# Colorado Program Evaluation Observations and Inspections

# Observations and Inspections - goals

- Understand actual implementation
- Assess barriers
- Qualitative indicators of potential impact
- Identify how procedures can be improved
- Identify additional energy-saving opportunities

# Observations and Inspections

- Service delivery observation – 9 jobs
- Training observation – classroom and field
- Inspections – 29 jobs
- Observation or inspection conducted for 4 of the 6 youth corps

# Training Observation

Strengths	Areas for Improvement
•Client relationship	•Assess incandescent use
•Followed protocols	•Explain during installation
•Described program	•Demonstrate temperature cards
•Respected homes	•One installation at a time
•Explained CFL savings	
•Discussed temperatures	
•Referrals	

# Service Delivery Observation

Strengths	Areas for Improvement
•Described program	•Discussion of actions
•Discussed lighting in every room	•Crew members need more information about energy efficiency
•Measured shower flow	•No referrals
•Checked all temps	•Don't have all needed tools
•Showed client how to measure	
•Discussed CFL savings	
•Left boxes for customer	

# Inspections - Focus

- CFLs – Did the client know where the CFLs were installed, how many hours per day the bulbs were used, and how satisfied the client was with the bulbs?
- Showerheads – Could the client identify the replacement, and how satisfied was the client was with the new showerhead?
- Temperature changes – Could the client identify the temperature change, and how satisfied was the client was with the temperature change?
- Program satisfaction – What was the overall program satisfaction?
- Opportunities – Some of the inspections included a discussion of additional opportunities for energy saving.

# Inspections - CFLs

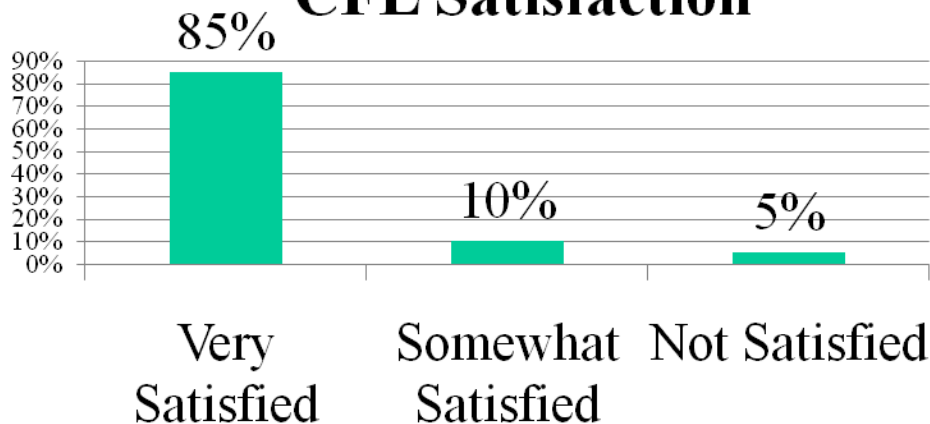
## CFL Identification

#Installed	11.6
#Identified	10.4

## CFL Use

Average Hours/Day	2.3
Max Hours/Day	5.7
Min Hours/Day	0
# <1 Hour/Day	3.3
# <.5 Hour/Day	1.9

