



Retrofit California: Better Buildings Program Overview

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Executive Summary

Energy efficiency retrofits (also called upgrades) are widely recognized as a critical component to achieving energy savings in the building sector to help lower greenhouse gas (GHG) emissions. To date, however, upgrades have accounted for only a small percentage of aggregate energy savings in building stock, both in California and nationally. Although the measures and technologies to retrofit a building to become energy efficient are readily deployed, establishing this model as a standard practice remains elusive.

Retrofit California sought to develop and test new program models to increase participation in the energy upgrade market in California. The Program encompassed 24 pilot projects, conducted between 2010 and mid-2013 and funded through a \$30 million American Recovery and Reinvestment Act (ARRA) grant from the U.S. Department of Energy's (DOE) Better Buildings Neighborhood Program (BBNP). The broad scope of the Program can be seen in the involvement of the following regionally based Grant Partners:

- Los Angeles County (as prime grantee)
- Association of Bay Area Governments (ABAG), consisting of:
 - StopWaste.org for Alameda County
 - Regional Climate Protection Authority (RCPA) for Sonoma County
 - SF Environment for the City and County of San Francisco
 - City of San Jose
- California Center for Sustainable Energy (CCSE) for the San Diego region
- Sacramento Municipal Utilities District (SMUD)

Within these jurisdictions, nine different types of pilots were tested with the common goal of identifying, informing, and educating the people most likely to undertake energy upgrades (both homeowners and contractors), and to provide them with incentives and resources to facilitate the process.

Despite its limited duration, Retrofit California undoubtedly succeeded in increasing awareness and education among home and property owners, as well as contractors, realtors, and community leaders. However, program results, as shown in Table 2 and Figure 3, indicate that a longer timeframe will be needed to transform the market and establish energy retrofits as the new paradigm. Innovations such as Flex Path, which came about because of barriers encountered during the Program, have already shown promise and are enabling increased participation.

Better Buildings Program: Program Overview

Table 1. Summary of Retrofit California Results

Energy Audit	
Building Type	Total
Residential Single Family	1,481
Residential Multifamily Units	16,783
Residential Multifamily Buildings	296
Commercial Buildings	781
Total Audits	19,051

Energy Upgrades	
Building Type	Total
Residential Single Family	3,913
Residential Multifamily Units	580
Residential Multifamily Buildings	36
Commercial Buildings	273
Total Upgrades	4,766

Annual Energy Savings	
Energy Type	Total
Electricity (kWh)	5,289,897
Natural Gas (therms)	1,212,881
Energy Cost Savings	\$ 645,093.00

Area of Completed Retrofits	
Building Type	Square Footage
Commercial Building Floorspace	1,540,371

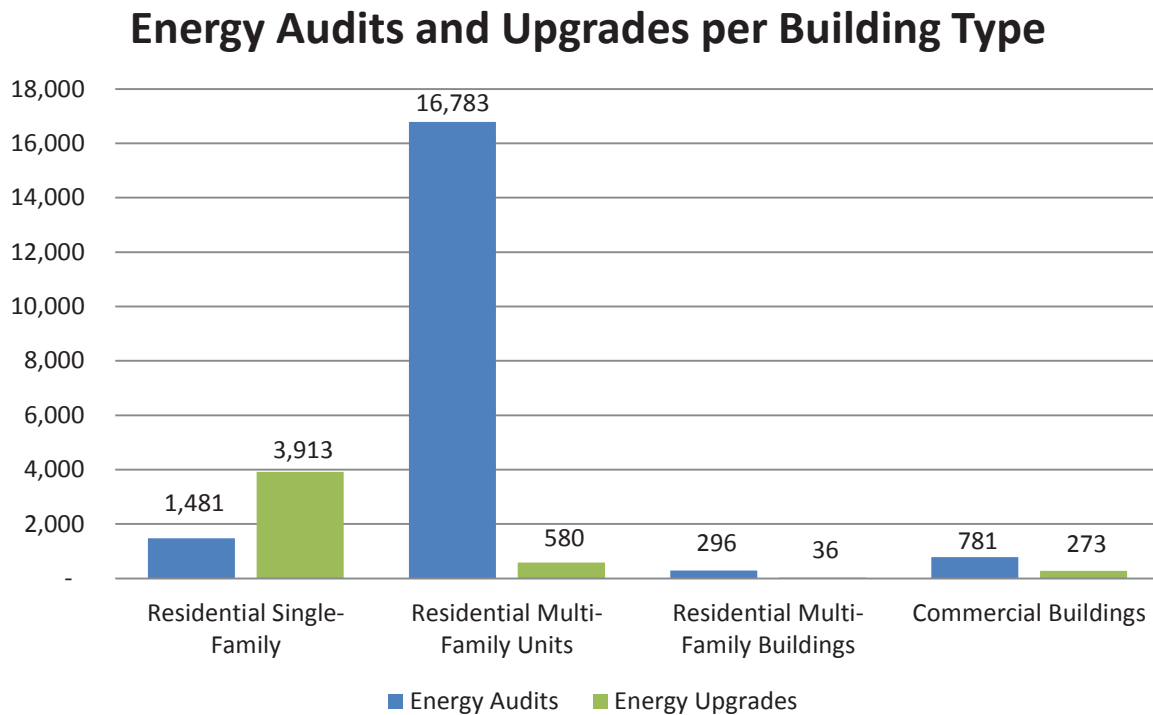


Figure 1. Energy Audits and Upgrades per Building Type

Together, the pilots represent an unprecedented effort to identify and address market barriers to energy efficiency upgrades and to provide lessons learned to shape future program planning and implementation. The statistics shown in Table 1 reflects the scope of the marketing and outreach campaigns, which tested a variety of approaches to increase understanding of the benefits of energy upgrades to drive participation in the Program. More traditional methods such as TV and radio advertisements were complimented by innovative community based social marketing campaigns that sought to leverage the trusted status of neighborhood organizations and leaders in order to motivate their constituents to undertake retrofits.

Table 2. Summary of Marketing and Outreach Efforts in Support of Retrofit California

Marketing & Outreach	
Market & Outreach Type	Total
Contests: Number of contests	11
Contests: Number of participants	2,964
Door to door: Number of homes visited	124,120
Door to door: Number of homes agreeing to take action	1,297
Hotline: Number of calls	4,188
One-stop-shop: Number of visitors	8,657
One-stop-shop: Number who requested services	1,215
Online Advertising: Number of clicks	54,997
School, church, library: Number attending session	7,917
Neighborhood Meeting: Number attended	14,768
Social Media: Number of clicks	14,997
Telethon/direct phone calls: Number of calls made	13,507
Telethon/direct phone calls: Number of calls answered	2,644
Webinar: Number of participants	943
Website: Number of unique visits	637,280
Website: Number of web applicants	2,293

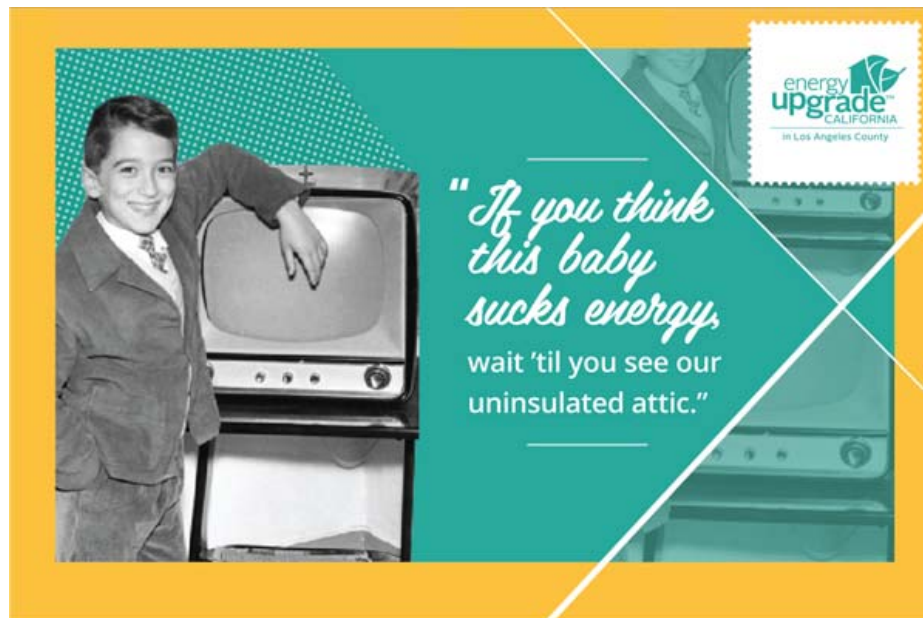


Figure 2. 'Retro' Energy Upgrade California™ advertisement for Facebook marketing campaign



Figure 3. Billboard sample to promote Energy Upgrade California™ rebates

The remainder of this report provides an overview of Retrofit California including brief summaries of the pilots' main components and highlights, followed by the major findings or takeaway lessons from the approaches that were tested. Eleven of the pilots will be continued, with modifications, under the ratepayer-funded Regional Energy Networks. Involvement in the RENS by many of the Retrofit California partners will ensure that early lessons learned are carried forward to guide future programs for energy upgrades in California.

Introduction

The overall goal of the Retrofit California program at the beginning of the grant period was to test new and innovative program models that would result in comprehensive energy efficiency retrofits. The Grant Partners and Project Officer at the DOE recognized that not all of the approaches piloted would necessarily succeed. Indeed, over the course of the grant period, several pilots with insufficient uptake were discontinued, while new pilots that proved to be successful were launched. A complete list of pilot types consists of:

1. Whole Neighborhood Approach (WNA)
2. HVAC Contractor Training (HVAC)
3. Community Based Social Marketing
4. Green Building Labeling (GBL)
5. Multifamily
6. On-Water-Bill (OWB) Financing
7. Home Improvement Retail Partnership (HIRP)
8. Energy Loan
9. Flex Path

Figure 4Error! Reference source not found. shows the full Retrofit California Program.



Figure 4. Retrofit California Grant Partners and Pilot Programs

Challenges

Launching Retrofit California amid an economic recession represented a major challenge because many homeowners were unable or reluctant to undertake upgrades during a time of financial uncertainty or constraint. However, it should be recognized that the full impact of the Program in creating demand for energy upgrades may yet be realized over a timeframe that extends well beyond the Program's duration. Homeowners who learned about energy upgrades because of a particular pilot may act on their knowledge months or even years later, when confidence in their financial situation is stronger.

A second challenge encountered soon after the Program's launch was the general loss of residential Property Assessed Clean Energy (PACE) financing.¹ The original Retrofit California proposal to DOE had relied on PACE financing to cover up-front costs for energy upgrades. As results from the Energy Loan pilot and the On-Water-Bill pilot indicate, the availability of affordable financing mechanisms that enable homeowners to spread costs over time constitutes a prime motivator that can increase the number of participants in programs.

A third challenge pertained to the coordination and timing of some of the pilots in regard to Energy Upgrade California (EUC) offerings, including many utility-administered energy efficiency programs. In several instances, the pilots—which needed to be fast-tracked because of the duration of the grant period—were ready to launch prior to the programs and services they had meant to support, which were being designed for a longer term. These delays in project implementation limited some of the pilots' capability to reach performance targets they had set during the planning stage.

Cross Cutting Lessons and Recommendations

Undertaking a novel, broad-based energy efficiency upgrade program naturally provided valuable lessons for the Grant Partners, who gained experience in program design, implementation, modification, and evaluation, which can serve to underpin the launch of the newly created Regional Area Networks (RENs). Although a further learning curve lies ahead, the program design and offerings of the RENs stand to benefit substantially from the testing of the various pilot approaches because those that proved effective can be replicated.

A third-party assessment of the Retrofit California pilots² yielded the following summarized observations and recommendations:

- Programs should apply formal theory and logic models during the planning stage. Map out program theories to identify potential weaknesses in proposed program logic and adjust designs to minimize risks. Although this step was originally part of the Pilots evaluation plan, it was omitted due to time constraints.
- When developing new programs, take existing infrastructure in account, such as the presence of a trained workforce, building codes and policies, as well as infrastructure that need to be developed. Reflect these conditions in the program's timeline. For the Retrofit California Program, SMUD was able to launch its pilots quickly because it could leverage programs and procedures it had already developed.
- The energy upgrade market is still nascent and education efforts need to continue:
 - To potential customers about the value of whole-house energy upgrades, stressing both energy and non-energy benefits (e.g., health and comfort)
 - To qualified contractors to train them to market whole-house retrofits to interested homeowners
- Moving forward, better coordination between programs and program partners is needed to ensure coverage and reduce redundancy. The CPUC, IOUs, and RENs efforts should work in concert to have the greatest impact on the whole-house retrofit market. A formal mechanism for coordination among the various entities should be established, along with adequate funding for this purpose. A joint approach to evaluation should be adopted.

¹ <http://www.fhfa.gov/webfiles/15884/PACESTMT7610.pdf>

² *Retrofit California Process Evaluation Final Report*, Los Angeles County Office of Sustainability/Bevilacqua-Knight, Inc., (prepared by Cadmus/Energy Services Division), November 12, 2103.

Pilots – Design, Strategy, and Lessons Learned

Whole Neighborhood Approach

The Whole Neighborhood Approach (WNA) field-tested the theory that contractors would be able to reduce costs if they became more efficient at installing the same measures in similar homes (standardized retrofit packages). As part of this process, contractors could save costs through volume purchases, which could be passed on to customers.

WNA pilots were undertaken by LA County, City of San Jose, SF Environment for the San Francisco City and County, SMUD, RCPA in Sonoma County, and CCSE for the San Diego Region. Based on market research, the pilots targeted specific geographic areas and neighborhoods that promised to offer concentrations of similar energy upgrade projects, and where early adopters might be inclined to influence their neighbors to undertake upgrades. However, all WNA pilots eventually expanded their boundaries to increase the pool of eligible property owners or did away with the geographic restrictions entirely.

- **LA County and RCPA WNA.** LA and Sonoma counties sought to streamline and reduce the cost of the upgrade process by developing standard packages of measures and associated energy models, and negotiating volume discounts with equipment suppliers. The pilots targeted neighborhoods with similarly constructed tract housing and sought to leverage the influence of neighbors to spread awareness of energy upgrades. The pilots ran in several neighborhoods in LA County and Sonoma County but were discontinued ahead of schedule due to insufficient uptake.
- **SMUD WNA.** SMUD implemented four subprograms consisting of single family, low-income, multifamily, and small commercial markets in the Downtown/East Sacramento area and the Rosemont neighborhood. Factors considered in the selection of these areas included average building age, the presence of tract housing, prior program participation, local economic conditions, and levels of community activity. SMUD's WNA pilot exceeded its goals.
- **CCSE WNA.** After a year and a half of low response to upgrade offerings in targeted neighborhoods, CCSE refocused efforts to support the program aspect that showed the most promise: demonstration homes for whole-house energy upgrades. Pilot experience indicated that homeowners and contractors responded well to open houses. More demonstration homes were added and more contractors were recruited to participate and receive the leads generated from these events.
- **San Jose WNA.** The City of San Jose targeted a low-to-middle-income neighborhood. The final pilot design consisted of providing marketing support for and referrals to low- and moderate-income energy-efficiency programs, which were administered by other organizations and were offered to participants free or at low cost. The combined programs offered a range of measures such as weatherization, attic insulation, compact fluorescent lights, low-flow showerheads, and replacement of failed appliances with energy efficient appliances. The pilot also provided funding for tankless water heaters, installed through one of the pilot's partner programs. San Jose WNA staff found that door to door canvassing by trusted organizations (i.e., organizations already serving the community) was the best approach to neighborhood outreach. As of May 2013, a total of 244 projects had been completed with another 125 pending. However, energy savings of 15% or more (the requirement for DOE reporting) were achieved in only 27 projects.

Pilot staff estimated that approximately 10% of the eligible homes in the selected community had participated.

- **SF WNA.** This pilot found early on that the diversity of housing stock was not conducive to standardized retrofit packages.

WNA Pilot Findings

In general, neighborhood targeting and the use of standardized retrofit packages and volume discounts did not prove to be effective strategies for the following reasons:

- Standardized packages still required customizing for each home in the targeted neighborhoods
- Even when homes were similar, homeowners often wanted a unique set of upgrades to match their particular retrofit goals
- Some homeowners preferred to select their own contractor from outside the program
- Some of the targeted neighborhoods proved to have high instances of rental housing and/or homeowners who were behind on their mortgages
- Contractors did not want to deviate from their existing materials supply chains

For the LA County WNA pilot, seven key components relevant to the design of future retrofit programs were identified:

- 1) Target broad communities rather than neighborhoods
- 2) Identify early adopters in a community
- 3) Use contractors who are already embedded and respected in the community
- 4) Employ professional sales staff, who are involved from the beginning
- 5) Utilize consistent, constant marketing and outreach throughout the program
- 6) Simplify necessary paperwork and procedures for both the contractor and the homeowner

Instead of finding localized economies of scale at the neighborhood level, the LA County WNA identified potential efficiencies in the home energy assessment (HEA) process. Initial treatment recommendations were usually the same for houses of similar design even when houses differed in age or location. This provides an opportunity to minimize costs and streamline processes for HEAs.

SMUD's success with its WNA pilot has been attributed to several factors. SMUD offered free energy assessments (whereas the other pilots did not), and used its own staff to conduct face-to-face marketing at community events and to generate leads. Homeowners considered SMUD to be a credible source of information about energy upgrades and liked having a financially neutral party to advise them (instead of a contractor). SMUD customers also proved to be more receptive to working with a pre-selected contractor, compared to the customer base for the pilots in LA and Sonoma counties. Figure 5 shows the energy savings and rebate packages offered as part of SMUD's Single Family WNA pilot.



Figure 5. Packages for SMUS's Single Family Neighborhood Program

A third-party assessment of the WNA pilots noted the success of door-to-door outreach by trusted organizations, the effective use of demonstration homes, and the value of working with high-quality contractors to educate homeowners about energy upgrade benefits. Expansion of neighborhood selection criteria to consider owner occupancy rates, financial health such as the number of foreclosures and mortgages in arrears, and a community's cohesiveness were recommended.³

The HVAC Contractor Training Pilot

The HVAC Contractor Training pilots in LA and San Diego counties assumed different tracks. Using a monetary incentive and mentoring, LA County encouraged HVAC contractors to meet the utility's Quality Installation (QI) standards on the HVAC installations they completed through EUC. By encouraging QI, which ensures properly sized and installed units, the pilot sought to increase the energy savings from HVAC measures. Pilot staff also hoped contractors would build upon EUC experiences and incorporate QI into their standard business practices.

Ultimately, the QI HVAC Pilot provided incentives for 98 projects submitted by eight different contractors with completed QI calculations. Only one application failed for not passing the technical review. All contractors submitting incentive applications to the pilot had previous QI certification. The pilot further provided subsidies for 27 contractors to attend QI software training and provided 31 contractors with QI software licenses.

In San Diego County, CCSE designed a pilot called Training and Outreach Program for HVAC contractors (TOP HVAC), which initially offered training to help HVAC contractors transition to a whole-house upgrade business model. After an initial round of trainings, CCSE conducted an assessment using contractor feedback. CCSE then modified the program design, training completion requirements, and training schedules in the following ways:

³ Retrofit California Process Evaluation Final Report.

- The requirement for HVAC contractors to commit to an entire series of workshops and networking events was discontinued because contractors said this level of commitment was a barrier to participation. The revamped training let contractors select from discrete workshops that addressed their technical and administrative gaps and encouraged contractors to attend other CCSE educational offerings.
- Training offerings were expanded to include specific aspects of completing home performance upgrades and developing a home performance business.
- Trainings were opened to a broader range of contractors, who were also invited to participate in networking events to help contractors form complementary partnerships among EUC and TOP HVAC contractors and raters.

HVAC Pilot Findings

Although HVAC contractors see value in QI certification and conducting load calculations, findings suggest LA County pilot created little new QI activity. The eight contractors who applied for QI incentives were already QI-qualified and most of the participating contractors who were interviewed for the evaluation said they already conducted load calculations. Assessment by a third party⁴ recommended that any future QI incentives be made available only for newly trained QI-qualified HVAC contractors and that those incentives should be reduced after their first few jobs. Tracking of newly QI-certified HVAC contractors could be used to see if the QI training changed their standard practices for sizing and selecting HVAC equipment.

The CCSE HVAC pilot identified a need for specialized training and networking among a wider set of contractors. After the trainings were opened up, more types of contractors were able to participate (see Table 3). The pilot also demonstrated the importance of working with contractors' schedules by offering trainings in the evenings when more contractors were free, as well as allowing contractors to attend shorter sessions offered throughout the year, rather than requiring them to commit to a fixed schedule of sessions offered over a shorter timeframe.

Table 3. Types of Contractors Attending TOP HVAC Training (n=138, Multiple Responses Allowed)

Contractor Type	Number of Attendees	Percent of Attendees
General(B)	53	38%
Rater	36	26%
HVAC(C-20)	16	12%
Administrator	6	4%
Insulation (C-2)	4	3%
Unknown	25	18%

Community Based Social Marketing

Community Based Social Marketing (CBSM) pilots were conducted in LA County, San Diego County, Alameda County, and San Francisco City and County.

LA's CBSM pilot was designed to spread awareness of the EUC Program in order to motivate homeowners to contact a contractor about energy upgrades as well as to recruit contractors to the EUC

⁴ Ibid.

program. Supported by outreach campaigns to homeowners and contractors, the pilot tested two additional marketing/outreach strategies:

- *Energy Champions Program* – encouraged community organizations (e.g., schools, churches) to promote energy upgrades to their constituents. Participating organizations received referral incentives for each constituent who completed an upgrade based on the value of the upgrade.
- *Home Energy Makeover Contest (HEMC)* – whole-house upgrades were offered as prizes in a contest to build awareness of the EUC program and generate leads for contractors. The county selected six contest winners from 2,305 entrants. Five of the winners received free energy upgrades, while the sixth, the grand prize winner, received a solar installation in addition to energy-efficiency upgrades. Of the 2,305 entries, 1,425 entrants opted in to allow contractors to contact them.

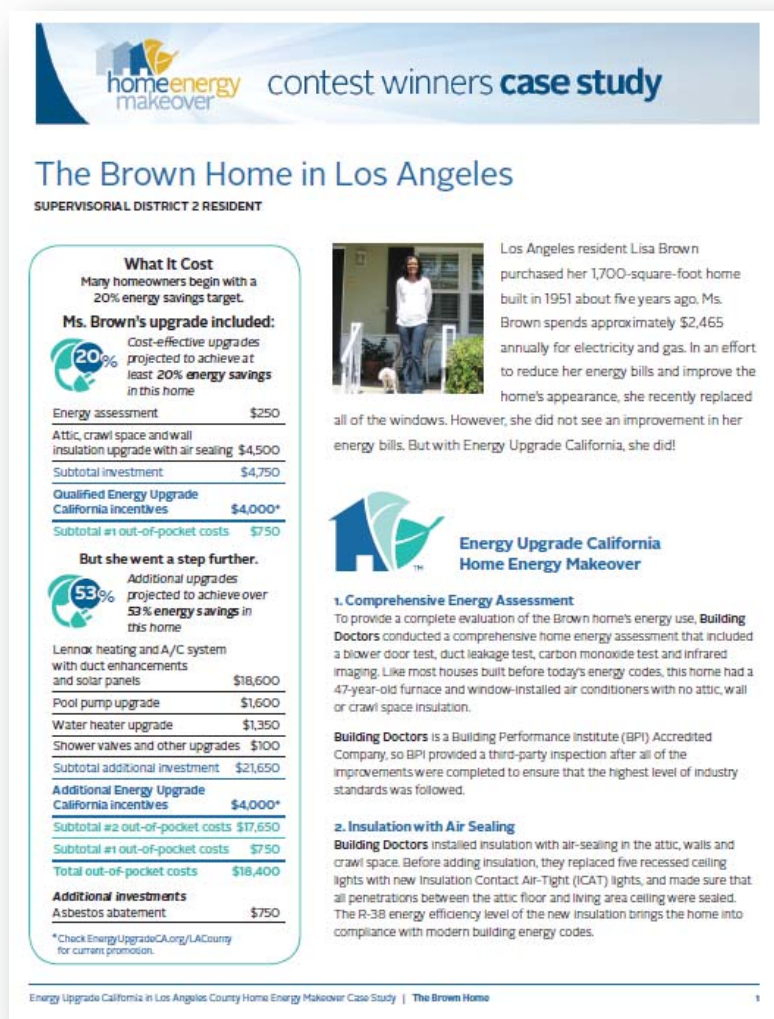


Figure 6. Case study for The Brown Home, Home Energy Makeover winner

In Alameda County, StopWaste created an “Energize for the Prize” pilot to leverage school organizations like parent teacher associations (PTAs) as “trusted messengers” to promote energy upgrades to

homeowners in their communities. The pilot team recruited and provided support and incentives to school organizations when they helped secure contracts for EUC upgrade projects. Over the two years of the pilot's implementation, 27 school organizations signed up to participate. Nearly 1,000 people attended 25 homeowner workshops. Pilot staff estimated that more than 15% of these attendees signed up for home energy assessments.



Figure 7. Website snapshot of the first place winner for “Energize for the Prize” pilot

In San Diego, CCSE, through its Hero Alliance pilot, promoted home energy upgrades to San Diego's large military community, including veterans. CCSE sought to test the hypothesis that members of this community would increase their interest in energy efficiency upgrades in response to two strategies:

- Leveraging social norms – CCSE endeavored to leverage positive social norms around energy upgrades by publishing consumer testimonials and contractor reviews from members of the military community who had made energy upgrades. CCSE also emphasized the military's leadership in energy efficiency.
- Fostering commitments progressively – Some CBSM literature has shown that individuals are more likely to commit to a large behavior change if they had already made a commitment to a smaller change.⁵ CCSE's strategy initially used a four-stage process that encouraged participants to move from making a commitment to taking a survey, getting a home energy assessment, and finally upgrading their home. Vouchers for home energy assessments were part of the pilot.

SF Environment's CBSM pilot provided bonus incentives for completed retrofits through PG&E's EUC Program and for referrals leading to completed EUC retrofits. It also used social media, bus shelter and newsprint advertising, and door-to-door outreach strategies to market EUC.

CBSM Pilot Findings

Overall, the CBSM pilots fell short of their goals in achieving EUC retrofits, primarily because the selected community groups and target audiences were devoted to other purposes that did not readily align with energy efficiency retrofits. School organizations, for example were focused on raising money for classrooms, and military organizations had established interests, such as jobs for veterans. Thus the

⁵ McKenzie Mohr, Doug. 2011. *Fostering Sustainable Behavior: An Introduction to Community Based Social Marketing*, Third Edition. Gabriola, B.C., New Society Publishers.

CBSM pilots were competing with the organizations' core missions and priorities. Moreover, many of the organizations' representatives were not ideal candidates for explaining or marketing energy upgrades.

The Energy Champions Pilot, which signed up 103 community organizations, achieved a total of 160 retrofit projects. Experience revealed that the most effective organizations had existing outreach and fundraising capacity. Active outreach methods—those that allowed in-person communication with a knowledgeable contact, particularly a contractor—were associated with more Homeowner Action Forms (HAF) submittals. The most successful Energy Champion organization, Sustainable Claremont, had been engaged in promoting EUC projects prior to the start of the pilot. Working with several other community organizations and contractors in the Claremont area, Sustainable Claremont was responsible for 60% of all HAFs submitted during the Energy Champion Pilot period.

Of the organizations that participated in Energy Champions, several reported that the primary concern raised by homeowners was the cost of EUC upgrades. Energy Champions used several strategies to address these concerns including framing energy upgrades as an investment, promoting incentives and financing options, and explaining non-energy benefits (such as improved comfort).

LA County's HEMC proved successful as an outreach tool to build awareness for the EUC program. The contest generated two local news features and resulted in more than 10,000 website hits as EUC launched its brand in LA County. According to program staff, participants who visited the EUC website to enter the contest also visited pages providing additional information about EUC. This success did not, however, translate directly into retrofits. Of the 1,425 leads provided to contractors from the contest, the program's tracking efforts identified two who completed upgrades. Pilot staff suspects that many contractors may not have aggressively pursued their leads or may not have tracked their efforts. Some contractors reported that their leads were not interested in pursuing upgrades outside the contest, primarily because they could not afford them.

A survey of HEMC entrants revealed that 22 of 57 respondents who were not aware of having been contacted by a contractor nonetheless reported making energy efficiency upgrades, including four who participated in EUC. In total, 29 respondents (39%) reported that they had made energy efficiency upgrades to their home since signing up for the HEMC, including eight who received rebates through EUC. Although survey results should not be used to extrapolate an estimate of the number of upgrades all contest entrants completed, this finding indicates that the contest had a greater influence than it was officially credited with.

The experience provided by StopWaste's Energize for the Prize Pilot revealed that homeowner events were more effective in promoting energy upgrades than school-based outreach. The events were well attended and a relatively large proportion of attendees pursued home energy assessments. Further research would be necessary to determine the role event attendance played in homeowners' decision-making.

In San Diego, CCSE tracked its progress with the military community and discovered what they believed to be a more effective role for the pilot—providing concierge advisory services to homeowners who were encountering snags with EUC. CCSE subsequently repurposed the pilot funds to meet this need. Ultimately, the most successful elements of the Hero Alliance Pilot were the reviews of contractors on the pilot website and the personalized energy advisor services. Both of these helped assure homeowners that they were making the right decisions as they moved through the upgrade process. CCES also learned that the military community responded more to messages about the benefits of home upgrades (comfort, health, safety) than to messages based on patriotism.

Green Building Labeling

Green labeling for buildings is a recognizable, independent seal of approval verifying that a home has been built or remodeled according to proven green standards. Green Building Labeling (GBL) pilots in LA County, Alameda County, and San Francisco were designed to promote green building labeling through marketing, outreach, research, and incentives.

The program focused on five key drivers:

1. Additional market value for the building/unit at time of sale or rental
2. Quality assurance provided by the label
3. Competitive advantage for certified contractors and raters
4. Credible verification for financial institutions, municipalities, and property owners
5. Enhanced public image for multifamily property owners

To increase awareness of green labeling, the LA and Alameda County pilots conducted outreach to homeowners and real estate professionals about green labeling, offered technical assistance and incentives to help properties earn a green label, and conducted advocacy for including green labeling on real estate multiple listing services (MLS). The LA and Alameda County pilots provided rebates for projects that achieved GreenPoint Rated certification, the leading residential green building rating system in California. Projects that received Leadership in Energy & Environmental Design (LEED) certification were also eligible to receive rebates in Los Angeles.

While similar, these two pilots differed in emphasis. LA County's effort focused less on education of the real estate industry and more on encouraging green building labeling projects during the grant period. LA County offered \$1,000 to \$2,000 rebates to property owners who achieved a green building label certification.

In contrast, StopWaste's main objective was "priming the market" for green building labeling projects to occur in the future. Thus, StopWaste concentrated more resources on training the real estate industry about the value of a green building label and how to explain that value to consumers. In 2011 and 2012, they conducted educational workshops with real estate agents and real estate associations, mortgage lenders, remodeling contractors, home inspectors, and appraisers.

StopWaste also partnered with SF Environment to sponsor an academic study⁶ evaluating the effect of green building labels on single family property values in California. Economists from the University of California (at Berkeley and Los Angeles) analyzed data on 1.6 million single family homes sold in the state from 2007-2012.

StopWaste and SF Environment further collaborated to use DOE's new Home Energy Score (HES) tool on 309 homes that received upgrades through EUC to determine if the tool could be effectively used in California. They developed an interface between EnergyPro (used for EUC projects) and the HES, so future projects can automatically generate an HES from EnergyPro models.

⁶ Nils Kok (Maastricht University, Netherlands/University of California, Berkeley) and Matthew Kahn (University of California, Los Angeles). *The Value of Green Labels in the California Housing Market: An Economic Analysis of the Impact of Green Labeling on the Sales Price of a Home.* July 2012.

Table 4 shows the number of completed GBL projects and participant types in LA and Alameda Counties, based on the pilots' data tracking systems. The information reflects the difference in pilot emphasis, with LA County focusing strongly on completing green building labeling projects while StopWaste worked to build acceptance within the real estate industry to prime the green label market for the future.

Table 4. GBL Projects Completed May 2012 through April 2013

Region	Single Family Projects Achieved	Multifamily Projects Achieved	Retrofit Target
LA County	567 homes	Two buildings with a total of 174 units*	505
Alameda County	6 homes	Six buildings with a total of 572 units	840
* These projects obtained LEED certification			

GBL Pilot Findings

The pilots met with challenges in engaging the real estate profession to establish green ratings for the MLS system. Additionally, a lack of building appraiser methodology and training to qualify the value of green labeled properties was identified. Nonetheless, the study sponsored by StopWaste and SF Environmental found that green labeled homes in California had an increase in appraised value between 5.5% and 9%.

Although LA County exceeded its retrofit target for the GBL pilot, it should be noted that approximately 90% of the single family GBL projects were delivered through one EUC contractor, who bundled multiple incentives from various sources and generated retrofit leads through door-to-door outreach. This was a successful approach to completing retrofit projects, with most homeowners reporting positive experiences. However, because the contractor handled all the paperwork and did not emphasize the green building labeling component of the projects, several homeowners were not aware of specific GBL rebates. Homeowners also said that the prospect of obtaining a green building label had not affected their decision to complete a retrofit.

Alternatively, owners of affordable multifamily buildings were shown to be a good match for green building labels. The label signals their commitment to having a green building and to tenants' health.

Multifamily Pilots

The Multifamily pilot for San Francisco used two existing energy rebate programs as a basis for tracking pre- and post-retrofit energy usage and testing methodologies for calculating the percentage of building energy savings for each project.

The Multifamily pilots in LA County and Alameda County offered technical assistance to multifamily property owners and/or their consultants for completing energy-efficiency upgrades of their properties. These services included energy-efficiency and green building upgrade recommendations, benchmarking a participant's buildings against similar buildings in the region, providing referrals to green building raters, and providing an online technical assistance toolkit

LA County offered financial incentives for both energy assessments and retrofits. The latter were based on the level of improvement in building performance as shown in Table 5. The improvement incentive was capped at \$100,000 or 60% of the construction costs. Participants could receive additional rebates for green building labeling through the GBL Pilot.

Table 5. LA County Energy-Efficiency Improvement Incentives

Improvement in Building Performance	Incentive per Unit
10% improvement	\$200
15% improvement	\$400
20% improvement	\$700
25% improvement	\$950
>30%improvement	\$1,200

For Alameda County, StopWaste had anticipated that PG&E would commence an EUC rebate program for the multifamily sector in 2012. When this program was delayed, the scope of the multifamily pilot was limited because no grant funds had been allocated toward rebates. To overcome this issue, StopWaste formulated a marketing approach for owners and managers of properties with ready access to capital. These properties included affordable housing structures where other financing and incentive sources were available and buildings where large remodeling projects were already planned. The pilot also directed participants to the GBL Pilot through which they could receive an incentive to offset the cost of obtaining certification for a green building label.

Market barriers addressed by the Multifamily pilots included:

1. Lack of economic incentive for energy upgrades due to split incentives, the divergent economic motivations of multifamily rental building owners and occupants, as well as the difference in energy use in multifamily buildings compared to single family homes
2. Lack of well-documented business case information and standardized analytical methodologies, which leaves property owners ill-equipped to evaluate the technical and economic potential for retrofitting their properties
3. Lack of access to affordable capital limits retrofitting opportunities, particularly in the affordable housing sector
4. Lack of professionals trained in multifamily specific protocols to provide technical services
5. Market confusion around which programs will apply to the various multifamily building sub-sectors

The LA County pilot originally targeted 560 units to achieve a minimum 10% energy savings. This target was increased as demand quickly led to a fully subscribed program, resulting in the upgrade of 720 units in 10 buildings with modeled energy savings ranging from 12% to 36%. The Alameda County pilot achieved 820 retrofitted units in 14 multifamily buildings (some also qualified as projects completed for the GBL pilot).

Multifamily Pilot Findings

Assessment of the Multifamily pilots in LA and Alameda counties found that participants become involved in order to learn about energy-saving technologies applicable to specific buildings, to save money, and to help fund energy-efficiency improvements in ongoing renovations or retrofits. In Alameda County, a desire to build green was another motive that participants frequently mentioned. Nearly all of the interviewed participants found the technical assistance provided by the pilots helpful, particularly the face-to-face meetings at the start of the project. Receiving early assistance allowed upgrades to be accommodated within renovation plans.

In both regions, pilot incentives played an important role. When participants were asked what barriers they faced in making energy-saving improvements to their properties, the most common response was financial constraints or difficulty in funding improvements. Other barriers included:

- Inability to meet payback period and/or cost ratio requirements
- Uncertainty as to the actual savings that would be achieved
- Recent installations of efficient equipment or limited improvement options
- Split-incentive or not being able to make upgrades to individual units
- Lack of knowledge about which improvements would be cost-effective

On-Water-Bill Financing

In Sonoma County, RCPA designed a financially self-sustaining pilot program offering financing for energy and water saving measures with no up-front participant costs. Participants agree to repay the costs of the measures over time via a surcharge (meter-based tariff) on their water bills. The program design, based on the Pay-As-You-Save (PAYS) financing model, required that the surcharge to be no more than 75% of the estimated bill savings, with no debt obligation for the customer, no credit checks, no liens, and the following assurances:

- Participants will only pay the surcharge while they are customers at the location where the measures were installed.
- The agreement protects participants from typical risks associated with independent contracting for measures.
- Failed measures will be repaired or the payment obligation ends.

The pilot team recruited one regional water district, The Town of Windsor, to offer a PAYS program. Windsor Efficiency PAYS launched in October 2012, offering customers a choice of packages based on customer eligibility and interest. Customers had to install a Basic package (see Table 6) to qualify for co-pay and landscaping measures.

Table 6. The Town of Windsor PAYS Packages

Package	Measures Included
Basic	Low-flow toilet Low-flow showerhead Faucet aerator
Co-pay	Compact fluorescent lamps (CFLs) Refrigerator Clothes washing machine Premium clothes washing machine <i>Chilipepper</i> hot water recirculating pump
Basic landscaping	Replace well-maintained turf grass with native plants needing less irrigation
Enhanced landscaping	Additional or larger plants

The pilot team went through several major steps to set-up and launch the pilot, including recruiting an interested water utility with sufficient staff resources, and working with the water utility to convince the municipality to approve a rate change, modify billing units, secure a source of funds, and manage contractor turnover. A water utility staff member noted that the PAYS pilot required a significant commitment of staff resources and hoped the time commitment would decrease over time. A second regional water utility had initially expressed interest in the pilot but then declined to participate because of staff resource constraints (and because the utility did not think PAYS offered sufficient benefits over its existing conservation programs).

On-Water-Bill Financing Findings

As of April 2013, 45 single family customers (owners and renters) had completed at least the Basic component of the program. Two multifamily properties also participated, installing Basic measures in every unit. The 17 single family customers who surveyed as part of the pilot assessment gave overall high satisfaction ratings for the program.

Customers most commonly cited saving money and water as important factors in their decisions to participate, though nine of the 17 said they would be willing to participate even without immediate bill savings.

Home Improvement Retail Partnership

Home Improvement Retail Partnerships (HIRPs) were tested by three Grant Partners. Each of the pilots was designed to leverage retailers' existing marketing channels to generate interest in EUC and promote energy upgrades to store customers. The concept was designed to capitalize on the fact that many customers like to browse as well as shop and are often amenable to cross selling, and that retail stores provide a logical venue for displaying information about a variety of goods and services.

In San Diego County, CCSE partnered with Best Buy to deliver energy assessment services through its Geek Squad™, who provided a basic survey of a home's energy performance while providing other in-home services to customers. They also directed homeowners to EUC when appropriate. The cost of the energy assessment was offset by a rebate. Promotion of the home assessment service was primarily through in-store displays, distribution of brochures during Geek Squad home visits, and events held at Best Buy locations. CCSE used their Energy Roadshow Trailer, an interactive exhibit, at community events to provide information about EUC and the Geek Squad assessment service.

In Alameda County, StopWaste partnered with Lowe's, which was offering its own comprehensive home energy assessment for \$99, using energy performance modeling software. Lowe's was already partnering with ReCurve, who would complete the recommended retrofits. StopWaste added to this effort by staffing an EUC booth at local farmers markets and handing out CFLs and low-flow showerheads, donated by Lowe's. StopWaste further purchased paid media (television, print, online, movie theaters, mass transit) to expand the reach of Lowe's marketing for its energy assessment services.

In San Francisco, SF Environment partnered with a local hardware store. The SF Environment pilot placed promotional articles in the store's newsletter; messages on receipts to drive customers to the pilot's website; and tear-away tags, or "shelf-talkers," near efficiency products such as caulk or furnace filters.

HIRP Pilot Findings

Although the pilots' impact was difficult to measure because of two of the retailers did not make tracking data available, uptake was judged to be minimal. The following issues were identified as limiting the benefits of these pilots:

- Pilot staff had to coordinate with both local and corporate offices, which increased the complexity and duration of the planning phase and shortened the deployment phase.
- Retail store employees were generally not strongly motivated—and in some cases not qualified—to promote the pilots, whereas they were better at promoting the retailer's other products and services. For example, conducting energy assessments did not initially count toward the Best Buy Geek Squad's performance goals.
- The energy assessments promoted through Lowe's and Best Buy did not qualify for the EUC program; homeowners interested in pursuing EUC would have to obtain a second energy assessment from an EUC-qualified contractor.
- Customers while shopping at Best Buy and Lowe's may not have been in the right frame of mind to learn about energy upgrades. Best Buy's customers were focused on purchasing home theater equipment, and Lowe's do-it-yourself type customers tended to be engaged in their own projects.

Lowe's staff reported no noticeable change in uptake after the start of the HIRP pilot, and the number of assessments completed during the HIRP pilot was low. The CCSE HIRP pilot delivered two home energy assessments, and visits to the SF Environment pilot website were few. In light of these results, the San Diego and Alameda pilots were discontinued before their scheduled termination.

Energy Loan Pilot

LA County partnered with Matadors Community Credit Union to provide low-interest financing to homeowners completing approved energy upgrade projects, for the Advanced Path, Basic Path or the Flex Path. Due to EUC program requirements, only homeowners of single family detached properties in LA County were eligible to participate. To encourage Matadors to offer more favorable loan terms, LA County created a loan loss reserve fund, which allowed the County to set aside 10% of the amount of each loan to reimburse the lender for 90% of the losses associated with any loans that defaulted. For a limited time, LA County also used Energy Efficiency and Conservation Block Grant funds to buy down the interest rate to 2%.

LA County staff reported that assuming the risk associated with energy loans motivated Matadors to reduce the interest rate for an unsecured five-year loan from a variable rate starting at 8.66% to a fixed rate of 6.99%. Staff members at Matadors reported they would not have offered the energy loan at all without the loan loss reserve fund.

Energy Loan Pilot Findings

As of April 2013, Matadors received 608 loan applications, of which 290 were approved. As of March 2013, in the financing program's second year, only two of the 263 funded loans had defaulted. Matadors' staff stated that it was too early to draw conclusions about the long-term profitability of the loan product because similar programs had found that most losses occurred in the third and fourth years.

Based on data from 455 applicants, 80% sought loans for Advanced Path projects, while 20% wanted loans for Flex Path projects. Of the 305 loan applications where the interest rate was given, almost all had applied for five-year loans at the special 2% interest rate.

A telephone survey of Loan Pilot participants revealed that 13 of the 30 respondents (43%) would not have completed their upgrades if they had not received the loan. This strongly indicates that loans, or other well-conceived finance mechanisms, play an essential part in widening participation in energy upgrade programs.



Figure 8. Energy Upgrade California™ web buttons used for energy loans

Flex Path Pilot

Each of California's investor-owned utilities (IOUs) proposed a locally administered Whole House Performance Program as part of their 2010-2012 program portfolios. Under direction from the California Public Utilities Commission Energy Division, the utilities added a Whole House Prescriptive Program, expected to offer a simpler path for homeowners interested in pursuing basic home energy upgrades. Ultimately, the two programs were combined and marketed to California homeowners under the statewide EUC brand, established by the California Energy Commission under legislative direction.⁷ The Whole House Performance Program became known as the "Advanced" Path and the Whole House Prescriptive Program became known as the "Basic" Path. Basic Path upgrades were intended to provide an alternative for a broader pool of homeowners interested in making energy upgrades but not prepared to commit the time and resources necessary to complete an Advanced Path project.

