LOW-COST ENERGY EFFICIENCY MEASURES: NEIGHBORHOOD BLITZ, DIRECT INSTALL AND CONSERVATION KIT PROGRAMS

Direct installation energy efficiency programs are those in which simple energy saving low-cost measures are installed in low-income households. These programs might be conducted using a "neighborhood blitz" approach, wherein all homes in a targeted neighborhood receive the low-cost measures, or might be done in conjunction with other services, such as home weatherization or a home energy audit. Potential measures include compact fluorescent light bulbs, low-flow showerheads and faucet aerators, water heater wraps, water pipe insulation, furnace filters, refrigerator/freezer thermometers, and setback thermostats. These programs were most common in the early 1990's and met with significant success, but fell into disuse in the late 1990's with relatively low energy prices. Recent spikes in home energy prices have created renewed interest in direct install programs. In the past few years, several state agencies (Indiana, Montana, Kansas, and South Carolina) and utility groups (Iowa) have instituted such programs.

A Better Idea Program
Offered by Los Angeles Department of Water and Power

In 1991, the Los Angeles Department of Water and Power began an ambitious program to install low-cost energy and water savings devices in every residence in its service territory. The utility initiated the program through a pilot for low-income customers. DWP hired two minority-oriented community agencies and one contractor to implement the program. The implementers sent a crew of installers and two canvassers to a neighborhood for the day. Using a van with the utility and program logos on it as a base camp and walkie-talkies to communicate with one another, canvassers would go door-to-door to schedule appointments. If no one were home, they left a door hanger encouraging the customer to call to schedule an appointment. Installers would follow behind the canvassers and spend 20 to 45 minutes per household depending on the installer, the size of the home, and the customer's level of interest. Measures installed during a visit included CFLs, low-flow showerheads and faucet aerators, and toilet displacement bags (a water-saving device). In addition, installers offered energy education, refrigerator coil cleaning, and toilet dye tests. In 1993, DWP visited 76,960 homes and expected the resulting savings to be 19.4 GWh and 1.3 MW annually. The participation rate in low-income neighborhoods was approximately 58%, but significantly lower in higher-income areas. The utility found the following barriers to higher penetration rates: lack of people home during the day to receive canvassers, language and immigration concerns for non-native speakers, fear and suspicion of racially mixed crews, and the misimpression that door hangers were actually advertisements.

Source: ACEEE 1994 Summer Study on Energy Efficiency in Buildings Proceedings, pg. 1.145

Homeworks
Offered By United Illuminating (Connecticut)

Between 1990 and 1995, United Illuminating operated a neighborhood blitz program for low-income customers in Connecticut. The Company used a primary contractor and non-profit community agencies for implementation, but also hired and trained youths from the communities served. United Illuminating sent a direct mailing to targeted neighborhoods 7 to 10 days prior to the visit. A few days prior, the utility left door hangers and canvassed the neighborhood to schedule appointments. On the day of the visit, installers would spend approximately one hour per household installing CFLs, water heater wraps, pipe insulation, water heater temperature setbacks, low-flow showerheads, and faucet aerators. They all provided the customer with some energy education. In the first three years, the program served 27% of the 100,000 eligible customers. By 1996, the program was discontinued because it had saturated its target market. The program was estimated to save 2.1 GWh per year for an annual budget of $534,550. The estimated levelized cost of saved energy was $0.032 per kWh, indicating that the program was very cost-effective.

Source: http://solstice.crest.org/efficiency/irt/15.htm;

Appliance Management Program
Massachusetts Electric Company

In 1996 and 1997, the Massachusetts Electric Company offered a home visit/appliance audit/direct installation program to high consumption (> 15 kWh per day) low-income customers, an eligible population of approximately 40,000 to 80,000 households. Working with local community agencies, the utility developed software, produced an educational booklet in English and Spanish, and trained community agency workers on energy issues. MECO provided the agencies a list of eligible customers, and the agencies made initial contact, conducted the home visit, and made a follow-up call or visit. In the customer's home, the installer provided a detailed appliance assessment along with energy education and an action plan, monitored the usage of major appliances, identified high-use refrigerators eligible for replacement (approximately 40% of homes visited received replacements), provided refrigerator cleaning brushes, and installed CFLs, air conditioning filters, low-flow showerheads and faucet aerators, and new waterbed mattresses. The installers also removed existing secondary refrigerators, if permitted. For the 1,340 households serviced, the net energy savings was approximately 973 kWh annually – which represents average savings of 1,354 kWh for customers who received new refrigerators, and 429 kWh for customers who did not. This program was reported to have a benefit-cost ratio of only 0.8 (test unspecified). Because this included program start-up costs, the utility thought the program would become more cost-effective over time. We have not been able to determine whether the program continued.