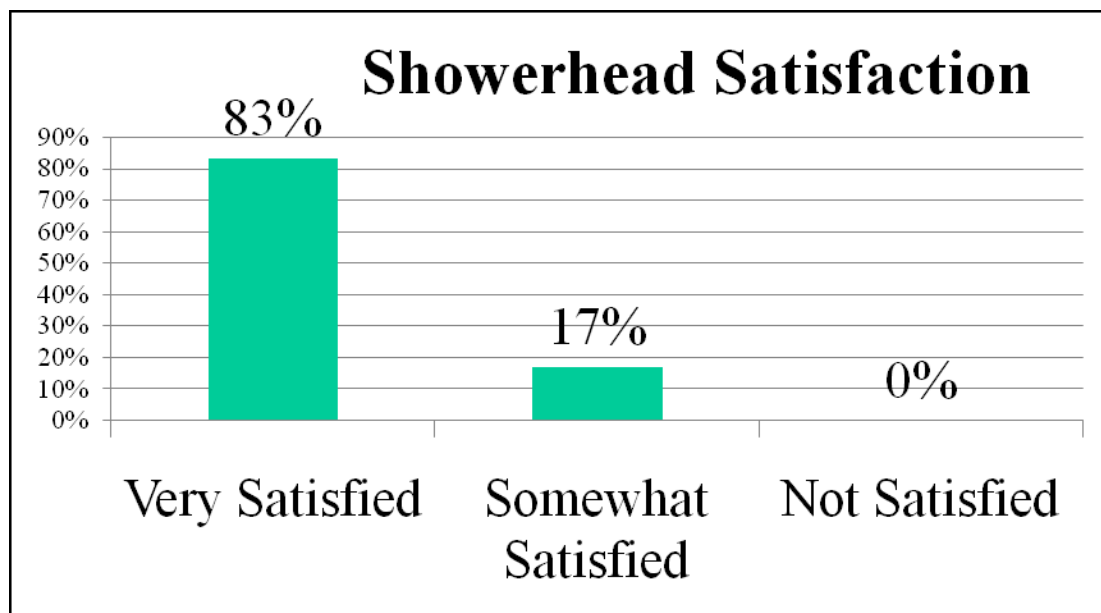
## CFL Satisfaction



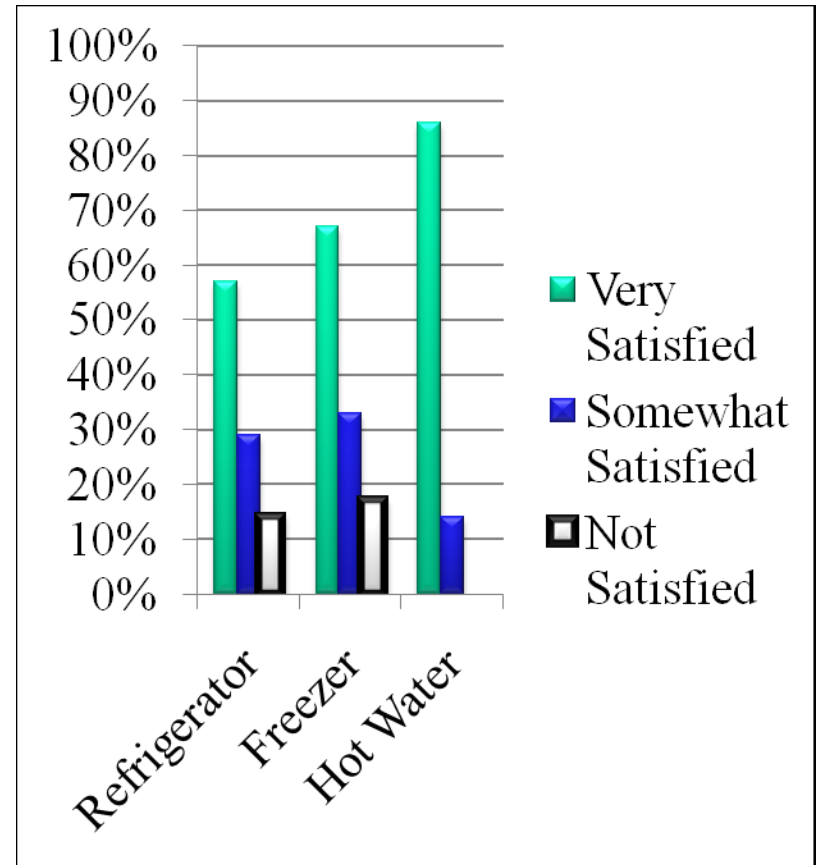
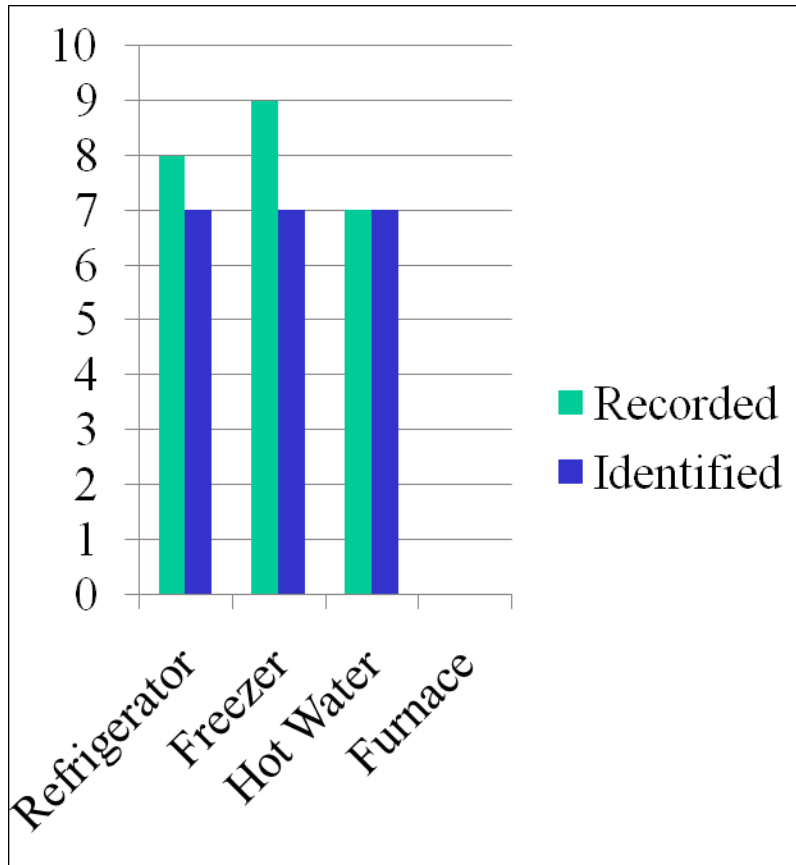
# Inspections – Showerheads