⁷ Assembly Bill 758 – Skinner, 2009.



Figure 9. Brochure promoting the ‘Whole House’ approach

The IOUs’ participation processes, training, certification, and quality control (QC) processes for EUC were in development when the ARRA funding was awarded to LA County. The slow launch of EUC in Southern California and the low statewide uptake of Basic Path, led to the development of a third option for LA County homeowners. LA County and its prime BBNP grant support contractor, BKi, designed a “Flex” Path to provide more options for homeowners who were interested in energy efficiency but whose projects were unsuited for the Basic or Advanced Path options. Flex Path gave homeowners and contractors more flexibility to determine which measures they would install than were provided in the Basic Path approach while simplifying the upgrade process relative to Advanced Path by eliminating energy modeling and pre-installation inspection requirements.

LA County identified 19 energy upgrade measures that would qualify for Flex Path incentives. To eliminate the need to conduct energy modeling for each upgrade project, pilot administrators used an energy model for a typical single family home to assign a value between five and 95 points to each eligible measure. The pilot offered a \$1,500 incentive to participants who installed at least two measures that together totaled at least 100 points. The pilot did not offer additional benefits to

participants who exceeded the 100-point threshold on a single application; however, an individual participant could submit multiple applications and receive multiple incentives as long as the measures listed on each application were unique.

This point-based incentive system enabled LA County to eliminate the energy modeling and pre-installation inspections required by the utility-run EUC programs. The pilot required contractors to submit photos, a Project Completion Form, and supporting documentation to verify that pre- and post-retrofit conditions met the pilot's requirements. In addition, Flex Path projects were randomly selected for an on-site inspection, using the Home Performance with ENERGY STAR® program guidelines. Three of a contractor's first five jobs, 20% of the next 20 jobs, and 5% of the contractor's jobs thereafter received inspections.

The Flex Path Pilot launched in January 2012, and experienced strong uptake. LA County increased the pilot's goal from 500 to 1,500 applications in May 2012 and again in October 2012 to 1,650 applications. Ultimately, the pilot received 1,656 applications from 1,287 individual participants. The pilot ended in November 2012, when it became fully subscribed.

Table 7 show the breakdown of measures installed through the Flex Path Pilot.

Table 7. Measures Installed through Flex Path

Category	Measure	Flex Path Point Value	Number of Projects with Measure	Percent of Total Projects with Measure
Total HVAC		-	617	72%
HVAC	New Programmable	5	435	51%
	Duct Insulation and Sealing	95	406	47%
	New Central AC	90	287	33%
	New Furnace	90	257	30%
	Whole-House Fan	5	2	0%
	New Heat Pump	90	2	0%
Total Insulation and Air Sealing		-	361	42%
Insulation and Air Sealing	Attic Insulation and Sealing	45	314	37%
	Crawlspace Insulation	55	200	23%
	Wall Insulation	90	48	6%
	Attic Radiant Barrier	50	44	5%
	Air Sealing	30	2	0%
Total Water Heating		-	281	33%
Water Heating	Pipe Wrap	5	266	31%
	Low-flow Showerhead and Aerators	5	50	6%
	Domestic Hot Water (Gas)	45	10	1%
	New Tankless Water Heater	90	7	1%
	Domestic Hot Water (Electric)	90	1	0%
Total "Other" Measures		-	110	13%
Lighting	3 ENERGY STAR CFL or LED	5	48	6%

Category	Measure	Flex Path Point Value	Number of Projects with Measure	Percent of Total Projects with Measure
Windows	Energy-Efficient Windows	65	14	2%
Cool Roof	Cool Roof	40	1	0%
TOTAL COMPLETED PROJECTS**		-	858	100%

* Five projects for which data on measures installed were not available are excluded from these figures.

Flex Path Findings

The success of the Flex Path Pilot indicated that many homeowners who were not participating in the Advanced or Basic Paths were nonetheless willing to undertake energy upgrades under a model that offered them flexibility and was easy to comprehend and use. Overall, both participants and contractors expressed satisfaction with Flex Path.

The average cost of a Flex Path project (\$6,874) was less than the average cost of an Advanced Path project in Southern California Edison territory (\$13,375), but about twice as much as the average Basic Path project in that territory (\$3,463).

Although many surveyed Flex Path participants reported they would have likely completed their project if Flex Path had not been available, it is not clear that they would have installed equipment at the same efficiency level or made all of the upgrades they did without the support of Flex Path. Survey findings indicated that the Flex Path incentive structure motivated some homeowners to install measures that would not have been included in their projects in order to reach the 100-point threshold. More than 80% of participants reported the availability of the Flex Path incentive was important in their decision to move forward with energy upgrades, and more than 70% reported that access to an EUC participating contractor was important in their decision to move forward.

Next Steps

In its decision of May 10, 2012 (Decision 12-05-015), the California Public Utilities Commission invited proposals for regional energy networks (RENs) from local government entities to be conducted in the 2013-2014 bridge period. The RENs will use ratepayer funding to independently administer regional energy conservation programs that complement and supplement existing IOU programs. Of the Retrofit California pilots, 11 will continue with modification for the 2013-14 period. For the Southern California Regional Energy Network (SoCalREN) program led by the County of Los Angeles, the pilots consist of the HVAC, Energy Champions, Multifamily, GBL, Flex Path, and Energy Loans.

Many of the Retrofit California partners are included in the RENs and will continue providing conservation programs through them. For these partners, implementing the Retrofit California pilots served as an important learning experience and helped prepare them to deliver programs through the CPUC funded RENs.

Appendix A

L.A. County Pilot Final Reports

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Energy Upgrade California Los Angeles County – Retrofit California, Better Buildings Program

Final Report: Energy Upgrade California in Los Angeles County - Whole Neighborhood Approach

Award Number: DE-EE0003562

BBNP Name: U.S. Department of Energy's Better Buildings Program

Project Title: Retrofit California

Name of Project Director/Principal Investigator: David Cohen

Team Members: The Energy Coalition

The information contained in this report may be shared, used, or disclosed to the general public with expressed consent from the County of Los Angeles.

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The Energy Coalition wishes to acknowledge the Davis Energy Group’s final report, which is used extensively in this document.

EXECUTIVE SUMMARY

Residential energy retrofit activities are critical to promoting energy efficiency in the U.S. building stock. To date, however, consumer adoption of retrofits has been limited. Nationwide, retrofits account for a small percentage of aggregate energy savings at relatively high whole-house costs. For example, the Better Buildings Program (BBP) Energy Upgrade California™ (EUC) program found typical whole-house Home Energy Upgrade costs of \$7,000 to \$14,000 per house. A few programs have implemented large numbers of retrofits through “giveaway” programs that target low-income areas. While increased market penetration of deep residential retrofits can contribute to reducing nationwide energy use, programs that achieve this uptake remain elusive.

Davis Energy Group (DEG) administered the design, planning, and management of the Contractor Whole Neighborhood Approach (WNA) retrofit pilot program in selected neighborhoods of the City of Palmdale within Los Angeles County. The program was administered as part of a grant through the U.S. Department of Energy’s Better Building Program. Launched August 2011, the retrofit pilot was designed to provide Home Energy Assessments (HEAs) and Home Energy Upgrades (HEUs) for residents in target neighborhoods in Palmdale. The Palmdale Contractor pilot was conducted in parallel with the county-wide promotion of the Energy Upgrade California program, supported through Los Angeles County’s California Energy Commission State Energy Program (SEP) grant. The Palmdale Contractor pilot, which was cancelled in September 2012, was part of a series of on-going pilots that examined promising strategies for increasing residential retrofits in regions throughout California. In addition to the contractor pilot in Palmdale, DEG supported the design and implementation of a Marketing Pilot, which took place in targeted neighborhoods of Diamond Bar and Walnut. The main difference between the Marketing Pilot and the general marketing strategy was that homeowners in the targeted areas received collateral information promoting discounted pricing. Collateral also promoted four contractors who had attended in-person events in the area in order to build confidence and brand awareness.

Initial program efforts focused on identifying target neighborhoods of similar housing construction to utilize economies of scale for promoting cost reductions. The program sought to minimize costs associated with HEAs and the purchase of materials, while also leveraging community networks for marketing. However, after months of slow uptake early on, program efforts were realigned to expand the geographic scope of the program and utilize different marketing and sales strategies.

Through experiences from this pilot and other WNA pilots managed by DEG, several economies of scale were identified, although they differed from initial predictions. Instead of finding localized economies of scale at the neighborhood level, potential efficiencies were identified in the HEA process. Through pilots statewide, DEG learned that the initial treatment recommendations are usually the same for houses of similar design even if they differ in age or location. This provides an opportunity to minimize costs and streamline processes for HEAs, which constitute a significant percentage of total project costs and present homeowners with a significant initial barrier to undertaking a Home Energy Upgrade.

Through the Palmdale Contractor pilot, DEG determined that several barriers must be overcome to achieve high retrofit volumes in the current market. These include first cost and financing challenges, the high cost of HEAs, a lack of professional whole-house performance sales personnel, logistical challenges associated with bulk equipment purchasing, and a limited understanding of market dynamics and homeowner motivations.

One unique goal of the Palmdale Contractor pilot was the ability to test the effect of professional sales personnel on market uptake of HEUs. Some results from retrofit programs indicate that offering sales

training to contractors increased conversions from leads to upgrades (DOE 2011b). In the pilot, one contractor, Alpine Green, employed a professional salesperson while the other contractor, REAS, did not. Alpine Green signed 90% of the upgrade contracts in the pilot program. This indicates that professional salespeople make a difference in the retrofit industry.

DEG has identified seven key components relevant to the design of future retrofit programs:

1. Target broad communities rather than neighborhoods;
2. Identify early adopters in a community;
3. Use contractors who are already embedded and respected in the community;
4. Employ professional sales staff from the beginning;
5. Utilize consistent, constant marketing and outreach throughout the program;
6. Simplify necessary paperwork and procedures for both the contractor and the homeowner; and
7. Do not expect a short-term program to be a self-starter in a new industry. Retrofit programs are more effective as a catalyst for efforts that are already underway.

Program	Total Leads	HEAs	HEUs	% Conversion	# of Households	Penetration Rate
Palmdale (contractor pilot)	134	22	8	4%	8,000	.1%

Several organizations, including Lawrence Berkeley National Laboratory, have highlighted additional challenges in getting homeowners to participate in energy efficiency retrofit programs (Fuller et al. 2010; Zimring et al. 2011). On-going pilot programs will seek to refine knowledge regarding these key components and challenges, while also seeking to answer a broader question: what motivates homeowners to undertake a residential retrofit?

The Energy Coalition aligned strategic marketing efforts to support Davis Energy Group's WNA pilot design and strategies for the cities of Palmdale, Diamond Bar, and Walnut. The marketing team's grassroots and traditional marketing work resulted in many homeowners attending over a dozen homeowner workshops with the WNA pilot contractors in the three pilot cities. The majority of contractor leads were generated through canvassing, direct mail, website, and workshops. Homeowners were urged to work directly with the contractors assigned to their neighborhoods rather than choosing from a list of names on the Energy Upgrade website. The implementation team wanted to see if homeowners were more likely to participate in the assessment and upgrade if the contractor barrier could be overcome.

FINAL TECHNICAL REPORT

Background

Empirical data from retrofit programs throughout the country is revealing that the retrofit industry is at a much earlier stage of development than originally thought. For many programs, including Energy Upgrade California (EUC) and the Whole Neighborhood Approach (WNA) pilots, program designers and managers expected that traditional marketing and outreach approaches, such as canvassing, flyers, and mailers, along with social marketing techniques such as the use of energy champions and/or social networking, would successfully tap a large market of homeowners ready for energy retrofits. Actual program growth, however, did not keep pace with initial expectations.

Other retrofit programs have mirrored the difficulties in promoting deep retrofits in the residential market. *Better Buildings for Michigan* instituted a “neighborhood sweeps” program that targets a neighborhood to sign up homeowners at several different levels of retrofit packages. From 2010-2011, the program showed notable results, signing up 28% of targeted homes for a base package (basic home weatherization for up to \$450), though only 2% had signed up for deep upgrades beyond that package (DOE 2011d). In many cases, significant levels of incentives are required to incentivize homeowners to undertake energy upgrades (DOE 2012a; DOE 2011a).

In developing the WNA pilot concept, DEG made educated initial assessments of effective strategies concerning an ideal pilot rollout schedule, such as using a single contractor to perform sales and marketing activities as well as the installations of the upgrades. In areas where those initial assessments did not pan out, the project team instituted program adjustments, including: 1) adding professional sales staff; 2) instituting consistent advertising campaigns rather than big pushes followed by periods of silence; and 3) holding small events and gatherings for homeowners. Each of these will be discussed in further detail below.

Many retrofit programs throughout the country, as described in case studies from Lawrence Berkeley National Laboratory and the Department of Energy, have yielded energy upgrades after twelve to eighteen months in the field. The Palmdale Contractor pilot was in operation for 13 months after its launch in August 2011 and was starting to gain traction, increasing from one upgrade to nine upgrades in the last four months after DEG took over marketing of the program.

The pilot also sought to determine the extent of applicability for standardized measure packages and options among a variety of typical housing types. For standardized packages to be successful in the marketplace, they must be reasonably replicable across neighborhoods and regions. Moreover, assessment costs must be streamlined. In many cases, the costs of completing assessments and modeling constitute 10% of the overall project costs. Identifying economies of scale in the determination of appropriate packages has the potential to streamline the assessment process and reduce time and costs.

Another goal for the pilot was to determine what types of marketing and outreach strategies were most effective in engaging homeowners for initial consultations through available communication methods. The pilot allowed homeowners to inquire about retrofit options through a call center, websites, or direct contact with participating contractors. Data tracking and consumer surveys sought to understand the extent to which different marketing strategies attracted customers through different contact media. In addition, data were used to track the retention from initial contacts (leads) to assessments, and finally to upgrades.

ACCOMPLISHMENTS

Pilot Program Steps: A Chronology

Neighborhood Selection

Initially, program designers for the WNA pilots believed that the first step was to identify target neighborhoods. The WNA pilot team used survey data developed by a marketing consultant for EUC that analyzed neighborhoods to determine potential “hot spots” of retrofit-ready homeowners. There were fifteen prime marketing areas, including portions of Palmdale. In addition to the “hot spots” maps, the WNA team included the following criteria for target neighborhoods:

- Houses 15-35 years old;
- Homes 1,200-3,000 square feet;
- All houses built within two years of each other, preferably by same builder;
- More than 500 houses in a neighborhood;
- Production builder subdivision with a limited number of house designs;
- Indications of pride of ownership and neighborhood stability.

Demographic and housing data identified four “neighborhoods” as having high potential for retrofit uptake. These neighborhoods were selected for the initial pilot. Based on early results in Palmdale and lessons learned from the marketing pilot that began earlier in the San Gabriel Valley, the pilot project team realized after three months that the target neighborhood approach did not account for unforeseen barriers that prohibit many economies of scale. Notably, industry participants are recognizing the nascent state of the retrofit market. For Palmdale, the project team realized that the target area was too small to support sufficient penetration and to take advantage of community-wide marketing activities. Moreover, the strategy did not adequately emphasize identification of early adopters, who according to lessons learned in the other WNA pilots, comprise an important component in the local marketing efforts.

Based on this knowledge, DEG began advocating the expansion of the WNA neighborhoods to include all of Palmdale west of Highway 14 in November 2011. The expansion retooled the pilot to emphasize a community-level approach rather than a neighborhood-level approach, which facilitated more flexibility and opportunities for marketing. In addition, the expansion made it easier to find early adopters who could steer pilot managers to the most promising neighborhoods.

Contractor Selection

The installation contractors, Alpine Green Services and Residential Energy Assessment Services (REAS) were selected through a Request for Qualifications (RFQ) process. Alpine Green’s personnel include experienced sales people with a background in building science and installation, whereas REAS is a contractor with highly experienced installation sub-contractors, but no professional sales people.

As the pilot progressed, Alpine Green met with success in closing HEUs, while REAS did not. Eventually REAS stopped doing work in the Palmdale Contractor pilot. REAS were expecting pre-sold leads prepared to sign a contract and undertake upgrades, while the program model provided contractors with all leads. Thus, sales efforts on the part of the contractor were critical.

For the Marketing Pilot Program, four contractors were selected and trained on the program components and variables to test. Those firms were: CSI Company, Greener Fitting, Home Performance Matters, and SoCal Remodeling.

Analysis and Modeling of Houses

During neighborhood selection, project team engineers analyzed houses in potential target neighborhoods using modeling software and a series of tools, including vintage tables, geospatial applications such as Google Earth, permit information, and available plans. Building energy models can be used for a number of different purposes, and models are best utilized for their strengths. DEG has drawn on existing industry knowledge and research to characterize the main uses of each of these models, as described below. In some instances, industry participants utilize models inappropriately. Contractors and program managers should determine the purpose of a building energy model in a given instance, and use this to guide how the model is used and how modeling results are presented. The various uses for building energy models are described below.

Incentive Equity

Utility rebate programs seek assurances through reasonable and documented verification that the rebates they provide for home energy upgrades are consistent and meet specified criteria. Performing a building energy model before an upgrade can provide utilities with this information. While not always indicative of actual home performance, such modeling approaches allow utilities to characterize relative rankings of various home energy upgrades, which is useful to differentiate between rebate levels. Thus, while pre-upgrade building models used for this purpose do not necessarily provide an accurate assessment of post-assessment performance, they do provide utilities with a verifiable and consistent methodology to assign rebate levels.

Package Design Tool

Building models can be used to design an upgrade package for a given house. For this use, models must specify in greater detail the characteristics of the house and potential upgrade options. Contractors will use the model as a guide to present various options to homeowners.

Predicting Energy Use

Building models can also be used to predict energy use following a home energy upgrade. Homeowners are presented with anticipated energy savings provided there are no significant changes in occupancy behavior). To calibrate a model for such uses, actual energy bills are needed from the pre-upgrade period. Post-upgrade bills are used to assess the accuracy of the predicted performance. Energy modeling for this purpose requires significantly more time and resources. Accuracy and consistency are key targets when using building energy models to predict savings.

Standardized Packages

All pilots that DEG administers utilize a standard upgrade package approach in conjunction with bulk purchasing of the materials and equipment. As the pilots evolved, it became apparent that standard packages are more widely applicable than originally believed. While early pilot procedures sought to identify a specific package that was tailored to the home assessment, broader analysis across regions revealed that similar home styles across neighborhoods, climatic zones, and age groups result in similar sets of prescribed packages. This insight has the potential to reduce HEA costs significantly: as previously mentioned, the assessment process can comprise as much as 10% of the total costs for an upgrade.

During the early program stages, analysis was conducted on selected neighborhoods to identify different housing types. Subsequently, analysis was done for individual houses as residents signed up for an HEA.

The modeling and analyses on the initial houses was used to develop a standard energy upgrade package designed to achieve approximately 18-22% energy savings for a house in that neighborhood. The project team found that the standard upgrade package actually applied to more house types than initially believed. Initially, DEG developed a series of packages appropriate to given neighborhoods with similar age and house structures. As DEG gained data and experience through multiple pilots, analysis revealed that similar energy efficiency measures were recommended for houses spanning different climates zones, styles, builders, and ages. Thus, significant time and resources were being spent in the assessment process, even when the outcome was often similar.

DEG has begun characterizing packages that are applicable to houses based on simple classifications. As an example, requisite measures for a single-story, slab-on-grade house with an attic include duct sealing, air sealing, attic insulation, and lighting upgrades. Next, options are considered based on a quick walk-through assessment, including measures such as installation of a water heater blanket, and replacement of aging equipment (furnace, condenser, water heater, and/or windows). As data continue to accrue, DEG is refining these assessments and hopes to continue the important research of characterizing widely-applicable standardized packages in order to reduce assessment costs.

Marketing

The Energy Coalition led marketing strategy and execution for the WNA pilot beginning in July 2011 through June 2012, when the program was cancelled due to lack of interest. The marketing strategy addressed the goal of testing neighborhood-scale marketing of standardized upgrade packages to stimulate homeowner participation in the EUC program. The pilot's marketing strategy customized the existing EUC marketing efforts implemented throughout Los Angeles County with unique pilot messaging in collateral materials and sales channels. The WNA concept offered the following added benefits to homeowners: lower pricing with volume purchasing, simplicity of a standardized upgrade package with options, and comfort and trust based on neighborhood group participation. In conjunction with homeowner marketing strategies, the pilot was also adjusted for contractor marketing approaches.

The team developed unique collateral pieces and advertisements to educate residents in the three pilot cities about the EUC in LA County program, special discounts through the pilot, and upcoming workshops. Messages were tailored to reflect the weather extremes of seasons, as well as program specials occurring during individual marketing campaigns. Because this was a contractor-promoting pilot, marketing pieces promoted the contractor companies participating in the pilot program in order to build brand recognition and confidence in a small group of contractors instead of the hundred or so choices available to the public on the EUC website. Grassroots and traditional marketing tools and tactics included canvassing with door hangers, direct mail postcards, flyers, brochures, posters, lawn signs, presence at community-facing events, ads on radio, television, and online, water bill inserts, articles in city-owned publications, media alerts, and calendar listings. Additionally, the team worked with city staff of the pilot cities to get out the word about the program's benefits and upcoming workshop opportunities via city communication vehicles and a phone campaign from a city staff person to targeted neighborhoods. The team also developed content and design for the WNA webpages, accessible through the local information section of the EUC in LA County website.

Overall, The Energy Coalition canvassed over 77,000 homes in the target neighborhood areas, and arranged a presence at 47 events (workshop, presentations, and community events) in the three pilot cities. Based on data gathered by Davis Energy Group, the canvassing, direct mail, website, and workshop marketing tactics resulted in the most leads for the WNA pilot contractors. The goals of the marketing program were met because all marketing efforts aligned with the overall program design and strategy, although the goal number of upgrades for the pilot program was not met overall.

The results of leads from each of these types of marketing for Palmdale, Walnut, and Diamond Bar are shown below in Table 1. Figure 1 shows program totals for the Palmdale Contractor pilot.

Table 1. Leads, Assessments, and Upgrades for both WNA Pilots

Palmdale Contractor Pilot	Lead Source	HEAs	HEUs
Bank/Mortgage			
Call Center	1		
Canvassing	49	1	
Contractor	14	7	4
Direct Mail	20	3	
Event May 1 (EC only)			
Existing Customer			
Lead Purchase			
Other	8	4	2
Print Media	10	1	
Real Estate Agent			
Radio	3		
Store Front			
Website	14	1	
Word of Mouth	2	2	1
Workshop/Event	52	6	2
Totals	141	25	9

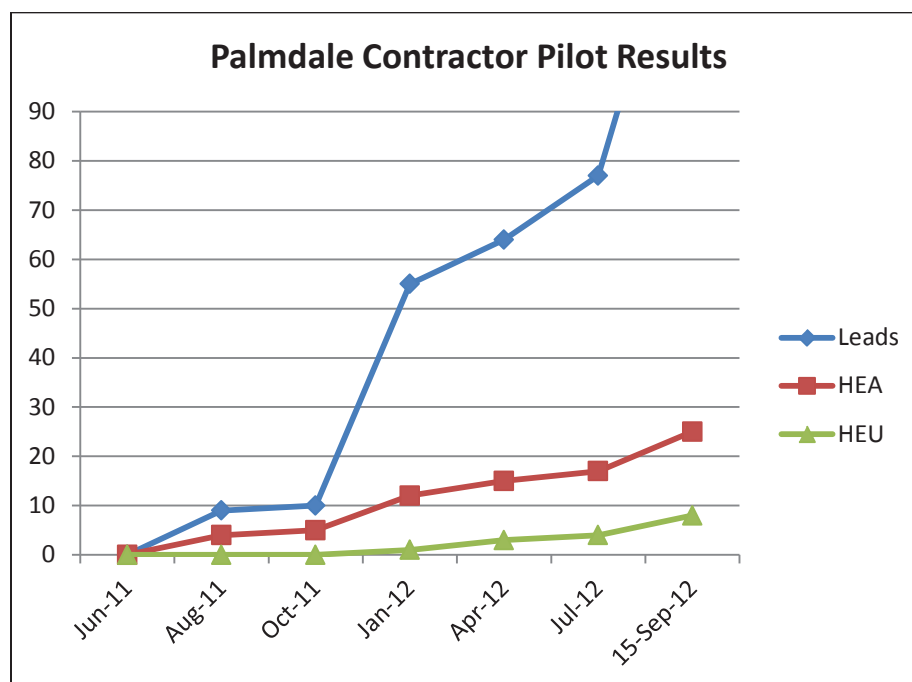


Figure 1. Program Totals for Palmdale Contractor Pilot

DEG was asked to take over the marketing implementation for the pilot in June 2012 and developed a ten-point marketing plan in conjunction with the City of Palmdale. It included local community events and free publicity in the city magazine and website. At this point, REAS had discontinued participating in any of the local events, while Alpine Green was attending all events. All of the homeowner phone calls were going directly to Alpine Green due to their visibility at the events. At DEG's suggestion and with DEG monetary support, Alpine Green added a second salesperson to handle the follow-ups. As part of their marketing efforts, Alpine Green also instituted a free one-hour site visit with prospective customers, prior to the full HEA, to determine the viability for an upgrade. This offering served to counteract a common consumer sentiment, whereby homeowners are reluctant to begin the HEA process due to the high upfront time requirement and monetary costs. Through the free one-hour consultations, contractors can quickly do spot checks in homes and educate homeowners about the upgrade process.

Financing

As in many other retrofit programs, the available financing options to support residential energy retrofits were limited. DEG has explored the various options such as CHF funding, rebate programs, LA County's financing, leasing models, and associated performance guarantees. In the Palmdale Contractor pilot, managers worked with the contractors and a variety of groups to offer multiple financing options. Nonetheless, difficulties with obtaining financing prevent many homeowners from participating in the upgrade programs. CHF financing, 3%, fixed/ 5-15 years, was available in Palmdale until December 2011. Financing through the Matador Community Credit Union through LA County, 2% fixed/ 5-15 year, was available in Palmdale from December 6, 2011, through October 2012. These programs were very helpful while available.

Bulk Purchasing

The bulk purchasing program developed by DEG for this and other pilots allows participating contractors to purchase materials and equipment needed for the energy upgrades through one provider at competitive pricing due to volume purchasing. This "one-stop shopping" approach eases the administrative burdens for contractors while opening up avenues for potential cost savings. Participation in the bulk purchasing program allows contractors the opportunity to realize significant savings in time and costs through centralized management of material deliveries. Purchasing is coordinated with manufacturers, distributors, and retailers at a product-specific level. Associated cost savings are passed along to the contractors and eventually to consumers.

The bulk purchasing program was co-funded by the Los Angeles County WNA program and the California Energy Commission. It has been used in the Energy Challenge in San Joaquin County; the location for the Energy Commission-funded Large Scale Residential Retrofit Program led by Davis Energy Group and is attracting other EUC contractors throughout California. Contractors have anecdotally cited both lower costs and time savings as benefits to participating in the bulk purchasing program.

Analysis of the upgrade contracts signed by the contractors in the Energy Challenge and Palmdale pilots indicated modest savings of 5% to 7% due to bulk purchasing. This value depends on market penetration; more sales would increase the potential for bulk purchasing savings. The program faces a "chicken versus egg" challenge: to get lower pricing, more volume is needed; to get more volume, lower pricing is needed. Analysis of the retail costs of upgrades, the wholesale costs of equipment and materials, the labor rates, and the profit margin percentage, indicates that if greater volume is achieved, economies of scale can be achieved, and more cost savings could be passed onto the homeowners. The program is diligently working to accomplish this.

CHALLENGES/LESSONS LEARNED

Through the course of the pilot, a number of important lessons were learned regarding retrofit program design and management. DEG built a strong relationship with the pilot contractors, enabling it to gain insight into marketing strategies, challenges, successes, and views on the retrofit industry. In many cases, the lessons gained from this pilot are reinforced by other retrofit program efforts led by DEG in other counties.

Economies of Scale

DEG has identified key elements for successful programs, including identification of early adopters, use of active local contractors, and broad geographic focus areas. At the core, each of the key program strategies seeks to further the opportunity of economies of scale in the upgrade market. Early in the pilot, DEG intended to generate economies of scale through neighborhood-based marketing efforts. Subsequently, DEG learned that economies of scale for residential retrofits do exist, but not necessarily in predicted locations. For instance, DEG learned that finding cohesive neighborhoods of similar house styles was not nearly as important as identifying early adopters. These people have a variety of motivations for making upgrades, including ideological motivations, desire for cost savings, or a personality that enjoys new market opportunities. Early adopters are critical to maximizing social networks and word-of-mouth marketing opportunities. Once early adopters are identified, marketing efforts can determine if the surrounding neighborhood meets the WNA requirements and seek to achieve the economies of scale by enlisting the early adopters' assistance in neighborhood marketing. All of the pilots DEG worked with revised their marketing strategies to try to find early adopters who would help proselytize their good experiences with the program and the contractor.

In addition to identification of early adopters, the scope of program efforts necessary to achieve economies of scale is larger than for a specific neighborhood approach. Programs must target wider areas where qualified, local contractors are engaged with the community and willing to undertake significant grassroots marketing themselves. The cost and knowledge barriers to residential energy retrofits are significant and neighborhood-scale marketing efforts are too localized to generate sufficient leads, assessments, and upgrades for *deep retrofits*. When program managers expand the target marketing area to the city or county, however, uptake increases. Thus, economies of scale for marketing of retrofit programs do exist by enabling the use of advertising (such as newspaper ads) that touches a wider audience.

Standardized packages offer a significant opportunity to capitalize on economies of scale in the residential retrofit market. Initially, DEG believed that standard packages would be applicable at a neighborhood scale, where houses were of similar age, size, and layout. Through analysis, DEG determined that packages actually have wider applicability across distinct geographic and climatic zones. For example, DEG team members discovered that house-specific modeling for several single-story, "L-style" ranch homes in different climate zones resulted in the same set of package options. Moreover, even when the retrofit programs used intensive marketing, the percentage of homeowners in a given neighborhood with the interest and resources to pursue retrofits remains low. Thus, both technical and marketing results indicate that a broader scale of retrofit program design is appropriate.

Program Scope

Based on experiences from the Palmdale Contractor pilot and other pilots, retrofit programs must identify and target geographic areas that provide a sufficient number of potential customers. In Palmdale, program managers concluded that *deep retrofit programs* (more than simple upgrades)

should concentrate on an area larger than single neighborhoods. At a community level, contractors and program administrators should work to understand the local marketplace, using input from engaged community members to identify best efforts for targeted marketing efforts.

The Palmdale contractors noted a number of lessons in this regard. First, target areas need to contain a housing stock on the order of thousands of homes in order to sustain a viable business model. The initial target market of 1000 homes was not sufficient to achieve desired uptake in assessments or upgrades. Moreover, target efforts should focus on more affluent neighborhoods because these residents often have greater access to capital and are likely to be current in their mortgage payments. Low- and moderate-income areas are often dominated by renters or homeowners with limited or no home equity, which is a major financing instrument for retrofits. Evaluation of such economic indicators was complicated by economic and real estate market fluctuations, and the still evolving financing market suitable for retrofit programs. The limited geographic scope of the effort also limited marketing and media opportunities. Social networks through schools, community organizations, and online platforms crossed over neighborhood boundaries, underscoring the advisability of targeting entire communities.

Importance of Contractors

Contractor selection is a critical component of a retrofit program. Contractors must have solid credentials and a good reputation. Homeowners tend to work with local contractors who are well-known. It is important that contractors be embedded in the community and considered to be “truly local.” Retrofit programs with strong contractors who make a commitment to a community have been shown to reap the benefits of increased retrofit uptake.

In Palmdale, this became evident when Alpine Green moved their office to Palmdale and attended many local events. Homeowners started recognizing Alpine Green at these events and initiating conversations with Alpine Green about their homes. In contrast, the other pilot contractor REAS was considered an out-of-town contractor with no connection to the community because they attended only two local events at the beginning of the pilot and then stopped participating. Alpine Green signed nine upgrade contracts by the end of the pilot, whereas REAS had only one.

Sales

Salesmanship is a critical component of retrofit programs. Through the Palmdale Contractor pilot and other pilots, DEG learned that sales professionals are essential to this process. Many contractors are excellent installers and building scientists, but they are not experienced in sales and marketing. Sales personnel should be included in program design and marketing efforts from the outset because their expertise is critical to understanding market opportunities and selecting the most efficient marketing approaches. Alpine Green used experienced sales personnel and outperformed REAS 9:1 in contracts signed. REAS did not use experienced, professional sales personnel. Sales personnel can help identify better approaches to market realities. Furthermore, in DEG’s Energy Challenge retrofit program in Stockton, CA, professional sales people have been participating since the program’s inception and have yielded retrofit numbers that have outsold the Palmdale Contractor Pilot 18:1. The Stockton pilot uses a single contractor with intimate knowledge of the local market. The contractor consistently uses professional sales staff to engage potential customers, drawing on an understanding of the role of marketing in the overall HEU process.

Discussions with a variety of contractors consistently indicated that marketing messages are most effective if focused on performance, comfort, and indoor air quality rather than on energy cost savings alone. While money is a key driver of consumer decisions, it is difficult to establish a baseline price for retrofit packages relative to energy savings because these savings vary with occupant behavior. Many

consumers undertake a retrofit for reasons of comfort rather than economics, and marketing efforts should capitalize on this to promote retrofits. The Palmdale Contractor pilot marketing efforts incorporated comfort and health messaging to capitalize on these lessons.

Another key lesson for program marketing that emerged from the Palmdale Contractor pilot was to promote the contractor, not the program. Homeowners let contractors into their home, not programs. This became evident when homeowners had two contractors to choose from, and Alpine Green was chosen most often. Alpine Green took the time to develop relationships with the homeowners and offered a free one-hour site visit to see what type of upgrade would be viable for the homeowner, whereas REAS would screen the homeowners over the phone to see if they could afford an energy upgrade.

Relationship between Consumer Education and Marketing

Better Buildings Programs around the country have all reported the need for greater public awareness and consumer education campaigns before and during retrofit programs. While all the pilot designers and stakeholders expected more leads from the marketing and outreach efforts, it was quickly realized that without a large-scale general consumer education program supported at the national and statewide levels by the likes of the Department of Energy and California state agencies, most homeowners would not understand the value of whole-house performance upgrades, much less take part in a program promoting deep retrofits requiring significant capital outlays. This has proven true in many instances across the country. Current residential retrofit programs, especially those that seek significant energy savings, have very low penetration rates, in part because homeowners are not well educated about the benefits of energy efficiency retrofit measures and also because upgrade costs are high.

DEG learned that retrofit programs must provide consistent and constant market outreach messages as opposed to large, limited-term pushes. During the brief history of retrofit programs in the United States, few have emphasized broad homeowner education. More emphasis has been placed on immediate sales and installations of home energy upgrades. Homeowners must better understand why a retrofit, or maintenance in general, is advantageous for their house. While the industry has emphasized Return on Investment (ROI) or payback periods as selling points for homeowners, many consumers respond to other messages. Results indicate that homeowners are more receptive to messaging around enhanced comfort and indoor air quality, as shown from survey results from other WNA pilots managed by DEG.

Through conversations with contractors, DEG learned that more consumer education is needed regarding the rebate structure. Many consumers expected free upgrade services and did not understand the differences between home energy assessments and upgrades. Other barriers to participation included significant first costs, confusion over multiple and overlapping rebate offers, and lack of understanding about long-term benefits. While these multiple offers were designed to address first-cost barriers to retrofit uptake, rebate programs must employ simple and clear rebate structures from the onset of the process to effectively engage potential customers.

Bulk Purchasing

The bulk purchasing program developed during this pilot is a work in progress. Purchasing is a relationship-based business. Volume purchases do not always result in the best price unless there is a relationship associated with that volume. In some instances, a buyer can receive a better price based on a relationship alone, but building such relationships takes time. Thus, developing effective bulk purchasing programs is both time and resource intensive, requiring consistent nurturing to grow volume.

A dedicated salesperson is needed in the field to encourage contractors to try this new purchasing paradigm. Without this encouragement, contractors are unlikely to change current habits in favor of a more sophisticated buying protocol, even if it saves time and money.

Perhaps the greatest advantage of the bulk purchasing program, according to contractors, has been time savings and convenience. The involvement of a professional purchasing agent provides contractors with the assurance of low pricing. When this is combined with a focused customer service orientation and a record of on-time deliveries, the results are excellent. However, follow-through on details and logistics is time consuming. In addition, contractors are often reluctant to change their buying habits.

Analysis of contracts and other documentation from each upgrade in the Palmdale pilot was inconclusive in determining if price savings in economies of scale were passed on to homeowners. While some metrics indicate potential consumer savings, the low level of uptake did not allow for the predicted economies of scale for contractors and homeowners. Pricing in the supplier market for building contractors is volatile, and suppliers are not sufficiently motivated to maintain discounts to ensure consistent savings. Contractors utilizing the bulk purchasing program in these pilots have committed to pass on any savings to the homeowners as long as their profit margin stays intact, but proven results are critical in convincing industry collaborators that such savings are consistent. However, participating contractors have indicated other significant benefits from single source purchasing through DEG's bulk purchasing program. Having the bulk purchasing program handle logistics, including product delivery times and locations (contractor warehouse or job sites) saves time for contractors, creates efficiencies, and reduces administrative costs.

Program Administration

Retrofit programs need to be flexible to respond to emerging market knowledge and capitalize on identified opportunities. Streamlined program structures can facilitate this. In the Palmdale pilot, the decision-making process was often complex and involved many parties. DEG has had the opportunity to participate in several types of program structures for retrofit pilots, all of which have required changes to initial pilot design in response to market conditions and to increase uptake. In one pilot, the Energy Challenge administered by DEG for the California Energy Commission, the decision-making process to institute an expansion of the geographic focus of the pilot took two weeks, consisting of one team conference call, one meeting, and a second call with three organizations. In the Palmdale pilot, where the administration team included Davis Energy Group, Bevilacqua-Knight, Inc., The Energy Coalition (marketing consultant), and the County of Los Angeles for the U.S. Department of Energy, the decision time for a similar change was six weeks. The process consisted of several meetings, conference calls, e-mails, and a formal report written on the proposed expansion. Four organizations were involved in making the decision.

While minimizing the number of decision-makers is important for retrofit program management, maximizing the number of supporters in a community is essential. Building program credibility requires that local contractors build relationships with a variety of entities, including community planners, politicians, government administrators, and local businesses. Support and networking through these groups can help to achieve market saturation for program recognition and advertising. This becomes particularly important in communities where a single pre-vetted contractor is the sole program provider.

CONCLUSIONS

The success of widespread residential energy efficiency upgrade programs is dependent upon the talent and energy of the participants, market dynamics in real estate and finance, and the ability of the infrastructure to respond to market requirements. DEG has identified several key themes related to development of successful upgrade programs. First, economies of scale in retrofit markets are possible. DEG identified efficiencies related to marketing and outreach efforts, risk mitigation techniques, completion of Home Energy Assessments, standardized package development, centralized bulk purchasing, and performance guarantees. Second, administrative infrastructure has significant influence on the ability of local contractors and administrators to adapt to emerging market trends. In general, wider involvement of organizations can divert limited resources away from sales-focused activities. Third, contractor expertise, as well as the way that contractors are presented to potential customers, can significantly affect program success. Limiting consumer choice to verified contractors can actually assist consumer decision-making. Fourth, while it may be tempting to try to quickly replicate successful practices from one region in other regions, care must be taken to examine whether the unique cultural, bureaucratic, environmental, and financial factors in a specific region support the adoption of practices developed elsewhere. Finally, further technology development can play a key role in changing consumer perceptions. Of note, technologies that enable consumers to better understand their energy usage and expected savings can assist them in altering behavior and making better-informed decisions regarding Home Energy Upgrades.

The WNA Interim Feedback report prepared by Cadmus (the EM&V consultant for EUC-LA) identified a general lack of awareness of whole-house energy upgrades, and of Energy Upgrade California, as a factor contributing to the pilot's slow uptake. It was noted that in order to reach its potential, public awareness of EUC would have to reach a level similar to the awareness of the Energy Star program. If marketing and outreach efforts continue, energy upgrades could become more established, especially as part of a renovation. Given the low level of awareness and participation in EUC to date, it has been difficult for the Contractor pilot to generate sufficient participation to effectively test its program theory of economies of scale in assessments, standard packages, and bulk purchasing. In addition, depressed home values, the high cost of energy upgrades, and the lack of consistent low-interest financing presented challenges to whole-house performance programs.

Further research is recommended in a number of areas. The high cost of Home Energy Assessments and modeling individual houses, combined with the consistent HEA results attained for broad categories of houses, suggest that energy efficiency measures could be tied to home categories to reduce overall costs of an upgrade. Parameters for categorizing houses include age, location, number of stories, foundation type, architectural style, and a small number of other easily determined data-points. Recommended measures, based on building science and modeling of other houses in the same category, could likely lead to a pre-selected set of required measures (such as air sealing), plus options based upon the age of existing equipment. The result would be a tool that radically reduces, or eliminates, the time needed to complete an HEA.

In designing a retrofit program, DEG has identified seven key components, including:

1. Target communities rather than neighborhoods.
2. Use local contractors who are embedded and respected in the community.
3. Employ professional sales staff from program start.
4. Utilize consistent, constant marketing and outreach throughout the program.

5. Simplify necessary paperwork and procedures for both the contractor and the homeowner.
6. Focus on people. In an early-stage industry, identify early adopters.
7. Do not expect a short-term program to be a self-starter in a new industry. Retrofit programs are more effective as a catalyst for efforts that are already underway.

Overall, retrofit programs must seek to answer a key question: what motivates homeowners to complete a residential retrofit? The answer varies because each homeowner has his or her own reasons for considering a home energy upgrade, however, a relatively small number of key motivators can be identified. Our early homeowner survey results show that it is primarily comfort and utility costs that drive home energy upgrades. It remains for future programs and research projects focused on residential retrofits to determine how to best educate the public and utilize the key motivators to induce a large number of homeowners to upgrade their homes. This is vitally important because it will contribute to the comfort and health of homeowners, who will also save on utilities. A robust home energy upgrade market will also create jobs that cannot be exported, cut energy use, and reduce carbon emissions.

PROGRAM SUSTAINABILITY PLAN

No plans exist for the continuation of the WNA pilot program.

VERIFICATION OF DATA

Renewable Funding (“RF”) served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE’s xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

DEVELOPED PRODUCTS

N/A

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APPENDIX A

Whole Neighborhood Approach Pilot – Los Angeles County

Marketing Plan

Program Goals

The goals of the Los Angeles County WNA program are to utilize a subdivision-based approach to increase energy savings and comfort for homeowners in Los Angeles County, to ensure that participation is easy and convenient for homeowners, and to decrease upgrade costs to homeowners through bulk purchasing and contractor efficiencies (such as performing multiple upgrades in close proximity to each other). These goals will be accomplished by:

- Utilizing outreach, marketing, and ongoing communication techniques to maximize participation
- Designing a standard upgrade package and options that meet Energy Upgrade California’s advanced path minimum requirements, using optimal building science practices and products to assure energy efficiency and safety standards are met
- Making the completion of home energy upgrades as turnkey as possible for the participating homeowners
- Establishing an economically viable business model for the delivery of group energy upgrade services by home performance contractors.

The Los Angeles WNA program consists of pilots in three cities.

- Palmdale Pilot goal = 200+ upgrade packages
- Diamond Bar = 100+ upgrade packages
- Walnut Pilot goal = 100+ upgrade packages

Targeted Neighborhoods

- Palmdale WNA Pilot (see map)
- Diamond Bar WNA Pilot (see map)
- Walnut WNA Pilot (see map)

Marketing Strategy Overview

The marketing strategy for the Better Buildings Program's Whole Neighborhood Approach Pilot in Los Angeles County addresses the goal of testing neighborhood-scale marketing of standardized upgrade packages in stimulating homeowner participation in the Energy Upgrade California program.

The Pilot's marketing strategy will customize the existing overall Energy Upgrade California marketing efforts already being implemented throughout the County with unique Pilot messaging in marketing materials and sales channels. The Whole Neighborhood Approach concept offers the following added benefits to homeowners: lower pricing with volume purchasing, simplicity of a standardized upgrade package with options, and comfort and trust with neighborhood group participation. In conjunction with homeowner marketing strategies, the Pilot will also be adjusting contractor marketing approaches.