Source: 1998 ACEEE Summer Study on Energy Efficiency in Buildings Proceedings, pg. 2.223

Warm Homes
State of Montana

In the fall of 2005, the State of Montana teamed up with the local Human Resource Development Councils (community agencies) and the Montana Conservation Corps (AmeriCorps) to deliver low- and no-cost energy efficiency measures to 600 households throughout Montana. The governor wanted to implement this one-time program because Montana has a 17,000 home backlog of customers eligible for LIHEAP weatherization, but can only perform 2,000 weatherizations per year. Customers who are eligible for LIHEAP, but at the bottom of the priority list for weatherization, received this low-cost service. The AmeriCorps workers were a temporary labor source, made available for 6 weeks at the end of their summer of tree-cutting and trail-building. Funding for this program came from a state appropriation of $1M over two years (2005-6) for energy assistance made at the governor's request. The Montana Department of Public Health and Human Services dedicated up to $250,000 of those funds in 2005 for the Warm Homes Program; it is estimated that only half of this was spent. The state estimated that it spent approximately $150 in materials per home for measures such as a furnace tune-up, caulking, client education, insulation, weather-stripping, storm windows, replacement of broken glass, or repair of exterior doors. Labor for the entire program is expected to be approximately $75,000.

Source: Jim Nolan, Montana Department of Public Health and Human Services, 406-447-4260

Energy Smart
Oregon HEAT

The non-profit organization Oregon HEAT has combined public and private sector funding to provide a full year of case management for 150 eligible Oregon homeowners. Customers receive a home energy audit, energy education, weatherization, a development plan for managing energy needs, a conservation kit with instructions/assistance with installation, monthly feedback on progress with plan, incentives for achieving plan, home visits and referrals to other social services as needed. The kit includes two CFLs, a low-flow showerhead, two faucet aerators, thermometers for checking refrigerator and water temperatures, a shower timer, and outlet covers. Funding comes from the Meyer Memorial Trust, the Oregon Attorney General's office, and Oregon HEAT itself. Quantec and local community agencies administer the program. For $1,200 in average spending per household, the customer receives annual bill savings of approximately $114. The conservation measures in the kit are a small fraction of the total cost (the kit costs $39).

Source: www.oregonHEAT.org; Quantec LLC

Conservation Kits

A number of utilities and state agencies around the country have offered conservation kits to low-income LIHEAP-eligible customers in the past five years. Kits cost between $10 and $60 and commonly include CFLs, low-flow showerheads, faucet aerators, refrigerator and water thermometers, plastic bags to measure shower and faucet flow rates, water heater insulation wraps, pipe insulation, and educational materials. State agencies generally rely on community agencies to determine participant eligibility and to distribute kits. Depending on the climate and the measures provided, customers save between 100 and 1,200 kWh annually, as well as natural gas and water savings of $15 to 125 per household per year. Funding for these programs has come from a variety of sources including federal LIHEAP weatherization dollars, private donations, state dollars, and utility contributions. Conservation kit programs have ranged in size from 1,000 to 200,000 kits. This type of program seems to be limitlessly scaleable. The table below provides key information on various conservation kit giveaway programs. It shows that, in some cases, the program provides more energy and water bill savings in one year than the cost of the program.

Program Sponsor	Year	Cost of Kit[1]	# of Kits Distributed	Dollars Saved Per Household Per Year
State of Kansas	2005	$22	10,000	N/A
State of Montana	2005	$150[2]	500	N/A
Iowa Utilities Assoc.	2004-Pres	$60	1,080	$125
State of Indiana	2003-Pres	$50	25,000	$102
South Carolina DOE	2004-2005	$50	1,200	$97
State of North Dakota	1998-2004	$180[3]	7,500	N/A
Seattle City Light	2001	$17	178,000	$15

Source: Quantec, LLC, a consulting firm based in Portland, Oregon, has implemented these conservation kit giveaway programs in many cases. Visit www.energywiseli.com for more information.