## Showerhead Identification

#Installed	19
#Identified	18



# Inspections – Temperature Turndowns



# Inspections

## Additional Opportunities

	Number	Percent
Computer on all night	1	8%
Willing to turn off?	0	0%
Not cold water for laundry	7	54%
Willing to use cold?	2	29%
Heat not set back	4	31%
Heat willing	0	0%

# Process Evaluation Summary

- Program Design
  - Spent time up front to investigate promising program models and analyze potential program savings.
  - Initially implemented services on a relatively small scale.
  - Initial implementation kept simple, with few client behavior change goals.
  - After evaluation results are in, they will determine how to modify program offerings.

# Process Evaluation Summary

- Implementation Recommendations
  - Client involvement: The client should be given the opportunity to observe and participate in measure installation.
  - Bulb replacement: Discuss whether a light is used prior to replacing a bulb.
  - Temperature changes and cards – Spend more time reviewing the temperature cards with the clients and should investigate whether they can obtain more user-friendly materials.

# Process Evaluation Summary

- Implementation Recommendations
  - Referrals: Need policy on when referrals should be made to WAP.
  - Tools: Make sure that all needed tools are available to the Youth Corps members.
  - Education opportunities: Take advantage of targeted opportunities to provide additional education to clients. This includes follow-up calls made by providers and inspections done by third party contractors.