Marketing Strategies

The geo-centric concentration of pilot homeowners in sub-sections of city neighborhoods requires very targeted community-based marketing and outreach strategies. Supporting these specific WNA neighborhood marketing activities will be the overarching Energy Upgrade CA marketing campaign which will reach all homeowners within the three pilot cities. The WNA team will be coordinating marketing and outreach activities to direct WNA homeowners to the appropriate WNA website, events, and contact information.

The WNA Pilot will be conducting multiple marketing and outreach activities to reach homeowners. These multiple marketing messages will build upon each other to create awareness, educate benefits of "whole-house" improvements, and stimulate interest to sign-up for home energy assessments.

The Pilot will provide marketing support to Contractors who participate in the Pilot with co-branding. Existing contractor collateral for Energy Upgrade will be modified to include standard purchase package messaging. The Pilot will recruit contractor participation via email blasts and direct mail communications to existing Energy Upgrade program participants.

This Pilot will perform the following marketing and outreach activities:

PHASE I (Pre-Launch) – Develop Marketing Strategies, Collateral & Website– June-July 15

- **WNA Call Center.** The WNA Pilot will coordinate call handling procedures with the LA County EUC Call center for WNA homeowners. The Pilot will provide WNA scripts, FAQs, contact information, call transfer procedures, and call tracking/reporting requirements.
- **WNA Website.** Separate website pages will be developed for the WNA pilot. The WNA web pages will be accessed either by homeowners navigating the Energy Upgrade web pages under the Local Info tab or homeowners going directly to WNA web pages as directed from WNA targeted marketing. The Pilot will leverage the zip code and address information provided on the Energy Upgrade California website to customize website messaging to promote the Pilot's custom package plus options. Website pages will include:
 - WNA Neighborhood landing page – WNA program description, specific WNA neighborhood description, option for non-participants

- Request for More Information Page – homeowner request form including contact information and validation of Pilot address
 - FAQs
- **Energy Champion Training.** The WNA Pilot will be integrated into the Energy Champions training kit, so that homeowners will not miss out on participating in the WNA Pilot. The WNA team will provide the Energy Champions team with marketing information. Training program starts in July.
 - Energy Champions’ Introductory Presentation – 2-3 PowerPoint pages on WNA
 - Energy Champions’ Training Manual – More detailed program description pages
 - Energy Champions’ email to homeowners in WNA Pilot cities – provide sample email/letter for Energy Champions to send to homeowners in the 3 Pilot cities
- **New WNA Collateral.** The WNA Pilot will customize existing Energy Upgrade collateral to include focused neighborhood messaging, descriptions and pricing of Pilot upgrade packages, and co-brand marketing collateral with WNA contractors.
 - WNA Contractor Brochure for homeowners
 - WNA Brochure insert for regular EUCLA brochure for use at City events
 - 1 Page WNA advertisement (flyer, insert)
 - WNA Post card direct mail piece
 - WNA Door hanger
 - WNA Yard signs
- **WNA Online Resource Library.** For consistent messaging and information to community leaders and promoters of the WNA program, a standard WNA program kit will be developed in conjunction with the marketing collateral. Additional presentations and events will be made to pilot neighborhood groups (HOAs and community-based organizations) to promote the standard package plus options. Informational materials will be developed in multiple languages, including a photo novella and videos in English, Spanish, and Chinese. Both printed and online materials will be developed for maximum effectiveness at communicating Energy Upgrade messaging and include all available tools to assist homeowners with their energy upgrade purchase decision, including information on rebates and incentives (including utility and county-subsidized), financing, contractor lists for Walnut and Diamond Bar, and resource centers. The following information will be available online:
 - WNA Homeowner presentation (modified EUCLA Homeowner PowerPoint)
 - WNA Talking Points
 - WNA FAQs
- **Develop Marketing/Outreach Strategies.** The Pilot team will work with City leaders and stakeholders on developing neighborhood specific marketing and outreach strategies.
 - Work with City project leads on identifying key neighborhood influencers/program supporters (Neighborhood Watch Captains, Homeowner associations, local school PTA residents, Youth activities (sports teams, scout troops...))
 - Develop calendar of City and neighborhood events for Summer and Fall. Work with City and COG.
 - Introduce to Local Businesses (Neighborhood market, hardware store, Real estate agents)
 - Schedule Sales Channels for Summer and Fall
 - Utility direct mail insertion on utility bill (water, electric, gas)

- WNA Pilot direct Mail drop
- Neighborhood newsletter
- Door-to-door Canvassing
- Insert in local newspaper
- Neighborhood signs/posters

PHASE II - Launch – Early Adopters/Program Champions (Test modeling) July 15-September 30

With the completion of call center procedures, website pages, and marketing collateral, the Neighborhood Pilot programs will launch in the three cities. The initial “actual” energy upgrades will be used to validate the draft Pilot upgrade packages developed through building science modeling. The Pilot needs a representative sampling of model types per Pilot neighborhood to test the assumptions and finalize marketing messages. Several marketing campaigns will be used in the Pilot neighborhoods to raise awareness and stimulate participation in the program.

- Launch marketing and outreach campaigns in the Pilot neighborhoods
 - WNA Pilot direct Mail drop
 - Neighborhood newsletter
 - Door-to-door Canvassing
 - Insert in local newspaper
 - Set up neighborhood signs/posters
 - Provide local businesses with marketing collateral
 - Utility direct mail insertion on utility bill (water, electric, gas)
- Provide added incentive for first sign-ups.

PHASE III – Ongoing Building Momentum

- Continue ongoing marketing and outreach activities
 - **Neighborhood Newsletters.** The Pilot will promote the Pilot packages in articles and advertisements within local neighborhood newsletters.
 - **Neighborhood Events.** Additional presentations and events will be made to pilot neighborhood groups (HOAs and community-based organizations) to promote the bulk purchase packages.
 - **Direct Mail.** The Pilot will modify the existing Energy Upgrade messaging in direct mail materials for pilot neighborhoods to highlight the bulk purchase packages.
 - **Local Neighborhood Business Partners.** The Pilot will continue to add local neighborhood retail store participation in promoting the Pilot program with display signage. The Pilot will conduct outreach to local neighborhood realtors, and provide these real estate professionals with informational materials for both buyers and sellers.
 - **Neighborhood Signage.** The Pilot will refresh signs and posters within the neighborhood to keep the program visible to residents. Contractor job site signs will be prominently displayed for homes receiving upgrades.

- The Pilot will develop Neighbor-to-Neighbor engagements as the program builds momentum as these relationships are the most effective Pilot endorsers/promoters
 - **Neighborhood Open House Demonstration/showcase homes.** Pilot homes used to develop the custom upgrade packages will be used as demonstration or showcase homes for the neighborhood to promote and educate the Pilot to the rest of the neighborhood. WNA will have access to use LA County’s mobile Environmental Service Center bus to showcase energy upgrades.
 - **Social Media.** The Pilot will develop neighborhood specific “groups” on social media network to promote the pilot packages and to provide advice from both experts and other homeowners. Social media communication channels will include website, email, text messaging, and Twitter to foster neighborhood interaction and participation.
 - **Challenges.** The Pilot will create opportunities to hold participation competitive between selected Pilot neighborhoods to stimulate interest and sign-ups.
 - **Recognition.** The Pilot will highlight neighborhood performance and recognize participants/program contributors in local media and special neighborhood events/meetings.

Launch Timeline Schedule

• Neighborhood stakeholder identification	June 2011
• Call Center prepared for WNA calls	June 2011
• Energy Champions training materials	June 2011
• Contractor collateral printed	July 2011
• WNA marketing collateral printed	July 2011
• WNA Website ready	July 15, 2011
• Neighborhood Launch	July 15, 2011
• Neighborhood stakeholder meetings	August 2011+
• Neighborhood events, newsletters	August 2011+
• Homeowner survey content developed	August 2011
• EM&V reporting requirements developed	September 2011
• Recognition/testimonials	September 2011+
• Demonstration homes	September 2011+
• Contractor Survey content developed	October 2011

Program Partners (Marketing)

- MIG
- InterEthnica
- Social Marketing program (TBD)

June 2012 – September 15, 2012| Marketing Plan

- Work with the City of Palmdale on the following free items:
 - Summer Starlight Concert Series
 - Thursday Night on the Square Events
 - Citywide insert in the Waste Management bill
 - Citywide message in the water bill
 - Article in the City of Palmdale e-newsletter
 - Article on the City of Palmdale website
 - Article the Palmdale Magazine
- General marketing collateral for Alpine Green following the marketing review process through The Energy Coalition:
 - Flyers
 - Banners
 - General EUCLA collateral

Energy Efficiency and Conservation Block Grant (EECBG) – Better Buildings Neighborhood Program

Final Report: Energy Upgrade California in Los Angeles County - Community Based
Social Marketing

Award Number: DE-EE0003562

BBNP Name: U.S. Department of Energy's Better Buildings Program

Project Title: Retrofit California

Name of Project Director/Principal Investigator: David Cohen

Team Members: The Energy Coalition, South Bay Cities Council of Government, Renewable Funding,
MIG, InterEthnica

*The information contained in this report may be shared, used, or disclosed to the general public with
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EXECUTIVE SUMMARY

The Community Based Marketing and Outreach (CBSM) Pilot program supported LA County's comprehensive Communications Plan for Energy Upgrade California™ (EUC), which leveraged funding from three grant sources (Energy Efficiency and Conservation Block Grant [EECBG], the California Energy Commission, and Better Building Program [BBP]) into a cohesive effort with consistent messaging, branding, and outreach strategies designed to minimize customer confusion and reduce duplication. Specifically, under the BBP grant funds, the following efforts were supported: Energy Champions, Home Energy Makeover Contest, General Homeowner Outreach, and Contractor Outreach Support.

The CBSM pilot aimed to design innovative strategies that resulted in a single, identifiable action, without any next steps. The LA County team's identifiable action was to call a contractor. The team's selection of this action item was based on market analysis, which indicated that selecting a contractor was a common barrier to the home performance process, but that once a contractor had been selected, the homeowner was generally determined to move forward with a retrofit. Secondly, it was assumed that contractors had the necessary skills to convert interested homeowner leads into sales. The home performance industry had been successful long before the EUC rebate program was launched, which indicated that contractors knew how to close deals.

The CBSM pilot encompassed four distinct innovative marketing and outreach strategies intended to mobilize community interest and prompt homeowners to contact a contractor to complete retrofits through EUC: Energy Champions, Home Energy Makeover Contest, General Homeowner Outreach, and Contractor Outreach Support.

ENERGY CHAMPIONS EXECUTIVE SUMMARY

Energy Champions is one facet of the multi-dimensional marketing campaign of Energy Upgrade California™ (EUC) in Los Angeles County designed to achieve comprehensive community-wide residential energy upgrades. Energy Champions consists of eligible, charitable, non-profit, faith-based organizations, schools, chambers of commerce, and homeowner associations that introduce and promote Energy Upgrade California's home performance programs to their members and communities. Energy Champions are incentivized on a sliding scale based on the number of upgrade projects completed. The Energy Champions program used community-based social marketing techniques to identify and overcome market barriers that prevent homeowners from retrofitting their homes. These barriers include:

- Lack of knowledge of retrofit benefits
- Lack of trust in contractors
- Lack of motivation to perform home improvements

Market research has revealed that homeowners are more likely to take action if they learn about an energy retrofit (and its related benefits) from individuals they know and trust. Community-based organizations are uniquely positioned as trusted ambassadors to effectively foster widespread interest in energy upgrades. Messaging received from these trusted sources should help property owners understand the value of program participation, induce them to take action and, in so doing, help their chosen organization raise needed funds.

Performance-based financial incentives are intended to unlock the unique outreach capacity of Energy Champions and encourage them to develop innovative ways to effectively motivate their constituents to take retrofit action. Additionally, by performing a home energy upgrade, individuals would not only benefit themselves, but also support their community organization. This additional incentive was designed to help overcome their lack of motivation and foster participation.

The continued study of motivational factors in public participation is one of the benefits of the Energy Champions pilot program. Regardless of the number of upgrades completed, the outreach resulting from the program contributes to shaping the EUC program. As social media becomes a dominant force in messaging, the ability to utilize local public validators to reach niche markets will become of paramount importance.

The draft survey results seem to back up this assertion. Although the Energy Champion incentive proved to be a motivating factor for organizations to do the outreach to their communities, and the outreach proved successful in informing more individuals about upgrades, the incentive did not motivate homeowners to move forward with upgrades. Only 6% of respondents indicated that the opportunity to raise funds for their respective Champion organization was a factor, with only one respondent indicating that it was a large influence. However, a majority of respondents named the Energy Champion as their primary or secondary source of information regarding the program. Thus, identifying the right incentives will be a boon to programmatic offerings across the spectrum.

ENERGY CHAMPIONS FINAL TECHNICAL REPORT

Institutional Design and Business Model

Besides calling a contractor, the key purpose of the Better Buildings Program Energy Champions Pilot was to assess how well incentivizing community organizations could help to raise awareness and influence participation in a deep retrofit energy efficiency program. Charitable, non-profit, faith-based organizations, schools, chambers of commerce, and homeowner associations capable of promoting Energy Upgrade California's home performance programs to their members and communities were invited to apply to become Energy Champions.

Key Assumptions:

- Community organizations act as local public validators that can effectively promote homeowner participation in Energy Upgrade California
- Homeowners will be more easily motivated to participate in EUC if they know an organization they value will benefit from their action

Target Market:

- Potential homeowners interested in upgrading their homes within Los Angeles County.

Partners:

- Los Angeles County
- The Energy Coalition
- Bevilacqua-Knight, Inc.
- MIG/Interethnica
- South Bay Council of Governments

Program Design and Customer Experience

The pilot initially contracted with MIG/InterEthnica to lead marketing efforts focused on providing promotion and outreach support to Energy Champion organizations. Using existing relationships with Southern California non-profit groups across a variety of different fields, MIG/InterEthnica began recruitment of the first Energy Champions in Q1 2011. Officially launching Q3 2011, the Energy Champion pilot, focused on geographic areas likely to benefit from efficiency retrofits, such as areas with an older housing stock.

In order to spur action by the community-based social partners, the Energy Champion receives the incentive when the homeowner's project is complete. LA County's incentive application form also asks participants to select the way they heard about the program. If a participant selects "Energy Champion," but has not filled out a Homeowner Action Form, LA County will follow up and provide them the opportunity to do so, even if the EUC project is already underway or complete. Figure 1 illustrates this process.

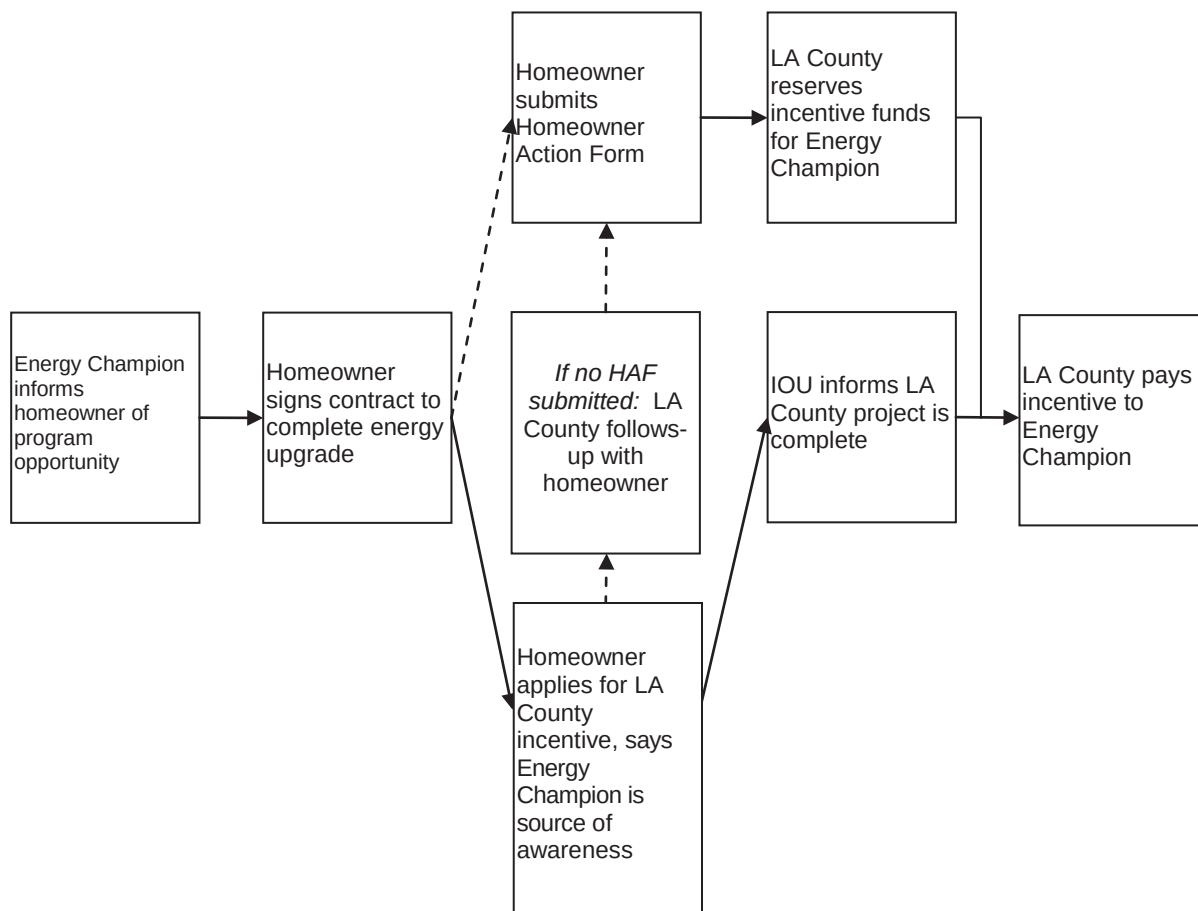


Figure 1. Energy Champion Incentive Process

Driving Demand

Marketing Paths

Figure 2 illustrates the three potential paths for Energy Coalition organizations to market Energy Upgrade California. These coincide with the available paths in the Energy Champion pilot, which grew organically from the initial to the current design based on implementation experience.

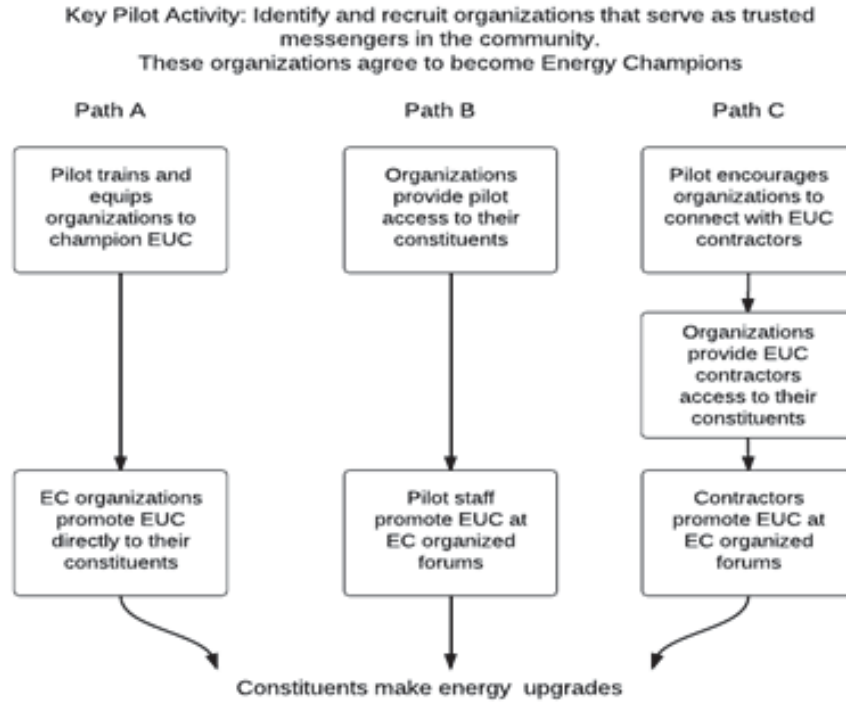


Figure 2. Energy Champions Marketing Paths

As the program assumes, community organizations can act as local public validators in their respective niche markets. This capability to drive demand for the programs they support is showcased by the Homeowner Action Form participant survey, wherein participants were asked to identify the source from which they first learned about Energy Upgrade California. Table 1 summarizes their answers.

Table 1. First Source of EUC Awareness for HAF Participant

Source	Count	Percent
Energy Champion	16	39%
Friend/Family/Coworker	10	24%
Contractor	6	15%
Prior Knowledge	4	10%
Some other way	5	12%
Total	41	100%

Workforce Development

As a residential-customer-facing outreach program, Energy Champions can best be assessed as having secondary or ancillary benefits to a target workforce. That said, one of the primary methods for Champions to achieve upgrades by having their own employees/members promote the Energy Upgrade California program within their own workplaces.

As was the case with related programmatic offerings, the LA County team identified issues with contractor delivery of the program and homeowner distrust in contractors as barriers. To overcome these barriers, the County team created mentoring opportunities for contractors, where program implementers observed and coached contractors on how to present the EUC program to homeowners. These efforts included speaker trainings to assist new contractors unfamiliar with how to communicate the benefits of the program and sales training webinars. Furthermore, the County invited contractors to attend community events and participate in contractor panels to generate leads in real time. Strengthening the bonds between the local public validator (the Energy Champion) and the local contractor could only be viewed as a positive programmatic outcome.

Financing and Incentives

Incentive Process: The Energy Champions pilot offers participating community organizations an opportunity to receive \$500 for each homeowner they refer who completes an EUC advanced path project and \$100 for each homeowner completing a basic path or flex path project. For an Energy Champion organization to receive an incentive, homeowners are also required to submit a Homeowner Action Form (HAF) that indicates a homeowner's intention to go through with an EUC project.

Originally, it was expected that homeowners would be required to submit a HAF before they completed their EUC project, and to identify the Energy Champion that referred them to the EUC program. In practice, however, it was not uncommon for a homeowner to either forget to submit a HAF, or to submit the HAF with all of their EUC paperwork. Because of this, many of the completed projects have HAF submittals dated after the EUC project was completed.

Data and Evaluation

In December of 2012, a survey was commissioned of homeowners participating in the Energy Champion program seeking to understand the following:

- How homeowners initially learned of Energy Upgrade California
- The level of influence of the Energy Champion organization
- The influence and awareness of the Energy Champion fundraising incentive opportunity
- The interest and motivation for completing an upgrade
- Whether or not respondents who submitted HAFs completed projects

The draft survey results showed that a majority of surveyed participants recalled the Energy Champion as either their primary or secondary source of initial knowledge of the EUC program. These results indicate the Energy Champions' reach to their respective communities.

Draft survey results imply that while the incentive proved to be a motivating factor for organizations to conduct outreach to their communities, and that their outreach efforts were successful in informing more individuals about upgrades, the Energy Champion incentive was not successful in motivating

homeowners to move forward with their upgrades. Only 6% of respondents indicated that the opportunity to raise funds for their respective Champion organization was a factor, with only one of those surveyed indicating it was a large influence.

Respondents who completed the Homeowner Action Form were also more likely to complete their project, with 100% completing an energy audit, 98% receiving a bid for the project, and 87% completing a project.

Champion Organizations

Although the program database gives the vast majority of Energy Champions the designation of “community based” organizations, this title encompasses groups with diverse missions and a wide range of issues (see Table 2), including 10 serving low-income or underserved populations within their area of focus.

Table 2. Energy Champion Organizations by Type

Organization Type	Count
Community Based	62
<i>Minority and/or immigrant focus</i>	16
<i>Youth focus</i>	7
<i>Health focus</i>	6
<i>Community development</i>	5
<i>Housing focus</i>	5
<i>Education focus</i>	5
<i>Arts and culture focus</i>	2
<i>Elderly focused</i>	2
<i>Service organization</i>	2
<i>Other</i>	12
Faith-based	16
Environmental	13
K-12 school	8
Chamber of Commerce	3
Homeowner Association	1
Total	103

ENERGY CHAMPIONS ACCOMPLISHMENTS

Targets outlined in Energy Champion Program Design:

- Enroll 100 Energy Champions.
Actual: 103 Energy Champion organizations enrolled.
- Achieve 25% of all upgrades attributed to Energy Champions.
Actual: Shown in Table 3.

Table 3. Upgrades Attributed to Energy Champions

Upgrade Type	Energy Champion Goal	Energy Champion Actual	% to goal
Revised Basic	16	0	0%
Revised Advanced	405	153	38%
Flex Path	448	7	2%
Total	870	160	18%

Other Accomplishments:

Energy Champions have been directly involved in staffing and/or organizing 203 community events throughout the period of performance. Although community events are not considered to have the highest success rate in prompting homeowners to act, they do contribute to overall brand awareness and have the advantage of presenting the EUC program within a local context. Champions also involved contractors at these events, which enabled them to initiate relationships with homeowners.

A few of the Champion organizations teamed with savvy contractors to take advantage of their respective strengths: non-profits know how to organize workshops and some contractors know how to sell home performance. This model proved extremely successful in cities such as Claremont (see below). Other organizations found similar program models, which proved both productive and successful.

LA County developed in-person and webinar trainings for the non-profit groups accepted into the program. For several of these groups, it was the beginning of their energy efficiency education and provided them with the basics of how to communicate the benefits of the program. Initial in-person training surveys indicated that Energy Champions found the trainings helpful and effective in inspiring them to champion the program. Webinars served as a useful tool to supplement in-person and one-on-one phone support.

Champion organizations partnered on workshops and marketing events where they could maximize attendance and have numerous contractors as panelists promoting the program offerings, as well as their own expertise.

LA County was accepted to present a poster at the Behavior Energy and Climate Conference in November 2012 to discuss program design and initial findings.

The City of Claremont deserves special recognition due to the unique collaborative effort catalyzed by the Energy Champions program. Sustainable Claremont, the City's primary Energy Champion, was formed following adoption of the City's Sustainability Plan in 2008, with the expressed purpose of engaging the public to create a more sustainable community. The organization took the Energy Champions model and ran with it, setting up an action group devoted to Home Energy Retrofits under the name Claremont Home Energy Retrofit Project (CHERP), with the expressed goal of retrofitting 1% of the city housing stock. In January 2013, the City of Claremont accomplished this goal with their 130th retrofit project; far outpacing the rest of the territory per capita.

Lessons Learned

The Sustainable Claremont/CHERP model typifies where success can best be found in future programs. A correlative analysis of the application data and successful project completion reports helped to reveal that organizations with both fundraising experience and existing channels of outreach capability

specifically tailored to in-person communications were best suited to take advantage of the Energy Champions model.

Concurrently, organizations that have established relationships with contractors have more Homeowner Action Form submissions than organizations that have not. Successful Energy Champions were found to hold more events and were more likely to have a contractor present at their events than Champions that were less successful.

Findings from two surveys conducted between the fall of 2012 and the spring of 2013 suggest that Energy Champions do not view their own understanding of the EUC program as a barrier to promoting the program. Among the 21 Energy Champions that responded to first survey, 81% rated their understanding of EUC as a four or five on a five point scale, and none rated their understanding below a three. Similarly, 81% of the respondents to the second survey (22 of 27) reported that they understand EUC well enough to promote it to their constituents.

ENERGY CHAMPIONS CHALLENGES

Survey findings suggest that time and resource constraints are likely limiting Energy Champion success in promoting EUC. The interviewed Energy Champions most often (15 of 25 responding) reported that they would be more successful in promoting EUC if they could spend more time doing so. These contacts most often (9 of 15) reported that a lack of staff or financial resources prevented them from spending more time promoting EUC. Five contacts also cited competing priorities within their organization as a factor that prevented them from devoting more time to promoting EUC. One contact stated that his organization could better promote EUC if fewer individuals were able to devote a greater proportion of their time doing so, allowing them to develop more detailed knowledge of EUC, rather than spreading the task among multiple individuals.

While Energy Champion organizations serve diverse populations, interview findings do not suggest that this diversity poses a substantial barrier to the pilot. The majority of survey respondents (74%) indicated that their constituents are good targets for the EUC program. While almost all of the respondents with at least one HAF submission (8 of 9) stated that their constituents are a good target for EUC, a majority (12 of 17) of those without HAF submissions also said their constituents are a good target. Energy Champions reporting that their constituents are not good targets for EUC either stated that their constituents could not afford the cost of EUC upgrades (5 of 7) or were not interested (2 of 7).

Due to a complicated and consuming project completion process, Energy Champions were unable to receive their incentives until a project was verified as completed by the investor-owned utilities (IOUs). This stifled interest in promoting the program because the goal line for incentives appeared to keep moving back. Although the process was streamlined as all the parties involved became more familiar with their roles, it has been deemed necessary to adjust the incentive in the coming program design to allow for a non-monetary, upfront incentive, most likely in the form of a suite of marketing options, to increase both Champion and programmatic visibility.

ENERGY CHAMPIONS SUSTAINABILITY PLAN

The Energy Champions program has been included in the 2013-14 California Public Utilities Commission Program cycle, as a continuation of the pilot activities outlined earlier, with minor programmatic alterations and still under the umbrella of the Energy Upgrade California program.

Because the program continues to incorporate an active feedback loop and generate solutions based on available resources, it will add a lead generation incentive component. The operating assumption is that encouraging Energy Champions to reach a larger population base will create more leads and more completed projects. Furthermore, all leads generated will build toward a token economy that can be traded in for marketing materials and opportunities.

The Energy Champion base will also be re-opened and new Champions brought on board in an attempt to broaden the message capacity of the program.

ENERGY CHAMPIONS VERIFICATION OF DATA

Renewable Funding (“RF”) served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE’s xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

ENERGY CHAMPIONS DEVELOPED PRODUCTS

Item	Description
Publication	General marketing collateral and customized brochures were made available in English, Spanish, Chinese, and Korean. The operating assumption was that providing each Champion with the validation of the program would help them to deliver a personalized message to their constituencies. The online resource library also housed newsletter templates, talking points, fact sheets, homeowner PowerPoint presentations, and videos for Energy Champion use.
Publication	Press Release to announce Energy Champions countywide launch – July 2011
Publication	Energy Champion case study featuring Sustainable Claremont
Publication	Energy Champion Training Guidebook
Publication	Abstract and poster artwork for BECC Conference in November 2012
Website (Administrative Portal)	This two-tiered portal was built by Renewable Funding integrates with not only input for the ECs to report, but the incentive processing procedures administered on behalf of all Energy Upgrade California™ in LA County by BKi as well.

HEMC EXECUTIVE SUMMARY

The Home Energy Makeover Contest (HEMC) offered LA County residents a chance to win an energy upgrade package designed to achieve at least 20% energy savings during the spring of 2011. The HEMC brought together local contractors who donated their time, equipment, and labor to complete energy upgrades for contest winners in return for non-winner household lists to use as sales leads. The objectives of the HEMC were to test whether publicizing upgrades of a selected group of homes would create enough trusted messengers to motivate and inspire audiences to pursue upgrades through EUC, as well as raising awareness for the program resulting in website hits, media interest, and demand for Participating Contractors. In addition to creating trusted messengers from contest winners, the HEMC sought to raise awareness of EUC among contest entrants and generate leads for participating contractors.

The county selected six contest winners from 2,305 entrants. Five of the winners received free energy upgrades, valued at \$20,000, while the grand prize winner received a solar installation in addition to energy efficiency upgrades, valued at \$50,000. Contest participants were engaged through mass media and online advertising, billboards and bus wraps, and door-to-door canvassing. As part of the application process, participants were required to provide 12 months of electric, water, and gas billing data, as well as a short paragraph describing why they wanted to upgrade their home. Participants also had an opportunity to upload the results of a Home Energy Efficiency Survey (HEES) online audit, which increased the IOU HEES program participation. This utility information was collected for use by participating contractors to vet the 1,425 leads generated. The purpose of requiring a more onerous application process was to provide leads to contractors that had useful information attached, or demonstrated a level of energy management and awareness by the homeowner.

The HEMC proved very successful as an outreach tool to market and build awareness for home performance and EUC. The program generated two local news features and resulted in over 100,000 website hits during the month that EUC launched its brand in LA County. The program was less successful in generating leads that resulted in EUC projects. Of the more than 2,000 contest entrants provided to contractors as leads, the program's tracking efforts have identified fewer than five who completed upgrades. However, this tracking system was based on a coded coupon given to contest entrants, which expired after six months. If any of the entrants followed undertook an upgrade after that period, or did not redeem the coupon, they would not have been tracked. Also not tracked were any homeowners who moved forward with upgrades after being motivated indirectly by the contest and its components (open houses, media buys, etc.).

HEMC FINAL TECHNICAL REPORT

Institutional Design and Business Model

Description: The objectives of the HEMC were to test whether publicizing upgrades of a selected group of homes would create enough trusted messengers to motivate and inspire audiences to pursue upgrades through EUC, as well as to raising awareness for the program resulting in website hits, media interest, and demand for Participating Contractors. In addition to creating trusted messengers from contest winners, the HEMC sought to raise awareness of EUC among contest entrants and generate leads for participating contractors.

Key Initiatives:

- Obtain program entrants
- Leverage HEES program
- Select winners based on established criteria including energy consumption, supervisorial district, media and marketing appeal, building type
- Create open house events and media around winners and upgrades
- Create Family Stories website and case studies to showcase upgrades as examples for interested homeowners

Target Market:

- Potential homeowner participants interested in upgrading their homes within LA County.

Partners:

- LA County, Energy Coalition, Participating Contractors, EGIA, MIG

Program Design and Customer Experience

Table 4 summarizes the statistics of the HEMC.

Table 4. Winner Selection Process

Actor Responsible	Selection Steps	Number of Entrants Selected
Homeowners EGIA	Entered contest	2,305
	Ranked contest entrants by energy intensity (use per sq ft of home)	100
	Selected 20 entrants with the highest energy intensity in each of the 5 LA County supervisorial districts	
	Conducted phone interviews with these contest entrants	
Sponsoring Contractors	Used phone interview data, application information, and information from driving by homes to select four homes in their assigned district (s)	20
	Conducted assessments of homes selected in each district	
Sponsoring contractors, EGIA, and The Energy Coalition	Selected one winner per supervisorial district based on characteristics of finalists, including energy savings potential	5
Sponsoring solar installer, EGIA, and The Energy Coalition	Selected grand prize winner to receive solar installation in addition to efficiency upgrade	1
Sponsoring contractors, EGIA, and The Energy Coalition	Selected a second winner in the grand prize winner's district to receive efficiency upgrades	1

Driving Demand

The decision was made to hold the contest at program launch in order to leverage the full media buy budget and PR momentum. This would allow for a wide variety of ads to be disseminated across the entire county and provide a “newsworthy” story for pickup by media channels. Although Energy Upgrade California became a secondary message to the HEMC, the process of educating the public, as well as the overall messaging, created an exponential interest in the contest that would have been lacking had the contest launched on its own.

One winner had to be from each of the 5 supervisory districts. This caused an interesting dilemma because the highest energy users in some of the coastal towns were less than some of the most efficient energy users in the inland communities. However, the team involved the donor contractors in both the selection criteria as well as the selection process, so that they had a chance to drive by some of the homes prior to choosing the 5 they would assess in each of the districts, before eventually choosing 1 winner.

The contractor community had requested that we keep the entry period to 30 days, which had its pros and cons. The pros had to do with a fear that the market would freeze while homeowners were waiting to see whether or not they won. Conceptually, contractors were afraid that we could hurt their sales cycle if we dragged on the selection period over 2 months. Furthermore, choosing when to run the contest, without competing against their heavy cooling or heating period, was of great interest to the

contractors. The cons were that we didn't have enough time to properly market the program and the contest over 30 days, and we could have used the contest more effectively to gain program traction and interest in whole-house awareness if we had offered the incentive of a free upgrade over a longer period.

Workforce Development

A workshop was held in February 2011 aimed at recruiting contractors for the contest. EGIA, the main implementer of the contest, had recruited many product sponsors, and the overall message was for teams to work together on a project, so that no single contractor had to carry all of the donation value. This concept resulted in many of the more experienced contractors working with teams of specialty contractors, who saw the benefits of joining the program and achieving BPI certification. These alliances continued throughout the Energy Upgrade program and still exist today.

The leads were provided to all of the Participating Contractors in the program, but contractors donating services were favored. Providing leads to all contractors was intended to help smaller shops—who could not afford to donate services—

The open house events showcasing the completed homes allowed the principal contractor to share their expertise with visitors, which included other contractors who were new to home performance and green building labeling.

The home makeovers included a green building labeling component, which involved a rater-contractor collaboration on all of the projects, resulting in case studies and experiences that could contribute to the success of the Green Building Labeling Pilot program.

Financing and Incentives

EGIA knew from experience that a contingency budget aimed at bridging the gap between donated equipment and total equipment needed was necessary. Often, it is easier to find a sponsor for solar panels or HVAC equipment than a low flow toilet or faucets. However, paying for construction using ARRA funding would have triggered the Davis Bacon Act, which we wanted to avoid. The contractors ended up spending significantly more money to retrofit the homes than was originally projected because none of the missing items could be subsidized. The LA County team did try to cover the costs of all of the test-in and test-outs, building permits, HERS ratings for the HVAC installations, and green building labeling soft costs. However, these did not come close to the amount needed to compensate the contractors.

Many of the contractors working on the contest wanted to use the homes to showcase their talents, or to demonstrate a variety of options they could use as sales tools. This made it difficult to build a financial justification for future homeowners to move forward with upgrades, unless they were able to understand the differences between these “show homes” and their home. Therefore, the contractors were instructed to break out the minimum measures, which included air sealing, duct sealing, and attic insulation, and whatever measures it took to get to 20%. This became the base for each home, before additional options such as solar powered HVAC, wall insulation, windows, etc., were included. The additional options were then quantified in each case study to show how the home got to 50% reduction in energy use.

Pool pump variable frequency drives (VFDs) were not included in the whole-house packages through the IOUs, but VFDs can result in an enormous amount of realized energy savings. Additionally, Pentair, a VFD manufacturer, was an equipment sponsor. Therefore, many of the homes with pools had VFDs and new

pumps installed as a best practices demonstration option rather than sticking only to the measures that are part of the IOU whole-house rebate program. The same is true of the Cyberrain irrigation system, which shuts off when raining, and the EnTouch programmable thermostat energy management system.

Data and Evaluation

Table 5, Table 6, and Table 7 summarize the data collected from the HEMC pilot.

Table 5. Source of Program Awareness

Source of Awareness	Count
Radio	316
Online	268
EUC Website	219
Media Coverage	154
Print	145
Word of Mouth	145
Flyer	24
Contractor	22
Facebook	22
Billboard	14
HEES Survey	8
Other	321
<i>Based on the 1,425 applicants who opted in, multiple responses allowed</i>	

Table 6. Most Commonly Cited Improvements Needed

Measure	Proportion of entrants mentioning (n=1,425)
Windows	45%
Insulation	42%
Air Conditioning	40%
Solar	31%
Water heating	24%
<i>(multiple responses allowed)</i>	

Table 7. Follow-up survey with non-winners: Reason for interest in the HEMC

Reason	Count of Participants
Hoping to win free energy saving upgrades	55
Making my home more energy efficient	52
Saving money on energy bills	49
Finding rebates for energy efficiency upgrades	38
Improving the comfort of my home	29
Replacing broken heating or cooling equipment	14
Looking for a contractor who would make my home more energy efficient	6
Other	2

HEMC ACCOMPLISHMENTS

- The County selected six contest winners from 2,305 entrants.
- Participants also had an opportunity to upload the results of a HEES online audit, which increased the IOU HEES program participation.
- 1,425 leads generated. The other 880 asked NOT to be contacted by vendors for follow-up.
- 6 robust case studies including production videos highlighting sponsors and contractors, homeowner testimonials, and audit reports with pricing.
- The HEMC program was asked to present lessons learned at the BECC Conference in Washington, D.C., in November 2011.
- Family stories section in Energy Upgrade California in LA County website highlighting each homeowner project, information about the sponsors, and results.
- The contest brought attention to the Energy Upgrade program, resulting in many contractors obtaining their BPI certification and becoming eligible in the program. According to the HVAC sponsor, Lennox, their authorized dealer and installer were not certified to provide upgrades in the EUC program. Thus they decided to authorize one of the pilot's sponsoring contractors to install their equipment and have since become more involved as a stakeholder in home performance on a national level.
- More Energy Upgrade participation occurred than could be identified through the established data tracking process.

HEMC CHALLENGES

Launching the HEMC as part of the launch of the EUC brand caused many challenges. It would have been smarter to launch the Energy Upgrade program first, receive earned media and brand awareness

through a “grand opening” campaign, and then launch the contest once initial interest begins to die down. Combining both elements into one period resulted in mixed messaging, disconnected prioritization, and conflicting agendas with the IOUs who did not wish to have anything to do with the contest at that time.

Another challenge pertained to contractor capacity. The program had just launched, and many of the contractors were still learning the program components, rules, and internal sales techniques. Many contractors lacked confidence in the program’s future, and were wary of staffing up to properly meet customer demand. When 50-100 entrant leads were given to each of the Participating Contractors, some potential customers were neglected. One contractor contacted the top 100 entrants and solicited all of them before those leads were given out fairly to the contractors who donated time and money. Some of the leads received a boilerplate e-blast from contractors with little or no follow-up, and those leads subsequently died. It was difficult to see nearly 1,500 prime leads—from homeowners who gave energy information and, in some cases, provided HEES surveys—become useless and to realize that none would result in assessments or retrofits. It did not make statistical sense. If the contest had been run a year later, it is likely that many of the contractors would have had the skillset to convert those leads into sales.

- The Cadmus interim evaluation report stated that initially 1,026 leads were distributed to 44 contractors. After four months, pilot staff redistributed leads from contractors who had not recorded efforts to make contact to those who had documented efforts to contact their homeowners.
- Ultimately, 13 contractors recorded efforts to contact 542 contest entrants.
- In surveys with non-winners, 25% (n=19 respondents) reported that a contractor affiliated with the HEMC had contacted them. Sixty percent (n=46) said they hadn’t ever been contacted by a contractor, and the rest said they couldn’t remember whether they had been contacted (14%, n=11).
- In surveys with non-winners, of the 19 who had been contacted by a contractor affiliated with the HEMC, 11 discussed energy savings upgrades with the contractor who contacted them, 7 of those 11 had a home energy assessment, and four of the respondents went through the EUC program, although 2 of the 4 went with a different contractor than the one who contacted them.
- Of the 57 who either had not been contacted or did not remember, 29% reported making energy efficiency upgrades including 4 who stated they did participate in the EUC program.
- Eight EUC participants were declared from the non-winner homeowner surveys. This indicates that more upgrades as a result of the contest are occurring than the 2 that the contractors reported.

Another challenge concerned data tracking. As stated earlier, it was very difficult to track the trickledown effect of the contest. Homeowners showing interest in retrofits through open houses, the Family Stories web pages, media and advertising both before and after the contest, and other sources of enticement were nearly impossible to trace back to the contest itself, especially since the survey questions performed by Cadmus never asked that type of question.

Many of the contractors felt that the lack of cooperation from the utilities was a disadvantage for the contest because the contest sought to demonstrate a typical EUC project in the winners’ homes, yet

they were not verified nor promoted as such by the utility companies, who did not support any components of the contest. The IOUs would not accept the contest projects because the work was done at no cost to the homeowner and the IOUs would be unable to claim the savings resulting from the project.

HEMC SUSTAINABILITY PLAN

Home Energy Makeover Contest concluded, however, the family stories case studies and content will migrate to the GreenLACounty.gov website.

HEMC VERIFICATION OF DATA

Renewable Funding (“RF”) served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE’s xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

HEMC DEVELOPED PRODUCTS

Item	Description
Website	Family Stories website page http://www.lacountymakeovercontest.org/county/los_angeles/index.html . Content will be translated to GreenLACounty.gov website.
Publication	Printed and electronic case studies were produced for each family (Gerardo, Dobbs, Kienzle, Kelley, Brown, and Bryan).
Publication	Press Release coordinated with City of Palmdale in March 2011 to collect more program entrants.

GENERAL HOMEOWNER OUTREACH EXECUTIVE SUMMARY

Energy Upgrade California in LA County marketing and outreach efforts leveraged BBP, CEC, and EECBG funds awarded to the County of Los Angeles. Utilizing BBP funds, general homeowner outreach efforts started in early 2011 were able to continue until April 2013 after other grants closed in April 2012.