For further information, please contact:

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[1] Includes materials, labor, training, and mailing costs.
[2] Includes minor repairs and appliance tune-ups.
[3] Includes a walk-through energy audit and energy education.

Neighborhood Blitz/Direct Installation/Conservation Kit Programs

	State of Indiana	Oregon HEAT Energy Smart
How does it work?	Community agencies attend train the trainer session, receive energy education materials and energy efficiency kits. CAAs hold energy education workshops for LIHEAP eligible clients. Clients measure energy use, install measures in their home, institute energy saving behavior and fill out survey indicating their outcomes. Quantec compiles survey data and reports on savings.	Full year case management for 240 families includes energy education, weatherization, brokering other needed social services based on family needs (includes a flex fund averaging $1200/family). Data-collection in areas of life, demographics, bill payment history and changes, kWh use changes, etc to determine cost-effectiveness.
Who does implementation?	Indiana Family and Social Services Administration with Quantec support (agency training, data collection, analysis and reporting)	Quantec, Mid-Willamette Valley CAP, Umpqua CAP
Who does oversight?	State agency	Oregon HEAT
What is the annual budget?	$900,000	$1,000,000 over 3 yrs
What is the funding source?	Federal DOE weatherization budget through the Indiana Family and Social Services Administration	Meyer Memorial Trust, Oregon Attorney General's office, Oregon HEAT
What is the goal for # of homes?	5,000 annually	150 over 2 years
How many have already been done?	>23,000 households, >12,000 annually	91
What measures are included?	Conservation Action Kit; $25 per participant to CAPs, $25 credit to participants who returned survey; education class, length varied, but explained kit contents -- Program no longer offers bill credit to customers.	Home energy audit and weatherization, household development plan for managing energy needs, conservation kit and instructions/assistance installing, one-on-one education, referral to community-based resources, monthly feedback on progress with development plan, incentives for achieving plan objectives, home visits and follow-up as needed
How many houses can implementors visit per day?	N/A	Varies
What is the cost per household?	$50	$1,200
How do they decide on participants?	Customers who request utility bill assistance.	Must qualify for LIHEAP but not face immediate disconnect. May have history of high electricity use, be seniors on a fixed income, have received energy assistance in past years, be motivated to reduce usage.
Is the program still going on?	Since 2003	Yes. Programs lasts from 7/1/04 - 6/30/07
Is it being scaled up or down? Why?	Considering expanding to non-LIHEAP households in the future	The total number of families served is being scaled down due to the demands of case-management and funds for staff, yet impacts on other programs is already occurring, scaling-up Energy Smartimpacts.
What is the evaluation methodology?	Phone surveys	
What are the estimated kWh savings of the program?		
What are the annual bill savings from the program?		
Average kWh savings per participant	696	811
Average therm savings per participant	41.3	47.2
Average water savings per participant (gallons)	6,008	4,211
Ave Savings/participant/yr (elec, gas & water savings)	$102.21	$114.31
Is there a cost-ben?		
Levelized cost ($/kWh)		

	United Illuminating Homeworks (CT)	State of ND Div. of Community Services
How does it work?	UI sent direct mail to targeted neighborhoods 7-10 days prior; left door hangers a few days prior, then canvassed the neighborhood to make appts. Spent 1 hour per household. Left "sorry we missed you" with installer phone # if no contact was made.	Community agencies
Who does implementation?	Used a primary contractor and non-profit agencies; also hired and trained youths from the communities serviced.	Community agencies
Who does oversight?		ND Dept of Commerce
What is the annual budget?	$534,550	$100,000
What is the funding source?		LIHEAP $ for LIHEAP eligible customers
What is the goal for # of homes?		
How many have already been done?	27,000	1,200 per year; 7,500 total
What measures are included?	Lighting, water heater wraps, pipe insulation, water heater temp setback, lo-flow showerheads, faucet aerators, customer education	After one-on-one meeting with consumer, an energy education specialist will conduct a walk-thru audit, provide an EE kit (includes low-flow showerhead, faucet aerators, caulk and caulking gun, plastic inside storm windows, frig and freezer thermometers, frig coil cleaning brush, 12 outlet gaskets, water heater jacket, CFL, water pipe insulation and, depending on need: smoke detectors, carbon monoxide detector, dozen furnace filters, door weatherstrip kit), energy conservation plan, blower door test, and furnace test.
How many houses can implementors visit per day?		
What is the cost per household?	$20	$180 max per house
How do they decide on participants?		Available to LIHEAP consumers.
Is the program still going on?	1990-1995	1998-2004
Is it being scaled up or down? Why?	Was discontinued in 1996 because it had saturated its target market -- served 27% of the 100,000 eligible customers in first 3 yrs of program	Discontinued, but rolled into normal weatherization program
What is the evaluation methodology?	Bill analysis	
What are the estimated kWh savings of the program?	2.1 GWh per year	5% savings first year, diminishing over time
What are the annual bill savings from the program?		5% savings first year, diminishing over time
Average kWh savings per participant	606	
Average therm savings per participant	31.9	
Average water savings per participant (gallons)		
Ave Savings/participant/yr (elec, gas & water savings)		
Is there a cost-ben?		
Levelized cost ($/kWh)	$0.032	