# Colorado Program Evaluation Client Survey

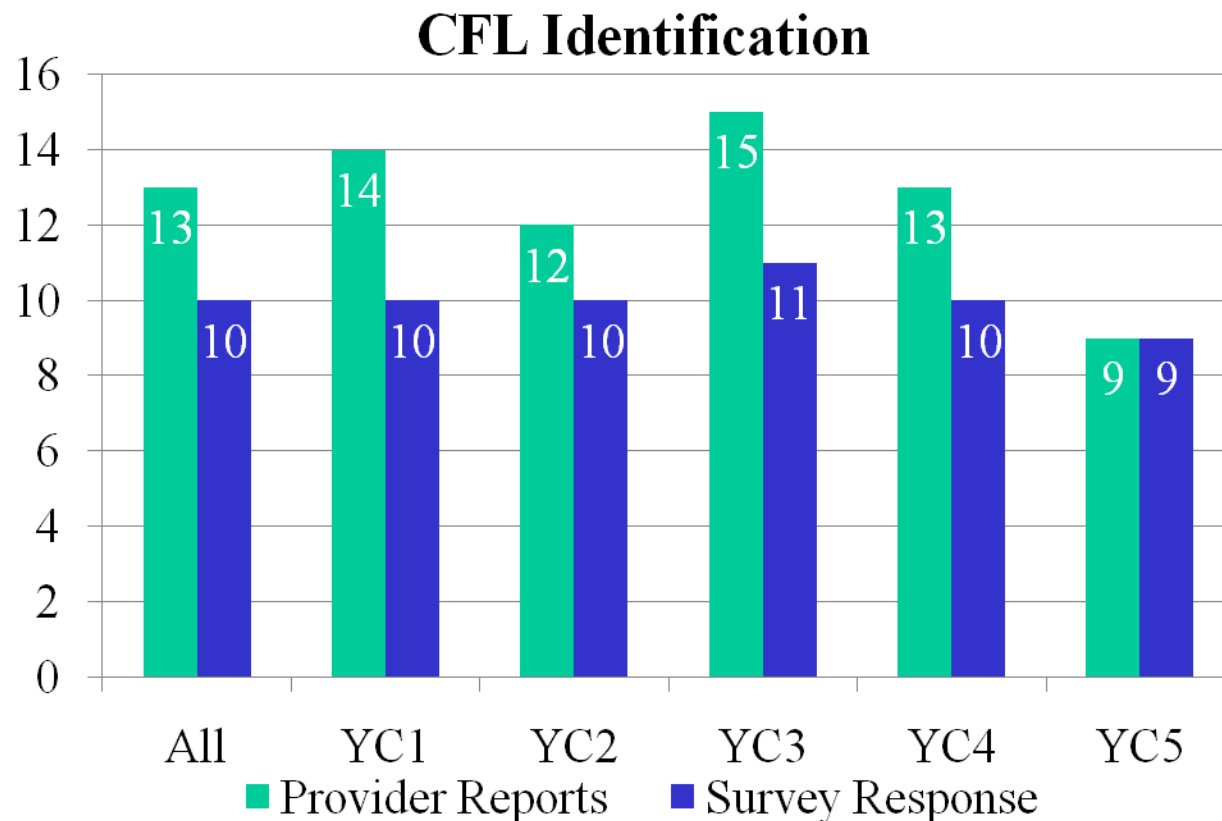
# Survey Goals

- Assess program effectiveness
- Compare three delivery methods
- Recall and retention of energy efficiency measures received or installed
- Energy saving actions
- Satisfaction with efficiency measures and services
- Household energy costs and health issues