According to the Energy Upgrade in LA County Communications Plan, the program assumed 35-40% of program participants would enter the program as a result of marketing and outreach efforts. Based on this assumption, LA County invested resources to develop a robust outreach plan. To maximize program participation and maintain consistent branding, the County and its partners collaborated on community outreach, countywide advertising, and the development of a statewide Energy Upgrade California website. The County team built an outreach plan aimed at reaching the homeowners identified through market research as most interested in doing upgrades on their home, combined with those most capable of affording these services. A multiple touch approach was used to educate homeowners about the whole-house approach, and a combination of outreach events, marketing materials, and regional ad and PR campaigns helped to steer consumers to the Energy Upgrade California website. Efforts were made to engage established local government stakeholder and outreach networks to educate homeowners, contractors, and retailers about the program. Throughout the grant period, general homeowner outreach included presence at community events/presentations, mainstream and multicultural local and mass media, creation and distribution of marketing materials, and PR campaigns and strategic PR.

The goals of the marketing and outreach program were to increase program awareness, educate property owners about the benefits of whole-house retrofits, drive program participation, and create a sustained market for a whole-house performance approach leading to long-term behavioral change. Data as of March 2013. Based on LA County incentive program applicants.

Specific goals by outlined by marketing and outreach strategy were identified early on, which were all met. These goals included:

- Reach 300,000 website hits or call inquiries
- Create virtual buzz through social media resulting in click-throughs to the website
- Achieve 50,000,000 media/advertising impressions through media, community events, and direct mail

A formal evaluation of the overall program with a focus on LA County's efforts has not been completed; therefore, it is difficult to draw conclusions and attribute marketing efforts directly with program participation. While market transformation within program operation between February 2011 – April 2013 was difficult to document, it is important to recognize that the program has paved the way for a full market transformation to follow, wherein the whole building energy retrofit industry achieves increased energy savings while spurring job creation and economic development. This transformation is evident in contractor sales and marketing confidence, brand and messaging awareness, and documented growth in the home performance industry. The unprecedented partnership developed between Cities and Council of Governments (COGs), SCE, and Southern California Gas Company (SoCalGas), and contractors has yielded the current program accomplishments. Energy Upgrade in LA County primed the region's whole building energy retrofit market for increased and continued growth. Marketing and outreach activities have begun to accelerate energy retrofit uptake as messaging has been refined and critical grassroots relationships have been established.

GENERAL HOMEOWNER OUTREACH FINAL TECHNICAL REPORT

Institutional Design and Business Model

Description:

The goals of the General Homeowner Outreach program were to increase program awareness, educate property owners on the benefits of whole-house retrofits, drive program interest and participation, and create a sustained market for a whole-house performance approach leading to long-term behavioral change.

Key Initiatives:

The key marketing initiatives included presence at community events/presentations, mainstream and multi-cultural local and mass media, creation and distribution of marketing materials, and PR campaigns and strategic PR. These marketing tactics were aimed at homeowners to educate them about the benefits of whole-house retrofits and the program offerings available to them including rebates/incentives, financing, and access to qualified contractors/experts.

Target Market:

Outreach was aimed at three target audiences:

- Early Adopters: Those who are strong environmentalists, already poised to “do the right thing” for the environment, and who just need to hear about a program and rebates.
- Retrofit-Ready: Those who are already planning home improvements and just need a little more information about what steps to take to save money and “do the right thing” for the environment.
- Retrofit-Persuadable: Those who are thinking about their utility bills, home comfort, and the environment or our dependence on fossil fuels/foreign oil, and who need information about what types of improvements they could make and what steps to take to save energy, money, and reduce fossil fuel consumption.
- Demographics:
 - o Income \$75,000-\$150,000
 - o High percentage of college-educated
 - o High percentage of population age 35-50
 - o High percentage of households with 4+ people

Partners:

Energy Upgrade in LA County homeowner outreach partners included Los Angeles County, BKi, The Energy Coalition, investor owned utilities, local governments, councils of government, community organizations, and participating contractors. Table 8 contains a more extensive list of Partners.

Table 8. Program Partners

Activity Area	Local Partners	Leveraged Local Partners
Marketing And Outreach	BKL The Energy Coalition InterEthnica OSS MIG Fifteen Minutes PR Walden Hyde Opportunity Green Green Technologies Allison & Partners Fifteen Minutes PR Walden Hyde	Cities within Los Angeles County South Bay COG San Gabriel Valley COG Gateway Cities COG Westside COG San Fernando Valley COG Las Virgenes-Malibu COG Southern California Edison Southern California Gas Ecology Action Energy Champion organizations Stopwaste.org CCSE

Program Design and Customer Experience

General Homeowner Outreach was a multi-layered, multiple-touch approach to educate homeowners about the whole-house approach, and a combination of outreach events, marketing materials, and regional ad and PR campaigns helped to steer consumers to the Energy Upgrade California website in order to find a Participating Contractor.

Customers had several pathways to obtaining information about the program depending on their first contact with the program. If the customer heard about the program through media efforts, they were urged to visit the website. Many homeowners told program staff that the website was difficult to navigate, and the steps to participate became lost. As a result, efforts were made to highlight as part of the messaging within the media print or script the need to not only visit the website but to call a contractor who could act as a whole-house expert. The contractor delivery was an invaluable part of the customer experience. While it was not funded directly out of BBP funds, Speaker Training was offered to contractors to help them learn how to effectively market and engage homeowners. This revised push toward contractor delivery resulted in a shift in survey results of program awareness. Since the messaging presented the contractors as the trusted messengers for the program, many of the homeowners believed they heard about the program through their contractor in post-retrofit surveys.

Customers also heard about the program through community outreach events. Initially, the event staff consisted only of consultant team members representing LA County to educate homeowners about the whole-house approach and how to participate in the program. Potential participants were given program materials to take home and were encouraged to visit the website or to call a contractor to learn more about their potential for program participation. Program staff learned that having a whole-house expert at the event offered homeowners the opportunity to understand how their unique home issues could be solved through an upgrade. As a result, whenever possible, participating contractors are invited to attend community events and presentations, along with program staff. Team members began tracking touches differently than engagements in order to better understand the relationship between interest in the program and signing up with a Participating Contractor for an assessment.

Through multi-cultural outreach efforts, potential participants were also given access to in-language materials and a call center that could support Spanish and Chinese speakers. In order for these customers to take action, they needed access to Participating Contractors who could address their

needs. As a result, program staff developed a process to provide contractor contact information based on in-language support, as well as recruit a wide variety of Participating Contractors to represent the variety of cultures of people looking for home upgrades.

Driving Demand

According to data collected by LA County incentive applications, over 37% heard about the program through marketing efforts. These data differ from the previous data collected when it was close to 50% through marketing efforts. As stated earlier, marketing the contractor delivery approach results in a misperception as to where the initial motivator came from. Figure 3 uses March 2013 data to show how people heard about the program.

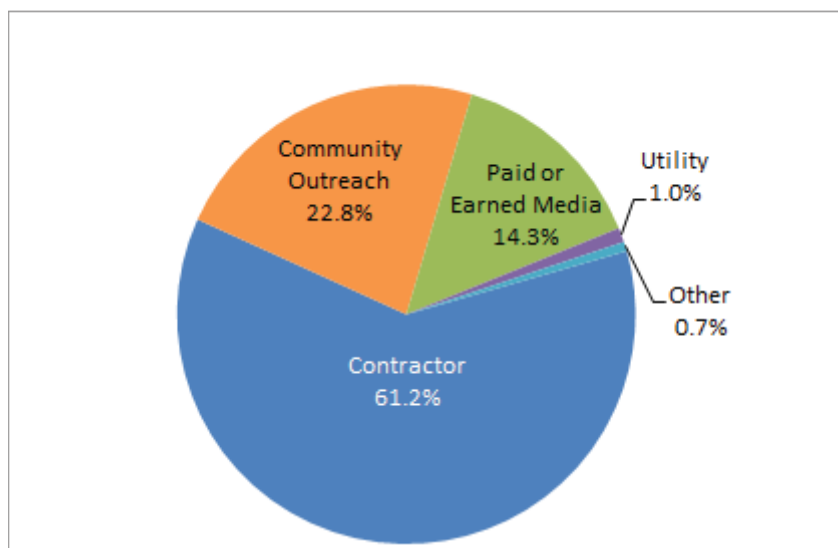


Figure 3. How did you hear about the program? (Data as of March 2013)

LA County contains approximately 3.4 million homes across 88 cities and unincorporated areas. Creating messaging and marketing strategies to cover this large territory was a challenge because different areas responded to different messages. Program staff adapted to different audiences in their presentations and community event attendance to account for different values applied to the program benefits.

Community event criteria were established to identify and vet potential Energy Upgrade outreach opportunities. Opportunities involving captive audiences interested in energy and/or the environment were prioritized. Of LA County matching incentive applicants, 6% attended an event and provided their email to sign up for regular program communication.

In January 2012, the County began a new marketing message campaign, with the help from Fifteen Minutes Public Relations and Walden Hyde design firm. The previous marketing message aimed to educate homeowners about whole-house retrofit approach and promote the rebates. The new strategy was based on lifestyle and termed “A Perfect Day.” Program staff noted that while rebates and incentives were an important key message, many homeowners and potential program participants identified with lifestyle messaging that addressed their home health and comfort. This campaign was

run through targeted media buys and electronic communications. Freelance Media provided the following analysis between the 2011 and 2012 media campaign results:

- The 2012 campaign utilized 45% less money and delivered 55% fewer impressions.
- The overall media efficiency of 2012 versus 2011 is similar, with a slight savings of a \$4.10 CPM versus \$5.00.
- By increasing the online expenditure to 21% of the budget, the CPC decreased to \$1.21 from \$9.43 and the overall clicks increased 1,390% with the use of Pandora and Facebook and Google.
- When utilized, both Television and Radio also performed well by increasing impressions and reinforcing message frequency extremely efficiently.
- iNet: 15 traffic sponsorships with a mobile ad component were introduced through ad buys.
- Print ads were strategically placed to promote Homeowner Workshop events.
- PR campaigns engaging celebrities such as Ed Begley Jr, Kristin Bauer, and Joe Mantegna, in combination with strategic Energy Upgrade California spokesperson interviews on local news programs, resulted in over 1.5 billion impressions and interest in the program during the period of time that the Flex Path program was at its most active in the marketplace.

Cadmus prepared a draft evaluation report surveying homeowner participants as part of the Energy Champions program. The results indicate that respondents rated increasing the comfort of their home as the most influential reason for making their upgrades.

Program participants also heard about the program through social media efforts on Facebook and YouTube. This offered a low-cost method to reach potential program participants and to increase brand awareness. Specifically, celebrity interviews and PSAs posted on YouTube are available for long-term use and are effective in generating program buzz.

Workforce Development

General Homeowner Outreach methods generated leads for Participating Contractors. The County team identified barriers to completing an upgrade: contractor delivery of the program as well as distrust in contractors. To overcome these barriers, the County team created mentoring opportunities between program implementers and contractors, aimed at coaching and observing the contractors working with the public on the program. These efforts included speaker trainings to assist new contractors unfamiliar with how to communicate the benefits of the program and sales training webinars. Furthermore, regular communications through contractor newsletters and electronic communication campaigns provided the building industry with talking points about the program, valuable program updates, and tips on how to integrate some of the BBP pilots into their sales pitch to homeowners such as the Green Building Labeling or Energy Champions pilots. Also, the County invited contractors to attend community events and participate in contractor panels to generate leads in real time.

Due to the success of incorporating contractor engagement at community events with program staff, all community events were required to include a contractor whenever possible. This not only allowed new contractors to develop their marketing skills with program staff assistance, but it allowed for homeowners to increase their familiarity with multiple contractors in the case they wished to obtain

multiple quotes. Additionally, local contractors often understood the values of their local audiences, which made their attendance and participation at events alongside program staff all the more valuable.

Contractors were also given the opportunity to participate in Contractor Cooperative Marketing. This program offered print-on-demand credits and marketing material reimbursements for items including custom brochures, banners, van wraps, uniforms, and media ads on radio and print.

Financing and Incentives

Financing offerings through LA County were marketed alongside general program outreach to homeowners. The introduction of the 2% financing product increased program interest and was communicated through program collateral, events/presentations, and electronic communications.

Financing depended greatly on contractor interest and communication, so much effort was given to educating and coaching the Participating Contractors on the financing program terms, updates, and ways to discuss financing with homeowner clients.

A coupon and voucher program was instituted leveraging California Energy Commission funding. The coupon program provided a \$200 extra homeowner incentive marked with an expiration date with the purpose of creating urgency to act now and lower the financial barrier to upgrading.

The voucher program was also instituted using California Energy Commission funding and provided a \$300 subsidy for an energy assessment to lower the barrier to initial participation.

Data and Evaluation

LA County had limited resources to perform full program evaluations. Specifically, marketing surveys were coordinated with IOUs and other organizations in order to limit the amount of times homeowner participants were contacted.

LA County tracked marketing metric data since February 2011. Portions of this data are available in a monthly dashboard released each month. The Energy Coalition will provide this data sheet for back up for any third-party evaluations needed.

Actual retrofit data for public consumption should be a requirement for future programs. The program had difficulty providing the information needed to sell comprehensive energy upgrades (such as return on investment data) because data were not available or could not be released to public due to legal limitations of certain stakeholders. As the program continues, real data can be used to inform potential participants. The LA County team did its best to highlight the six projects that went through the Home energy Makeover Contest as case studies in order to illustrate costs, energy savings, and non-energy results. These six homes were designed to be an invaluable tool for homeowners and contractors interested in finding data that could help illustrate how similar homes may perform with the same types of upgrades.

GENERAL HOMEOWNER OUTREACH ACCOMPLISHMENTS

The homeowner outreach efforts successfully increased overall awareness of Energy Upgrade California in Los Angeles County through community engagement opportunities at events and public presentations and overall marketing and PR efforts. As of April 2013, the goals outlined in the Communications Plan were met and the program was showcased at over 876 events. Marketing and public relations efforts yielded over 2 million website page view impressions to both the LA Energy Upgrade pages (850,453)

and the statewide Energy Upgrade pages (1,240,174), 345,352,669 paid media, and 1,131,393,676 earned media impressions.

Marketing campaigns featured key messaging about the rebates available through the whole-house program and the benefits of treating one's home as a system. These messages were conveyed through branded, creative advertising campaigns during the program and were shared through traditional and non-traditional media avenues such as blogs, online, print, radio and television advertisements, and a mobile texting campaign. The texting campaign was worked into all audible advertisements, and the marketing team developed a mobile-optimized website, which prompted visitors to sign-up for e-blasts, resulting in over 1,200 text opt-ins over a short period of time.

The public relations efforts focused primarily on celebrity endorsements of the program and traditional public relations pitching strategies. These efforts helped raise awareness for the program and created opportunities such as informative television segments about energy improvements, do-it-yourself energy savings tips, positive editorial content, and high profile online placements, resulting in over 1,004,528,840 earned media impressions.

As mentioned above, 876 Energy Upgrade in LA County events were held across the territory. Six percent of LA County matching incentive applicants attended an event and provided their email to sign up for regular program communication. This number is expected to be higher; however, the data to correlate event attendance with Energy Upgrade participation is limited. Over the course of the program, more community organizers approached Energy Upgrade staff to satisfy event requests. As a result, event criteria were established to identify and vet potential opportunities. However, for appropriate events that are unable to be staffed by Energy Upgrade program staff, community Energy Champions or participating contractors were offered the opportunity.

To address a barrier of lack of knowledge of whole-house approach, LA County leveraged DOE's energy assessment video by posting it on the Energy Upgrade California in LA County website homepage to educate website users about the importance of an energy assessment and how it is incorporated into the Energy Upgrade process. This video is provided as a resource for contractors, Energy Champions, and program staff. This tool was also leveraged by a school program to integrate with a home energy survey assignment.

Marketing Metrics through April 2013 are provided in Table 9. A more detailed tracking sheet will be provided as supplemental information for third-party evaluators. Table 9 includes activities under the BBP grant as well as leveraged activities under EECBG and California Energy Commission Funds. Activities are not tracked by funding source.

Table 9. General Homeowner Marketing Activities

General Marketing Activities	Data
Total Media Impressions (Paid)	346,328,189
Total Media Impressions (Earned)	1,144,253,886
Total Website Visitors	
Energy Upgrade CA in LA/Local Portals	168,348
Energy Upgrade statewide	483,688
Total Website Page Views	
Energy Upgrade CA in LA/Local Portals	870,746
Energy Upgrade statewide	1,317,934
Outreach Events	876
Number of Touches at Events	799,064
Targeted Communications	
Direct Mail	15,303
Direct Email	70,892
Door Hangers	413,000

GENERAL HOMEOWNER OUTREACH CHALLENGES

The whole-house approach was new to consumers and contractors, as well as the IOUs, which meant a steep learning curve. There was also some market confusion and misalignment between program operational readiness, practices, and marketing efforts.

At times, the program had difficulty providing the information needed to sell comprehensive energy upgrades (such as return on investment data). In the beginning especially, contractors needed better marketing and sales tools to reduce the time they spent with homeowners educating them about the whole-house approach.

More widespread awareness of the Energy Upgrade California program would have helped to create stronger brand recognition and our efforts thus far to create awareness should be maximized in future marketing campaigns.

Additionally, some of the areas identified as being prime for upgrades ended up being hit hard by the recession, which decreased those neighborhoods' ability to afford and participate in the program. This resulted in a lack of confidence in the market segmentation data.

Substantial mid-course program design changes—including a change in the utility administrator, the introduction of HERS II, and changes in credential requirements for Participating Contractors—undermined the consistency of program marketing and requirements.

Inconsistent program offerings across utility provider territories posed a difficulty for creating effective marketing messaging. For instance, areas serviced by Southern California Gas Company and a municipal territory had different incentives available than joint Southern California Edison and Southern California Gas Company.

With Los Angeles County's matching rebates piggybacking on the utility's processes, it was very difficult to market the process for maximizing the rebates to the contractors and homeowners. The IOUs managed the contractors' upfront training and eligibility, the incentive application process, and the QA/QC of the projects. LA County had to figure out how to insert its effort into the process in order to

“sell” its offerings so that participants understood that releases needed to be signed, additional applications needed to be filled out and W-9s needed to be sent in. This added a layer of complexity that could not be communicated in simple marketing and messaging.

GENERAL HOMEOWNER OUTREACH SUSTAINABILITY PLAN

Energy Upgrade homeowner outreach will continue as part of the IOU program and as part of the Southern California Regional Energy Network efforts. Moving forward, LA County funding to support homeowner outreach will be significantly less, compared to the ARRA funds. As a result, the Communications Plan will not include such a robust a campaign; however, outreach will continue to leverage established program partners. With the majority of data demonstrating that homeowners are equating their participation to contractor outreach, it is difficult to justify the need for brand awareness and robust demand building activities on a local level. Instead, the statewide marketing and outreach team, led by the CPUC, will have to handle brand awareness and market messaging from a statewide level.

GENERAL HOMEOWNER OUTREACH VERIFICATION OF DATA

Renewable Funding (“RF”) served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE’s xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

GENERAL HOMEOWNER OUTREACH DEVELOPED PRODUCTS

Item	Description
Website	Family Stories website page http://www.lacountymakeovercontest.org/county/los_angeles/index.html. This website content will be translated to GreenLACounty.gov. Home Energy Assessment website page http://lacountymakeovercontest.org/county/los_angeles/energyAssessment.html LA-specific pages of Energy Upgrade California statewide website www.EnergyUpgradeCA.org/LACounty

Call Center	YouTube: http://www.youtube.com/user/EnergyUpgradeCA Facebook: https://www.facebook.com/pages/Energy-Upgrade-California-in-Los-Angeles-County/140594779319684?sk=wall Call Center Info: (877) 785-2237 LAhelpdesk@EnergyUpgradeCA.org Live Chat is available M-F/ 9a,-5pm on the website: www.EnergyUpgradeCA.org/LACounty
Website	A resource library with tools for real estate professionals, contractors, affiliates, speakers bureau and Energy Champions:: https://energyupgradeca.org/county/los_angeles/resources
Audio Produced Media Produced Production Videos	Multiple radio promos produced (KABC online ad Weather Section 070811) Designed new ad campaign (Jan 2012) including new media buys: Radio, online, print, email, TV ad. Family Stories testimonial videos marketing program (5 families highlighted), Opportunity Green video using Don Cheadle

CONTRACTOR OUTREACH SUPPORT EXECUTIVE SUMMARY

Energy Upgrade in LA County Contractor Outreach Support efforts leveraged BBP, California Energy Commission, and EECBG funds awarded to the County of Los Angeles. Utilizing BBP funds, general homeowner outreach efforts started in early 2011 and continued until April 2013, after other grants closed in April 2012. Below are efforts specific to BBP funding that did leverage the mentioned funding sources.

The Contractor Outreach and Support Pilot established a network for consistency in communication regarding program updates and opportunities, industry developments, as well as contractor success stories.

First, a Contractor eNewsletter was created to provide a reliable source of programmatic instruction. Services by Constant Contact, an online marketing company, allowed program administrators to track open rates and click rates to verify that content was being received by Participating Contractors. The eNewsletter announced opportunities such as industry certification trainings, IOU-sponsored trainings, and other relevant building industry opportunities. The eNewsletters also served to answer common questions that arose from one-on-one contractor feedback as well as from Call Center feedback. Lastly tools and resources available from the Online Resource Library continually offered contractors timely access to program related forms, webinars, and marketing materials.

Second, a series of Quarterly Contractor Networking Events was created to facilitate face-to-face interaction between contractors, raters, Program Administrators, as well as building industry participants who were forecast for ancillary benefits of the EUC Program such as real estate professionals, lenders, brokers, and appraisers. These events filled a need for real-time feedback from all parties involved in the program. Additionally, they provided a forum for cross-industry networking, which fostered the promotion of other programs such as Green Building Labeling, HVAC Contractor Pilot, Multifamily, and efforts related real estate industry outreach.

Lastly, a need arose for a Job Fair sponsored by LA County. Based on feedback from Participating Contractors, and in anticipation of increased job submittals due to trends in summer construction—as

well as a strategically planned Summer Special rebate increase—the need for a Job Fair was identified. LA County surveyed contractors to collect job openings for a database. They then helped those companies create job descriptions with defined knowledge, skills, and abilities. These jobs were then posted to a Jobs Board. From there, specific recruiting through industry-based organizations, Workforce Investment Boards, and Community College workforce programs receiving ARRA funding were targeted. This allowed full-time, part-time and contract workers to be screened and paired with EUC Participating Contractors in a way that was conducive to work-ready primary and ancillary job placement.

These three methods: the eNewsletters, Quarterly Networking Events, and Job Fair worked together to establish a communications network and capacity building resources, which all contributed to an effective Participating Contractor Community within the Energy Upgrade California in LA County Program.

CONTRACTOR OUTREACH SUPPORT FINAL TECHNICAL REPORT

Institutional Design and Business Model

Description:

Foster a network of contractors through a series of quarterly interactions via eNewsletters and in-person networking events, and a Summer Job Fair during the program cycle.

Key Initiatives:

- Produce an LA County team-sponsored Job Fair to accommodate the increased demand of summer retrofits in the Energy Upgrade California Flex Path and Advanced Path programs.
- Host Quarterly Networking Events for contractors to facilitate the exchange of new ideas, contractor-to- program administrator feedback, connect multiple industry sectors, and celebrate the success of completed projects.
- Distribute a quarterly contractor eNewsletter with program updates, success stories, training resources, upcoming events, and industry news.

Target Market:

Contractors, Raters, Real Estate Professionals, Lenders, and Program Administrators

Partners:

IOUs, Industry Organizations

Program Design and Customer Experience

Job Fair

Intent: To simplify and accelerate the hiring process for Energy Upgrade California in LA County Participating Contractors to meet growing market demand for residential retrofits. To provide direct access to employers needing new hires with knowledge, skills, and abilities in emerging green job occupations, as well as new hires for ancillary jobs, who possess existing skill sets in small business operations.

The Difference:

- The jobs made available by this job fair were specific to the needs of Participating Contractors working on Energy Upgrade projects in LA County. These contractors informed the implementation team of the need to fill a variety of positions, with no time to screen and interview candidates. The team obtained and pre-screened approximately 50-75 qualified candidates to attend the job fair and have access to the Participating Contractors.
- Workforce Investment Boards and other strategic partners of the LA County Workforce Development committee had been engaged to publicize the event as well as send unemployed or underemployed candidates to submit the documentation necessary to attend.
- All job openings from Participating Contractors were posted to a job board hosted by Build It Green prior to the Job Fair to enable applicants to review and target employers with jobs they wished to prioritize.
- At capacity, with 14 businesses and 75 job seekers in attendance, the following was a result of the job fair:
 - o 1,050 possible hiring decisions are created
 - o Over 315 two-minute speed interviews occurred
 - o 42 fifteen-minute interviews occurred

Target Audience:

- Employers:
 - o EUC-LA: Participating Contractor Businesses
 - o BBP Pilot: HVAC Contractor Businesses
 - o BBP Pilot: Multifamily Contractor Businesses
 - o BBP Pilot: Green Building Labeling Contractor Businesses
- Job Seekers:
 - o Residential contractors (licensed and unlicensed)
 - o Software-based energy modelers (training opportunities may be provided)
 - o Financial payback estimators
 - o Value added sales and business development professionals
 - o Small business administration/coordination personnel
 - o Skilled laborers with attention to detail
 - o Graphic designers and marketing professionals
 - o Those familiar with SCE and SCG rebate and application processes
- WIBs/One-Stops
 - o Keywords for VOS/WIBS: BPI, HERS, HVAC, 'general contractor', 'energy model', 'skilled labor', 'graphic design', 'attention to detail', 'business development', 'value added sales', 'utility companies', 'energy audit', software, marketing, 'skilled trades', 'green building', crawlspace, attic

Methodology & Implementation:

Two outreach efforts were simultaneously conducted: one for Employers and one for Job Seekers.

- Up to 15 employers were recruited to host a table at the job fair
 - o The EUC- and BBP-approved and working contractors were the target audience
- Employers expressed interest and indicated the number of jobs and job functions needed and staffing hours needed (full-time, part-time, contract work)
- Employers utilized a Jobs Board tool to create and post job openings. Access is free to job seekers and employers and made possible by LA County. It can be viewed here: <http://www.builditgreen.org/en/jobs/search.asp>

- Job seekers with the skill sets listed above were recruited from:
 - Previous contractor trainings in the EUC-LA Database of Participation Workshop attendees and beyond. Workforce Investment Boards (including Veterans).
 - Local industry organizations such as the Institute of Heating and Air Conditioning Industries, Inc. (IHACI) and the California Association of Realtors (CAR)
 - Nonprofits such as the U.S. Green Building Council (USGBC), Build It Green, and nonprofit community-based organizations participating in the EUC Energy Champions program
 - EUC listserves
- Job seekers shall express interest and indicate their existing skill sets and work availability (full-time, part-time, contract work)
- Job seekers were contacted by someone from the implementation team and asked to submit a current resume before being confirmed as an attendee to the job fair
- Job seekers with documented knowledge, skills, and abilities as indicated in their RSVP and resume were matched with the job needs as indicated in the employer RSVP
- Resumes of job seekers were distributed to employers prior to the job fair for evaluation
- The 2-hour event agenda included:
 - 7:30-7:45 – Employer Set-up with prior review of resumes
 - 7:45-8:15 – Registration and refreshments
 - 8:15-9:00 – 2-minute speed interviews with all candidates
 - 9:05-9:50 – 15-minute interviews
 - 9:50-10:00 – Wrap up

Quarterly Networking Event

- Quarterly Networking events are marketed via Constant Contact eblasts to a listserv of program participants and stakeholders.
- Typical implementation includes the formation of a committee consisting of LA County and a representative from each BBP Pilot Program. Additionally, a representative from each IOU, as well as one from LADWP, was included in later Quarterly Networking events. A mutually-agreeable venue, date, and location were established. Marketing collateral was also created and approved by all parties, with a notable effort on respective outreach to program administrator outreach channels. Because these events engaged multiple sectors, the programming and collateral were inclusive of contractors, raters, and realtors.
- A typical program lasted 3 hours, between 4pm-7pm on a weeknight. Food was provided with time for informal networking, followed by a program update, an industry speaker, and a presentation highlighting successful approaches to cross-sector collaboration.

Quarterly eNewsletter

- Quarterly Contractor eNewsletters are sent via Constant Contact eblasts to a listserv of program participants and stakeholders.
- Typical eNewsletters received input from LA County and its subcontractors. Main stories from each BBP program, as well as EUC Advanced Path, Basic Path, and Flex Path program updates were highlighted. Each eNewsletter contained a feature story on a major EUC program, main stories about program updates and successes, and a list of upcoming trainings. Side stories contained upcoming outreach events, links to useful program resources, and common contact

emails and hotlines. Draft content was typically submitted to program administrators, and reviewed by LA County prior to final distribution through Constant Contact.

- LA County found that distribution of regular eNewsletters assisted in communication of program design changes with contractors; however, multiple methods of communication were utilized when feasible.

Workforce Development

Workforce Development efforts for Contractor Outreach and Support focused primarily on the Job Fair, as well as funneling opportunities for training and contractor scholarships to appropriate parties. Because the overall EUC program objectives contributed to driving demand for residential retrofits, Contractor Outreach and Support focus on ensuring communications and connections to resources to build capacity for contractors.

Financing and Incentives

N/A for Contractor Outreach. However, rebates and incentives of the core program are promoted through this pilot as a funneled opportunity.

Data and Evaluation

Job Fair

Data as of 2/14/12:

- 14 employers confirmed; 131 Job seekers
- Of the 12 employers, the jobs shown in Table 10 have been indicated as needed.

Table 10. Job Fair Opportunities and Results

Number/Type of Opening Indicated by Employers	Openings Filled
1 full-time employee	3
2 full-time employees	3
3 or more full-time employees	4
1 part-time employee	1
2 part-time employees	3
3 or more part-time employees	4
Contract employees as needed	11
Total	51 Job Opportunities; 36 full-time equivalent positions

Quarterly Networking Event

Quarterly networking events were hosted throughout the program; specifically, for BBP funding, two Building Industry Networking Events were hosted during the funding period. The events were held on August 23, 2012, and March 6, 2013. Each event had 60 attendees ranging from program administrators, Participating Contractors and their employees, as well as raters and real estate professionals.

Quarterly eNewsletter

The metrics Table 11 detail the twelve quarterly Contractor eNewsletters that were distributed to Participating Contractors and program stakeholders. Unlike the IOU notifications, the LA County contact list consisted of primary contacts for Participating Contractors, as well as established contacts for their office administrators and employees wishing to receive updates. Open rates in the 20% range are expected for lists with multiple points of contact within each company.

Table 11. Contractor Newsletter Distribution Analytics

Date	Avg. open rate	Number of recipients	Clicks
3/4/2013	24.5%	3254	62
10/31/2012	24.8%	3425	56
7/11/2012	24.6%	3451	79
4/27/2012	27.1%	3444	77
1/12/2012	27.5%	3287	83
11/21/2011	27.7%	3310	64
10/18/2011	28.7%	2854	124
9/23/2011	23.6%	2680	69
8/19/2011	29.6%	2760	108
7/19/2011	26.9%	2099	69
6/21/2011	28.5%	2517	95
5/27/2011	29.4%	2541	101

CONTRACTOR OUTREACH SUPPORT ACCOMPLISHMENTS

Job Fair: Targets outlined in Job Fair Design

- SOPO Task 1: Host a Job Fair during the summer months to build capacity for Participating Contractors
 - Target: 15 Employers and 75 Job Seekers
 - Actual: 12 Employers and 131 Job Seekers
- SOPO Task 2: Present Qualified Job Seekers to Employers
 - Target: Screen 75 Job Seekers and Present 12 Candidates to each Employer Per Opening
 - Actual: Out of 131 Resumes, 60 Screened Job Seekers were presented and matched with all 12 employers
- SOPO Task 3: Present Qualified Job Seekers to Employers
 - Target: Create 25 Job Opportunities
 - Actual: 51 Job Opportunities were extended from employers resulting in 36 full time equivalent positions
- SOPO Task 4: Create a Jobs Board
 - Target: Create a functional Jobs Board for ongoing recruitment as well as job search tools
 - Actual: A Jobs Board was created and posted through the EUC website

Quarterly Networking Event: Targets outlined in Networking Event Design

- SOPO Task 5: Host Quarterly Networking Events
 - Target: Deliver Program Updates at each Event
 - Actual: Both industry and program presentations were delivered at each event
- SOPO Task 6: Include multiple building industry sectors at each event
 - Target: Capture attendance from Real Estate Professionals and HERS Raters
 - Actual: Real Estate Professionals and HERS Raters were in attendance

Quarterly eNewsletter: Targets outlined as strategy for eNewsletters

- SOPO Task 7: Distribute one eNewsletter per quarter to the Contractor audience
 - Target: Distribute 12 eNewsletters
 - Actual: 12 eNewsletters were distributed

CONTRACTOR OUTREACH SUPPORT CHALLENGES

Job Fair

- Contractors were reluctant to commit to hiring workers; however, they were comfortable interviewing screened candidates.
- Screening a large volume of resumes was time consuming; however, providing high-quality candidates who were qualified for specific job openings proved to be extremely effective.
- Finding qualified candidates was difficult because employers were seeking industry-recognized certifications and prior relevant experience. Outreach through industry organizations such as USGBC, BIG, and ASHRAE proved helpful.

Quarterly Networking Event

- The size of LA County made it difficult to find a location that was convenient for a majority of stakeholders.
- Collaboration with IOUs on marketing and collateral was detrimental to outreach timelines due to consistently missed deadlines for graphic and content approval.
- Realtors were a difficult group to recruit via RSVP invitations, and also demonstrated a low turnout if they did RSVP.

Quarterly eNewsletter

- Providing clear metrics on program progress became difficult due to the lack of transparency in IOU incentive matching and approval procedures.
- Inconsistency and availability of up-to-date Participating Contractor lists proved to be difficult to manage for maintenance of listserves.
- Contractor feedback revealed that using Constant Contact occasionally resulted in important updates from the Program being flagged as spam and subsequently being unread by contractors, in some cases.

CONTRACTOR SUPPORT SUSTAINABILITY PLAN

The majority of contractor support will be led by IOUs in the future. Currently, there are no plans to continue hosting job fairs; however, the jobs board is still available for use. The IOUs also host contractor workshops specifically for existing Participating Contractors, as well as workshops for contractors interested in becoming an Energy Upgrade Participating Contractor. IOUs also handle communications via the contractor list and will continue to do so. This is appropriate because many LA County eNewsletter items such as matching incentives and other LA County specific program offerings have expired. LA County will continue to encourage the cities and stakeholders to help engage local contractors within the program.

CONTRACTOR OUTREACH SUPPORT VERIFICATION OF DATA

Renewable Funding (“RF”) served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE’s xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

CONTRACTOR OUTREACH SUPPORT DEVELOPED PRODUCTS

Item	Description
Website	Jobs Board: http://www.builditgreen.org/en/jobs/search.asp
Publication	Monthly eNewsletters Contractor Blueprint Manual

Energy Efficiency and Conservation Block Grant (EECBG) – Better Buildings Neighborhood Program

Final Report: Energy Upgrade California in Los Angeles County - HVAC Contractor Pilot

Award Number: DE-EE0003562

BBNP Name: U.S. Department of Energy's Better Buildings Program

Project Title: Retrofit California

Name of Project Director/Principal Investigator: David Cohen

Team Members: The Energy Coalition

The information contained in this report may be shared, used, or disclosed to the general public with expressed consent from the County of Los Angeles.

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EXECUTIVE SUMMARY

The heating, ventilation, and air conditioning (HVAC) Contractor Pilot leveraged successful components of both the Energy Upgrade California™ in Los Angeles County (EUCLA) and the Southern California Edison (SCE) programs, while creating a framework for targeted outreach and training to an increasingly important residential market sector. Many contractors enjoyed the simplicity and prescriptive approach of LA County's Flex Path rebate program. Simultaneously, HVAC contractors, a prime target group, excelled at SCE's QI program, but were not interested in the complex and lengthy whole-house Advanced Path Energy Upgrade California (EUC) program. Out of this gap emerged a successful combination of program offerings leading to deeper retrofits and diversification of expertise among Participating Contractors. These contractors addressed not only HVAC equipment upgrades, but were also positioned to address ductwork efficiencies and envelope measures, which traditional HVAC-only contractors would not include in a deep energy retrofit.

The program realized a two-sided approach to contractor outreach: 1) Traditional HVAC contractors are ideal candidates to become Home Performance Contractors, and 2) Traditional Home Performance Contractors can benefit from tools and training on HVAC design.

Through this capacity building of new and existing EUCLA Participating Contractors, more retrofits occurred that followed the energy efficiency loading order for deeper retrofits, leading to long-lasting energy savings and more comfortable homes in LA County.

Research and Understanding

The pilot aimed to demonstrate:

- That Energy Upgrade California and whole-house retrofit programs serve as entry points for HVAC contractors to expand their business models into home performance.
- HVAC contractors need software such as Wrightsoft or Elite to properly model equipment and ducts, but also greatly benefit from Sales and Marketing webinars because they are new to selling whole-house retrofits (rather than remove and replace jobs). Properly designing an HVAC system is not solved by permitting alone and goes beyond equipment selection. Having tools to create a model of heating and cooling loads and taking into account the building envelope and duct sizing ultimately leads to the most informed combination of cost-effective retrofit options for homeowners.
- HVAC contractors and their clients respond to multiple forms of marketing.
- The key purpose of the Better Buildings Program (BBP) HVAC Contractor Outreach Pilot ("The Pilot") was to test the effectiveness of the HVAC community to encourage comprehensive energy upgrades at the time of equipment replacement, service, or maintenance

Technical Effectiveness

The program proved technically effective in the areas of contractor training and mentoring; in the enhanced energy savings per project (above and beyond traditional Energy Upgrade Advanced or Flex Path Jobs); and in the receptiveness of homeowners to engage in deeper retrofits.

Contractor Training and Mentoring

The pilot engaged two types of contractors: home performance contractors seeking advanced skills in HVAC design and installation, and traditional HVAC contractors seeking to become home performance contractors. The common critical tool between the two contractor populations is the enhanced energy modeling software, which goes above and beyond the HVAC design capabilities of Energy Upgrade California's EnergyPro software. Thirty-one Participating Contractors were provided with Wrightsoft Software licenses, which allow them to perform design to ACCA Standards for Manual J, D, and S calculations. These allow for a whole-house upgrade to use heating and cooling loads (Manual J), appropriate duct sizing for trunk and branch runs (Manual D), and right-sized equipment (Manual S). Contractors would traditionally submit EnergyPro models that do not account for this level of detail in HVAC system design. A variable-speed drive for an air conditioning fan may consume more energy if the ducts are not sized properly—despite having a high-efficiency piece of equipment. Therefore, the HVAC Pilot Contractors are designing for actual system performance, rather than for equipment-only specification. This enhanced design was verified by the Program's Engineering Consultant, who provided design review per ACCA Standard 9. Any apparent deficiencies in the software model, design flaws, or specified system layout and configuration were communicated by the Engineering Consultant to the Participating Contractor through mentoring comments. The frequency of mentoring comments declined as contractors submitted additional HVAC Contractor Pilot project applications.

Enhanced Energy Savings per Project and Homeowner Receptiveness to Deep Retrofits

As a measurable impact of program technical effectiveness, the average savings per HVAC Contractor Pilot project was higher than a standard Energy Upgrade California project. In the pilot, three-quarters of all submitted and approved pilot projects saw multiple Energy Upgrade California applications. HVAC Contractor Pilot participants were delivering not only HVAC-specific upgrades, but also building envelope and other measures that contribute to deep energy retrofits. Specifically, air sealing and attic and/or wall insulation coupled with an HVAC system upgrade led to deeper energy savings. The software enabled the contractors to demonstrate the interactive effects of multiple energy efficiency measures, while 'fine tuning' duct diameter, air flow, and system optimization. In one case, a contractor submitted four Flex Path applications for a single site, which equates to a 60% energy reduction for a homeowner.

As seen by enhanced energy savings per project, the homeowners benefiting from the Pilot Program were receptive to an 'up-selling' of value-added services through the Energy Upgrade California program. By leveraging the Sales and Marketing Webinars available to all Participating Contractors, the HVAC Pilot Contractors were able to make a business case from a financial perspective and an intuitive case from a health and comfort perspective to engage in a multi-EEM project. Equipped with industry adopted software and state-approved tools, Participating Contractors have effectively been able to communicate the benefits of the Energy Upgrade California program to homeowners.

Public Benefit

The following lists the benefits available to EUCLA pilot participants:

- Provided a \$500 incentive for each qualifying job submitted in EUCLA.
- Offered free Wrightsoft software (\$1000 value).
- Provided free EUC training & QI training (\$1500 value).
- Offered scholarships for additional certifications (e.g., BPI Building Analyst and NATE C3).

- Promoted the pilot participant’s business.
- Distinguished the pilot participant from competition by increasing skills and competencies.
- Generated leads (the pilot participant’s company name appears on the EUC website and on the QI website).
- Enabled the pilot participant to close more sales opportunities.

FINAL TECHNICAL REPORT

Institutional Design and Business Model

HVAC Contractor Outreach Pilot Description

The key purpose of the Better Buildings Program (BBP) HVAC Contractor Outreach Pilot (“The Pilot”) was to test the effectiveness of the HVAC community to encourage comprehensive energy upgrades at the time of equipment replacement, service, or maintenance. Existing HVAC contractors are typically an established group, many of whom already participate in utility programs, making them ideal candidates to expand core competencies or build alliances with other contractors to offer comprehensive home energy performance services. Cash incentives, training, and other resources were used to spur HVAC contractors to do comprehensive energy upgrades as opposed to just HVAC change-outs and maintenance.

Target Market:

- Buildings: Single family residential
- HVAC Contractors: C-20 or both a C-20 and B license through the California State License Board

Committee Partners (Regional Partners):

The BBP regional partners participating in this HVAC Contractor Outreach Pilot Program are the California Center for Sustainable Energy (CCSE), representing the San Diego Region, and the County of Los Angeles (“LA County”).

Program Design and Customer Experience

Stage 1: HVAC Pilot Program Application Process – Participating Contractor

1. Participating Contractor visits the [HVAC Pilot webpage](#) (Figure 1) on the Energy Upgrade California in Los Angeles County website, reviews all sections including FAQs.



Figure 1. HVAC Contractor Pilot Webpage

2. Participating Contractor completes and submits the HVAC Contractor Application Form (Figure 2); Administrator reviews it according to the following criteria:
 - C-20 license is valid and active – verified via the Contractors State License Board.
 - Contractor is approved and on the EUCLA list.
 - W-9 form is submitted by mail or fax – TIN is verified as valid using IRS e-services account.
 - o W-9 is cross-referenced with information on Contractor Application Form and then is stored in a secure folder.
 - Completed SCE's QI classroom training
 - o Training is provided through pilot participation.
 - o Up to two training slots are available per contractor.
 - o If the contractor is NATE C-3, tuition is waived. Otherwise, scholarships were available until April 30, 2012.
 - Must have Wrightsoft or Elite software installed on computer.
 - o Wrightsoft software license is provided through pilot participation.
 - All training must be completed prior to obtaining eligibility for rebates, and contractors must remain in good standing through quality assurance processes to remain eligible to receive incentives.

3. BKi Administrator processes the HVAC Contractor Application Form and approves or denies:
 - Process HVAC Contractor Application Form following above-mentioned criteria.
 - If criteria is satisfied, send contractor approval confirmation email.
 - If necessary, request The Energy Coalition’s Administrator send Wrightsoft software license to newly approved contractor.
 - If necessary, send newly approved contractor email address to CNG for training scheduling.
 - Add newly approved contractor to HVAC Google Docs spreadsheet.