	Massachussetts Electric Company (MECO)'s Appliance Management Program	LA Dept of Water and Power's A Better Idea Program
How does it work?	Utility identified eligible customers; community agency made initial contact, conducted home visit, made follow-up call/visit. Utility developed software, producted educational booklet in Spanish and English, and trained CAP managers.	Crew of installers and two canvassers are sent to neighborhood for the day. A van with the utility and program logos is parked in the area to serve as a staging point. One person places door hangers on homes that will be canvassed the following day. A canvasser goes door-to-door to schedule appointments for the installers who follow 10-15 minutes behind. If no one is home, a card is left encouraging customer to call and schedule appt. Crews have walkie-talkies. Installation takes between 20-45 min depending on installer, size of home, and customer interest.
Who does implementation?		Two CAPs and a contractor
Who does oversight?		
What is the annual budget?		
What is the funding source?		
What is the goal for # of homes?		All residences in service territory; 76,800 in 1993 (=15.4 GWh, 1.4 MW)
How many have already been done?	240 in Pilot in 1996; 1100 in 1997	76,960 in 1993 (=1.3 MW, 19.4 GWh); Participation rate was 58% in low-income areas
What measures are included?	Detailed appliance assessment, monitoring kWh usage of major appliances, high-use refrigerators eligible for replacement (40% received replacements), refrigerator cleaning brushes, showerheads, aerators, and wraps, new waterbed mattresses, CFLs, AC filters, removal of existing secondary refrigerators, education about energy use with action plan	3-4 CFLs, energy education, refrigerator coils cleaned, low-flow showerheads, aerators, toilet displacement bags, and toilet dye tests, educational materials.
How many houses can implementors visit per day?		
What is the cost per household?		
How do they decide on participants?	Customer must be on R-2 (low-income) rate, have baseload consumption of 15 kWh per day and have an account less than 3-months in arrears, and live in one of four CAP service territories chosen for pilot, couldn't have electric heat. Estimated eligible population was 40-80K.	Pilot done in 1991; full program began in Nov 91.
Is the program still going on?		
Is it being scaled up or down? Why?		
What is the evaluation methodology?	Telephone surveys conducted 3 months after end of program to evaluate satisfaction; impact evaluation done through econometric analysis of customer bills	Interviews w/ program staff, program managers, utility upper management, all field staff, contractor supervisor and crew chief, and ex program staff members; in-field evaluations; customer telephone surveys
What are the estimated kWh savings of the program?		
What are the annual bill savings from the program?		
Average kWh savings per participant	429 kWh for non-refrigeration replacement measures; 1354 kWh w/ refrigerator replacement; net savings of 973 kWh annually; gross savings of 1048 kWh annually	
Average therm savings per participant		
Average water savings per participant (gallons)		
Ave Savings/participant/yr (elec, gas & water savings)		
Is there a cost-ben?	0.8	
Levelized cost ($/kWh)		