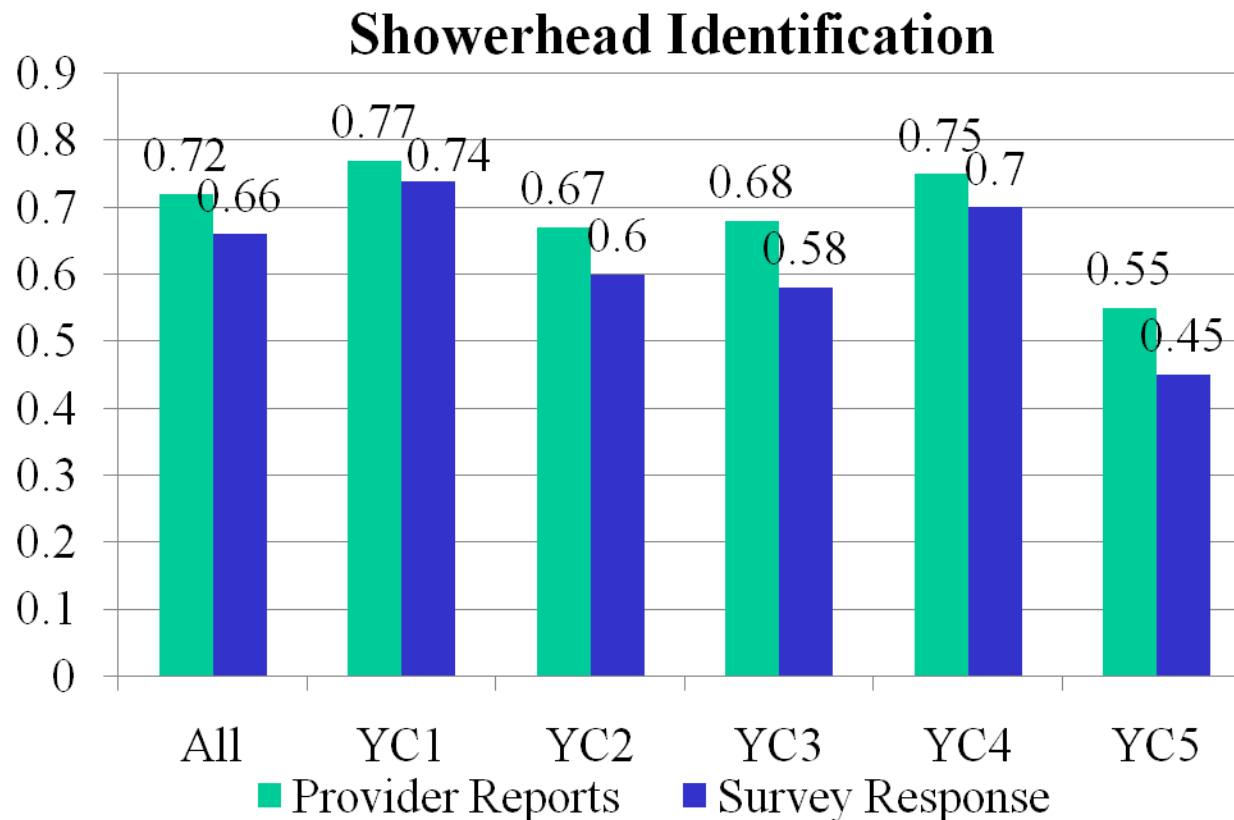
# Survey Methodology

- Conducted in August and September 2007
- Clients served in the first six months of service delivery – January through June 2007
- Clients in the three delivery method groups: direct install, workshop, and mass mailing
- Oversampling of less common delivery methods and service providers