The screenshot shows the 'HVAC Contractor Application Form' on the Energy Upgrade California website for Los Angeles County. The page has a blue header with the 'energy upgrade CALIFORNIA' logo and navigation links: 'About', 'Statewide Site', 'Income Qualified', 'Commercial', 'Multifamily', 'Log In or Register'. Below the header is a blue navigation bar with links: 'My Action Plan', 'About the Program', 'Contractors and Raters', 'Rebates and Incentives', 'Financing', and 'Local Info'. A secondary navigation bar includes 'Overview', 'Contractor Directory', 'Rater Directory', 'About Directories', 'How to Participate', 'Trainings', 'Scholarships', and 'HVAC Pilot'. On the left, a sidebar menu lists 'Overview', 'Eligibility', 'Process', 'FAQ', 'Contractor Application Form', and 'Job Submittal Form'. The main content area is titled 'HVAC Contractor Application Form' and includes the text: 'This application form is for interested HVAC contractors to apply to the HVAC pilot.' The form fields are: 'Business Name *' (text input), 'Business Address *' (text input), 'City *' (text input), and 'State' (dropdown menu with 'CA' selected).

Figure 2. HVAC Online Contractor Application Form

Stage 2: HVAC Job Submittal Process for Incentive – Participating Contractor

Participating Contractor, once eligible for the program and having completed a job, visits the [HVAC Pilot webpage](#) on the Energy Upgrade California in Los Angeles County website to fill out a [Job Submittal Form](#) (Figure 3) to apply for the incentive.

Figure 3. Online Job Submittal Form

Stage 3: HVAC Incentive Application Processing and QA – BKi Administrator

The Participating Contractor conducts the HVAC equipment replacement, properly sizing the ductwork and equipment according to QI guidelines and using the approved QI software, while simultaneously following either the EUCLA Advanced Path or Flex Path incentive requirements. The Participating Contractor then completes the online Job Submittal Form, which acts as their incentive application form. The BKi Administrator will send the QI calculations to the engineer for review and await mentoring comments via email. The BKi Administrator will also regularly monitor the hvac@bki.com email address for program questions, interpretations, and general correspondence.

Upon receiving a Job Submittal Form, the BKi Administrator will conduct the following verification steps:

1. Review the Participating Contractor’s Job Submittal Form and ensure all information is valid.
 - Verify Participating Contractor’s status in the EUCLA program.
 - Verify the Participating Contractor’s license is valid and active through the California [Contractors State License Board](#).
 - Confirm the property listed on the Job Submittal Form is a single family residence located in LA County. Do a property search by address through the [Los Angeles County Office of the Assessor](#).
 - Verify the utility provider by inputting the property zip code into the [EPA Power Profiler](#).
2. Verify the following documents (Table 1), which are required to be submitted with Job Submittal Form.

Table 1. Supporting Documents for Job Submittal

		Advanced Path	Advanced Path	Flex Path
REQUIREMENTS	Program Sponsor	SCE/SCG	SCG-only	LA County
	HVAC Pilot Job Submittal Form	✓	✓	✓
	QI Calculations (Wrightsoft or Elite)	✓	✓	✓
	Utility Reservation Form	Reservation Job Reporting Template	Vision Reservation print-out	N/A
	Homeowner Information Release Form	SCE/SCG Version	SCG Version	N/A
	Energy Savings Model	Energy Pro Data File	Energy Pro Data File	Flex Path Test-in/Test-out template

3. Supporting documentation for each job is compiled by the BKi administrator.
 - Create a folder for each application in the HVAC Incentive Check Processing Secure Folder using the following naming convention: Job Number_First and Last Name_Contractor
 - If the job submittal requires additional supporting documentation, the BKi Administrator will request it from the contractor.
4. Send QI docket of materials to TEC administrator to verify completeness and send to Engineer.
 - Documents are filed in HVAC Pilot Tracking Folder by Job Number.
 - Job is documented in the HVAC Pilot Tracking Form with relevant metrics.
 - Engineer reviews and provides mentoring comments to TEC administrator within 10 business days via email.

- If clarifications are necessary on the content of the QI Calculations, the TEC administrator shall communicate the comments between the Engineer and the Contractor.
 - Once QI docket is reviewed, a Pass or No Pass ruling will be issued to the TEC administrator.
5. Upon approval, send job submittal approval email to contractor.
 6. Provide the incentive to the contractor.

Stage 4: HVAC Incentive Approved Data Transfer Process – BKi Administrator

Once the Job Submittal Form processing and QA (Stage 3) is complete, the BKi Administrator will need to conduct the following steps:

1. Compile the appropriate contractor data for the property into a CSV file in the format (Table 2) provided by the LA County Administrator.

Table 2. Contractor Data for the Property

Attribute	Description	Data Type	Size
Encumbrance_#	Encumbrance Document ID set by LAC	text	11
Reference_#	Unique Identification Number set by BKi	text	30
Service_Account_#	Service Account Number	text	22
Utility_Type	001=Electric, 002=Gas, 004=Water	text	3
First_Name	First Name	text	60
Last_Name	Last Name	text	60
Address_1	First Line of Address	text	75
Address_2	Second Line of Address	text	75
City	City Name	text	60
State	State or Province	text	2
Zip	Zip Code	text	10
Address_1_Mailing	First Line of Mailing Address	text	75
Address_2_Mailing	Second Line of Mailing Address	text	75
City_Mailing	Mailing City Name	text	60
State_Mailing	Mailing State or Province	text	2
Zip_Mailing	Mailing Zip Code	text	10
Handling_cd	Code to alert LAC system to send check to mailing address: code will be "1"	text	5
Line_Amount	Check Amount	decimal	(12,2)

2. Print file transfer data and have it reviewed by BKi manager, whose approval is signified by a stamp.

Submit this CSV file monthly to the LA County Administrator via secure file transfer with PGP encryption for incentive check processing.

Driving Demand

The goals/objectives were accomplished by working directly with the contractor community to provide effective and relevant home performance, sales, and marketing training. Because home performance contracting is not the dominant business model in the existing marketplace, the Pilot tested whether providing additional resources motivates HVAC contractors to participate in EUC and up-sell whole-house retrofits. The Pilot was designed to leverage the following points:

- HVAC contractors are one of the few contractor types who maintain service agreements and, therefore, have a trusted and repetitive client base.
- Heating and cooling a home is often the largest component of a residential energy bill. By taking the advice of a contractor trained in building science and whole-house retrofits, the homeowner is likely to save a significant amount of money on their energy bills.
- HVAC contractors are called on a regular basis when trigger events occur, such as HVAC breakdown. Failures such as these, present an opportunity to conduct more comprehensive whole-house assessments and provide whole-house solutions.
- HVAC contractors have the ability to access rebates, from EUC and other sources, to better serve their customers and reduce the cost of a more efficiently heated and cooled home.

Based on the HVAC contractor requirements in the IOU programs, this Pilot identified local, reputable HVAC contractors who have a track record meeting utility program requirements and business ethics standards. These established groups of HVAC contractors were approached and encouraged to either expand their core competencies or build effective alliances/partnerships with other contractors to add whole-house energy upgrades into their portfolio of services. The Pilot sought to put participating HVAC contractors on a path to becoming industry leaders versed in building science.

Participating HVAC contractors were required to meet program eligibility requirements including participation in the Energy Upgrade California program. Participating contractors benefited in the following ways:

- Marketing – marketing support, tool kits, and co-branded materials.
- Networking – opportunities to meet contractors and technicians with complementary services to facilitate partnering.
- Training – discounted or free trainings in Home Performance, energy modeling, HVAC sizing, and sales training.
- Scholarships – scholarships for additional certifications such as BPI Building Analyst, NATE C3, and BPI Heating and Cooling.
- Expanded business model – expanding existing service offerings to take advantage of available rebates.
- Access to industry experts through phone calls, e-mails, internet and in-person training, Q&A, and networking sessions.

Workforce Development

The Pilot sought to drive participants toward existing resources rather than create new training programs. EUCLA Participation Sessions and QI certification are training programs that are currently in

existence and are leveraged for this Pilot. In fact, driving participants to these two existing training programs is the main focus of this Pilot.

Training opportunities, beyond the two mentioned above, were offered through EUCLA scholarships, which supported additional related certifications such as BPI Building Analyst, BPI accreditation, NATE C3, General B-license, energy modeling, and Wrightsoft HVAC design per Manual J, D, and S ACCA standards. Wrightsoft hands-on training, as well as one-year software subscriptions, was made available to Participating Contractors.

Financing and Incentives

Upon approved completion of the following listed items, the pilot participant received \$500 for each EUCLA Upgrade completed with QI calculations. The EUCLA upgrade may be completed by the pilot participant as either a subcontractor or the prime contractor on the project and the incentive is available until funds are exhausted. The incentives for each pilot participant will be compiled and distributed monthly. All LA County incentives are taxable income.

The process flowed as follows:

1. Fill in the online job application for each completed project.
2. Submit via email, the Job Reporting Template excel version 3.0 (or most recent) with QI calculations (a copy of the Utility Whole House Reservation form).
3. Submit via email, the signed homeowner data release form.

Data and Evaluation

All required Job Submittal Forms and accompanying documentation were reviewed according to ACCA Standard 9. Once a Job Submittal Form and eligibility criteria were verified by the program administrator, the engineering calculations were submitted for mentoring comments and approval, which was determined by a third-party engineering firm. The rate of mentoring comments significantly reduced as HVAC Pilot Contractors submitted subsequent Job Submittal Forms. Monthly reports were compiled and uploaded to the EUCLA Master Dashboard for program reporting.

ACCOMPLISHMENTS

One of the overarching goals of the BBP is to demonstrate more effective marketing and outreach methods that will inform and motivate participation in residential whole-house energy retrofits. This Pilot's objective is to evaluate the HVAC contractor outreach channel by determining which resources best increase contractor participation in Energy Upgrade California. Through targeted contractor outreach, specific Pilot Contractor training, and the creation of incentives and engineering mentoring, our HVAC Contractor Pilot Program proved successful in spurring long-lasting deep retrofits.

Statement of Project Objectives: Targets vs. Actual

SOPO Task 1: Test the effectiveness of the HVAC contractor outreach channel for achieving deep energy savings in homes

- Target: Spur an increase in average energy savings of EUC projects, which concurrently apply for HVAC Contractor Pilot Incentives

- **Actual:** There was a direct correlation between an increase in energy savings per site and sites with HVAC Pilot Program Applications. This is seen by the frequency of multiple Flex Path applications per site, as listed below. Each Flex Path project is a prescriptive approach, leading to 15% energy reduction. Two applications would equal 30% energy reduction, and the majority of applications had 2 or more successful applications.
- 26 HVAC applications: 1 Flex Path application
- 65 HVAC applications: 2 Flex Path applications
- 4 HVAC applications: 3 Flex Path applications
- 1 HVAC application : 4 Flex Path applications:
- 2 HVAC applications: Advance path applications

SOPO Task 2: Ascertain which tools or incentives provide the assistance HVAC contractors need to offer comprehensive home energy services to customers

- **Target:** Deliver software training and SCE QI program scholarships to Pilot Contractors while providing a \$200 incentive for HVAC Contractor Pilot projects.
- **Actual:** Provided 31 Wrightsoft Software licenses and derived a hands-on Wrightsoft software training for HVAC Pilot Contractors. Also allowed EUC Participating Contractors to attend the hands-on Wrightsoft training. Provided SCE QI program scholarships to Pilot Contractors; however, SCE limited the number of QI program trainings. Provided a \$500 incentive for HVAC Contractor Pilot projects in order to incentivize the HVAC contractor to utilize the software provided rather than sizing the equipment in EnergyPro, which was the utility base requirement.

SOPO Task 3: Help contractors identify the most cost-effective marketing strategies to increase the closing rates for participating contractors

- **Target:** Develop and deliver Sales and Marketing tools to HVAC Pilot Contractors.
- **Actual:** Delivered a 3-part webinar series for Sales and Marketing for Participating Contractors. Developed an HVAC Contractor Toolkit for resources on Home Performance. In-Home Selling: http://bit.ly/In-HomeSelling_Webinar
- Marketing: <http://bit.ly/LACMarketingWebinar>
- Utilizing Resources of EUCLA: http://bit.ly/EUCLA_ResourcesWebinar

SOPO Task 4: Create a more elite workforce of HVAC contractors through advanced training.

- **Target:** Recruit 30 HVAC contractors to sign up for the Pilot program, including becoming an Energy Upgrade Los Angeles Participating Contractor and completing SCE's QI training program.
- **Actual:** Recruited 25 HVAC contractors to sign up for the Pilot program, including becoming an Energy Upgrade Los Angeles Participating Contractor and completing SCE's QI training program. Additionally delivered Wrightsoft training.

SOPO Task 5: Conduct energy upgrade services on 100 residences between June 2010 and June 2013

- **Target:** 100 Whole-house retrofits
- **Actual:** 98 Whole-house retrofits

SOPO Task 6: Determine the feasibility of replicating such a Pilot elsewhere with recommendations on best practices for full-scale implementation

- **Target:** Demonstrate program success and seek funding opportunities for further implementation.
- **Actual:** Program success is detailed in this report and further iterations of the HVAC Contractor Pilot have been submitted under California Public Utility Commission filings.

Through our efforts with software training, the EUCLA team championed the Wrightsoft to EnergyPro electronic interface that allowed Manual J, D, and S calculations to be interpreted between software platforms.

In the process of spurring traditional HVAC contractors to move toward whole-house retrofits, our Pilot Program also identified a market for Flex Path contractors to move toward whole-house retrofits via increased knowledge of HVAC design and installation practices. This was mainly accomplished through making Wrightsoft licenses and training opportunities available to contractors already familiar with EnergyPro and HPwES.

CHALLENGES

The following were factors that led to program adaptations and shaped the final delivery of the HVAC Contractor Program:

1. Contractors' participation in the SCE QI program was an eligibility requirement for the Pilot Program. However, the SCE QI Program was closed to new contractors for a majority of the program cycle. This reduced cross-training opportunities for EUC Contractors to become QI contractors, and reduced the pool of new QI contractors who could become EUC contractors. This was overcome by adapting the HVAC Pilot eligibility requirements to only require SCE QI classroom training, and not the full field certification. This opened our pool of HVAC contractors. The HVAC Pilot also allowed EUC Participating Contractors (who were not engaged in the SCE QI program) to fill available seats in the Wrightsoft hands-on software training, in order to build capacity for non-HVAC-centric Participating Contractors. In the future, it is not recommended to specify eligibility criteria that are outside the control of the implementing party.

2. The original Job Submittal process was intended to be integrated into the EUC Job Reporting Template by the IOUs. This would have incorporated Manual J, D, and S calculations. However this was never implemented. The HVAC Contractor Pilot did maintain a separate Job Submittal Form tool on the Pilot's webpage. Additionally the EUCLA team anticipated that the Job Reporting Template would include this integration and, as a result, did succeed in working with Wrightsoft and EnergyPro to develop an interface between the two software platforms.
3. The Flex Path and LA County Matching Rebate Programs were oversubscribed, leading to an early shutdown of the HVAC Contractor Pilot. More incentives for the Pilot would have been available for contractors seeking to leverage programs.
4. Out of all the HVAC Contactor Pilot Jobs that were submitted, only 2 applications were for an Energy Upgrade CA Advanced Path job. Most of the HVAC contractors participating in the pilot preferred the quicker and simpler approach to Flex Path Projects. The time needed for Advanced Path paperwork, time lost waiting for IOU test-in, and uncertainty in revised energy savings/corresponding incentive dollars—all of these influenced HVAC contractors to choose LA County's Flex Path program.
5. HVAC contractors took advantage of the proposed training in order to qualify for program rebates. However, the hands-on software training is what allowed them to perform those calculations more quickly and with more confidence. Contractors found value in direct training from the software vendor (Wrightsoft), as opposed to a Program Administrator's training, which was heavily focused on incentive application minutiae. When contractors learn shortcuts and tips for the actual energy modeling required to build a scope of work and job specifications, they can perform their upgrades with a higher skill level, thus resulting in more confidence in energy savings.

PROGRAM SUSTAINABILITY PLAN

The HVAC Pilot has been denied funding by the California Public Utilities Commission, therefore this pilot will not be part of the Southern California Regional Energy Network for 2013/14.

The HVAC program will instead focus on contractor outreach and training. While there have been trainings offered in the past, additional workforce training and support is needed to further penetrate the existing building market and drive participation in EUC and its pilot programs. The program will focus on recruiting additional contractors into EUC and mentoring existing Participating Contractors. With proper training and support, all EUC contractors will be able to help their clients assess the energy performance of their homes, identify energy upgrade opportunities, and connect them with incentive programs needed to make the improvement.

VERIFICATION OF DATA

Renewable Funding ("RF") served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE's xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

DEVELOPED PRODUCTS

None.

Energy Efficiency and Conservation Block Grant (EECBG) – Better Buildings Neighborhood Program

Final Report: Energy Upgrade California in Los Angeles County - Green Building Labeling

Award Number: DE-EE0003562

BBNP Name: U.S. Department of Energy's Better Buildings Program

Project Title: Retrofit California

Name of Project Director/Principal Investigator: Bruce Mast

Team Members: Build It Green

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EXECUTIVE SUMMARY

The Green Building Labeling pilot program in Los Angeles County designed and implemented an innovative single family program that encouraged homeowners to earn a green label and substantiated that label's value. The program originally targeted 200 single family homes to earn either the GreenPoint Rated Existing Home or Leadership in Energy and Environmental Design (LEED) for Homes label.

The Green Building Labeling pilot incorporated effective program elements such as: highly strategic marketing to homeowners and businesses; comprehensive workforce development; incentives to offset the cost of earning a green label; a professional referral incentive to encourage lead generation; and robust quality assurance/quality control protocols. The pilot met with some challenges engaging real estate professionals, particularly in regard to the Multiple Listing Service (MLS) systems. The pilot will continue and expand its outreach to real estate professionals through the new Southern California Regional Energy Network.

The program was designed to promote:

1. Additional market value at time of sale or rental
2. Quality assurance provided by the label
3. Competitive advantage for certified contractors and raters
4. Credible verification for financial institutions, municipalities, and property owners
5. Enhanced public image for multifamily property owners

The program was able to transform the market around goals one, two, three, and five, leading to the labeling of over 600 single family homes and 2 multifamily properties. Additionally, property owners were educated on the chances for and value of green building certification.

FINAL TECHNICAL REPORT

Institutional Design and Business Model

The key purpose of the Green Building Labeling pilot program (the pilot) was to capture opportunities to improve home energy performance as part of remodeling projects and home improvements prior to or subsequent to time of sale; create new value propositions through enhanced market value of improved property; and bundle energy efficiency with a full spectrum of quality-of-life and environmental benefits.

The green label certification was primarily based on GreenPoint Rated, the leading residential green building rating system in California. The pilot tested the market response to the GreenPoint Rated consumer label in the single family and multifamily sectors. Project activities included: promoting the label and increasing its visibility in the general market and among real estate professionals and home performance contractors; generating advertising and word-of-mouth for the consumer label; and showcasing labeled properties through the website and media partnerships. Rebates to offset the cost of labeling were offered to establish a critical mass of properties. This project leveraged State Energy Program funded activities to train real estate professionals and establish green ratings on the Multiple Listing Services.

The program's key initiatives were as follows:

- Promote energy efficiency improvements with a full spectrum of quality-of-life and environmental benefits through a green building label
- Establish a single family contractor delivery process for acquiring a green building label
- Advocate the green building labeling value proposition through the real estate and appraisal industry
- Conduct a campaign to include green labeling on MLS and analyze MLS data

Target market:

- Single family
- Multifamily

Green Building Labeling committee partners (regional partners):

- StopWaste.Org (Alameda County)
- Los Angeles County
- San Francisco Department of the Environment

Program Design and Customer Experience

Los Angeles County offered incentives for owners of existing single family homes. Incentives were reserved on a first come, first served basis.

Step 1: Online Program Application and W9

- The owner completed and submitted an online interest form to apply for the Green Building Labeling incentive on a dedicated website. The Program Administrator completed an initial screening of the incentive application to determine eligibility and reviewed the information for consistency and accuracy.
- A link directed the homeowner to the IRS website to access a W-9 form. The homeowner completed the W-9 and submitted it via fax or email to the Program Administrator for verification of their tax identification number. The Program Administrator compiled the tax identification numbers and submitted the information to Bevilacqua-Knight, Inc. to check against the IRS database. A project application was not complete and an incentive could not be issued without a verified W-9.

Step 2: Contract with Green Label Professional and Construction

- The homeowner contracted directly with a qualified GreenPoint Rater for Existing Homes or LEED for Homes rater who served as their professional agent to earn the label. The rater worked with the homeowner to identify their scope of work. The rater submitted the GreenPoint Rated application materials to Build It Green. Build It Green reviewed the materials to determine if the project could receive a label and whether it was for Elements or Whole House. The homeowner proceeded to construction. LEED certification was processed through the US Green Building Council. For the single family homes in this incentive program all certifications were GreenPoint Rated. For the multifamily program both certifications were LEED.

Step 3: Green Label Certification and Incentive

- The homeowner completed their retrofit. The rater verified the installed measures and submitted the final GreenPoint Rated application materials to Build It Green. Build It Green reviewed the materials to ensure compliance and determines the final label achieved, whether it was Elements or Whole House. Build It Green issued the certificate of achievement for the label to the homeowner via email.
- The Program Administrator compiled incentive requests for all eligible homeowners who earned a green label during that period. An incentive request was submitted to Bevilacqua-Knight, Inc. for processing. The incentive was paid directly to the homeowner by Los Angeles County.

Driving Demand

Demand for the program was successfully driven through a strategic combination of consumer marketing, media outreach, events for real estate professionals, and GreenPoint raters themselves.

- O Consumer Marketing: The pilot implemented a consumer marketing campaign to build awareness of the opportunity for green labels generally and of the pilot program specifically. Consumer marketing primarily targeted homeowners who were likely to already be interested in green living. The consumer marketing campaign included a dedicated website, print ads, public radio sponsorships, online display ads, Google AdWords, and a contest for a free GreenPoint Rating. Monthly Google Analytics tracking demonstrated that advertising successfully drove traffic to the website in contrast to periods with no consumer marketing.
- O Consumer marketing for green labels was included in the Home Energy Makeover contest. Each of the 6 winners received a GreenPoint Rating as part of their prize. Information regarding their projects and the green label was included on the contest website, in project case studies, and provided to media.
- O Media Outreach: The pilot leveraged media to compliment the consumer marketing. Earned media raised the public profile of the program by leveraging journalists as trusted messengers. Press releases regularly announced the attainment of milestones. Press events for a study on green labels and a media tour of a green labeled home led to wide coverage across print, online, and radio.
- O Professional Events: Professional events served to market the pilot to real estate professionals. Real estate professionals require a high-touch, personal selling approach. Presentations were given to associations of realtors throughout Los Angeles County to educate real estate professionals on the program and the opportunity it presented for their clients. Two open houses were held at homes that had received a green label before going up for sale to promote the pilot in an experiential setting.
- O GreenPoint Raters: GreenPoint Raters were highly successful at educating their clients on green labels and marketing the pilot program to them. These raters were the critical link in driving demand. The pilot provided them with a resource library of educational and marketing materials to support their sales efforts. Raters were able to market to their clients the value of obtaining a green label certificate for the work that was completed.

Workforce Development

The pilot program was able to leverage funding through the California Energy Commission's State Energy Program to develop the workforce necessary to implement the pilot.

- O The pilot coordinated a regional Affordable Comfort Institute conference. The primary focus of the conference was the Energy Upgrade California™ program, but information on green building labeling was included. The conference provided diverse educational opportunities for building and real estate professionals of all types.
- O The pilot coordinated two trainings to develop the necessary rater workforce, one in 2011 and one in 2012. These two trainings combined Certified Green Building

Professional, GreenPoint Rated Core, and GreenPoint Rated Existing Home. These trainings resulted in 27 individuals becoming certified.

- O The pilot coordinated three Certified Green Real Estate Professional trainings for real estate professionals to educate them on green building and how to direct their clients to relevant programs. Two trainings were held in 2011 and one in 2013. These trainings resulted in 118 certified professionals.
- O The pilot realized the need for additional resources and supplemental training after certification to ensure building and real estate professionals' success. The pilot developed a comprehensive, yet user-friendly contractor tool kit to guide contractors through the Energy Upgrade California program and all its pilot programs. A series of sales and marketing webinars were held in early 2012 to help building and real estate professionals understand how to sell energy efficiency and green labels. In early 2013, two webinars were held targeting real estate professionals to educate them about the financing resources their clients could access for energy efficiency and green retrofits.

Financing and Incentives

Los Angeles County offered rebates to offset the cost for homeowners to get a green label. There were different incentives available for different types of projects during the program. In addition, Build It Green waived the fees it typically charges homeowners for GreenPoint Rated application and certification to increase affordability.

In the initial phase of the program, the 6 winning properties in the Home Energy Makeover Contest each received a \$3,000 incentive to offset the cost of a GreenPoint Rating as part of the energy efficiency retrofit. The purpose of the incentive was to gain visibility and grow demand for the program through the contest.

During the second phase of the program, homeowners were eligible to receive an incentive of either \$1,000 or \$2,000 for earning a green label. Homeowners received a \$1,000 incentive for the GreenPoint Rated Elements label. The Elements label is awarded to homes that earn a minimum of 25 points in green building best practices, as well as minimum points in 5 environmental categories. The label is most applicable to small retrofit projects. Homeowners received a \$2,000 incentive for the GreenPoint Rated Whole House label. The Whole House label is awarded to homes that earn a minimum of 50 points in building best practices and a higher minimum point threshold in 5 environmental categories. It is most applicable to large retrofit projects. Homeowners could also receive a \$2,000 incentive if they had earned a LEED for Homes label, but no homeowners submitted for that incentive. The program also provided a \$200 referral incentive to building professionals for each project they referred to the program that earned a green label.

The pilot provided a special \$5,000 incentive for homes that underwent an energy efficiency retrofit and earned a green label before being put up for sale. The pilot provided 2 such incentives.

Data and Evaluation

Rebate applications were submitted by the property owner through a dedicated Green Label Rebate Program website.

Standards for compliance to earn the GreenPoint Rated Existing Home label are found in the GreenPoint Rated Existing Home Manual and GreenPoint Rated Policy and Procedure Handbook, and include pre-requisites to earn the label, individual measure criteria, and verification protocols. Standards for

compliance to earn other green labels, such as LEED and HERS II, followed program-specific policy and procedures.

Energy modeling for GreenPoint Rated aligns with the California Energy Commission's HERS Phase II protocols for evaluation of existing homes. The energy evaluation is also compatible with national standards, including Home Performance with Energy Star and Building Performance Institute (BPI).

Credential standards for field verification professionals followed specific green label program (HERS II, GreenPoint Rated Existing Home, and LEED) policy and procedures. Professional credentials for a consultant delivery model to earn the GreenPoint Rated Existing Home label are found in the GreenPoint Rated Policy and Procedure Handbook. As a part of this pilot, a contractor delivery model for GreenPoint Rated Existing Home was piloted with clear credential requirements and QA protocols. GreenPoint Rated Existing Home builds upon the BPI and HERS II methodology to include non-energy aspects of property rehabilitations and retrofits.

ACCOMPLISHMENTS

1. SOPO Task 1: Demonstrate that green building labeling motivates property owners to make energy upgrades to a home, particularly at remodeling and time of sale/purchase trigger events

- o Target: Number of homes that earn a green label during remodel or time of sale/purchase trigger event
- o Actual: 605 homes earned a green label. All of these properties earned the green label in the course of an energy efficiency retrofit, demonstrating that a green label can motivate homeowners to incorporate a larger scope of work of non-energy measures for a deeper overall retrofit that encompasses other green building practices

2. SOPO Task 2: Demonstrate the market value of green labeled homes, measured as 1) a quantifiable price premium for green labeled homes and/or 2) reduced time-on-market for labeled homes, compared to unlabeled homes

- o Target: Measureable increased value of green labeled homes
- o Actual: Homes with green labels had an increase in appraised value between 5.5% and 9% based on California-wide study.

3. SOPO Task 3: Provide incentives to facilitate homes earning the GreenPoint Rated or other label, and taking advantage of other Energy Upgrade California program incentives

- o Target: 200 Green labeled homes
- o Actual: 605 single family homes earned a green label

4. SOPO Task 4: Train single family contractors to deliver the GreenPoint Rated Existing Home label

- o Target: Increase the number of single family contractors trained to deliver GreenPoint Rated Existing Home
- o Actual: 27 building professionals certified to deliver GreenPoint Rated Existing Home

5. SOPO Task 5: Train and certify real estate professionals and appraisers

- o Target: Number of certified real estate professionals and appraisers
- o Actual: 124 real estate professionals trained, 118 certified as Certified Green Real Estate Professionals

6. SOPO Task 6: Track the portion of the targeted real estate market that is served by an MLS system that accommodates green labeling information

- o Target: Percentage of certified real estate professionals served
- o Actual: After convening real estate industry stakeholders in 2011, it became apparent that we would not be able to obtain the data needed

7. SOPO Task 7: Track the number of MLS-listed homes with a green label

- o Target: Number of MLS-listed homes with a green label
- o Actual: After convening real estate industry stakeholders in 2011, it became apparent that we would not be able to obtain the data needed

CHALLENGES

The following challenges were encountered during the pilot:

- o **MLS System Coordination and Access:** After convening real estate industry stakeholders in early 2011, it became apparent that we would not be able to obtain the data needed to do the tracking and analysis that was originally proposed in the program metrics section regarding MLS systems inclusion of green labels. The MLS Boards in California are highly fragmented in their decision-making and technology platforms. Focus was shifted to building relationships with regional associations of realtors, the California Association of Realtors, and National Association of Realtors.
- o **Regional Home Prices and Foreclosures:** Home prices in California were very volatile during the pilot. During much of the pilot, home prices were depressed. Real estate industry stakeholders also cautioned about the high foreclosure rates in some parts of California. More recently, home prices have risen drastically while foreclosure rates have fallen. These factors have made it difficult to establish the value of green labeled homes.
- o **Lack of Appraiser Methodology:** The valuation of energy efficiency and green measures is new to appraisers. The Appraisal Institute has only provided its Resident Green and Energy Efficient Addendum since late 2011. A great deal of training is needed for appraisers to properly incorporate the addendum. Additionally, there is a lack of comparable homes to provide a basis for determining values. These factors have made it difficult to establish the value of green labeled homes in the real estate market.

PROGRAM SUSTAINABILITY PLAN

The pilot has received funding to continue its work as part of the Southern California Regional Energy Network as approved by the California Public Utilities Commission for the 2013/14 funding cycle. The

program supports achievement of the California Public Utilities Commission's Energy Efficiency Strategic Plan, which calls for deployment of energy or carbon labeling programs at time of sale and inclusion of home energy ratings in real estate sales listing information. The program will be named the Green Building Labeling Program.

The pilot will expand beyond the borders of Los Angeles County to the entire Southern California Edison and Southern California Gas Company services territories. The program will collaborate closely with the investor owned utilities, municipal utilities, local government partnerships, and regional, state, and national associations of realtors.

The program will offer training and support to real estate professionals and will support inclusion of green labeling in MLS systems; cash incentives to homeowners for green labels will not be part of the program. The Green Building Labeling Program aims to transform the real estate industry in the following ways:

1. Establish and/or disseminate industry best practices for assessing environmental performance in the course of time-of-sale inspections.
2. Establish and/or disseminate industry best practices for appraising green features.
3. Train and certify 475 green real estate professionals (i.e., realtors, home inspectors, appraisers, and loan officers) by the end of 2014, including 80 professionals in Southern San Joaquin Valley.
4. Incorporate green fields and green labels, such as GreenPoint Rated and HERS Score, into 3 MLS systems, representing the primary MLS systems serving Southern California.

VERIFICATION OF DATA

Renewable Funding ("RF") served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

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DEVELOPED PRODUCTS

None.

Energy Efficiency and Conservation Block Grant (EECBG) – Better Buildings Neighborhood Program

Final Report: Energy Upgrade California in Los Angeles County - Multifamily

Award Number: DE-EE0003562

BBNP Name: U.S. Department of Energy's Better Buildings Program

Project Title: Retrofit California

Name of Project Director/Principal Investigator: Bruce Mast

Team Members: Build It Green

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EXECUTIVE SUMMARY

The Energy Upgrade California™ Multifamily Program in Los Angeles County designed and implemented an innovative multifamily whole building energy efficiency retrofit program. The program was developed to be a model that can be scaled statewide. The program originally targeted 560 units to achieve a minimum 10% energy savings; that target was increased to 1,050 as pent-up demand quickly led to a fully subscribed program.

The multifamily pilot incorporated unique and effective program elements such as: an online portal that includes program information, a funding finder, and a portfolio tracking tool; an incentive to offset the cost of an investment grade audit; free technical assistance consultations; an incentive for comprehensive whole building upgrades using building science principles; and robust quality assurance/quality control protocols.

The multifamily program was designed to overcome five market barriers:

1. Lack of economic incentive for energy upgrades due to split incentives, the divergent economic motivations of multifamily rental building owners and occupants, as well as the difference in energy use in multifamily buildings compared to single family homes
2. Lack of well-documented business case information and standardized analytical methodologies, which leaves property owners ill-equipped to evaluate the technical and economic potential for retrofitting their properties
3. Lack of access to affordable capital, which limits retrofitting opportunities, particularly in the affordable housing sector
4. Lack of professionals trained in multifamily specific protocols to provide technical services
5. Market confusion around which programs will apply to the various multifamily building sub-sectors

The multifamily pilot was able to transform the market around all five barriers, leading to the upgrade of 720 units, with modeled energy savings ranging from 12% to 36%.

FINAL TECHNICAL REPORT

Institutional Design and Business Model

The Energy Upgrade California Multifamily Program in Los Angeles County (the multifamily pilot) aimed to develop a viable model for a whole building multifamily upgrade program that is accessible for building owners and can be scaled for statewide implementation by overcoming barriers to participation. This whole building model would complement the existing single measure incentive programs that already existed. Various approaches to achieve greater levels of retrofit penetration into both the market rate and affordable multifamily building sectors were tested.

Program activities included the following elements:

- Property owner organization outreach targeted apartment owners associations, property management associations, non-profit housing authorities, and other groups, which were the source for identifying opportune buildings for program participation.
- Technical and financing evaluation assistance was provided to support property owners in making retrofit decisions and understanding financing options available to them.
- Both direct and indirect financial incentives were developed and offered to building owners to induce greater and more comprehensive retrofit activity.

The multifamily pilot's key initiatives were as follow:

- Demonstrate a viable program model for whole building multifamily upgrades including program design, implementation, and verification protocols.
- Increase energy upgrades in the multifamily sector by addressing key industry barriers, such as complex financing sources and multiple building types.

Target market:

- All multifamily building types of 5 or more units: market rate and affordable, rental and for-sale, low-rise, mid-rise, and high-rise in Los Angeles County

Committee partners (regional partners):

- Los Angeles County
- StopWaste.Org (Alameda County)
- City of San Francisco

Program Design and Customer Experience

Step 1: Complete Online Interest Form

- A building owner completed a brief online interest form to request additional information and be placed on the email distribution list. The program administrator reviewed the interest form for initial eligibility. If eligible, the building owner was provided with the Pre-Qualification Application.

Step 2: Submit Pre-Qualification Application and W9

- The building owner completed and submitted the Pre-Qualification Application, which included information on the project contacts, milestones, architecture, occupancy, affordability, utility service, past improvements, and existing conditions. The Program Administrator reviewed the Pre-Qualification Application to ensure the project was a good candidate for the program and to gather data to inform technical assistance.
- The building owner submitted a completed W9 to the Program Administrator for verification of their tax identification number. The Program Administrator compiled and submitted the information to Bevilacqua-Knight, Inc. to check against the IRS database. A project application was not complete and no incentive would be paid without a verified W9.

Step 3: Provide Technical Assistance

- The Program Administrator scheduled and provided a free technical consultation by phone. The purpose of the technical assistance was to review the application information with the building owner to help determine the viability of hitting at least a 10% improvement threshold, and establish funding sources, and overall program eligibility. The review also helped identify at least three significant energy conservation opportunities. Additional technical assistance could also include: identifying green building measures; identifying additional funding sources; reviewing the scope of work; and facilitating a green building team meeting.
- The Program Administrator issued either a Letter of Acceptance or a Letter of Denial. Accepted projects had funds reserved for them for the Assessment Incentive, Improvement Incentive, and if appropriate, the Green Label Incentive. The project was guided to other resources if it was not a good candidate for the program.

Step 4: Complete Building Audit and Submit for Assessment Incentive

- The building owner was directed to locate and contract with an approved rater to perform an investment grade audit. The audit identified the scope of work and the proposed performance improvement threshold. Once the scope of work was agreed upon, the building owner submitted for the Assessment Incentive. Below is a list of documents required to be submitted for the Assessment Incentive:
 - EnergyPro report(s) showing 10, 20, and 30% improvement options for the whole building. The HERS II report whole energy improvement from a California Energy Commission approved HER II simulation software must be submitted in 2 formats: .bld and .pdf format. Res CalCERTS Report or Residential Performance Report was accepted.
 - Building sketch (optional)
 - Multifamily data collection sheet of all inputs for modeling
 - Assessment Incentive Data Form
 - Assessment Incentive Request Form
 - Audit report from Approved Rater including Combustion Safety Testing data

- Copy of building permit approval or equivalent level of commitment to project
- Scope of Work
- The Program Administrator reviewed all submitted documentation, with a particular focus on the energy model, and approved the projects for payment if they met program eligibility requirements. If so, a request was sent to Bevilacqua-Knight, Inc. to process payment of the Assessment Incentive. The incentive was paid by Los Angeles County directly to the building owner.

Step 5: Green Label Incentive (Optional)

- If the project owner also wished to pursue a green label, the owner had to contract with a credentialed rater to initiate the rating process and perform the verifications for the rating. An approved rater was often qualified to provide both the investment grade audit and green label services. It was recommended that a rater for the green building be involved in the early stages to assist in defining the scope of work.
- The Green Label Incentive was provided through the separate Green Label Rebate Program after the upgrade was complete, measures verified by the rater, and the green label attained.

Step 6: Construction

- The building owner carried out the prescribed building upgrades using the contractor of their choice. The Program Administrator was in regular contact with the rater and building owner to stay apprised of the project progress.

Step 7: Improvement Incentive

- After work was completed, the rater completed an on-site verification of all the energy upgrades to ensure they met energy efficiency goals, matched modeling assumptions, were installed correctly, and followed program procedures. The rater then modeled the building in approved software to validate improvement.
- Once the construction was completed and the rater had verified the installation of the measures and confirmed the modeling assumptions, the property owner used the Improvement Incentive Request Form to request payment for the Improvement Incentive. Below is a list of documents and information required to be submitted for the Improvement Incentive:
 - An EnergyPro report showing achieved percentage improvement based on verified installed measures. The HERS II report, a whole energy improvement report from a California Energy Commission approved HER II simulation software, must be submitted in 2 formats: .bld and .pdf format. Res CalCERTS Report or Residential Performance Report was accepted for this program.
 - Test-out data on any Combustion Safety Testing or other Building Performance Testing
 - Measures modeled matched the scope of work installed
 - Improvement Incentive Request Form

- Scope of work completed and the cost of the work
- Improvement Incentive Data Form from Approved Rater indicating verification of installed measures and the target % for specific improvement has been met
- Energy Pro file and data collection form/take off
- The Program Administrator completed a review of all documentation for final approval and compliance with the program. An incentive request was submitted to Bevilacqua-Knight, Inc. for processing. The Improvement Incentive was paid directly to the building owner by Los Angeles County.

Step 8: Field Quality Control

- The QC Team directly inspected the retrofit measures implemented in participating projects. These field verifications focused on evaluating the rater's ability to perform proper and applicable diagnostics, develop a scope of work of effective and eligible improvements, and properly test-out the improvements selected by the building owner.
- Each rater had their first job verified by QC staff. After the initial job was found to be satisfactory, the rater was subject to a 15% (or 1 in 7) field verification rate for all projects thereafter reported. This Quality Control review was more stringent than the HERS protocol, which is the greater of 1 or 1%.

Driving Demand

Demand for the program was successfully driven through a high touch approach to for-profit building owners, non-profit housing corporations, and raters. The program was fully subscribed within 9 months of public launch. The multifamily pilot utilized the following outreach activities:

- Focus Groups: The multifamily pilot held two focus groups comprised of for-profit building owners, non-profit housing corporations, and investor owned utility representatives. The focus groups provided feedback on program design and generated interest in the program before launch.
- Building Owner Communication: The multifamily pilot team was in close contact with building owners who submitted interest forms, often resulting in owners incorporating energy efficiency retrofits into multiple properties across their portfolios.
- Rater Communication: The multifamily pilot team was in regular communication with the qualified raters. Raters were able to advise their clients and guide them to the multifamily pilot when appropriate.

Workforce Development

The multifamily pilot had initially planned on holding at least one California Multifamily Existing Building Training to establish a sufficient workforce of qualified raters to provide services in Los Angeles County. After careful review, it was determined that the program could be successfully served by the existing regional workforce.

Emphasis was instead put on supplemental resources and training to support the rater workforce. A comprehensive rater toolkit was developed to support raters' technical and administrative

implementation of the program. Webinars and field trainings were held to meet the need for skill development in combustion appliance safety testing, and webinars were held to build energy modeling skills.

Financing and Incentives

The multifamily pilot utilized the recommendations of the Multifamily Home Energy Retrofit Coordinating Committee, samples of other multifamily incentive programs, and local research to design an incentive program that met the needs of multifamily property owners within LA County, and effectively incentivized energy upgrade projects.

The incentive structure included two payments. The first payment offset the cost of the investment grade audit by the rater to achieve the desired improvement level. The second incentive payment was based on the achieved improvement level as a result of verified installed measures at the completion of the project. There was an additional incentive if a project obtained a green label.

The Assessment Incentive:

Number of Units in Building	Incentive / per building
5 - 20 units	\$5,000
21 - 50 units	\$10,000
51 + units (incremental increase)	\$20/unit

- The incentive was designed to help offset the upfront cost of performing an investment grade energy audit.
- The intent of the investment grade audit was to identify energy improvements for a project, identify percent improvement, and include improvement options of 10%, 20%, and 30%, at a minimum.
- The audit had to be conducted by an approved rater and all the energy conservation measures had to be verified for final incentive.
- The audit determined the potential improvements and level of energy savings, which was used to calculate the amount of the Improvement Incentive.

The Improvement Incentive:

Improvement in Building Performance	Incentive / per Unit
10% improvement	\$200
15% improvement	\$400
20% improvement	\$700
25% improvement	\$950
>30% improvement	\$1,200

- Approved projects were eligible for incentives to offset the cost of purchasing and installing energy conservation measures to meet a targeted improvement.
- The cap for this incentive was \$100,000 or 60% of the net construction costs.
- Incentive was paid at the completion of post-construction verification by the approved rater.

Green Building Labeling Incentive

In addition, there was an incentive available for projects that achieved the GreenPoint Rated or Leadership in Energy and Environmental Design (LEED) label through the LA County Green Labeling Pilot Program. To be included in the program, projects had to involve a Certified GreenPoint Rater or LEED Accredited Professional.

Meeting this third-party verified standard demonstrated leadership and provided additional benefits to the property owner:

- Quality assurance provided by the label
- Credible verification for financial institutions, municipalities, and property owners
- Enhanced public image for multifamily property owners
- Possible additional market value at time of sale or rental

Label	Incentive / per Unit
GreenPoint Rated Elements or LEED for Existing Buildings: Operations & Maintenance Label	Flat incentive of \$4,000 for projects with 5-20 units. Projects with 21+ units will receive an additional \$50/unit for additional units.
GreenPoint Rated Whole House or LEED for New Construction Label	Flat incentive of \$4,000 for projects with 5-20 units. Projects with 21+ units will receive an additional \$100/unit for additional units.

Data and Evaluation

To ensure credibility, cross-functionality, and marketability, the QA/QC program was designed to align with the protocols from existing building performance programs and standards such as Building Performance Institute and California Home Energy Rating System (HERS I and II). Required documentation was carefully reviewed to ensure building qualification and to evaluate the quality of work of the trained raters. The multifamily pilot conducted 100% desktop review of all projects submitted and random field verifications.