	Kansas Governor's Office	MT Conservation Corps -- Warm Homes
How does it work?	Community agencies will hand out kits and install measures if consumers are unable to install themselves. State has hired a temp worker to coordinate the administration (Sept 05 to Jan 06).	LIHEAP will pay for supplies; MCC will pay for labor. An energy auditor will set up a time to visit with you about your home's needs for weatherization materials. When your home is scheduled for weatherization work, a crew or an independent contractor will come to install the necessary materials in your home. After the work is completed, you will be asked to sign a statement indicating that you believe the work was done properly and to your satisfaction.
Who does implementation?	Community agencies and temp worker.	Human Resource Development Councils (HRDCs) administer the program. I think they dispatch the MCC. MCC crews in 6 cities go to homes to do a partial weatherization.
Who does oversight?	Kansas Corporation Commission- State Energy Office	MT Dept of Public Health and Human Services
What is the annual budget?	$250,000	$250,000; will spend about half because ran out of time
What is the funding source?	Cobbled together from state and utilities.	state appropriation -- governor asked for $10M; ended up $1M over biennium
What is the goal for # of homes?	10,600 kits	Planned to do 500 homes in 6 weeks (Backlog of 17,000 homes identified for LIHEAP assistance, but only 2000 done per year)
How many have already been done?	0	600. These homes are taken off the weatherization waiting list.
What measures are included?	15, 20 and 23 watt CFLs, caulk gun, tube of clear caulk, shrink fit window kit (for up to 5 windows), 30' roll of rope caulk, self-adhesive door sweep, combo pack of switch/outlet insulators, 17' roll of closed cell foam weatherstrip, earth massage showerhead (1.75 gpm), prismiere showerhead (1.75 gpm), kitchen swivel aerator, bathroom aerators, teflon tape, water saving tips guide, energy saving tips guide	These measures may include a furnace tune-up, caulking, client education, insulation, weather-stripping, storm windows, replacement of broken glass, or repair of exterior doors.
How many houses can implementors visit per day?		varied based on installers, supervision, and travel time between jobs
What is the cost per household?	$21.95 per kit	$150 in materials plus labor
How do they decide on participants?		Priority given to older and disabled consumers
Is the program still going on?	Yes	No
Is it being scaled up or down? Why?	This is a one-time event in the fall of 2005, however they are seeking state funding to supplement LIHEAP in order to perform more weatherizations annually (from 1,100 per year to 1,800 per year) and looking at implementing a revolving loan program similar to Nebraska's.	This was a one-time program. They don't know if they will do it again.
What is the evaluation methodology?	They might follow-up with the community agencies to see what worked and what didn't.	
What are the estimated kWh savings of the program?		N/A
What are the annual bill savings from the program?		$20/month? This is a number thrown around.
Average kWh savings per participant		
Average therm savings per participant		
Average water savings per participant (gallons)		
Ave Savings/participant/yr (elec, gas & water savings)		
Is there a cost-ben?		
Levelized cost ($/kWh)		

	Seattle City Light
How does it work?	Mailed initial solicitation offering kits. Customers had to mail back request form to receive.
Who does implementation?	Contracted to a fulfillment house to mail solicitation, field responses, and mail conservation kits
Who does oversight?	
What is the annual budget?	$2,865,735
What is the funding source?	
What is the goal for # of homes?	Offered 314,064 kits; customers requested 178,481
How many have already been done?	
What measures are included?	CFLs, bathroom faucet aerators, diagnostic water flow-rate measurement bag
How many houses can implementors visit per day?	
What is the cost per household?	$13.10 for CFLs per kit (76%); SCL admin (labor and expenses) was $0.58 per kit (3%); $3.47 delivery (20%) for fulfillment house and mailing costs; total cost of $17.15 per kit
How do they decide on participants?	
Is the program still going on?	
Is it being scaled up or down? Why?	
What is the evaluation methodology?	
What are the estimated kWh savings of the program?	Technical potential was 34,233 MWh; Actual gross impact was 18,275 MWh; Free-rider adjusted for 91 kWh per kit for those customers who would have purchased a CFL anyway. Net impact 16,330 MWh, 1.961 aMW. Spillover from people buying more CFLs was 9,070 MWh. All from lighting. Additional 2,675 MWh from aerators and purchase of low-flow showerheads. Total kit savings of 28,075 MWh, 3.372 aMW.
What are the annual bill savings from the program?	$1.9M electric; $0.8M water
Average kWh savings per participant	142 kWh
Average therm savings per participant	
Average water savings per participant (gallons)	805 gallons
Ave Savings/participant/yr (elec, gas & water savings)	$8.13/yr for water/sewer; $15.13 total
Is there a cost-ben?	
Levelized cost ($/kWh)	$0.0177; down to $0.0169 when water included