# Survey Results – Measure Identification



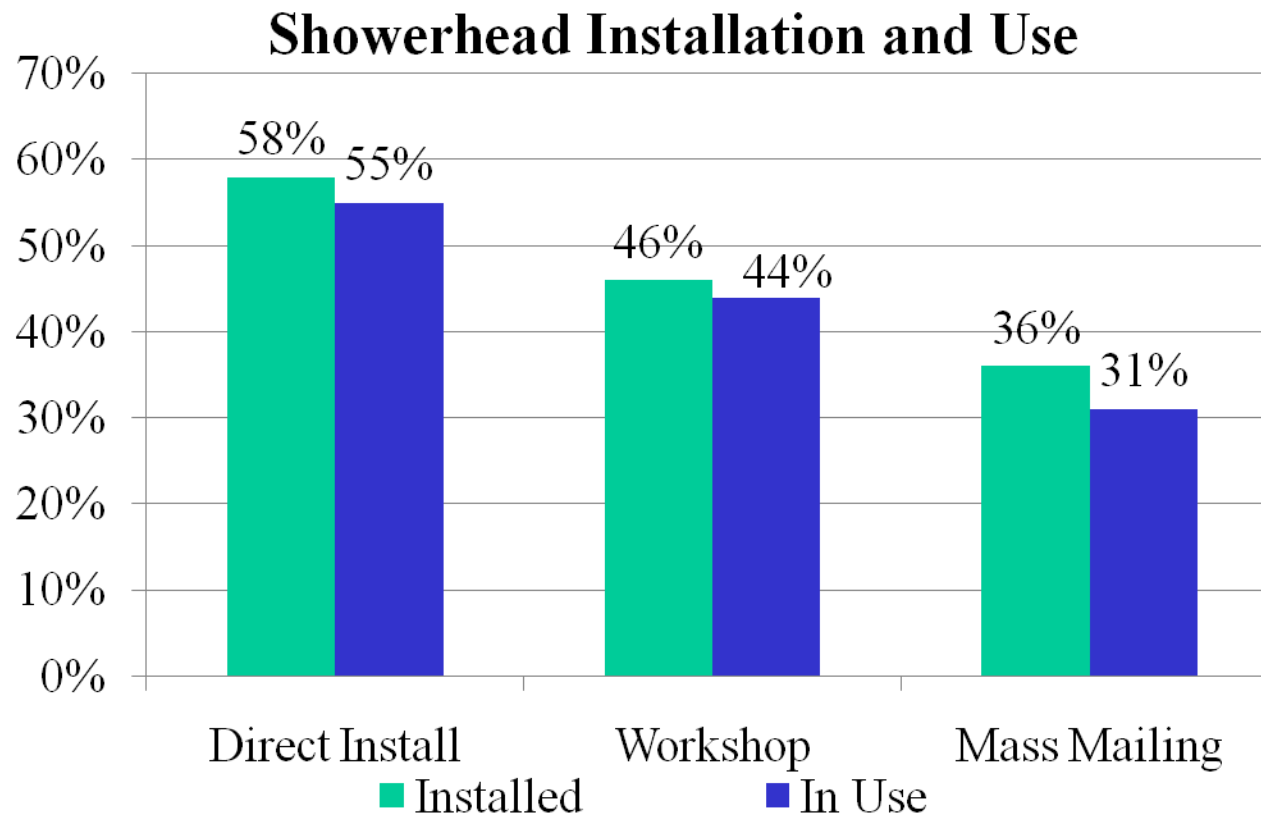
# Survey Results – Measure Identification



# Survey Results – CFL Use

	Direct Install	Workshop	Mass Mailing
# of CFLs Received	9.8	4.3	4.0
# of CFLs Installed	9.8	3.2	2.8
# of CFLs In Use	9.1	3.2	2.7
# of CFLs used > 30 minutes/day	5.7	2.6	2.1
# of CFLs used > 4 hours/day	2.8	1.1	1.3

# Survey Results – Showerhead Use



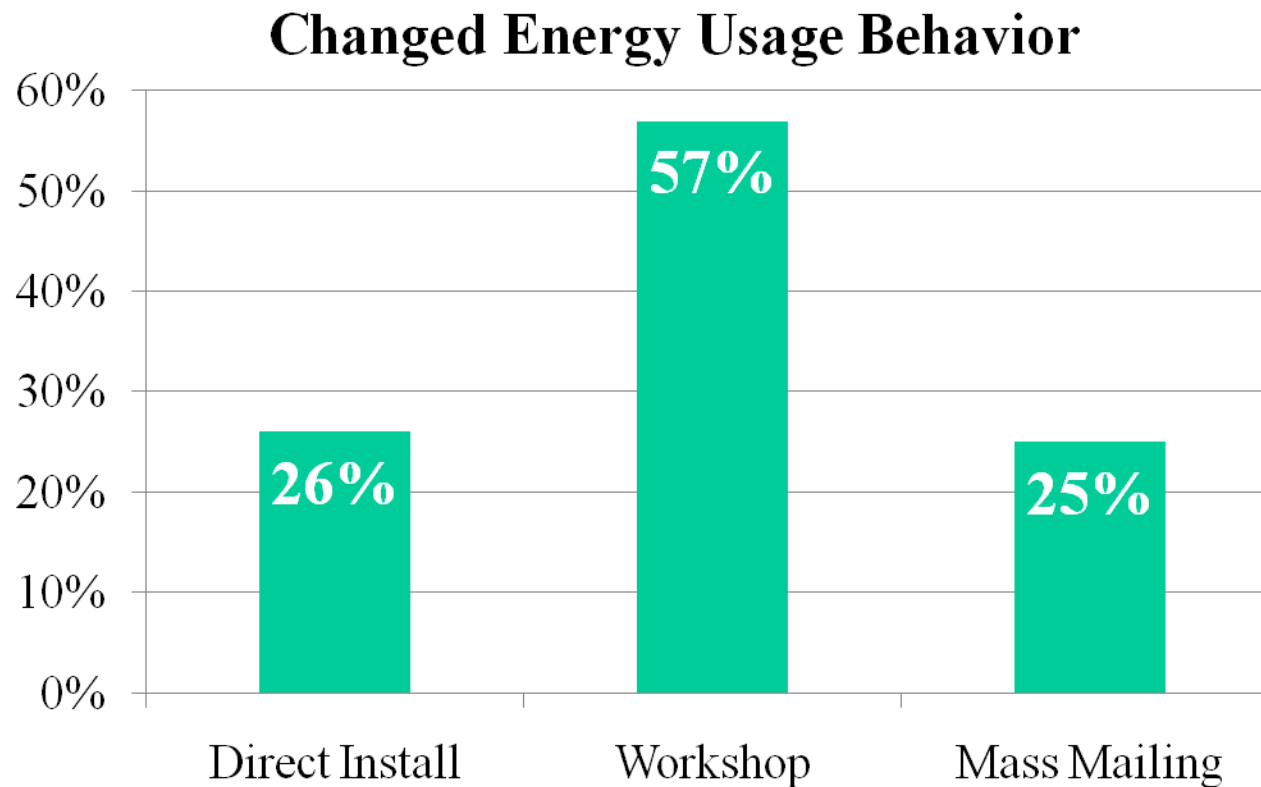
# Survey Results – Water Thermometer Use