Below is a list of the documents required to be submitted for the Assessment Incentive:

- EnergyPro report(s) showing 10, 20, and 30% improvement options for the whole building
- Building sketch (optional)
- Multifamily data collection sheet of all inputs for modeling
- Assessment Incentive Data Form

- Assessment Incentive Request Form
- Audit report from Approved Rater including Combustion Safety Testing data
- Copy of building permit approval or equivalent level of commitment to project
- Scope of Work

Below is a list of the documents and information required to be submitted for the Improvement Incentive:

- An EnergyPro report showing achieved percentage improvement based on verified installed measures
- Test-out data on any Combustion Safety Testing or other Building Performance Testing
- Measures modeled match the scope of work installed
- Improvement Incentive Request Form
- Scope of work completed and the cost of the work
- Improvement Incentive Data Form from Approved Rater indicating verification of installed measures and the target % for specific improvement has been met
- Energy Profile and data collection form/take off

Field verifications were performed on completed jobs to obtain a representative sample of each rater's work. Each rater had their first job verified by QC staff. After the initial job was found to be satisfactory, the rater was subject to a 15% (or 1 in 7) field verification rate for all projects thereafter. This Quality Control review was more stringent than the HERS protocol, which is the greater of 1 or 1%. The quality of the raters' work was consistently strong, with minor if any issues identified during field QC.

Monthly reports were compiled and submitted for inclusion in program reporting.

ACCOMPLISHMENTS

The overarching goal of the multifamily pilot was to demonstrate a viable model for a multifamily upgrade program that is accessible for building owners and that could be scaled statewide by overcoming barriers to participation. The pilot program proved successful in spurring multifamily whole building retrofits.

Statement of Project Objectives: Targets vs. Actual

SOPO Task 1: Demonstrate that an integrated technical assistance program will increase multifamily property owner participation in incentive programs

Target: Demonstrate demand for a multifamily whole building retrofit incentive program

Actual: 75 total projects submitted representing 5,143 units

SOPO Task 2: Provide training to establish a sufficient workforce of qualified raters

Target: At least one technical training workshop

Actual: Two days of CAS field training with 10 attendees; 2 EnergyPro modeling webinars with 80 total attendees

SOPO Task 3: Provide technical assistance consultations to building owners to support making retrofit decisions that incorporate energy efficiency

Target: Provide technical assistance consultations to all applicants

Actual: 33 total technical assistance consultations completed

SOPO Task 4: Complete multifamily whole building energy efficiency upgrades

Target: Original target of 560 units undergoing efficiency upgrades; revised to 1,050 units in July 2011

Actual: 720 units undergoing energy efficiency upgrades

SOPO Task 5: Achieve a minimum 10% energy efficiency improvement in all projects

Target: 10% minimum energy efficiency improvement

Actual: 12% or better energy efficiency improvement in each project and average 33% modeled energy efficiency improvement across all projects

CHALLENGES

The following challenges were encountered during the multifamily pilot program:

- **Investor Owned Utility Coordination:** The multifamily pilot had intended to coordinate closely with the investor owned utilities. The investor owned utilities had originally planned to launch their own multifamily whole building retrofit program in 2011. The intention was to share best practices, lessons learned, and referrals to the benefit of both programs. Southern California Edison and Southern California Gas Company have yet to launch their multifamily retrofit program. Thus, the desired level of coordination has yet to materialize.
- **Project Attrition:** The multifamily pilot had a 33% attrition rate for projects that completed their audit, and received their Assessment Incentive, but did not proceed to implement the full scope of work of energy efficiency measures. This was most often due to concerns over the cost of the scope of work, lack of funding, and inability to meet the April 30, 2013 construction deadline. This attrition made it difficult to manage the incentive budget.

PROGRAM SUSTAINABILITY PLAN

The following challenges were encountered during the multifamily pilot program:

- **Investor Owned Utility Coordination:** The multifamily pilot had intended to coordinate closely with the investor owned utilities. The investor owned utilities had originally planned to launch their own multifamily whole building retrofit program in 2011. The intention was to share best practices, lessons learned, and referrals to the benefit of both programs. Southern California Edison and Southern California Gas Company have yet to launch their multifamily retrofit program. Thus, the desired level of coordination has yet to materialize.
- **Project Attrition:** The multifamily pilot had a 33% attrition rate for projects that completed their audit, and received their Assessment Incentive, but did not proceed to implement the full scope

of work of energy efficiency measures. This was most often due to concerns over the cost of the scope of work, lack of funding, and inability to meet the April 30, 2013 construction deadline. This attrition made it difficult to manage the incentive budget.

The expanded multifamily pilot program aims to transform the multifamily energy efficiency market in the following ways:

1. Help 180 multifamily property owners perform significant upgrades (e.g., beyond basic cosmetics or minor repairs) to projects totaling 8,000 housing units
2. Property owners will realize measurable economic benefits from energy and green upgrade projects
3. Tenants will prefer and seek out multifamily buildings with energy efficiency and green improvements and/or labels.
4. Lenders will encourage and/or require energy efficiency and green improvements with commensurate benefits

VERIFICATION OF DATA

Renewable Funding (“RF”) served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE’s xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

DEVELOPED PRODUCTS

None.

Appendix B

L.A. County Partners' Final Reports

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Energy Efficiency and Conservation Block Grant (EECBG) – Better Buildings Neighborhood Program

Final Report: Alameda County

Award Number: DE-EE0003562

BBNP Name: U.S. Department of Energy's Better Buildings Program

Project Title: Retrofit California

Name of Project Director/Principal Investigator: Wendy Sommer

Team Members: Karen Kho, Stephanie Stern, Miya Kitahara, Edie Irons

The information contained in this report may be shared, used, or disclosed to the general public with expressed consent from Alameda County.

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INTRODUCTION AND BACKGROUND

With funding from the U.S. Department of Energy's Better Buildings Program, the Alameda County Waste Management Authority (StopWaste.Org) developed a series of pilot programs to promote home energy upgrades, accelerate building energy retrofits in Alameda County, and achieve deep market penetration in focused geographic areas. StopWaste.Org proposed several pilot ideas that were accepted by the DOE for inclusion in the Better Buildings Program.

To streamline efforts and maximize outcomes, StopWaste.Org built upon the existing program, Energy Upgrade California in Alameda County, which was established with State Energy Program funding from the California Energy Commission (CEC).

By leveraging the statewide brand of Energy Upgrade California, StopWaste.Org was able to create and pilot a series of local initiatives while avoiding the potential for confusion among homeowners who live in Alameda County but work or travel to neighboring counties in the Bay Area.



By piloting several program ideas, StopWaste.Org's goal was to determine which approach generates the most consumer demand for energy upgrades and is most effective in achieving the Better Buildings Program's overall goals of saving energy, creating jobs, and developing a market for sustainable building performance. This report summarizes StopWaste.Org's approach, outcomes, and lessons learned from each pilot program, including:

- Home Improvement Retail Partnership Pilot (Section II)
- Community-Based Social Marketing Pilot (Section III)
- Green Labeling Pilot (Section IV)
- Multifamily Integrated Technical Assistance Pilot (Section V)
- Alameda Flex Package Pilot (Section VI)

HOME IMPROVEMENT RETAIL PARTNERSHIP PILOT

Executive Summary

StopWaste.Org's first pilot program targeted single family homeowners and contractors who are already engaged in home improvement projects through a partnership with a home improvement retail store. Several counties tested the approach: San Francisco County partnered with Ace Hardware; San Diego County partnered with Best Buy; and, in Alameda County, StopWaste.Org partnered with Lowe's. StopWaste.Org selected Lowe's as its partner because it is a trusted neighborhood home improvement store with four locations in Alameda County, and to leverage an existing program through which Lowe's was offering a \$99 home energy assessment using home performance software created by Recurve.

The primary goal of the pilot was to promote Energy Upgrade California's whole-house approach to energy efficiency by leveraging Lowe's \$99 home energy assessment as an entry point. To this end, StopWaste.Org worked to drive traffic to and engage customers in the four Lowe's stores in Alameda County. The second goal of the pilot was to generate homeowner awareness of and interest in Energy Upgrade California, gradually building an email list of active leads.

StopWaste.Org supplemented Lowe's and Recurve's in-store and online marketing efforts with our own community-based marketing, paid advertising, and earned media. Over the course of the pilot program, we encountered several challenges with the Lowe's consumer audience: (1) Lowe's customers, who are mostly do-it-yourself (DIY) and do-it-for-me (DIFM) types, were not purchasing many home energy assessments because of the requirement to work with a contractor, and (2) we learned that Lowe's customers don't "browse" because they already know what they need to buy before they enter the store. Engaging customers in conversation about a new program and selling a new service in this environment was extremely challenging.

Final Technical Report

Institutional Design and Business Model

StopWaste.Org established a marketing partnership with four Lowe's stores in Alameda County (Dublin, Fremont, Livermore, and Union City) in order to:

- Leverage Lowe's existing \$99 home energy assessment as an entry point to generate awareness of and interest in home energy upgrades;
- Capture the attention of homeowners already thinking about home improvements; and
- Gradually build an email list of active leads for Energy Upgrade California.

In order to pursue all of the marketing channels available—including in-store promotion and media publicity using the Lowe's name—StopWaste.Org and its marketing consultants, Allison+Partners and Underground Advertising, also collaborated with Lowe's corporate headquarters. Although the timeline for implementation of the pilot program was shortened by the fact that we had to negotiate several

agreements (i.e., licensing) with Lowe’s corporate office, once all of the legal documents were in place, the creative process went smoothly and Lowe’s was collaborative, flexible, and open to suggestions.

The one critical place Lowe’s was unable to adapt their plans to match ours involved the \$99 home energy assessment. The duration of their \$99 home energy assessment promotion had been predetermined by their corporate office and, due to the delays while negotiating licensing agreements, our pilot program was unable to launch until the last few weeks that the Lowe’s promotion was in place.

Program Design and Customer Experience

As initially envisioned, the Retail Partnership pilot was intended to leverage Lowe’s \$99 home energy assessment as an entry point to Energy Upgrade California. However, it turned out to be a challenge to draw a clear connection between the offerings at Lowe’s and Energy Upgrade California because (1) the Lowe’s home energy assessments were not performed by Energy Upgrade California Participating Contractors and therefore did not fulfill the requirements for the Energy Upgrade California Advanced Package, (2) Lowe’s stores only offer three of the seven energy upgrades necessary for Energy Upgrade California’s Basic Package, and (3) the Lowe’s \$99 home energy assessment promotion began winding down only a few weeks after our pilot was fully in place.

Nevertheless, the program benefited from:

- Opportunities to build brand awareness through in-store kiosks that promoted Energy Upgrade California to home-improvement-minded shoppers;
- The association with a trusted brand in home improvement—particularly during the early days of Energy Upgrade California, when the brand was still unfamiliar to most residents; and
- A trained member of Lowe’s home energy efficiency staff who joined StopWaste.Org’s outreach team at several community-based events, and whose expertise helped drive sign-ups and lead generation at those events.

Driving Demand

The pilot leveraged four marketing channels to educate homeowners about the whole-house approach to home energy efficiency and Energy Upgrade California:

1. In-Store Promotion
2. Community-Based Marketing
3. Paid Advertising
4. Earned Media

In-Store Promotion

To supplement Lowe's in-store promotion of its \$99 home energy assessment, StopWaste.Org designed and created Energy Upgrade California-branded kiosks (see Figure 1) to build awareness of the program and educate consumers about the problem Energy Upgrade California is designed to solve—namely, that most homes leak energy, even though homeowners may not realize it.

The kiosks' design and messaging echoed the “haunted house” creative concept featured in our paid advertising (explained in further detail below), and encouraged homeowners to ask a Lowe's associate about an “in-home energy consultation.” Since the branded kiosks were driving Lowe's customers to ask the staff about a home energy assessment, we invited Lowe's staff to attend one of our contractor orientations, which were designed to provide building professionals with an overview of the program, additional offerings, and available rebates.

The branded kiosks were displayed near the energy-efficiency products in all four Lowe's stores in Alameda County, with the goal of targeting Lowe's customers seeking energy-efficiency home improvements. The kiosks were displayed in stores for two to three months.

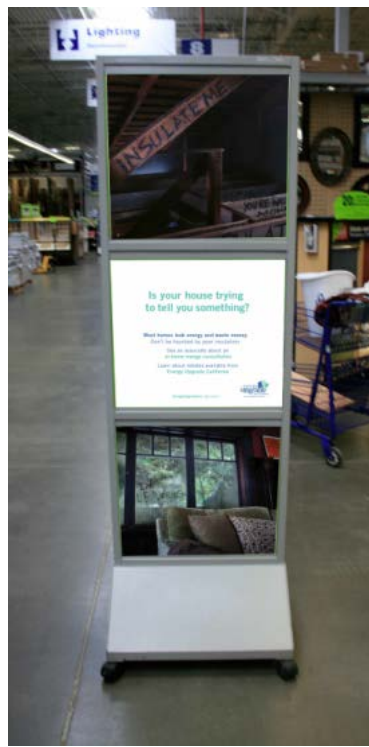


Figure 1. In-store branded kiosk

Community-Based Marketing

After learning through conversations with Lowe's management that Lowe's customers make most of their purchasing decisions before entering the store, we expanded our marketing outreach to meet our

target audience where they are: out in the community. We zeroed in on farmers markets as a destination for the type of eco-conscious consumers most likely to be receptive to information about energy efficiency.

We set up and staffed a booth (see Figure 2) at one to two farmer market events in each of the four cities with a Lowe's home improvement store—Dublin/Pleasanton, Fremont, Livermore and Union City—as well as the City of Hayward's Green Expo, another event where the majority of attendees fit our target audience of environmentally conscious homeowners. Whenever possible, the farmers market booths were staffed jointly by representatives of Energy Upgrade California and Lowe's.



Figure 2. Booth design for Energy Upgrade California (left) and booth at Farmer's Market (right)

To maximize visibility at the events, we designed and created an Energy Upgrade California booth complete with a tent, tablecloth, banners featuring the haunted house creative, and a spin-the-wheel activity to engage and educate passers-by. Lowe's donated four \$99 home energy assessments and the majority of the energy-efficiency giveaways (including CFL light bulbs, low-flow shower heads, and programmable thermostats), which helped capture the attention of passers-by and introduce them to basic tools to improve the energy efficiency of their home.

Prior to spinning the prize wheel, participants were asked to sign up with basic information (including name, city, zip code, and whether they were a homeowner), as well as an email address for future communication. We used the time while participants were filling out their details and spinning the wheel to ask them about their experience with energy upgrades and inform them about Energy Upgrade California and the benefits of getting a home energy assessment.

Paid Advertising

Our objectives for the advertising campaign were to generate awareness of Energy Upgrade California within the target area (the four cities with Lowe's stores: Dublin, Fremont, Livermore, and Union City),

educate local residents about why their home might need an energy upgrade, and create a sense of urgency to go to Lowe's for an energy consultation.

Our strategy included a mix of the following media:

- Ads in Bay Area Rapid Transit (BART) stations in Dublin/Pleasanton, Fremont, and Union City (Figure 3)
- Print ads in local newspapers, including Tri-City Voice, Pleasanton Weekly, and Livermore Independent (example below)
- Online advertising targeted by activity, location, behavior, and interest
- Cable television in target areas
- Movie theaters ads in Dublin and Union City



Figure 3. Ad in BART station

In collaboration with Lowe's, we developed a haunted house-themed creative concept for our advertisements with the tagline: *Is your house trying to tell you something?* The message behind the creative was that most houses are leaking energy; homeowners just need to know how to read the signs. The call to action encouraged homeowners to visit their nearest Lowe's store or EnergyUpgradeCA.org/InsulateMe—the microsite (see Figure 4) we created as the online home for the Energy Upgrade California/Lowe's partnership—to learn how to fix the energy leaks in their home.



Figure 4. Microsite screenshot (left) and print ad (right)

Earned Media

Finally, in the four cities with Lowe's home improvement stores (Dublin, Fremont, Livermore, and Union City), we leveraged our Community-Based Marketing efforts further by reaching out to local newspapers and blogs to invite reporters to visit our Energy Upgrade California booth at local farmers markets to learn more about the benefits of a home energy assessment and the public-private partnership between StopWaste.Org and Lowe's. This media outreach both laid a foundation for future stories about Energy Upgrade California by familiarizing reporters with the whole-house approach to energy efficiency, and generated some initial local news coverage that helped begin the process of educating local residents.

Financing and Incentives

The Home Improvement Retail Partnership did not include a financing component. Incentives to learn more about the whole-house approach to energy efficiency included:

- *\$99 home energy assessment from Lowe's:* Because this offer was available through an existing Lowe's program, no BBP funds were spent to provide this incentive—it was built into the partnership with Lowe's. In addition, Lowe's agreed to donate four home energy assessments as prize-wheel giveaways at our Community-Based Marketing events.
- *Energy-efficiency giveaways, including CFLs, low-flow shower heads, and programmable thermostats,* were also donated by Lowe's. These prize-wheel giveaways provided an incentive for passers-by to engage with program outreach staff at the Energy Upgrade California booth at farmers markets and other community-based events, an important first step in building awareness of the program and our email list of active leads.

- *Energy Upgrade California-branded reusable grocery/farmers market bags* (see Figure 5) were also created as prize-wheel giveaways. In addition to providing an attractive incentive, they were designed to serve as another marketing channel, reinforcing the program brand whenever they were used.



Figure 5. Visitors at booth posing with Energy Upgrade California reusable bag giveaway

Data and Evaluation

Several data points were gathered during the pilot program to measure its impact in building awareness and engagement among local residents:

- Paid media placements and impressions (*brand awareness*)
- Visits to the pilot program microsite (*online engagement*)
- Online ad click-throughs to the program microsite (*online engagement*)
- Direct conversations at community-based events (*direct engagement*)

Accomplishments

The pilot program generated a total of 7,161 unique visitors to the EnergyUpgradeCA.org/InsulateMe microsite, with a significant increase in March 2011 (6,396 unique visitors), up from 765 unique visitors in February 2011. Paid advertising ran in both months, so the sharp increase in unique visitors may be a result of community-based marketing and earned media efforts, both of which ramped up in March, as well as the accumulated effect of repeat exposure to the advertising messages.

A total of 27 ad placements in print newspapers resulted in over 1.9 million impressions. Online advertisements generated over 1,400 click-throughs to the site. Our 30-second television spot ran 1,676 times on local cable channels and 5,040 times in local movie theaters.

Across seven events, outreach staff had conversations with nearly 300 residents about energy upgrades.

Challenges

While the Home Improvement Retail Partnership Pilot program did provide an opportunity to road-test and refine our key messages through our community-based marketing efforts—providing valuable insights through numerous direct conversations with local homeowners that informed future pilots—the program also faced a number of challenges, including:

1. “DIY” Mentality of Home Improvement Store Customers
 - During the pilot, we discovered that Lowe’s customers, who are mostly do-it-yourself (DIY) and do-it-for-me types, were not purchasing many home energy assessments because of the requirement to work with a contractor. Furthermore, we learned that Lowe’s customers don’t “browse” because they already know what they need to buy before they enter the store. Engaging customers in conversation about a new program in this environment was extremely challenging.
2. Capacity of Lowe’s Employees to Carry the Energy Upgrade Message
 - The messaging on the branded in-store kiosks encouraged customers to ask Lowe’s staff about an in-home energy consultation. However, through the course of the pilot we learned that Lowe’s retail staff are not trained to sell services unless they are offering installation for products such as large appliances or double-pane windows. As a result, many had difficulty selling home energy assessments. Lowe’s corporate office acknowledged that its core competency is selling on-the-shelf products, not engaging and selling customers on a service, which made it difficult to build awareness and understanding of Energy Upgrade California at their retail stores.
 - It is worth noting that this challenge was compounded by the fact that Lowe’s is centrally controlled, which limits opportunity for tailored staff training at the local level. A nationwide program might have an easier time partnering with Lowe’s, because company-wide trainings could then be offered as part of Lowe’s corporate policy rather than attempting to focus on a handful of stores in a single region.
3. Lack of Alignment Between Energy Upgrade California and Lowe’s Products and Services
 - **Program offerings:** Another challenge stemmed from the fact that Lowe’s \$99 home energy assessment does not qualify as an Energy Upgrade California home energy assessment (a necessary step for the Advanced Package), and the home improvement store only offers three of the seven energy upgrades necessary for Energy Upgrade California’s Basic Package. As a result, it was a challenge to draw a clear connection between the offerings from Lowe’s and Energy Upgrade California.

- **Timeline:** Due to delays in negotiating agreements with Lowe’s corporate office, the Home Improvement Retail Partnership Pilot program was unable to launch until the final few weeks of the \$99 home energy assessment promotion being run by Lowe’s. This short timeline limited our ability to take full advantage of synergies between the two programs and the multiple marketing channels we had planned.

Verification of Data

No independent evaluations beyond those sponsored by BBP were conducted on this pilot.

Developed Products

A wide range of materials were created to support each of the four marketing channels used in the pilot:

In-Store Promotion

- Branded kiosks that echoed the “haunted house” creative concept featured in our paid ads and encouraged homeowners to ask a Lowe’s associate about an “in-home energy consultation.”

Community-Based Marketing

- Energy Upgrade California-branded tent
- Two Energy Upgrade California-branded tablecloths
- Two pull-up banners featuring the haunted house creative
- Spin-the-wheel game to engage passers-by
- Energy Upgrade California-branded reusable grocery/farmers market bags

Paid Media

- 30-second “Haunted House” television spot (shown on local cable and in local movie theaters)
- Full-color BART posters featuring “Haunted House” creative
- Two black-and-white print ads featuring “Haunted House” creative
- Online advertising targeted by activity, location, behavior, and interest

Earned Media

- Fact sheet describing Energy Upgrade California and the partnership with Lowe’s
- Spokesperson talking points about Energy Upgrade California and the partnership with Lowe’s
- Press release announcing the partnership with Lowe’s

COMMUNITY-BASED SOCIAL MARKETING PILOT

Executive Summary

As part of its series of pilot programs to promote Energy Upgrade California in Alameda County, StopWaste.Org implemented a community-based social marketing (CBSM) program. CBSM is a process for cultivating new social norms within an existing community of people. The pilot program targeted school-based communities within Alameda County and aimed to establish home energy efficiency as desirable and commonplace within those communities.

The foundation of the program, Energize for the Prize, was designed as a school fundraiser in which any school or school-related nonprofit organization in Alameda County was eligible to participate. Schools and school-related nonprofits were offered the opportunity to earn money for every energy upgrade they signed up, with bonuses available for other milestones and activities to promote the Energy Upgrade California program.

The overall goal of the pilot was to test the viability of driving demand for single family home upgrades by incentivizing members of these established school-based communities to participate in and spread the word about Energy Upgrade California.

Although the complexity of Energy Upgrade California, the limited capacity and busy schedules of parent volunteers and PTAs, and the time constraints inherent in the school year presented challenges to fully engage school partners as program ambassadors, the Energize for the Prize Pilot did achieve a number of successes:

- 25 homeowner workshops with a combined attendance of nearly 1,000 people;
- Tabling at farmers markets, street fairs, and other public venues that exposed thousands of residents to Energy Upgrade California and helped grow the email list of interested Alameda County homeowners to more than 2,000 people;
- Lead generation for Participating Contractors via homeowner workshops; and
- Earned media coverage that tied key milestones in the school-based contest together with broader messaging to educate the public about Energy Upgrade California.

Final Technical Report

Institutional Design and Business Model

Energize for the Prize sought to drive demand for whole-house energy upgrades by leveraging school communities' existing networks and communication channels and providing additional financial incentive to homeowners. With Energy Upgrade California already in place, Energize for the Prize was structured to test the viability of incentivizing school organizations to promote participation in Energy Upgrade California.



Program Design and Customer Experience

Energize for the Prize was designed as a school fundraiser. All schools and school-related nonprofit organizations in Alameda County (e.g., PTAs, booster clubs, education foundations) were eligible to participate.

- Participating school organizations appointed a volunteer **Energy Ambassador**, filled out a registration form, and were listed on the Energize for the Prize website.
- **Energy Ambassadors** were the point of contact for their school community and were equipped with a toolkit to help them understand and answer questions about Energy Upgrade California, coordinate outreach efforts at their organization, and pass on leads to Energize for the Prize **Outreach Coordinators** or Energy Upgrade California **Participating Contractors**.
- **Outreach Coordinators** recruited school organizations to participate, represented the program at community-based events and homeowner workshops, maintained the Energize for the Prize Facebook page, and managed day-to-day activities associated with the pilot program.
- **Participating Contractors** performed energy assessments and upgrades and promoted Energize for the Prize by informing their clients of the fundraiser and helping clients complete the required paperwork.

Driving Demand

Energize successfully promoted Energy Upgrade California through homeowner workshops supported by a broad public relations campaign, announcements through email listserves, on-site school posters (Figure 6), neighborhood canvassing, and flyers sent home with students. Events were held on campus at participating schools and at local community centers, and these events were promoted in direct partnership with participating school organizations.



Figure 6. Poster promoting Energize for the Prize

Earned Media: News Coverage for Key Contest Milestones

Key contest milestones provided opportunities to generate media coverage of Energize for the Prize and Energy Upgrade California. StopWaste.Org’s public relations team reached out to local news media and blogs to announce:

- The launch of the contest in August 2011
- The winners of the first phase of the contest (at the end of the 2011/12 school year), and the launch of the second phase (for the 2012/13 school year)
- The Phase II winners and conclusion of the contest.

Energize for the Prize was also included as a secondary message in other media outreach about Energy Upgrade California throughout the program. This cross-promotion resulted in 85 additional pieces of earned media coverage.

In addition to news media and blog outreach, StopWaste.Org created a brief article about Energize for the Prize for distribution in the city newsletters of the 14 local jurisdictions in Alameda County. All of this earned media coverage served not only to promote participation in the Energize for the Prize contest, but also to raise awareness and educate the public about Energy Upgrade California as a whole.

Promotion of Homeowner Workshops

Having found that direct engagement is the most effective way to educate homeowners about the complex Energy Upgrade California program, significant focus was placed on driving attendance at homeowner workshops, many of which were co-hosted and cross-promoted by schools participating in Energize for the Prize. To maximize awareness among community-minded residents and drive workshop attendance, we conducted targeted outreach to local news sources such as the Patch and community newspapers.

We also placed calendar listings and byline articles that presented the workshops as a win-win for community members: they could make their home more comfortable and energy efficient, while raising money for local schools. In addition to driving attendance, the workshop publicity also provided a spillover effect of educating and informing all community members who read the coverage about Energy Upgrade California.

Finally, upcoming homeowner workshops were promoted through social media (see Figure 7), including the Energize for the Prize Facebook page, Energy Upgrade California's Facebook and Twitter pages, and StopWaste.Org's Facebook and Twitter pages.



Figure 7. Workshop promotion using social media

Financing and Incentives

Energize does not include a financing component. The incentives for participating school organizations were as follows:

- **Phase I** (August 2011-April 2012): School organizations received \$100 for each energy upgrade they recruited. The school organization that recruited the most upgrades earned an additional

\$5,000. The second and third place schools earned an additional \$3,000 and \$2,000, respectively.

- **Phase II** (May 2012-April 2013): School organizations received \$250 for each energy upgrade they recruited, plus an additional \$250 for every three upgrades (“upgrade three, get one free”). Each school organization was also eligible to receive up to \$400 in bonuses for performing specific outreach and promotional activities.

Data and Evaluation

- Evaluation reports and recommended program changes were completed in May 2012. Based on the recommendations from Phase I, changes were implemented in the second year of the pilot. Action Research conducted three county-wide random-digit-dial phone surveys during the pilot and telephone interviews with Energy Ambassadors after the first year of the pilot. These reports are attached.

Accomplishments

The objective of the Community-Based Social Marketing Pilot, *Energize for the Prize*, was to test the viability of community competition to drive consumer behavior—specifically, to drive participation in the whole-house energy efficiency program, Energy Upgrade California. Accomplishments relative to those goals include the following:

- Continue to build awareness and understanding of Energy Upgrade California.
 - o The pilot garnered media coverage around key contest milestones. For example, a KTVU news segment highlighted the launch of the first phase of contest and profiled Bayfarm Elementary, an *Energize for the Prize* participating school. The segment was featured online and on-air twice, reaching an estimated 296,373 households.
 - o Including *Energize for the Prize* as a secondary message and call-to-action, along with other Energy Upgrade California news (e.g., Flex Package), generated an additional 85 pieces of media coverage over the course of the pilot.
- Test viability of community competition to drive personal behavior.
 - o *Energize for the Prize* engaged 27 school organizations, representing 88 schools throughout Alameda County. Among the participating organizations were six district-wide education foundations.
 - o The incentives for school fundraising and community competition helped drive attendance at workshops and generate media coverage, but were not as strong in driving consumer behavior change, particularly for a program like Energy Upgrade California, which requires a significant investment of time and money.
- Motivate homeowners to participate in Energy Upgrade in Alameda County.

- o Visit website to find out more about the program.
 - Nearly 2,000 people visited the Energize for the Prize microsite during the pilot.
- o Schedule a consultation with a qualified contractor.
 - More than 15% of workshop attendees are estimated to have signed up for energy assessments with Participating Contractors.
- o Sign a contract to perform an energy upgrade.
 - 78 people (40 in phase I, 38 in phase II) signed a contract for a Basic, Advanced, or Green Energy Upgrade Package and filled out a School Reward Form for Energize for the Prize.
- View home as a “whole house” system and bring behind-the-scenes improvements (e.g., duct work and insulation) into the public view to drive social norm change.
 - o Energize for the Prize Outreach Coordinators organized 25 homeowner workshops with a total of nearly 1,000 attendees over the course of the two-year pilot.
 - o These events introduced attendees to building performance concepts, the “whole-house approach,” and the importance of energy efficiency measures such as duct sealing, insulation, and air sealing.
 - o Workshops included case studies presented by neighborhood homeowners who had completed an energy upgrade. These enthusiastic spokespeople served as role models for workshop attendees, creating relatable examples that helped plant the seeds of new social norms where home energy efficiency is seen as desirable and commonplace within the community.
- Set homeowners on the path toward securing a green label.
 - o Every homeowner workshop discussed green labeling and promoted the Green Package rebate when it was available.
 - o An energy upgrade moves a home most of the way toward a GreenPoint Rated label. However, since green home labels are not yet well known, ongoing, targeted outreach would be necessary to raise awareness of and drive demand for securing a green label.

Challenges

The Energize pilot was successful in raising awareness of Energy Upgrade California in Alameda County. However, the program design proved to be a labor-intensive strategy for generating upgrade projects. Specific challenges included:

1. Limitations of Parent-Teacher Organizations (PTOs) and Volunteer-Run Organizations

- **Lack of experience:** School organizations don't generally have experience promoting non-scholastic events and programs to the general public. PTO leadership also changes every year, in many cases, making it difficult to maintain longer-term engagement and support.
2. Energy Ambassadors' Lack of Engagement and Effectiveness
- **Too busy:** Parent volunteers are already over-burdened, and most do not have experience promoting a relatively complex program like Energy Upgrade California. Most Energy Ambassadors had very little time and energy to spend familiarizing themselves with and actively promoting Energize for the Prize and Energy Upgrade California.
3. Project Timing
- **School Calendar:** For a project with a school-based audience like Energize, it is essential to take school-year timing into account. Many organizations set their fundraising and event schedules in the prior school year and are inactive over the summer.
 - **Pace:** During the school year, PTOs typically meet monthly, creating long delays for program activities and decisions such as setting a time for Outreach Coordinators to present at an organization's meeting, then securing a commitment to sign up, agreeing to specific outreach activities, and obtaining approval to host a workshop.
4. Project Complexity
- **Explaining the Program:** Due to the relationship between Energize for the Prize and Energy Upgrade California, an in-depth explanation was needed for Energy Ambassadors to understand both Energy Upgrade California and Energize for the Prize. This complexity presented a challenge both in recruiting school organizations to participate and in encouraging homeowners to sign up for energy upgrades through the program.
5. Project Design
- **Phase I:** The competition model did not work in the first year, due to many of the factors explained above. Schools that signed up later in the year felt like they were "already too far behind the other schools" and did not engage deeply with the program.
 - **Phase II:** Incentivizing school organizations to assist with outreach improved their engagement and activity. Providing a clear roadmap of what they could do helped focus their limited attention on activities beneficial to the program. Still, improvements in program design did not lead to the desired number of Energize for the Prize jobs.
6. News Value

- It was challenging to create ongoing earned media coverage in between the natural contest milestones, such as the launch of the contest and announcing the winners. In the future, an effort should be made to ensure that school-based promotions and contests include a student engagement or educational component in order to generate more media interest.

Verification of Data

Throughout the program, Action Research conducted three countywide phone surveys using random digit dials to survey homeowners to measure widespread adoption of Energy Upgrade California in Alameda County, specifically the effectiveness of Energize for the Prize. After Phase I was complete, Action Research performed in-depth interviews with 12 Energy Ambassadors, collecting information about their role, goals, challenges, the value of the program, and how it fit into existing school-based activities. See attached Action Research reports for additional details.

Developed Products

A variety of materials were developed and deployed throughout the pilot including:

- o Workshop presentations
- o Press releases
- o Press kit, including Energize for the Prize fact sheet and FAQs
- o School outreach postcards
- o Event flyers for: Energy Expo, Home Energy Roadshow, school-based and community-based workshops, Energy Upgrade Open House Tour
- o Energize for the Prize microsite (www.energizefortheprize.org)
- o Energize for the Prize Facebook page (facebook.com/energizefortheprize)
- o School Toolkits, including posters, flyers

GREEN LABELING PILOT

Executive Summary

The Green Labeling Pilot in Alameda County was developed to leverage green home labeling as an entry point for promoting energy upgrades to single family homeowners. Green labels for existing homes can be a powerful tool to complement other market transformation strategies, such as incentives and financing, and encourage energy-efficient home improvements. Specifically, broader uptake of green labels for existing homes such as GreenPoint Rated, HERS II, LEED for Homes, and the U.S. DOE's Home Energy Score has the potential to:

- **Accelerate consumer awareness** about the value of energy efficiency and green improvements;
- **Create market transparency** and enable the value of green building improvements to be recognized and acted on by homeowners and home buyers, as well as the real estate and financial professionals who facilitate these transactions; and
- **Serve as a driver for investment in home energy efficiency**, especially in mild climates like the Bay Area where energy upgrades can have a long payback period.

The following goals reflect the pilot's long-term indicators of success:

Demonstrate that green building labeling motivates homeowners to make energy upgrades, particularly when remodeling or preparing to buy or sell a home.

Demonstrate market value of green-labeled homes, measured as: (1) a quantifiable price premium for green-labeled homes, and/or (2) reduced time-on-market for labeled homes compared to unlabeled homes.

Final Technical Report

Institutional Design and Business Model

The Green Labeling Pilot program was based on GreenPoint Rated, the leading residential green building rating system in California, and was designed to test the market response to the GreenPoint Rated consumer label in the single family and multifamily sectors. Because energy upgrades are required to achieve the label, GreenPoint Rated can serve as a driver for participation in Energy Upgrade California. Therefore, StopWaste.Org collaborated with Build It Green, the organization that administers GreenPoint Rated, in the implementation of the Green Labeling Pilot program.

StopWaste also piloted the Energy Home Energy Score (HEScore), a national rating system developed by the U.S. Department of Energy. The Score reflects the energy efficiency of a home based on structure and heating, cooling, and hot water systems. The Home Facts provide details about the current structure

and systems. Recommendations show how to improve the energy efficiency of the home to achieve a higher score and save money. Under BBP, Alameda and San Francisco Counties scored 309 homes as part of Home Energy Score. Eligible homes included those participating in Energy Upgrade California.

Program Design and Customer Experience

The Green Labeling Pilot was designed to:

- Promote green home labeling and increase its visibility in the general market and among real estate professionals and remodeling contractors;
- Generate media coverage and word-of-mouth for the GreenPoint Rated consumer label; and
- Showcase labeled properties through the GreenPoint Rated consumer website and media.

Rebates to offset the cost of labeling were offered to help establish a critical mass of GreenPoint Rated properties in the marketplace. The pilot program also leveraged State Energy Program (SEP) funding to train real estate professionals and establish green ratings on the Multiple Listing Services, and StopWaste.Org agency funds supported complementary marketing efforts in the multifamily and new home sectors.

During fall 2011, the statewide green labeling committee was in contact with the Department of Energy's HEScore program about becoming a partner in the national HEScore launch. However, state regulation prohibits the use of any rating system in California not approved by the California Energy Commission. Alameda and San Francisco Counties continued to work with the Department of Energy on scoring approximately 300 single family homes that participated in Energy Upgrade California. As part of the analysis, we developed a programming interface between EnergyPro and the Home Energy Score application programming interface (API). This will allow future projects with EnergyPro modeling inputs to automatically generate Home Energy Scores. Home Energy Score is included in the list of green labels being recommended for inclusion in MLS listings in California.

Driving Demand

To drive adoption of GreenPoint Rated in single family existing homes, single family new construction, and multifamily buildings, the Green Labeling Pilot program aimed to increase awareness of GreenPoint Rated and recognition of its value among homeowners, remodeling contractors, builders/developers, property managers, and realtors.

As a first step, Build It Green revised the GreenPoint Rated point and tier structure and certificate design to more clearly communicate program structure and benefits to homeowners. The GreenPoint Rated program was also streamlined to bring down the cost of obtaining a label prior to the sale of a home.

With a streamlined program structure in place, we next identified key motivations for participating in the green labeling program:

- Increased home value at the time of property sale or rental

- Quality assurance provided by the label
- Competitive advantage for certified contractors
- Credible verification of green home features for financial institutions, municipalities, and property owners
- Enhanced public image for multifamily property owners

To communicate these messages and educate residential property owners about the benefits of a green label, we employed a variety of strategies, described below.

Laying the Foundation

To ensure consistent messaging, the Green Labeling Pilot marketing team (including StopWaste.Org, Build It Green, Allison+Partners, and Underground Advertising) worked together to develop key messages, train key spokespersons, and share talking points and marketing materials with local contractors and realtors, who could in turn share the information with homeowners. In our messaging, we positioned GreenPoint Rated as the gold standard in green homes in order to articulate the value of GreenPoint Rated homes for homeowners, the real estate market, and the environment, and to reinforce the credibility of the GreenPoint Rated label.

Homeowner Marketing

The pilot identified and leveraged several channels to reach homeowners considering a home remodel, purchase, or sale, including:

- **Media coverage** of new research on the value-add of green labels for single family homes and a media tour of a GreenPoint Rated home;
- **Direct outreach** via homeowner workshops at local home improvement stores;
- New online and mobile resources; and
- **Education and trainings** targeted to real estate, home inspection, home appraisal, and building industry professionals, who serve as trusted experts for homeowners during the sale, purchase, or remodel of a home.

To support these strategies, the Green Labeling Pilot marketing team developed the following assets:

- **Online Resources:** A new consumer-facing website (www.GreenPointRated.com) and a microsite housed on the Energy Upgrade California website
- **Homeowner Engagement Tool:** An online and mobile survey to help homeowners determine “Is Your Home GreenPoint Ready?” along with recommendations on green home improvements

- **Printed Materials:** New GreenPoint Rated brochures, fact sheets, case studies, posters, and home and building signage, as well as materials to promote the benefits of green homes and green labels through e-newsletters, blogs, and social media
- **Paid Advertising:** Online and print advertising disseminated through search engines, real estate websites, and home/lifestyle magazines
- **Public Service Announcements** that aired on local television stations
- **Media Materials:** Press releases and a press kit, including a fact sheet, FAQs, and case studies featuring local GreenPoint Rated homes

Industry Professional Marketing

To establish the value of green home labeling, industry professionals including remodeling contractors, realtors, lenders, and appraisers are also influential audiences. Tactics to reach this audience included:

- **Education and Training:** Provided GreenPoint Rated trainings to contractors, promoting the benefits of the contractor green label delivery model and benefits of the home performance business model when pairing GreenPoint Rated with Energy Upgrade California. Trainings on how to communicate and market GreenPoint Rated were also provided.
- **Marketing Materials:** New GreenPoint Rated brochures, fact sheets, case studies, posters, and home and building signage were created and made available to industry professionals to help them educate their clients about the benefits of green homes and market GreenPoint Rated.
- **Online Resources:** Two types of online resources for industry professionals were made available via the Build it Green website (builditgreen.org/greenpoint-rated):
 - Educational information about the GreenPoint Rated system; and
 - Downloadable marketing collateral and talking points to help green building and real estate professionals build their business and market GreenPoint Rated to their clients.
- **Networking Events:** Trainings and other events provided another avenue for industry professionals to network with one another and build their business.
- **Other Ongoing Communications:** To keep GreenPoint Rated “top of mind” for industry professionals, alert them to upcoming events and trainings, and reinforce the benefit of green homes and green labels, Build It Green promoted the program via e-newsletters, blogs, and social media throughout the pilot.

Advocacy for Greening the MLS

To complement the industry marketing strategy, Build It Green also worked to encourage systemic change that would further adoption of green home labeling in the local market. Because the MLS Boards

in California, particularly in Northern California, are highly fragmented, progress toward expanding their listings to include green features and labels has been slow. To encourage progress in this direction, Build It Green continued real estate advocacy activities begun under SEP, including convening a real estate advisory committee on greening the MLS and establishing relationships with industry associations. A draft guide to Greening the MLS in California was also produced with SEP funding.

Earned Media

Earned media coverage supported both the homeowner and industry professional marketing strategies.

Homeowner-Focused Media: To generate media interest in GreenPoint Rated among home and lifestyle publications, we created a news hook around a major program milestone—**10,000 homes in California certified by GreenPoint Rated**—and paired the announcement with an opportunity for media to tour a well-designed GreenPoint Rated home. We created and distributed a press release about the 10,000-homes milestone and invited national lifestyle, green living, and regional news outlets to tour the home of architect Ian Macleod in Albany, California (Figure 8). To support the tour, we developed talking points for Build it Green spokespersons and Macleod, and created b-roll footage of the home for use in future media efforts. The coverage generated from the **GreenPoint Rated media tour** enabled us to reach new audiences, such as interior design and architecture enthusiasts and consumers interested in eco-conscious living.



Figure 8. GreenPoint Rated Media Tour at Ian Macleod’s home

A second major earned media opportunity was the **release of a study by UC Berkeley and UCLA researchers Dr. Nils Kok and Matthew Kahn to determine the value of green home labels** (including LEED for Homes, ENERGY STAR and GreenPoint Rated) in the California residential marketplace. The study, funded jointly by StopWaste.Org and the San Francisco Department of the Environment, revealed a 9% price premium for green-labeled homes in California. The results of the study, which was released in July 2012, garnered extensive coverage in national, regional, environmental, and industry press (see Figure 9).



Figure 9.Online new story about study highlighting value of green homes in the marketplace

Industry Media: In order to build credibility and awareness of GreenPoint Rated among building and real estate professionals, we pitched bylined articles on green building trends—including green home certifications—to building and multifamily trade publications, with Dr. Kok and Build it Green board president Cheryl O'Connor as authors.

Workforce Training and Development

Professional training for real estate and building professionals was offered throughout the pilot.

Real Estate Professionals

Through the Green Labeling Pilot and associated efforts funded by SEP, workforce development programs for real estate professionals were designed to engage and educate real estate professionals as a key outreach channel to reach homeowners at time of home purchase or sale.

Real estate professionals were identified as a key audience because they are in a unique position to (1) persuade home sellers to upgrade their homes in order to reduce the number of days on market and increase the sales price, (2) help home buyers to identify energy-efficient homes to purchase, and (3) to procure financing for energy-efficiency upgrades after purchase. The Joint Center for Housing Studies estimates that home buyers spend more than \$6,000 per year on home improvements in the first two years after buying a home, indicating that this “new homeowner” audience is a critical one. Real estate

professionals are often the gatekeepers to this important market. However, most real estate professionals lack the knowledge or expertise to help clients take advantage of these opportunities.

To meet this need, Build It Green organized a series of presentations, trainings, and a Real Estate Networking Event to educate realtors about the value of green building and green labeling, green real estate financing, and the energy efficiency rebates available through Energy Upgrade California. The underlying theme of all educational activities was to present the business case for green building and remodeling and demonstrate how these programs can help realtors grow their business.

Specific programs for real estate professionals during the pilot period included:

- 5 presentations to over 100 real estate professionals
- Hosted networking events to connect realtors to trained inspectors, HERS Raters, GreenPoint Raters, and green contractors
- Development of a two-day Certified Green Real Estate Professional training to provide the critical knowledge and understanding needed to advocate for and assist consumers in participating in energy and green upgrade programs in California.
 - More than 400 representatives from over 100 real estate organizations participated in these CG-REP trainings.
 - 164 Bay Area real estate professionals were trained to be Certified Green Real Estate Professionals (*SEP-funded*)
- Recruited and promoted four homes that were GreenPoint Rated at the time of sale. The first open house for agents and brokers attracted approximately 50 agents and brokers. The home sold in just two days for \$35,000 more than comparable sales in the area.