	<b>Direct Install</b>	<b>Workshop</b>	<b>Mass Mailing</b>
Recalled Receipt	42%	78%	54%
Understand How to Use	39%	67%	41%
Used Thermometer	20%	48%	22%
Changed Water Temperature Setting	18%	42%	26%

# Survey Results – Refrigerator Thermometer Use

	Direct Install	Workshop	Mass Mailing
Recalled Receipt	48%	72%	67%
Understand How to Use	44%	65%	61%
Used Thermometer	28%	50%	46%
Changed Refrigerator/Freezer Temperature	20%	43%	28%

# Survey Results – Energy Usage Behavior



**Question:  
Have you  
made any  
other  
changes to  
reduce your  
energy use  
as a result  
of the  
program?**

# Survey Results – Behavior Changes

	Direct Install	Workshop	Mass Mailing
Reduced Use of Heat	9%	27%	13%
Reduced Use of Air Conditioning	3%	7%	10%
Discard Unused Refrigerators	5%	9%	4%
Turn Off Computers Not in Use	7%	11%	8%
Turn Off Lights Not in Use	6%	21%	13%
Wash Clothes in Cold Water	9%	19%	10%

**Question: What other action have you taken to reduce your energy use as a result of the program?**

# Survey Results – Behavior Changes

	Direct Install	Workshop	Mass Mailing
Program was Very Helpful	64%	81%	53%
Energy Bills are Lower	53%	51%	39%

	MM1	BRP2	MM3	BRP3
Program was Very Helpful	51%	57%	53%	54%
Energy Bills are Lower	32%	48%	40%	49%

# Survey Results – Saving Estimates

	<b>Direct Install</b>	<b>Workshop</b>	<b>Mass Mailing</b>
kWh Savings	440	232	197
Therm Savings	9	32	16
Net Present Value	\$251	\$201	\$140
Average Cost	\$228	\$121	\$21-\$43

# Survey Results – Additional Opportunities

Percent of all respondents who have equipment, are not already taking the action, and are very or somewhat willing to do so.

	<b>Direct Install</b>	<b>Workshop</b>	<b>Mass Mailing</b>
Night heat setback	37%	39%	36%
Night computer off	5%	7%	8%
Cold water laundry	13%	8%	13%
Remove Refrigerator	3%	8%	3%

# Summary

- Research based approach
- Goal: cost-effective delivery to large number of households
- Initial evidence shows good results
- Opportunities for improvement – provider training, education materials, mass mailing BRC
- Need to look at impact results...