Contractors

With SEP funding, a contractor delivery process was developed for remodeling contractors who are Certified GreenPoint Raters and BPI-certified contractors. The contractor delivery model will streamline the process for homeowners and reduce the cost of the rating through self-verification and a sampling-based quality assurance program, modeled after Home Performance with Energy Star.

Home Inspectors

Build It Green conducted two pilots aimed at providing an accessible yet credible time-of-sale rating:

- The first pilot led to a simplified GreenPoint Rated checklist of measures that could be evaluated in a single visit. The activities in this task built upon two pilots to streamline the rating process to be compatible with the existing home inspection process.

- The second pilot engaged home inspectors and explored how GreenPoint Rated could fit into their business model.

Build It Green also delivered a pilot training to a select group of home inspectors to test the viability of a curriculum that would provide information to enable a home inspector to certify an existing home under the GreenPoint Rated program. In particular, the program targeted existing homes that are a part of the real estate transaction process. The pilot training provided scholarships to home inspectors to participate in the GreenPoint Rated and CalCERTS HERS trainings in order to obtain eligibility certifications and certification as a GreenPoint Rater for Existing Home. The training covered Green Building Education, Home Performance, and Evaluation Education, and provided an opportunity for feedback from the home inspectors to be used in the development of future curricula.

The home inspector engagement efforts can be summarized as follows:

- Outreach to home inspector chapters with general information about GreenPoint Rated and the synergies between green building and home inspection;
- Training on how to build business by incorporating green evaluation into home inspection; and
- Mentoring in the field.

Financing and Incentives

- The pilot offered single family and multifamily incentives for projects that received green building certification. The availability of incentives provided an opportunity for industry professionals to engage with their clients and network. However, since the decision to undertake remodeling and complete renovations is a lengthy process, we did not expect most projects to complete certification during the grant period.

Single Family Incentives

- \$1,000 incentives for single family homes were offered during the time-of-remodel phase of the pilot. A total of six single family incentives were issued. The balance of single family green labeling rebate funds was transferred to the Flex Rebate pilot at the end of the second year.

Multifamily Incentives

The Multifamily Integrated Technical Assistance Pilot offered rebates from the Green Labeling Pilot to drive demand for retrofits. Projects that undertake an energy retrofit are well positioned to earn a green building label, which would allow them to market the green and energy efficiency attributes of the building. The technical assistance also facilitated the initial steps toward earning the green building label. Six multifamily projects, representing 590 units, received \$103,500 in BBP green labeling rebates. StopWaste leveraged its own agency funds to incentivize the green labeling of an additional 10 projects representing 389 units (of which 6 projects/121 units were completed within the BBP timeframe).

Accomplishments

The objective of the Green Labeling Pilot marketing was to leverage green home labeling as an entry point for promoting energy upgrades to single family homeowners. Building industry and real estate professionals were targeted as influencers in the labeling process during time of remodel and during a sales transaction. To reach these objectives, the program utilized a portfolio of complementary marketing and outreach strategies to inform and motivate property owner and real estate professional participation.

Overall, the pilot moved toward the following end goals:

- Created Awareness through the use of various media channels and community events.
- Created Demand among homeowners by capitalizing on opportunities presented by specific markets and trigger events, and by demonstrating the credibility and value-add of the GreenPoint Rated label.
- Facilitated the Process by providing clear information to homeowners about how to have their homes rated and offering professionals clear guidance about how to leverage GreenPoint Rated to increase their business opportunities.

The pilot specifically accomplished the following major tasks:

- Developed and deployed a new homeowner-facing website for GreenPoint Rated.com and micro-sites at Energy Upgrade California and Build It Green's website.
- Developed an online and mobile survey to help homeowners determine "Is Your Home GreenPoint Ready?" with recommendations on green home improvements.
- Coordinated with the CBSM Energize for the Prize Pilot and promoted Green Point Rated at homeowner workshops.
- Trained Real Estate Industry professionals at association presentations and networking events.
- Worked with three home inspectors to complete the process of becoming certified as a GreenPoint Rater of Existing Homes and HERS Raters; developed plans to use their insights and feedback for future trainings.
- Awarded green labeling rebates for single family and multifamily buildings that earned Green Point Rated labels.

In addition, the Home Energy Score Pilot generated 309 provisional HEScores with the available pilot data. To generate these scores, all projects required multiple runs through the Lawrence Berkeley National Laboratory (LBNL) scoring tool due to software API issues with the original data. Through our data findings, along with other national data, the DOE HEScore team is actively implementing various improvements and the California Pilot Team continues to support this effort and collaborate on key market needs and tool criteria.

Challenges

Green labeling is still a relatively new concept, and homeowners generally do not understand the value of a green and energy-efficient home. Many challenges and market barriers still exist. Without a widely accepted mechanism for green labeling of existing homes, it will remain difficult for:

- Home buyers to make rational choices that factor in a property's energy efficiency and other green attributes.
- Home sellers to understand or take advantage of the potential sales price premiums if they invest in energy upgrades before sale.
- Real estate professionals to communicate the value of energy efficiency improvements to home sellers and help home buyers identify more energy-efficient properties or finance upgrades post-sale.
- Home inspectors and appraisers to identify and properly evaluate the value of green homes versus conventional homes.

The Home Energy Score Pilot ran into some technical challenges while developing the EnergyPro software functionality, generating the scores, and performing the analysis. The main issue for development and refinement is the scoring mechanism and scale. This pilot provided a number of recommendations to DOE, which they are considering as they make their next round of revisions to the HEScore tool.

Program Sustainability Plans

The green labeling activities undertaken in Alameda County under BBP can potentially be continued with California ratepayer funding. Staff at the California Public Utilities Commission expressed a high level of interest in local governments continuing implementation and StopWaste will pursue future funding opportunities to continue this work.

Verification of Data

No additional evaluation was conducted for the Green Labeling Pilot.

Developed Products

The Green Labeling Pilot developed the following products:

- A new consumer-facing website (www.GreenPointRated.com) and a microsite housed on the Energy Upgrade California website
- An online and mobile survey to help homeowners determine "Is Your Home GreenPoint Ready?" along with recommendations on green home improvements
- New GreenPoint Rated brochures, fact sheets, case studies, posters, and home and building signage.

- Online and print advertising disseminated through search engines, real estate websites, and home/lifestyle magazines, and public service announcements that aired on local television stations.
- Press releases and a press kit, including a fact sheet, FAQs, and case studies featuring local GreenPoint Rated homes.

Products developed for the California Home Energy Score Pilot include:

- EnergyPro HEScore API interface for score generation through EnergyPro Residential Performance module currently utilized in the Energy Upgrade California portfolio of programs
- EnergyPro ECON-2 output report containing HEScore pre- and post-test scores

MULTIFAMILY INTEGRATED TECHNICAL ASSISTANCE PILOT

Executive Summary

The Multifamily Integrated Technical Assistance Pilot in Alameda County offered integrated technical assistance to overcome barriers of complex, fragmented program structure, and demonstrated a viable model for a multifamily upgrade program that is accessible for building owners and can be scaled for statewide implementation.

The pilot successfully reached a large pool of property owners and managers and engaged them in pursuing energy efficiency for their buildings. Technical assistance was provided for a wide variety of projects, including both immediate and future retrofits. However, the timing of when building owners undertake and complete their retrofit projects was beyond the control of the technical assistance program, and was driven largely by funding sources external to the pilot.

Final Technical Report

Program Design and Customer Experience

The pilot offered integrated multifamily technical assistance to overcome barriers of complex, fragmented program structure, and demonstrated a viable model for a multifamily upgrade program that is accessible for building owners.

To build capacity for continued implementation of a viable multifamily program, the program was designed to:

1. Leverage existing organizational structures and communication channels, particularly apartment and housing associations, in order to conduct outreach.
2. Offer technical assistance to:
 - o Help property owners evaluate project feasibility and appropriate approach to upgrades;
 - o Link projects with available incentive and financing programs;
 - o Benchmark the energy performance of projects;
 - o Provide preliminary design assistance to individual projects by advising on measures necessary for green building certification, as well as compliance with various funding and financing; and
 - o Develop project scopes.
3. Create a pool of trained professionals (auditors, raters, contractors, and property managers) to implement the program and provide technical services through a consultant delivery model.

4. Provide access to qualified contractors who possess the skills to perform multifamily building retrofits and rehabilitations consistent with energy efficiency best practices.
5. Provide a robust system of field verification, quality assurance, and methodologies for quantifying project-specific expected benefits. The system will be aligned with HERS II and GreenPoint Rated.
6. Develop and offer participants a technical assistance toolkit with case studies, market research fact sheets, white papers, and presentations.
7. Promote the adoption of energy-efficient utility allowances in the multifamily affordable housing sub-sector.

Driving Demand

The multifamily pilot targeted outreach through existing networks. The outreach leveraged city department contacts and industry associations. In Alameda County, green labeling rebates were also offered as a way to increase the value of the energy upgrade and drive property owner demand.

Workforce Training

Professional qualifications, training, and workforce development leveraged State Energy Program funding. A gap analysis developed by the California Home Energy Retrofit Coordinating Committee's Multifamily subcommittee identified four key roles and training needs: rater/verifiers, building operators, central water heating system contractors, and energy analysts. Table 1 shows the courses that were designed and delivered through State Energy Program funds or StopWaste.Org agency funds.

Table 1. Course delivered through the State Energy Program or StopWaste.Org funds

Professional	Trained	Dates	Funding Source(s)
Rater/Auditors and Verifiers	70	Nov 2010 Jan 2012	Local government and SEP-funded for Nov 2010 delivery; BBP funding in L.A. for regional delivery
Building Operators – Multifamily Systems	53	Feb 2012 Feb 2013	Local government and SEP-funded
Energy Analysts – Multifamily Building Analysis and Modeling	23	Feb 2012	SEP-funded

Financing and Incentives

No energy upgrade incentives or financing products were offered. The pilot was designed to leverage utility whole-building rebates. The utility rebates were delayed in their launch such that pilot participants could not utilize them during the pilot program cycle.

Data and Evaluation

The technical assistance included support for setting up an automatic benchmarking service through EPA Portfolio Manager and Energy Upgrade California Portfolio Tracker. The pilot's technical assistance added buildings and meters into the growing database of multifamily accounts in EPA's Portfolio Manager. The pilot also leveraged SEP funding to build a statewide multifamily Portfolio Tracker that includes benchmarking and utility data tracking, as well as project and workflow tracking functionalities.

Accomplishments

The objective of the Multifamily Integrated Technical Assistance Pilot was to increase the participation of the traditionally underserved multifamily sector by providing technical and financing assistance to multifamily property owners and managers.

The pilot was successful in strengthening and expanding relationships in the multifamily sector and engaging property owners to evaluate the energy efficiency of their buildings. The conversion rate into completed retrofits was lower than anticipated due to the lack of utility-funded whole-building rebates that, when StopWaste.Org designed this program, were expected to be available during the BBP program cycle. Nevertheless, approximately half of the projects that received technical assistance proceeded on to construction and/or a green certification. The projects that did not proceed during this program cycle have come out of the program better positioned to undertake well-informed retrofits when funding becomes available.

- The program provided technical assistance for 4,800 units (41 projects).
- Of the projects that received technical assistance, 2,200 units (22 projects) proceeded onto construction and/or a green certification.
- Of the projects that proceeded onto construction and/or green certification:
 - 583 units (13 projects) completed a retrofit during the program cycle that achieved at least 15% energy savings
 - 440 units (5 projects) have completed a GreenPoint Rated certification and received a BBP green labeling rebate.
 - 529 additional units (11 projects) are earning a GreenPoint Rated certification through StopWaste.Org agency grants.

The program also created an infrastructure that provides a foundation for ongoing programs:

- Solidified relationships with regional property owners and managers, local multifamily associations, and city departments interfacing with multifamily property owners, all of which will support effective outreach in the future.
- Leveraged SEP funding to train 70 rater/auditors, 53 property managers, and 23 energy modelers.
- Leveraged SEP funding to create IT tools and a statewide web portal for multifamily energy upgrades.
- Assisted City of Alameda Housing Authority to obtain HUD approval to use California Utility Allowance Calculator (CUAC).
- Supported California Energy Commission and State Treasurer's Office in developing FAQs on applying the CUAC to existing buildings.

Challenges

The main challenges faced by the Multifamily Integrated Technical Assistance Pilot were the lack of a post-retrofit financial incentive and the limitation of program cycle timing. Specific challenges included:

There was no whole-building utility rebate available, which was anticipated during the program cycle and would have been leveraged to make upgrades financially feasible for participants. The dropout surveys showed that many property owners and managers who received technical assistance were unable or unwilling to proceed without a rebate.

A post-installation rebate or other enforceable mechanism is needed for effective data gathering on completed projects. Without an incentive to provide the data, it was challenging to collect the necessary data to show energy savings from technical assistance.

Public Housing Authorities' limited staff time prohibited them from enacting comprehensive energy efficiency-based utility allowance policies.

The limited program timeframe curtailed the volume of viable candidates. Projects had to have already obtained capital but not yet solidified project scopes in order that they could be flexible about how they spent their capital.

Limited access to utility bill data from the utilities hindered the robustness of analysis of actual energy usage during the technical assistance process. Whole-building utility data that include tenant meters is prohibitively difficult to obtain through the current data authorization procedures.

Program Sustainability Plans

The BBP pilots in the Association of Bay Area Governments (ABAG) region will be continued or evolved into new programs based on lessons learned, and sustained through California ratepayer funding. The pilots across California were successful in demonstrating local governments' ability to administer and implement energy efficiency programs directly. As a result, the California Public Utilities Commission

invited and approved proposals from regional collaborations of local governments to administer ratepayer-funded programs beginning in the 2013-2014 program cycle. ABAG will oversee programs in the nine-county Bay Area region through the Bay Area Regional Energy Network (BayREN).

The Multifamily Integrated Technical Assistance Pilot will evolve into a more comprehensive offering with the addition of retrofit incentives, and with the following program design:

Name: BayREN Multifamily Subprogram (consumer-facing name is in development)

Building upgrade and market transformation goals for 2013-2014

- 5,000 units incentivized through rebates
- 9,000 units receiving technical assistance
- 300 property owners engaged through targeted outreach
- 50 multifamily contractors trained

Market served

- Multifamily buildings with five or more units
- Nine-county Bay Area region

Services offered

- Integrated technical assistance including measure recommendation, program referrals, utility bill analysis, or benchmarking
- Multiple-measure rebate: a flat \$750 per unit rebate for undertaking multiple measures resulting in at least 8% modeled energy savings
- Targeted outreach conducted by local governments
- Multifamily contractor training
- Enhancement of energy modeling software to minimize time investment and streamline process

Collaboration with partners

- The nine counties will collaborate to design and deliver the programs.
- Industry partners, associations, and building professionals will be engaged to deliver the outreach and upgrades.
- Collaboration with the utilities and other programs in the region will streamline program referral and improve the customer experience.

Verification of Data

No independent evaluations beyond those sponsored by BBP were conducted on the pilot.

Developed Products

A multifamily upgrade toolkit was developed on www.multifamilygreen.org and launched in January 2011. Subsequently, StopWaste.Org worked with other multifamily program implementers across the state, leveraging State Energy Program funds, to develop the content for the Statewide Energy Upgrade California Multifamily Portal, which launched in March 2012: multifamily.energyupgradeca.org. The portal includes a description of the program offerings, an explanation of multifamily whole-building upgrades, case studies, and the Funding Finder tool developed through State Energy Program funds. The Funding Finder tool collects building-specific data and generates recommendations for upgrade measures and appropriate programs.

ALAMEDA FLEX PACKAGE PILOT

Executive Summary

The final program implemented by StopWaste.Org through the countywide Building Retrofit Program's Better Buildings Program grant was the Alameda Flex Package Pilot. As part of *Retrofit California*, the aim of the Alameda Flex Package Pilot mirrored the goals of the American Recovery and Reinvestment Act (ARRA): (1) energy savings, (2) job creation/preservation, and (3) economic recovery.

The Alameda Flex Package Pilot was launched in August 2012 to test an alternative to the existing Energy Upgrade California Basic Package Rebate Program, which required a set list of energy-saving measures. The Alameda County Flex Package was based on the Flex Path model designed by the County of Los Angeles, also using BBP funding. The Flex Package pilot program was designed to offer a menu of single measures with assigned energy savings scores from which a homeowner could choose two or more measures with scores totaling 100 or more points (yielding a 15% minimum energy savings) to receive a \$1,500 incentive.

The primary goals of the Flex Package pilot program were to:

- Provide homeowners with limited budgets with a pathway to participate in Energy Upgrade California, while delivering a minimum of 15% energy savings on average; and
- Offer contractors a streamlined job development and sales process.

Based on the rapid uptake of the Los Angeles program, the Alameda Flex Package Pilot initially targeted 250 energy upgrade projects on a first-come, first-served basis.

To achieve these goals, the Flex Package pilot incorporated a unique set of program elements, including:

- A menu of measures that provided homeowners with more flexibility to tailor their project to the specific needs of their home;
- A point system based on pre-modeled energy savings for a variety of energy upgrade measures;
- A streamlined application and project approval process for consumers and contractors; and
- Low-range incentives to target low/modest-income households.

The pilot was successful in delivering an average energy savings of 22.3% per home. Additionally, by building on and refining earlier Energy Upgrade California program models, the pilot provided new insight to inform the ongoing development of whole-house retrofit programs envisioned by the California Public Utilities Commission in their 2013-2014 Energy Efficiency Portfolio and beyond.

The pilot also expanded and strengthened relationships in the multifamily sector and demonstrated the ability of local governments to run multifamily energy efficiency programs. As a result, the pilot administrators are poised to run expanded programs through California ratepayer funding.

Final Technical Report

Institutional Design and Business Model

The Alameda Flex Package Pilot sought to establish a practical on-ramp program for homeowners with modest budgets to enter the Energy Upgrade whole-house program, and provide an effective alternative to the more prescriptive Basic Package. It used key elements of the County of Los Angeles Flex Path program to strengthen the comfort and energy savings benefits that could be delivered by a rebate program with a streamlined, pre-modeled approach.

Program Design and Customer Experience

The Alameda Flex Package Pilot offered an incentive of \$1,500 to Alameda County homeowners who installed two or more qualifying measures with a combined point value of 100 or greater. To qualify for the incentive, homeowners were required to work with an Energy Upgrade California Participating Contractor who (1) helped select measures that met the homeowners' needs from a list of pre-qualified measures, (2) ensured effective installation, and (3) assisted with the online incentive application process. In planning the launch of its Flex Package pilot, the Alameda County team leveraged the existing Flex Path model in Los Angeles County. The qualifying measures and submission requirements virtually mirrored those of the Los Angeles program, with point values customized to the Alameda County climate zones and modeled savings. The Flex Package was primarily marketed through contractors, however, StopWaste.Org initiated a contractor co-op marketing system that collaborated on branding and messaging and promoted Flex Package through Energize for the Prize and homeowner workshops.

Homeowner and Contractor Eligibility

Flex Package was designed to serve moderate-income homeowners who could only afford to implement a few energy efficiency measures. To meet the eligibility requirements to participate in the pilot, homes had to be owner-occupied single family detached residences located in Alameda County, and the participant had to use an Energy Upgrade California Participating Contractor.

These requirements allowed any contractor who was already part of the PG&E Energy Upgrade California program to participate in the Flex Package pilot without having to go through an additional enrollment application. Contractors were required to attend a short orientation for the pilot program, which was offered several times during the duration of the pilot. Inquiries were received regarding rental properties and whether they could qualify for the program. The incentive could be extended to rental properties in future program offerings.

Qualifying Measures

The Flex Package model was designed to award incentive dollars based upon a point system. Energy upgrade measures eligible for the program were assigned points based upon software-modeled energy

savings and whole house building science principles. For the Alameda Flex Package Pilot, the following scale was used: 15 Flex Package Points were equal to 1% average energy savings, and given a \$100 incentive.¹ Contractors appreciated the elimination of energy modeling.

Only one rebate was offered per home in order to allow for broader homeowner participation and to push those projects that could achieve deeper energy savings into the Advanced Package program. This model worked well in Alameda County, particularly since a majority of the projects submitted to the program had only 2 or 3 measures, and the average project cost was less than \$7,000.00. The Qualifying Measures list (see Table 2) was available online in a consumer-friendly, downloadable PDF format so that contractors could easily distribute it to potential clients.

Table 2. Alameda Flex Package Qualifying Measures

INSULATION AND AIR SEALING			
FLEX PACKAGE MEASURE	PRE-UPGRADE CONDITION	POST-UPGRADE CONDITION & SUBMISSION REQUIREMENTS	POINTS
Attic Insulation & Sealing	$\leq R-11$	$\geq R-38$ Supporting documentation required for close-out: specification sheet, before & after photos, combustion safety test results	40
Attic Radiant Barrier	No radiant barrier	Continuous rolled or pre-laminated Supporting documentation required for close-out: specification sheet, before & after photos	15
Air Sealing	$ACH_n \geq 0.50$	$ACH_n \leq 0.35$ Supporting documentation required for close-out: blower door test-in results, blower door test-out results, combustion safety test results	30
Wall Insulation	No insulation	$\geq R-13$ Supporting documentation required for close-out: specification sheet	70
Under floor Insulation	No insulation	$\geq R-11$, ENERGY STAR® or Energy Aware Supporting documentation required for close-out:	50

¹ Points are based upon average energy savings. These energy savings are based on the reduction in household energy consumption resulting from typical energy upgrades for a typical Alameda County single family detached home as modeled using EnergyPro, the energy modeling software required by the California Energy Commission for Energy Upgrade California project submissions.

		specification sheet, before & after photos	
HEATING, VENTILATION, AND AIR CONDITIONING			
FLEX PACKAGE MEASURE	PRE-UPGRADE CONDITION	POST-UPGRADE CONDITION & SUBMISSION REQUIREMENTS	POINTS
Replace existing central forced air furnace with new ENERGY STAR® central forced air furnace	Gas-fired; AFUE ≤ 0.80	ENERGY STAR®; Gas-fired; AFUE ≥ 0.95 Supporting documentation required for close-out: specification sheet, before & after photos including nameplate	55
Replace existing central A/C with new central A/C	≤ 10 SEER	≥ 15 SEER 11 EER Supporting documentation required for close-out: specification sheet, before & after photos including nameplate	40
Replace existing heat pump with new heat pump	≤ 5.6 HSPF, 8 SEER 6 EER	≥ 8 HSPF, 15 SEER 11 EER Supporting documentation required for close-out: specification sheet, before & after photos including nameplate	85
ENERGY STAR® Whole House Fan	No whole house fan	ENERGY STAR® Whole House Fan Supporting documentation required for close-out: specification sheet, before & after photos	5
ENERGY STAR® or Energy Aware programmable thermostat	Manual Thermostat	ENERGY STAR® or Energy Aware programmable thermostat(s) covering whole house Supporting documentation required for close-out: specification sheet, before & after photos	5
Duct insulation & sealing OR duct replacement (in place of insulation/sealing)	Leakage $\geq 28\%$; $\leq R-4$	Leakage $\leq 15\%$; $\geq R-8$ Supporting documentation required for close-out: Duct Blaster® test-in and test-out data, specification sheet, before & after photos	80
WINDOWS			
FLEX PACKAGE MEASURE	PRE-UPGRADE CONDITION	POST-UPGRADE CONDITION & SUBMISSION REQUIREMENTS	POINTS
Replace all windows with ENERGY STAR® windows	Single metal clear pane (U-factor ≥ 1.19 ; SHGC $\geq .83$)	ENERGY STAR®; U-Factor ≤ 0.40 ; SHGC ≤ 0.30 Supporting documentation required for close out: specification sheet, before & after photos	60

WATER			
FLEX PACKAGE MEASURE	PRE-UPGRADE CONDITION	POST-UPGRADE CONDITION & SUBMISSION REQUIREMENTS	POINTS
Domestic hot water heater replacement (gas to gas)	Gas-fired; EF ≤ 0.575	Gas-fired; EF ≥ 0.62 Supporting documentation required for close out: specification sheet, before & after photos including nameplate	35
Domestic hot water heater replacement (gas to tankless)	Gas-fired; EF ≤ 0.575	ENERGY STAR® Gas-fired; EF ≥ 0.82 Supporting documentation required for close out: specification sheet, before & after photos including nameplate	50
Pipe wrap for domestic hot water heating	Un-wrapped	Wrapped Supporting documentation required for close out: before & after photos	5
Low flow showerhead with thermostatic shut-off valve and faucet aerators	No thermostatic flow controls	Evolve™ ShowerStart™ Roadrunner on all showers and low-flow restrictor (i.e. aerators) on all faucets (bathroom faucets ≤ 1.5 gpm at 60 psi; kitchen faucets ≤ 2.2 gpm at 60 psi) Supporting documentation required for close out: specification sheet(s), before & after photos (one per fixture type)	5
LIGHTING			
FLEX PACKAGE MEASURE	PRE-UPGRADE CONDITION	POST-UPGRADE CONDITION & SUBMISSION REQUIREMENTS	POINTS
ENERGY STAR® Lighting Fixtures	3 incandescent fixtures	3 ENERGY STAR® CFL Fixtures or 3 ENERGY STAR® LED Fixtures Supporting documentation required for close out: specification sheet(s) before & after photos (one per fixture type)	5
COOL ROOF			
FLEX PACKAGE MEASURE	PRE-UPGRADE CONDITION	POST-UPGRADE CONDITION & SUBMISSION REQUIREMENTS	POINTS
Cool roof (R-11 to R-38)	$\leq R-11$	All of the following requirements must be met for $\geq 75\%$ of the roof over conditioned space; $\geq R-38$; Low slope ($\leq 2:12$): SRI ≥ 70 , Thermal Emittance Factor ≥ 0.85 ; Steep slope ($> 2:12$): SRI ≥ 40 ; Thermal Emittance Factor ≥ 0.85 Supporting documentation required for close out: specification sheet, before &	50

		after photos	

Application Process

Alameda Flex Package used an online application process through the Energy Upgrade California state website. Homeowners were able to download program information and apply online for a set of measures or project scope with contractor assistance. Contractors were able to submit the Flex Package completion form to verify the project for incentive issuance and access support documents from the Contractor Document Library. Additionally, homeowners were required to submit a W-9 and a Terms and Conditions document on the front end, in order for their incentive to be reserved. Asking for supporting documentation on both ends of the process led to some confusion and, going forward, we will try to have all documents submitted after the project has been completed, along with the completion form. The application should be for reserving the funding and collecting basic homeowner and contractor contact information only.

Driving Demand

StopWaste.Org did not anticipate the need to actively market the Alameda Flex Package because of a simultaneous marketing campaign for Energy Upgrade California that provides general consumer education for whole-house upgrades, and because the Alameda program dovetailed on the contractor-driven Los Angeles program. However, Alameda County did not see the quick ramp-up in project applications that Los Angeles had achieved. Therefore, several marketing and outreach efforts were initiated, including:

- **Contractor Co-op Marketing:** Under the BBP pilot program, StopWaste.Org designed marketing materials to be co-branded by contractors, including door-hangers, mailers, and yard signs, and subsidized the printing of these materials for contractors to promote the Flex Package program.
- **Targeted Media Ads:** StopWaste.Org designed homeowner-facing media ads to run on the radio and online to promote Flex Package.
- **Promotion through Local Jurisdictions:** In addition to contractors, StopWaste.Org worked with the cities in Alameda County to promote Flex Package on their websites and in their newsletters.
- **Promotion through Energize for the Prize:** Finally, StopWaste.Org actively promoted Flex Package through the Energize for the Prize Pilot, ensuring that Flex Package was part of all homeowner workshop presentations. In addition, GreenPro Network, which went door-to-door with flyers about homeowner workshops, also distributed flyers about Flex Package.

The pilot used the statewide Energy Upgrade California website to host the incentive application and completion forms, and to connect website visitors interested in Flex Package with local Energy Upgrade California Participating Contractors qualified to provide services. The pilot used the same website to provide online education about home performance using trusted energy resource data (e.g., U.S. Department of Energy) to illustrate the value of energy efficiency measures.

Workforce Development

The Flex Package pilot did not contain a specific workforce development element. The Flex Package pilot established contractor requirements that leveraged the baseline set of contractor requirements for the California Public Utilities Commission's statewide whole-house incentive programs and targeted PG&E-approved Participating Contractors based in Alameda County. For example, Flex Package contractors were required to:

- Be a California State Licensing Board (CSLB) licensed contractor with a license appropriate to the scope of work to be performed.
- Be enrolled in the PG&E Energy Upgrade California program so they could offer Flex Package customers additional energy upgrade services and incentives through Energy Upgrade California.

Quality Assurance

The Flex Package pilot was designed to streamline contractor and homeowner participation requirements while upholding the highest possible standard of project quality. In addition to requiring that Alameda Flex Package contractors be qualified for the PG&E Energy Upgrade California Advanced Package, the Flex Package team established several Quality Assurance and Quality Control protocols, including:

- Diagnostic tests were to be performed depending on the scope of work, and each contractor must have an internal BPI building analyst on staff.
- All projects that involved air sealing were required to have a Combustion Appliance Safety (CAS) and a Combustion Appliance Zone (CAZ) test-out performed by a BPI building analyst.
- For projects requiring combustion safety testing, 100% had test-out witnessing through field quality assurance.

Proper measure installation diagnostic testing and CAS/CAZ test-outs were verified via program field inspections in accordance with recommended Home Performance with Energy Star tiered sampling rates (see Table 3). The Alameda Flex Package team coordinated with PG&E and Participating Contractors to provide documentation of contractor standing within the PG&E Whole House Program Field Quality Assurance Tiers. Contractors who could demonstrate advanced standing in one of these tiers within the PG&E Energy Upgrade California program were able to enter the Alameda Flex Package Pilot at that same tier.

Table 3. Home Performance with Energy Star Sampling Rate Tiers

Tier	Sampling Rate (minimum and at program discretion)
Tier 1	3 of the first 5 submitted jobs
Tier 2	4 of the next 20 submitted jobs
Tier 3	5% of all additional submitted jobs

Financing and Incentives

The Flex Package pilot was an incentive program. The Flex Package model was designed to award incentive dollars based upon a point system. Energy upgrade measures eligible for the program were assigned points based on software-modeled energy savings and whole-house building science principles. The pilot offered an incentive of \$1,500 for homeowners who completed two or more measures based on a pre-modeled per-measure point system. The incentive was paid to the homeowner, unless the homeowner opted to have the incentive paid directly to the contractor. In total, the Flex Package pilot paid out 18 rebates. The average total project costs were \$8,125.24, so the rebate covered 18.5% of the total project cost.

No other additional financing was offered through the Flex Package pilot; however, homeowners did have the option of leveraging other financing programs available through their local utility or government programs.

Data and Evaluation

As part of *Retrofit California*, the Flex Package pilot's lead agency collected detailed project-specific data to support DOE and the CPUC's Evaluation Measurement & Verification (EM&V) efforts, including:

- Energy usage and greenhouse gas emissions reductions
- Renewable energy generation
- Jobs created
- Number and amount of projects financed
- Number of contractors/workers trained
- Number of buildings and residences retrofitted
- Utility bill savings by participants.

Project-specific data also included access to pre- and post-Flex Package customer billing data, which will be used to evaluate the program and accuracy of the deemed savings, and to develop a program

realization rate. However, the full billing data will not be available within the timeframe of the BBP program.

The pilot program monitored the data points shown in Table 4 to track and verify program performance.

Table 4. Flex Package Data Tracking Points

Monitoring and Verification Data	Operations Data
Number of Alameda Flex Package projects completed	Contractor contact and program information
Amount of energy saved on average per Alameda Flex Package project, as verified by quality assurance process	Property owner information (e.g., name, phone number, address)
Amount of energy saved by an Alameda Flex Package Pilot (average across retrofit projects within pilot)	Project house data (e.g., historical electrical and natural gas utility bill info)
Measures installed per project	Alameda Flex Package project schedule

Accomplishments

StopWaste.Org worked to ensure that the Flex Package pilot effectively pioneered new and innovative program models that would rapidly accelerate building energy retrofits and achieve deep market penetration in focused geographic areas. Although the Flex Package pilot did not achieve the anticipated participation, StopWaste.Org believes this pilot demonstrated the potential of an alternative Whole-House Retrofit incentive as discussed below and in the section on Program Sustainability Plans.

The Flex Package pilot was not part of the original statement of project objectives (SOPO); therefore, the program goals and associated deliverables outlined below are based upon the implementation plan. The program targets were to deliver a program design, qualified measures list, streamlined incentive application/verification process, marketing approach, and quality assurance, and to deliver a number of completed retrofits.

Accomplishments of the Alameda Flex Package Pilot included the following:

- Developed local customization of a measure menu-based, pre-energy modeled program that allowed contractors to package multiple measures using an energy-value point system to qualify low- and modest-cost projects for incentives under the Energy Upgrade California program.
- The Flex Package pilot set out to achieve a 15% average energy savings across all projects and achieved on average 22% energy savings based on the modeled savings and measure point values (see Table 5).

- Refined appropriate options to streamline customer sales experience, contractor project scope development, incentive application and fulfillment processes, and confirmation of measure installation and energy savings results.
- Leveraged program design, infrastructure, and protocols of the successful Los Angeles County Flex Path pilot for rapid deployment.
- To provide quality assurance, the Flex Package team leveraged the existing quality assurance program status with PG&E. This process enabled Participating Contractors to provide documentation of their standing within the PG&E Whole House Program Field Quality Assurance Tiers and enter the Flex Package pilot program at the same tier as their standing with PG&E.
- Implemented program and contractor marketing to generate market demand.
- Created a replicable program design that will be implemented on a regional and statewide basis.

Table 5. Flex Package Program Accomplishments

Completed Projects	Total Rebates Paid	Avg. Energy Savings	Avg. Savings kWh	Avg. Savings therms
18	\$ 27,000	22.5%	15%	25%

Challenges

The Flex Package pilot provided lessons learned that can be incorporated into future program designs. One of the most notable challenges was the short pilot timeframe. It was vital to communicate that there were a limited number of incentives available; however, there can be negative connotations associated with a first-come, first-served rebate program with a limited scale. For instance, some contractors indicated that they did not sell Flex Package to their clients for fear that program funding would be overcommitted by the time their clients applied for the rebate.

Participating Contractor Requirements

Some contractors indicated they decided not to participate in the Flex Package Pilot because they were not interested in learning a new program and administrative process. A large number of Flex Package-approved contractors had invested a significant amount of time and money in learning the arduous process of applying for incentives in the PG&E Whole House program.

Flex Package is a good model program for new contractors who are not familiar with the PG&E process and modeling requirements, and are thus more eager to invest time into learning a new program. Additionally, the Flex Package pilot was limited to the existing pool of PG&E Participating Contractors, and could not directly recruit contractors for participation. The key to future Flex Package success is an active pool of HVAC and insulation contractors looking for an on-ramp to home performance.

Driving Demand

Other contractors indicated that they used Flex Package to upsell their clients to the Advanced Package and did not pursue projects that had a smaller scope of work because it was not beneficial for their bottom line. For future programs, it is essential to conduct contractor outreach in advance to ensure that participating contractors see the benefit of the Flex Package program.

Flex Package was also promoted through earned media, homeowner workshops, and paid online and radio advertisements.

Qualifying Measures

The pilot's qualifying measures were adopted from the Los Angeles County Flex Path program. Although this made for a quick start-up and launch, some of the measures' qualifying pre- and post-conditions eliminated projects from participating. The Flex Package team would have liked to have spent more time reviewing and customizing the pre- and post-conditions for the measures, such as air sealing and duct sealing. A few weeks after the program launched, changes were made to the pre- and post-upgrade requirements for air sealing based on contractor input and feedback. The program would have benefited from engaging contractors in program design elements such as qualifying measures prior to the launch of the pilot.

Application Process

Homeowners were required to submit a W-9 and a Terms and Conditions document up front in order to reserve their incentive. Asking for supporting documentation on both ends of the process led to some confusion. In the future, we will try to have all documents submitted after the project has been completed, along with the completion form. The application should be for reserving the funding and collecting basic homeowner and contractor contact information only.

Lessons Learned

Through the Alameda Flex Package Pilot, StopWaste.Org gathered invaluable contractor feedback that can be used for future program designs. Contractor participation is a key component of successful program design, and contractors who invest in local retrofit program efforts are most successful in engaging homeowners. Implementers should involve contractors from the start in program design elements such as qualifying measures so that the program can best serve their needs and function within their business models. Additionally, more consumer education is needed over a longer period of time to allow for market penetration and program uptake.

Program Sustainability Plans

The BBP pilots in the Association of Bay Area Governments (ABAG) region will be continued or will evolve into new programs based on lessons learned, and sustained through California ratepayer funding. The pilots across California were successful in demonstrating local governments' ability to administer

and implement energy efficiency programs directly. As a result, the California Public Utilities Commission invited and approved proposals from regional collaborations of local governments to administer ratepayer-funded programs beginning in the 2013-2014 program cycle. ABAG will oversee programs in the nine-county Bay Area region through the Bay Area Regional Energy Network (BayREN), including a single family program based on the Flex Package pilots.

The revised ABAG program will be marketed as the Energy Upgrade California Home Upgrade program. It will be similar to the Flex Package program design deemed savings and will use a point-based system for homeowners and contractors to evaluate project options. The Home Upgrade program will require at least three measures and will offer tiered incentives. Owners choosing to undertake a larger scope of work that results in more energy savings can earn a larger incentive of up to \$2,500. The Flex Package team has already begun to communicate this program transition to contractors.

Verification of Data

Renewable Funding (“RF”) served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed. RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE’s xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

Developed Products

Products developed for the Alameda Flex Package Pilot include:

- The program website, AlamedaFlex.org, at:
https://energyupgradeca.org/county/alameda/flexpackage_overview
- Application forms and application processing and quality assurance procedure
- Deemed savings values and calculations for Alameda County climate zones
- Basic program marketing materials, including flyers, description of the program, and qualifying measures

- Contractor co-op marketing materials
- Fostered collaborations with contractors serving Alameda County
- Contractor orientation and training materials

Energy Efficiency and Conservation Block Grant (EECBG) – Better Buildings Neighborhood Program

Final Report: Association of Bay Area Governments

Award Number: DE-EE0003562

BBNP Name: U.S. Department of Energy's Better Buildings Program

Project Title: Retrofit California

Name of Project Director/Principal Investigator: Gerald Lahr

Team Members:

Association of Bay Area Governments (ABAG)—the official regional planning agency for San Francisco Bay region, and council of governments with the Bay Area's nine counties and 101 cities and towns as voluntary members; StopWaste.Org/Alameda County Waste Management Authority—JPA that represents County of Alameda and the 14 cities within the County; City and County of San Francisco; Sonoma County Regional Climate Protection Authority (RCPA); City of San Jose

The information contained in this report may be shared, used, or disclosed to the general public with expressed consent from the Association of Bay Area Governments.

Disclaimer:

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EXECUTIVE SUMMARY

Association of Bay Area Governments (ABAG), as the lead agency and fiscal agent, participated in the Statewide BBP Steering Committee and EM & V Committee, providing leadership and partnership in statewide and regional coordination efforts. This has included facilitating the SF Bay Area Regional Call Center supporting Energy Upgrade California and supporting other regional energy efficiency efforts with personalized outreach. The new ABAG-administered pilot program launched in early 2013, composed of public agencies representing the nine-county Bay, is focused on designing and implementing an effective energy savings program and implementing four pilot subprograms addressing single family and multiple family retrofit, codes and standards, and financing for energy retrofits.

StopWaste.Org (Alameda County Waste Management Authority) has developed a series of pilot programs successfully using a variety of marketing and outreach strategies to generate more consumer and community demand for energy upgrades and energy efficiency. They have implemented the *Home Improvement Retail Partnership Pilot* targeting single family homeowners and contractors in partnership with Lowe's, a home improvement retail store. They have implemented a community-based social marketing (CBSM) program, *Energize the Prize*, which targeted school-based communities in Alameda County, with the aim to establish home energy efficiency as desirable and commonplace within the communities. Designed as a school fundraiser, Energize the Prize was an opportunity for schools and school nonprofits to earn money for every energy upgrade they signed up, with bonuses for other energy milestones and activities. StopWaste.Org also implemented the *Alameda Flex Package Pilot*, which provided an alternative to the Energy Upgrade California Basic Path Rebate program by offering a more flexible and budget-friendly menu of measures and low-range incentives, as well as a streamlined application and project approval process for consumers and contractors. Other pilot projects they implemented included the *Green Labeling Pilot*, which leveraged green home labeling as an entry point for promoting energy upgrades to single family homeowners, and the *Multifamily Integrated Technical Assistance Pilot*, which provided technical assistance to meet the complex, more fragmented structural issues of multifamily building owners and property managers.

The City and County of San Francisco's Single Family BBP initiatives focused on achieving single family retrofits, supporting San Francisco's home performance industry. *Green Building Labeling* was implemented with outreach to the real estate community. *Community Based Social Marketing* employed financial incentives for upgrades, contractor support, and a carefully conceived segmented, choreographed, layered and personal outreach approach to targeted community market segments. This was in addition to partnering in a series of granular demographic research and data collection efforts covering communities, businesses, and processes.

The Sonoma County Regional Climate Protection Authority (RCPA) implemented three pilot programs: the *On-Water Bill Financing*, the *Whole Neighborhood Approach*, and the *Sonoma Flex*

Package. The RPCA worked with the Town of Windsor to design and implement a tariffed On-Water Bill Financing pilot, branded as Windsor Efficiency Pays. The Whole Neighborhood Approach pilot was concerned with driving down delivery costs through a neighborhood-scale program, streamlining the participant-contractor-administration process with uniform home designs for neighborhood retrofitting, and creating a sustainable, replicable model. Their third pilot program was the Sonoma Flex Package, based on the County of Los Angeles model. This pilot was designed to test an alternative to the Energy Upgrade Basic Path Rebate Program through incentives for homeowners with limited budgets, streamlined job development and sales process for contractors, and delivery of a minimum of 15% energy savings on average.

The City of San Jose implemented a *Whole Neighborhood* approach centered on existing housing and energy programs in San Jose. The Pilot was focused on low-income residents and the provisions for basic needs of hot water, heat, and safe shelter in coordination with utility, federal, state, and local programs. Their research and examination of existing community outreach programs focused on including an additional layer of training and coordination to increase the energy efficiency of low-income housing stock, and the importance of adding energy efficiencies in utilities, buildings and homes when making necessity replacements in affordable housing programs.

FINAL TECHNICAL REPORT

Meeting Initial Program Objectives (SOPO)

The San Francisco Bay Area Better Building Program Team met the following program implementation objectives:

Provide attractive new financing options to address the high upfront cost of retrofits:

- Innovative financial incentives and rewards (StopWaste.Org/Alameda, San Francisco)
- Flex Packages for Single and Multifamily Retrofits (StopWaste.Org/Alameda, Sonoma)

Demonstrate more effective marketing and outreach methods to inform and motivate property owner participation—effectively communicate current value propositions and create new ones—show use of non-energy benefits know to strongly motivate or discourage action)

- Community-based Marketing and Outreach (StopWaste.Org/Alameda, San Francisco, San Jose)
- Home Improvement retail store partnerships (StopWaste.Org/Alameda, San Francisco)
- Green Building Labeling (StopWaste.Org/Alameda, San Francisco)

Streamline participant, contractor, and administration processes to reduce the transaction costs created by an inefficient delivery model)

- Whole neighborhood delivery for single family residences (San Francisco, Sonoma County/RCPA, San Jose)
- Multifamily building retrofit delivery innovations (San Francisco, StopWaste.Org/Alameda)

Accomplishments

Pilot projects related to addressing cost barriers to energy upgrades by creating financing mechanisms had solid and replicable outcomes. The Sonoma RCPA On-Water Bill Financing Pilot (Windsor Efficiency Pays) exceeded its multifamily target and has built substantial momentum in the single family market. This mechanism provided utility residential customers with an eligibility process to receive program installation and quality assurance services for high-efficiency toilets, showerheads, aerators, clothes washers, compact fluorescent lights bulbs, on-demand water recirculation pumps, and refrigerators, as well as drought tolerant landscaping.

The Sonoma Flex Package Pilot, the Alameda Flex Package Pilot, and San Francisco's Single Family Initiatives with their use of energy upgrade rebates and referral vouchers all provided innovative ways to make the energy upgrades more accessible through flexible cost-efficient packages.

The Community-Based Social Marketing Pilots run by StopWaste.Org and San Francisco were successful models of targeting communities, offering special prizes rebates and other financial incentives to engage residents in participating in energy upgrades. Promoting Green Building Labeling was a successful effort, with San Francisco partnering with Alameda County to commission the first comprehensive academic study of its kind, studying the effect of green building labels on property sale values of single family home in California. Follow up data analysis showed the increased sale value of labeled homes, which is impacting government and greening various Bay Area Multiple Listing Services.

San Jose's Whole Neighborhood Approach targeted energy upgrade needs associated with low-income multifamily structures and with research on proposed ways to include this challenging segment. StopWaste.Org's Multifamily Integrated Technical Assistance Pilot Project successfully reached a large pool of property owners and managers to engage them in pursuing energy efficiency for their buildings.

Full executive summaries and final reports of each project partner are attached, documenting and describing the multiple projects implemented, their successes, how they met their challenges, and insights into their processes for other agencies and jurisdictions to replicate.

VERIFICATION OF DATA

Renewable Funding ("RF") served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE's xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

Energy Efficiency and Conservation Block Grant (EECBG) – Better Buildings Neighborhood Program

Final Report: California Center for Sustainable Energy

Award Number: DE-EE0003562

BBNP Name: U.S. Department of Energy's Better Buildings Program

Project Title: Retrofit California

Name of Project Director/Principal Investigator: Jack Clark

Team Members: Jeremy Hutman, Laura Parsons, Bob Coleman, Jennifer Green, Matthew Messina,
Nicole Borunda, Elizabeth Gray, Fabian Rodriguez, Michael BATTERY

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BETTER BUILDINGS IN SAN DIEGO EXECUTIVE SUMMARY

About the California Center for Sustainable Energy

The California Center for Sustainable Energy (CCSE) is an independent, non-profit 501 (c) (3) corporation that helps residents, businesses, and public agencies save energy, reduce grid demand, and generate their own power through a variety of rebate, technical assistance, and educational programs. The organization provides the community with objective information, research, analysis and long-term planning on energy issues and technologies. It serves the state as a knowledgeable, independent voice on energy issues. CCSE is a Building Performance Institute Training Affiliate, a Home Performance with ENERGY STAR® sponsor, and a Home Energy Score Partner.

Overview of San Diego Regional Programming

As the third largest metropolitan area in California, San Diego County plays a significant role in the state's goal to achieve an average of 40% energy savings in existing homes by 2020. In 2010, CCSE partnered with San Diego County, the City of San Diego, the City of Chula Vista, and San Diego Gas and Electric (SDG&E) to launch Energy Upgrade California in San Diego County.

Energy Upgrade California's (EUC's) Whole House Retrofit Program (now called the Home Upgrade Program) is one of the contributing initiatives designed to help achieve a portion of the State's aggressive targets. The Home Upgrade Program launched soon after the California Better Buildings Neighborhood Program grant was funded, and CCSE designed its pilot programs to drive demand for that program.

The Better Buildings Pilots are part of a comprehensive set of programs in the San Diego region that are collectively ushering in a sustainable market-based building performance industry, for both residential and multifamily properties. Programming in San Diego County includes utility rebates for whole house upgrades, a financing partner, workforce education and training programs, contractor management, lead generation, income-qualified direct install, and ongoing stakeholder coordination (see Image 1).

As Property Assessed Clean Energy and related energy efficiency programs were developing in early 2010, CCSE and other stakeholders saw the need for regional coordination and established the Retrofit Advisory Committee (RAC – now called the Retrofit Advisory Council), which includes SDG&E; local governments; community and non-governmental organizations; real estate agents; financing institutions; contractors; and Home Energy Rating System (HERS) raters. The RAC provides guidance on how the region can manage the local implementation of Energy Upgrade California in order to create a sustainable market for energy efficiency upgrades in San Diego. The RAC was critical to managing a coordinated effort when ARRA funds came into the region through several channels, including the Better Buildings Neighborhood Program. Key implementers are listed below and shown in Figure 1.

1. **Rebates** – SDG&E, CCSE, City of San Diego
2. **Workforce Development** – CCSE, SDG&E, Local Governments, Metropolitan Area Advisory Committee on Anti-Poverty (MAAC) Project, San Diego Continuing Education, Environmental Health Coalition
3. **Demand Generation** – CCSE, SDG&E, Local Governments, EUC Contractors, EUC HERS Raters,
4. **Contractor Management** – CCSE, SDG&E
5. **Financing** – City of San Diego, City of Chula Vista, San Diego Metropolitan Credit Union
6. **Income-Qualified Programs** – City of San Diego, CCSE, Environmental Health Coalition
7. **Multifamily** – TRC (formerly Heschong Mahone Group)
8. **QA/QC** – Richard Heath Associates, CCSE

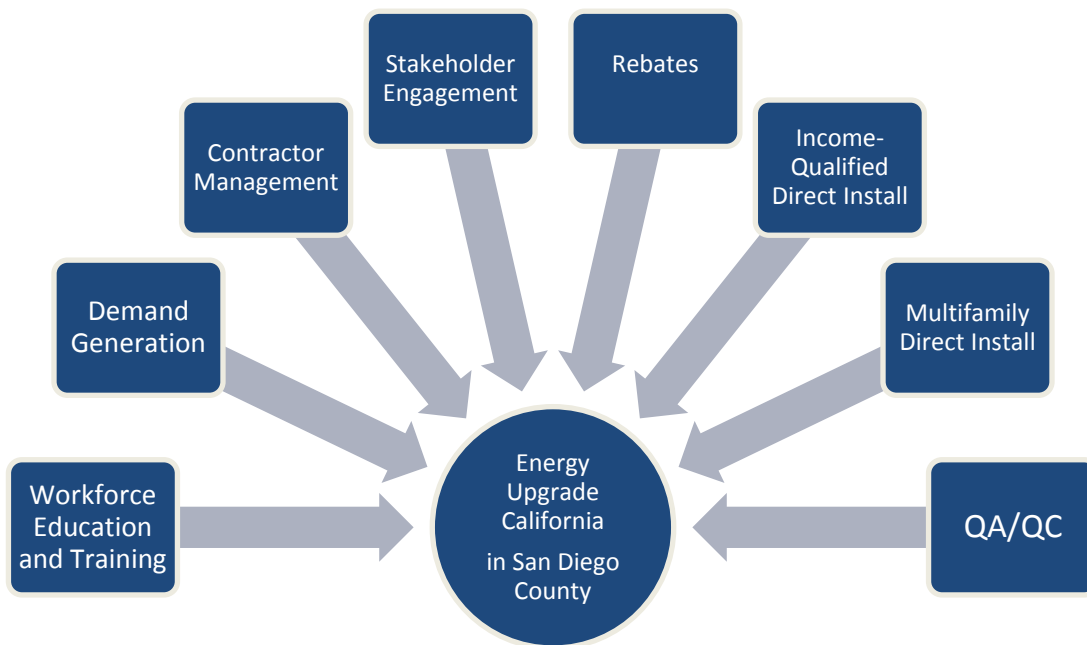


Figure 1. Regional Programmatic Categories

Better Buildings Pilot Programs

CCSE implemented four pilot programs under the general categories described in the Statement of Project Objectives. The categories included:

1. Community Based Social Marketing (CBSM)

2. Whole Neighborhood Approach (WNA)
3. HVAC Contractor Outreach
4. Home Improvement Retailer Partnership

All aspects of the initial pilot designs were coordinated with SDG&E’s Home Upgrade program in order to support the common objective of driving homeowner demand for EUC participating contractors’ services¹. When the pilots launched, however, the market was still in its infancy, and information was unclear on how contractors would conduct business, what measures would be included in a home performance energy upgrade in San Diego, expected costs, project timelines, and consumer purchasing behavior patterns.

CCSE expected dramatic changes in the home performance industry over the three-year duration of the grant and therefore created flexible programs that helped guide the development of the market in San Diego². CCSE had close working relationships with SDG&E and other Energy Upgrade California implementers and served as leader in the region. The organization’s role in contractor management, workforce development, stakeholder engagement, and demand generation enabled Pilot Program Managers to identify and anticipate market trends. Each Pilot launched with a specific goal and hypothesis to be tested. CCSE ensured close monitoring so changes could be made as rapidly and efficiently as needed.

The pilots shared the common evolution of starting as special initiatives within a general market program. When the general market did not materialize, they were refined into a series of lead-generation tactics, which created high-quality leads for contractors in the region, who were happy to receive them. As described above, CCSE made many changes to Pilots, which either: 1) worked as designed, 2) partially worked and were refined or, 3) did not work and were discontinued entirely to make room for new, more effective initiatives (see Table 1).

Table 1. CCSE Pilot Programs

Discontinued or Altered Pilots	Current Pilots

¹ And later HERs raters, a participation category added in 2012. HERs raters were given the ability to lead jobs using EUC Participating Contractors and manage the application for homeowners.

² CCSE’s Better Buildings Pilot Programs were implemented throughout SDG&E service territory which included all of San Diego County and parts of Southern Orange County. “San Diego”, or the “San Diego Region” refers to all of SDG&E territory unless otherwise specified. SDG&E supplies power to a population of 1.4 million business and residential accounts in a 4,100 square-mile service area. The territory includes all of San Diego County and a portion of Southern Orange County.
<http://www.sdge.com/our-company/about-us/our-service-territory>

1. Whole Neighborhood Approach 2. CBSM – Military Outreach 3. Retailer Partnership w/ Best Buy	1. Demonstration Home 2. Home Energy Coach 3. TOP HVAC 4. Real Estate Industry Outreach 5. Residential Energy Roadshow

Community Based Social Marketing – In a campaign called the San Diego Hero Alliance, CCSE targeted the military community with a combination of outreach activities, norming messaging, and concierge services. The hypothesis was the military community identified strongly with their military peers and would take action if certain behaviors were considered “normal” among those with whom they identify. The main lessons learned were that the military community did not respond well to patriotic messaging. They preferred typical cost, comfort, and health messaging. Also, the community expected exclusive discounts that were not available to them (or any other group).

The most effective aspect of the pilot was the concierge service provided by CCSE staff. It included a direct consultation and a contractor review platform similar to Yelp.com, which over 90% of users found helpful in finding a contractor. After less than one year of implementation, CCSE expanded the concierge service to the rest of the San Diego community and discontinued the military outreach. At the end of the grant, the CBSM campaign had been converted into the “Home Energy Coach,” a service that supported all regional lead generation and lead management efforts. In a market-based program, CCSE recommends some form of concierge service that supports homeowners, helps contractors with credibility, and prevents leads from being lost.

Whole Neighborhood Approach – CCSE partnered with the City of Chula Vista to launch the “Community Savings Initiative”, a demand aggregation strategy that tested whether bringing together a core group in a neighborhood could bring down costs and motivate neighbors to invest in energy upgrades. The pilot also tested whether showcasing an upgraded home in a neighborhood of similar houses would lead homeowners to invest in similar upgrades in their own homes.

CCSE conducted a GIS analysis to select the neighborhood and organized a group of neighborhood leaders and helped them run a request-for-proposal process to select contractors for their neighborhood (13 contractors submitted proposals, and two were selected). The pilot also included a demonstration home, which was upgraded and then showcased. CCSE found that homeowners in the neighborhood were not interested in moving forward with upgrades primarily because the 1990s-built homes did not have a good ROI on energy upgrades. The demonstration home, however, proved to be successful, and was visited by homeowners from throughout the city. It did not matter that the home being showcased was different from theirs. They just wanted to see the upgrades and talk to the contractor who did the work.

In response to these outcomes, CCSE discontinued neighborhood organizing and focused solely on setting up demonstration homes throughout the region. A demonstration home initiative helps in the first years of a program, when contractors do not have a pipeline of jobs and homeowners do not have

an understanding of what measures constitute an energy upgrade. However, demonstration homes are not cost-effective as a long-term solution for program implementers. The most effective strategy is to use seed funding to train contractors to do their own demonstration homes, ultimately without the help of program implementers. Two of the nine participating contractors have taken this approach and are doing demonstration homes with limited CCSE support.

Home Improvement Retailer Partnership – CCSE partnered with Best Buy to test whether their mobile technicians known as the “Geek Squad”³ would be a good channel to drive demand for energy upgrades. CCSE helped three local Geek Squad employees (known as agents) obtain their BPI certification and trained them to do home energy assessments. They were all technically astute and learned home performance principles and the use of diagnostic equipment quickly. In an effort to get contractor buy-in, Best Buy and CCSE determined that the agents would not do a comprehensive, BPI-scope assessment but would only conduct a \$150 visual survey with a checklist to highlight opportunities for improvement⁴. The agents would then help the homeowners contact an Energy Upgrade California participating contractor if there was a cost-effective opportunity for improvement.

This strategy proved to be unsuccessful for several reasons. Geek squad agents’ compensation was based on the number of home visits they completed in a day. When they tried to upsell a home performance survey they got stuck in extended conversations with homeowners. The additional information a homeowner needed to make a decision required more time than was available. The pilot was discontinued due to lack of interest.

Although the pilot was unsuccessful, the Geek Squad agents who specialize in home audio are highly qualified to conduct home energy assessments (with the appropriate training). They are experts at customer service and technically skilled. Another market and climate, where home performance is much more cost-effective than San Diego, would be a better place to test the Geek Squad as a delivery channel for assessments. The Geek Squad could also be a good delivery channel for weatherization services because they could do the installations themselves.

HVAC Contractor Outreach – CCSE’s HVAC contractor outreach program, called the Training and Outreach program for HVAC contractors (TOP HVAC), was originally designed to test whether creating a local association of HVAC contractors interested in home performance would be a good support mechanism to help members transition into home performance. CCSE found that there needed to be

³ From www.geeksquad.com - Geek Squad is the first national 24-hour task force dedicated to solving the world’s technology challenges. Comprised of highly skilled and specially trained computing Agents, home entertainment installers (GSIs), AutoTechs and appliance repairers (GSRs), 20,000 active Geek Squad technicians patrol Geek Squad precincts in all U.S. Best Buy stores, at Geek Squad stand-alone U.S. store locations, and at service centers nationwide.

⁴ The price was determined prior to market data on home energy assessments. CCSE only had data on HERs Raters who charge \$500-\$600 per assessment. Unlike HERs Raters, contractors used the assessment as a loss leader. They charged significantly less, which made the Best Buy price uncompetitive.

more basic training in home performance and therefore set up a series of business development and sales training courses for contractors.

The program started with a 3 month series of courses and networking events to introduce HVAC contractors to both home performance and other specialty contractors with whom they would need to establish a relationship in order to complete home performance jobs (e.g., insulation contractors and energy raters). The strategy was to have eight to ten new companies go through the same training and networking curriculum several times each year. The courses became popular and eventually the TOP HVAC program was made available to all contractor types.

CCSE found that general business development and sales training were very useful to contractors who are interested in transitioning into home performance, even if the subject matter is not specifically focused on home performance. Also, when multiple types of contractors go through similar training together it provides a strong networking opportunity. CCSE held XX trainings with XX contractors. Approximately 90% of Energy Upgrade California Home Upgrade jobs were submitted by a contractor who attended at least one TOP HVAC course.

Real Estate Agent Outreach – CCSE tested the effectiveness of promoting whole-house energy upgrades to homeowners through the real estate agent, a trusted advisor. The Real Estate Agent Outreach Pilot originated from direct involvement with the San Diego regional real estate community. Agents, brokers, home inspectors, lenders, and appraisers all demonstrated interest in learning more about home performance and what it can do to expand their business and improve client services. As a result, the Real Estate Outreach Pilot was launched to test the effectiveness of promoting whole-house energy concepts and products to consumers by way of a trusted advisor—the real estate professional.

The pilot offered tools and resources to interested real estate professionals, including:

1. Education and training
2. Vouchers for discounted energy assessments

The pilot successfully recruited 73 licensed real estate agents, completed 154 energy assessments as a result of agents providing their clients vouchers, and resulted in 27 whole-house energy upgrades. CCSE found that the combination of home performance training, a certification, and a unique gift realtors can give their clients provides a strong method for engaging real estate agents and having them positively interact with the home performance industry.

Residential Energy Roadshow – The Residential Energy Roadshow is a mobile home performance educational resource that was originally designed to support the WNA and CBSM pilot programs. CCSE hired a design team, which included an architect who specialized in green buildings to design a mobile display of technologies and a fabrication company to build the exhibits. The strategy was to both teach basic home performance principles and show homeowners what technologies went into a home energy upgrade. The Roadshow immediately proved to have more than a supporting role, and CCSE toured the exhibit throughout the San Diego region between August 2011 and October 2012.

After a year, CCSE took the lessons learned from all of its demand-generation activities and created a new roadshow that focused on norming messaging, including case studies of actual jobs. The new Roadshow also included a custom-made home simulation software application that allows homeowners to help a fictional family upgrade their home.

CCSE recommends mobile displays as a good way for an implementer to engage the community, but cautions that events should be carefully selected. CCSE found that attendees did not engage at events that were only peripherally related to home performance (e.g., health fairs). High-value activities included home shows and utility-sponsored events. Figure 2 shows a timeline of all the pilots.



Figure 2: Pilot timelines

Although the grant period is ending, new rounds of funding and a long-term commitment from the State of California will enable CCSE to take the lessons learned from federally funded programs and continue to move the industry forward. There were several factors that led to the total number of retrofits being lower than expected, but the main issues are being addressed and the region has a strong foundation.

1. **Lack of a practical on-ramp for contractors** – Utility program design proved too complicated with an all-or-nothing Basic Path and a complicated modeling scenario for the Advanced Path. This combination created an environment of slow initial uptake. However, Utilities and the California Public Utilities Commission are committed to improving the Basic Path and will be launching an easier-to-use version, which will help the region gain the momentum necessary to work toward its long-term goals.
2. **Contractors selling outside of the program** – CCSE generated over 6,000 leads for contractors and raters. Because there was no simple way to participate in the Energy Upgrade California Home Upgrade Program, many contractors did not go through the utility rebate program, and their upgrades outside the program proved difficult to track. Although not ideal, the fact that contractors were including building science principles in their business models and doing work outside the program is evidence that this is a market in transformation.
3. **Extended learning curve in lead management** – The Energy Upgrade California brand did not gain traction as expected because conventional marketing proved ineffective. CCSE had to alter the pilots from special initiatives operating with support from a high-level traditional marketing campaign to grass roots lead generation. CCSE was able to quickly adapt and test a variety of tactics for generating and managing leads, and ultimately developed a strong lead generation and management process. CCSE worked closely with contractors to refine and improve the follow-up process to reduce customer drop off, and has fully launched its comprehensive third-party concierge service called the “Home Energy Coach”, modeled after successful Better Buildings partners, but tailored to San Diego’s unique characteristics.

Along with driving retrofits during the grant period, CCSE focused on developing the market as programming continues after mid-2013 in the San Diego region. In 2010, there were two home performance contractors operating in SDG&E territory. At the end of the Better Buildings Grant, there are close to 100 home performance contractors participating in the Home Upgrade Program. CCSE was also able to develop a general process for lead generation and lead management that is funded through 2014, and will help to engage new contractors as they expand into the home performance industry.

WHOLE NEIGHBORHOOD APPROACH – DEMONSTRATION HOMES

Overview

The Whole Neighborhood Approach Pilot Program tested the effectiveness of a multi-phase demand aggregation strategy in order to streamline the energy retrofitting process and reduce project costs for property owners in a geographically contiguous area. The Pilot also provided an opportunity to test innovative marketing strategies to additionally drive demand.

Phase 1 (May 2011 – December 2012)

Phase 1 focused on a targeted neighborhood of 600 homes in the Rancho Del Rey neighborhood in Chula Vista, California. The plan was to start in the 600-home area with a phased expansion outward to nearby neighborhoods to include up to 6,000 homes in subsequent phases. This neighborhood was selected as a result of a CCSE-led GIS analysis that showed the homes were high energy users, were larger-sized with high potential for energy savings, and had residents with higher per capita income.

The Pilot, named the Community Savings Initiative, was designed to reduce the cost of EUC retrofits by generating sufficient demand in the targeted neighborhood so that participating contractors could offer volume discounts to customers. Neighborhood leaders selected two EUC participating contractors through an RFP process, to obviate the need of their neighbors to go through the contractor selection process.

Under CCSE's guidance, one of the selected contractors upgraded a home in the neighborhood, and the homeowners became key spokespeople for their energy efficiency upgrade experience. CCSE conducted a highly organized saturation campaign to the neighborhood, teaming with the City and the neighborhood YMCA to drive local homeowners to visit the demonstration home during designated open house events. Key marketing involved use of mailers, door hangers, banners posted in parks, signage at the demonstration home, door-to-door canvassing by the two contractors, a kick-off workshop, an energy efficiency event for students and parents at the neighborhood elementary school, a tabling/booth at Chula Vista community events and weekly Farmer's Markets, and a letter addressed to homeowners from the mayor of Chula Vista.

A "block party" served as the hard launch of the Community Savings Initiative in July 2011. The event had a carnival-like feel with a stage, music, and free food, and over 110 people attended, including the Mayor of Chula Vista. CCSE held three more home tours at the demonstration home over the next three months.

The lead generation strategies implemented under Phase 1 were very successful in identifying leads and scheduling home energy assessments. However, similar to other early initiatives, conversion of the leads to actual home energy upgrades was not successful. There were several reasons for this road block, some of which fell outside the scope of this

pilot. These included a depressed economy and contractors who were still honing their sales process. A common issue in San Diego is that the financial value proposition is not strong enough, and contractors were often trying to make the sale on financial benefits alone, rather than comfort and health benefits. To further understand this, CCSE contracted with a research firm (Action Research) to pinpoint the lack of uptake for retrofits, and 65 of the 100+ home tour attendees were surveyed. The results supported CCSE's initial assumptions.

The main lesson from Phase 1 was that a model home that demonstrates energy efficiency upgrades gives people a chance to see the upgrades for themselves. It is a highly credible environment and can serve as a "hub" of energy efficiency marketing, education, and information exchange.

Phase 2 (January 2012 – June 2012)

Based on Phase 1 results, the Pilot took a different approach for Phase 2. The purpose was to create wider awareness, drive more demand for home energy upgrades, and leverage areas on the west side of Chula Vista with the highest potential for energy savings. The cornerstone for Phase 2 was the development of two demonstration homes in two different neighborhoods. One was a showcase home renovated by SDG&E and the City of Chula Vista, and the other was a home upgraded by a participating EUC contractor.

The Pilot took a neighborhood approach in its marketing of the two demonstration homes. One key addition was the use of directional signage (up to 25 two-sided signs) placed a couple of days before each demonstration home event to promote the event. Also, regular canvassing/flyer drops were conducted a few days before each open home, reaching 1,200-1,500 residences, as well as local retail establishments in the vicinity. The Pilot expanded its grass roots outreach to community organizations in northwest and southwest neighborhoods, focusing on cultivating new relationships and leveraging existing ones to "help spread the word" about the Pilot. In addition, press releases and announcements were issued to print (daily and weekly newspapers) and online media to promote the open houses. The Pilot also used its CCSE-based Community Savings Initiative website, CCSE's main page, CCSE's Calendar of Events email blast, city of Chula Vista's Nixle email blasts, and the city distributed flyers to all city offices, libraries, and recreational centers.

CCSE and the contractors changed the messaging to stress comfort and improved indoor air quality. Case studies became a mainstay for all future demonstration homes developed during the Pilot. Participating homeowners were branded as "Trusted Advisors" as the most credible information source for other homeowners to turn to learn about the benefits of installing energy efficiency measures.

The success of the first two Phase 2 demonstration homes created an opportunity to expand this model to other homes. CCSE encouraged participating contractors to recruit their satisfied EUC customers for demonstration homes. As such, four additional homes were developed and used one time each—one in Chula Vista and three in other neighborhoods in San Diego. For the one-time use of the home, CCSE provided a \$500-\$800 contribution toward a new energy-efficient appliance.

During Phase 2, there were 14 home tour events (including the January 2012 launch event) totaling 529 attendees, averaging 38 attendees per event. Of these, 108 (22%) signed up for an energy assessment with a participating contractor, averaging 8 high-quality leads per event.

Phase 3 (July 2012 – May 2013)

Phase 3 was designed to expand upon the successes of Phase 2. The Pilot approach was further refined with an overall goal to attract and train more EUC contractors so they could independently implement the demonstration home marketing method.

With Phase 3, the overall goal of the Pilot was to set up 40 new demonstration homes (see Table 2 and Figure 3) and train up to 10 contractors in this marketing method, in order that they could independently use demonstration homes as a marketing strategy when funding expired.

Table 2. Demonstration Homes recruitment results

Demonstration Homes Recruitment Results	
40	Goal for Demonstration Home Program (Phases 1, 2, and 3).
50	Applied for the Demonstration Home Program.
13	Opted out after initial consideration, homeowners uncomfortable with tours in their home
37	Total demonstration homes (completed or in pipeline)
9	Total participating contractors



Figure 3: Demonstration Homes set up for tours

Demonstration Home Program Participating Homeowners

CCSE issued a homeowner agreement that served as the legal agreement for participation and holding of three home tours. Homeowner participation requires consent to use their names, address, and photographs of them and their home in marketing materials to promote the Demonstration Home Program and the home tours. CCSE scheduled the events with homeowners, generally one event per month for three consecutive months. CCSE found that homeowners can serve as “Trusted Advisors” because they are the most reliable and credible information source for their neighbors.

CCSE paid a matching rebate from \$1,000–\$4,000 to homeowners (depending on their rebate from SDG&E) for each demonstration home with three open house events. Some homeowners put that money directly toward their payment to the contractor. In order to facilitate this, CCSE cut a two-party check that the homeowner could sign over to the contractor. CCSE found this process to be unnecessary and complicated. In March 2013, CCSE changed the process to only provide a rental fee directly to the homeowner for holding three home tour events. The amount remained the same, but it removed the contractor from the transaction.

Participating Contractor Selection, Participation, Roles and Responsibilities

For Phases 1 and 2, a Memorandum of Understanding (MOU) between CCSE and the contractors was required. Contractors had to meet certain requirements to participate in the Pilot. To reduce barriers and get more contractors involved in the Demonstration Home Program, an MOU was not issued for contractor participation during Phase 3. A concise Demonstration Home Program Manual for Participating Contractors was issued in July 2012. This streamlined the process, and the Program Manual was used by contractors and Pilot staff for adhering to Program requirements. A launch workshop for contractors was also held to convey this information. The Program Manual covered the four program components and listed participating contractor eligibility criteria, requirements, and obligations for participation.

CCSE had issues with a contractor behaving unprofessionally at demonstration home events, and an MOU would have helped preempt some of the disputes. CCSE recommends that an MOU be signed by all participating contractors.

Demonstration Home Cost

CCSE found that the average cost to implement a demonstration home with three events is approximately \$13,000. The cost includes staff time for coordinating with homeowners and contractors, marketing expenses, day-of-event activities, and the rental fee

(~\$3,000) paid to the homeowners. Almost all of this cost can be reduced when contractors start doing the demonstrations homes on their own.

Driving Demand

Marketing planned and conducted during Phase 2 throughout Chula Vista involved numerous techniques including: press releases to print and online media; web/internet presence using CCSE websites, and leveraged use of city, community organization, state EUC websites; neighborhood canvasses and distribution of flyers; flyer distribution to and posting at local retail establishments; posting of large banners in the community; directional signage for the events; mailers; door hangers; advertorials (co-op with contractor); email blasts; Facebook ads; announcements on Craig’s List; leveraging of City of Chula Vista communication opportunities including Nixle email blasts, city’s main calendar, city’s CLEAN calendar, and CLEAN newsletter in water utility bill inserts; and grass roots efforts with community organizations. Use of these tools was refined taking into account efficiencies and cost effectiveness and what would be most practical for contractors to do on their own.

To evaluate the effectiveness of these marketing tactics, CCSE tracked how each attendee learned about the event (see Figure 4), by having them fill out a sign-in sheet.

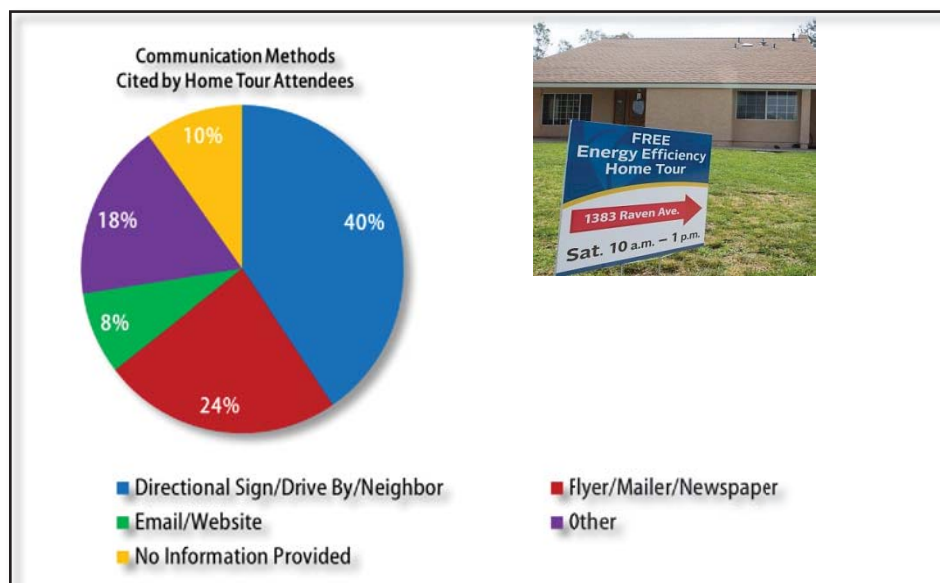


Figure 4. How people found out about events

Working with Partners

Working with active community organizations that have a large reach and identifying a “champion” to connect with was highly effective. The champion provided opportunities for placement

of announcements in newsletters, websites, email blasts, and distribution of demonstration home flyers at community meetings. Of the 80 attendees at the April 20, 2013, demonstration home open house in the Scripps Ranch community, 33% had learned about the event from community organizations.

Websites are important and serve as anchors for information dissemination. Key Pilot websites:

1. CCSE homepage – www.energycenter.org
2. CCSE Community Savings Initiative homepage – <https://energycenter.org/index.php/incentive-programs/energy-upgrade-california/better-buildings/the-energy-upgrade-california-community-savings-initiative>
3. CCSE Home Upgrade page – www.energycenter.org/homeupgrade – Developed during Phase 3; replaced the Community Savings Initiative site. Home tours link provides information on scheduled home tours.
4. City of Chula Vista – CLEAN page – <http://www.chulavistaca.gov/clean/Default.asp> – Lists all home tour/open houses in Chula Vista.
5. EUC state portal – www.EnergyUpgradeCA.org – Connects site visitors with local EUC events.

Day of Event – Home Tour/Open House Activities

Activities conducted for each open house event are standardized. It takes a full day of effort to hold an open house. CCSE staff (2-3 people), along with contractor assistance, set up for the event at the demonstration home. This involves placement of all tables, signage, information boards, collateral, and case study boards, canopy, sign-in table, collateral outside and inside the home, signage including welcome signs, energy efficiency technologies and information board, case study boards, and any other signs developed specifically for a particular home tour/open house. The contractor assists with set up and provides a minimum two staff to conduct guided tours. CCSE, serving as the event host, greets visitors and handles sign-in. This includes giving key handouts to visitors and providing introductory information on EUC and the whole house approach, before handing visitors over to the contractor's staff, who conduct the guided tours. Table 3 shows Demonstration Home results.

Table 3: Demonstration Home results

Pilot Phases	Completed Homes	Home Tours/Open Houses Held	Attendees	Referrals (Signed up for Energy Assessment)
1	1	4	170	40
2 & 3	14	51	1,462	363

Totals	15	55	1,632 30 each event	403 7 each event 25% of attendees

- Highest attended single event – 80 attendees, 24 referrals
- Lowest attended single event – 6 attendees, 1 referral

Sustainability Plan

The Demonstration Home Program has been a recognized success and is among the most productive marketing strategies applied. SDG&E and Local Government Partners will continue funding the Demonstration Home Program through 2014. The contract calls for CCSE to develop 20 demonstration homes and conduct 60 open house events (three per demonstration house) throughout San Diego County.

COMMUNITY BASED MARKETING AND OUTREACH

San Diego Hero Alliance and the Home Energy Coach

Overview

In a campaign called the San Diego Hero Alliance, CCSE targeted the military community with a combination of outreach activities, norming messaging, and concierge services. The hypothesis was the military community identified strongly with their military peers and would take action if certain behaviors were considered “normal” among those with whom they identify. The main lessons learned were that the military community did not respond well to patriotic messaging. They preferred typical cost, comfort, and health messaging. Also, the community expected exclusive discounts that were not available to them (or to other groups).

The most effective aspect of the pilot was the concierge service provided by CCSE staff. It included direct consultation and a contractor review platform similar to Yelp.com, which 90%+ of users found to be helpful in finding a contractor. After less than one year of implementation, CCSE expanded the concierge service to the rest of the San Diego community, and discontinued the military outreach. At the end of the grant, the CBSM campaign had been converted into the “Home Energy Coach”, a service that supported all regional lead generation and lead management efforts.

Messaging

CCSE contracted with Action Research to conduct preliminary survey and focus group research at the start of the program. Results indicated that the military/veteran community valued comfort, health, and safety as the most important benefits of home energy upgrades.

These are the same messages that have tested well with the general population. Describing energy efficiency as a patriotic duty did *not* test well with this audience.

The research also showed that the military/veteran community may be more sensitive to the challenge of finding a quality contractor, as compared to the general population. To overcome this, CCSE piloted a contractor review platform similar to Yelp or Angie’s List. Homeowners provided 1-5 star ratings of their contractors, along with comments about their experiences. Contractors were given the opportunity to post responses to bad reviews.

In December 2012, CCSE sent a survey to the Hero Alliance participants who had completed home energy assessments to ask them about the usefulness of the reviews. Eighteen of the respondents used the reviews to choose a contractor and answered the following question: **When choosing a contractor, how useful were the reviews?** Figure 5 shows

the results of the survey.

Value	Count	Percent
Essential - I would not have felt comfortable choosing a contractor without seeing reviews	7	39%
Very useful - The reviews were an important factor in my choice of contractor	10	56%
Somewhat useful - Other factors were more important	0	0%
Not useful - The reviews did not factor into my choice of contractor	1	6%

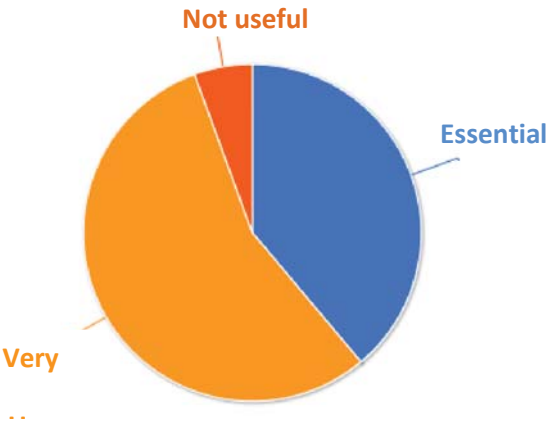


Figure 5. Results from survey of Hero Alliance participants

The contractors with reviews received the vast majority of leads through this program. However, it is important to note that new leads did not flock strictly to the company with the highest rating. The comments were also an important part of this rating tool, as they allowed participants to subjectively judge companies on criteria they found most valuable.

In addition to helping program participants choose contractors, the reviews provided added value as a social norming tool. It was another way to demonstrate that many people in the local military/veteran community were hiring these companies to perform home energy upgrades. Figure 6 shows an example of a contractor's review.



Figure 6. Screenshot of Yelp-style reviews of contractors listed at www.sdhero.org/contractors

Vouchers for home energy assessments

The military community is accustomed to exclusive offers, and CCSE often received the question, “Is this program unique to the military or to veterans?” In order to encourage this sense of exclusivity, CCSE introduced a \$300 voucher (see Figure 7) for home energy assessments as a special benefit to this community. Other benefits provided by the vouchers included:

1. Lowering the price point for home energy assessments
2. Providing a way of tracking when assessments were completed, and which homeowners were working with which contractors
3. Establishing a personal connection with program participants when sending the voucher; ensuring they knew CCSE was available as a resource for any questions or problems
4. Providing a sense of urgency by issuing vouchers with an expiration date three weeks into the future



Figure 7. \$300 voucher for home energy assessment

Third-party advisor for multiple touches without a sales pitch

All program communication was sent from individual staff members, who encouraged participants to call or email them directly with any questions. By walking participants through the program, CCSE was able to help them overcome barriers to action (e.g., resolving an issue with a contractor, figuring out a financing option). The personal touch by an independent non-profit expert was successful.

Another best practice related to communications was the “multiple touches” approach. Program participants were sent emails periodically either to prompt them to move on to the next step or simply to provide information and program updates (usually in the form of blog postings). We know that fitting a home energy upgrade into a busy schedule is a barrier. Several participants contacted us three, six, or nine months after first hearing about the program. Multiple touches kept home energy upgrades in their awareness, until they were ready to act.

Guidebook and briefings for outreach staff

CCSE developed a guidebook for staff that addressed home performance concepts, program eligibility requirements, financing information, complementary incentives, online resources, and other frequently asked questions. This guidebook proved to be an invaluable tool for everyone who interacted with the public. It was updated approximately once a month, or as major changes were needed. In addition, biweekly briefings were held to ensure staff understood the latest program updates and how to message the information to homeowners.

Accomplishments

The purpose of the Community-Based Social Marketing pilot program was to drive higher levels of awareness and retrofit actions by leveraging existing social networks and communications channels within targeted communities. The CBSM pilot program began as the San Diego Hero Alliance (focusing on the military/veteran community), and later changed to the Home Energy Coach program in January 2013. Accomplishments are broken out into these two categories.

San Diego Hero Alliance

Outreach events

- Included tabling at community/military events and workshops at defense contractors, veteran group meetings, and CCSE's learning center (see Figure 8)
- Events attended/organized by CCSE: 66
- Total event attendees: 710,304
- Interactions with CCSE program staff (includes event with the Roadshow): 2,327

Networking events with military and defense-oriented groups

- Networking events attended: 11
- Total event attendees: 2,710

Ads and media

- 11 print ads (1/2 page or full page), primarily in military and veteran-focused media
- Two Facebook ads
- Four postings in San Diego U-T event calendar
- Three press releases and articles in Camp Pendleton Patch, *The Connection*, a health-oriented magazine distributed at workplaces, and in Armed Forces Communications and Electronics Association (AFCEA) newsletter
- 18 blog posts on www.sdhero.org



Figure 8. Outreach at Naval Base San Diego (left) and Workshop at CCSE (right)

Participation

The San Diego Hero Alliance was broken down into four levels of progressive engagement, shown in Table 4. (This was changed to three toward the end of the program.)

Table 4. The four level of progressive engagement for the San Diego Hero Alliance

Participation Level	Goal	Achieved
Level 1 - Pledge	5,040	340
Level 2 - Survey	2,520	171
Level 3 - Assessment	840	55
Level 4 - Upgrade	420	12

Challenges

The military and veteran community proved to be a challenging audience to reach. The initial plan was to conduct outreach via defense contractors, who employ many veterans at middle/upper income levels. However, it proved difficult to build relationships with these companies and convince them of the value of hosting a lunch workshop on the topic.

CCSE then shifted focus to events and publications tied to local military bases, which serve retirees (those who served a full military career) as well as active duty and families. However, it was difficult to find outreach and marketing opportunities that specifically reached *homeowners* within this community. Military-focused events and publications often attract a large percentage of renters or homeowners who plan to move within three years (when they change duty stations). Although there was a lot of interest in energy conservation and efficiency, the majority of the people we encountered were not in a position to do whole-house energy upgrades.

Other priorities for decision-makers

Although there is an extensive support network for military and veteran families (especially in the San Diego area), many of these organizations are focused on problems such as homelessness, job placement, service-related injuries and illness, etc. A program designed to help homeowners who can afford to spend \$5,000–\$12,000 on energy upgrades is, understandably, not as high of a priority for this support network. Even when a group expressed interest, it took quite a bit of time to build trust with decision-makers and navigate the bureaucracy of some organizations.

Sensitivity to sales pitches

Other challenges were not specific to the military/veteran audience. We know that many homeowners are sensitive to sales pitches. For those who were unfamiliar with CCSE, we encountered resistance to engaging with us. This was less true when CCSE conducted outreach on military bases, but it became pronounced when we started marketing Home Energy Coach services to the broader community. CCSE tried to overcome this barrier by incorporating explicit messaging that we are a nonprofit educational resource for the community.

Transition to Home Energy Coach

Building on the success of the personal advisor model used in the San Diego Hero Alliance, CCSE launched the Home Energy Coach program in January 2013 to support all home energy upgrade outreach efforts at CCSE.

Leveraging CCSE's Regional Energy Mapping Project (REMP)⁵ and additional funding from the Local Government Partnership, CCSE organized outreach events in communities identified as having moderate to high potential for home energy upgrades. (Criteria analyzed included percentage of pre-1980 single family homes, energy consumption levels, rates of solar and electric vehicle adoption, and owner occupancy rates and income levels.) At the events, Home Energy Coaches educated attendees on home energy upgrades via workshops and our Roadshow. Attendees received Home Energy Coach business cards, and follow-up emails were sent to remind them that we were available as an independent nonprofit resource.

The number of assessments and upgrades resulting from community events is unknown, but 38% of households that attended gave their contact information to a contractor to schedule an assessment.

⁵ The Regional Energy Mapping Project was an SDG&E and Local government-funded GIS analysis of the region that built on the initial analysis conducted in the City of Chula for the Community Savings Initiative WNA Pilot.

Figure 9 shows the lead-to-referral conversion rate and percentage of homeowners planning upgrades in the next month.

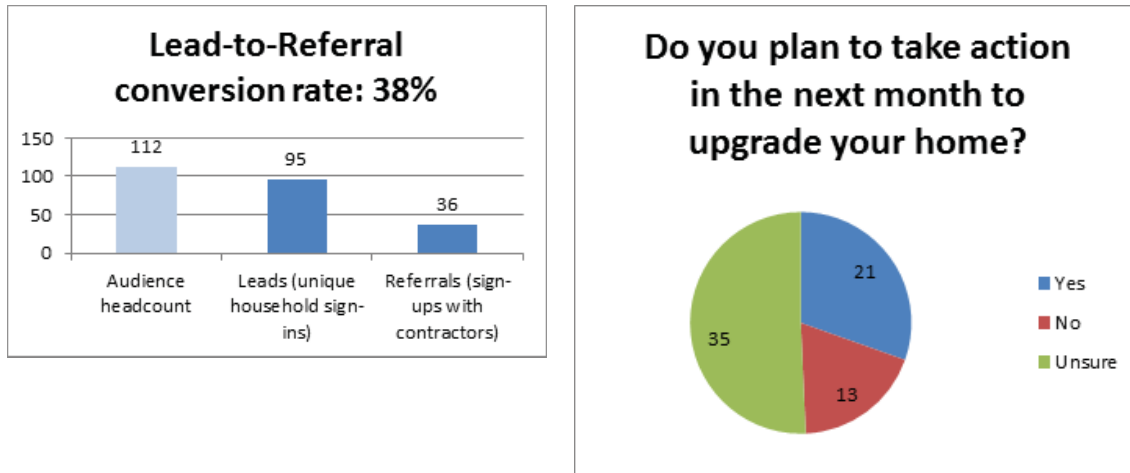


Figure 9. Statistics from five community events held between January and April, 2013.

Direct mail campaigns

Other neighborhoods that scored highly on the REMP model were selected for direct mail campaigns; these encouraged homeowners to “Contact a Home Energy Coach” to learn how to upgrade their homes, lower their energy bills, and maintain comfortable indoor temperatures.

Radio

Similar to the direct mail campaigns, radio advertising was conducted on the local NPR station to encourage homeowners to “Contact a Home Energy Coach” for expert advice. No sales pitch was made.

Media

CCSE authored articles for the Grossmont–Mt. Helix Improvement Association, Scripps Ranch Civic Association, and Escondido City Magazine.

Leveraging other CCSE programs

Home Energy Coaches sent follow-up emails to leads generated through our Demonstration Home Program and Roadshow (both Better Buildings Pilot Programs). In addition, Home Energy Coach services were advertised at CCSE’s “Solar for Homeowners” workshops, with an emphasis on exploring energy efficiency before going solar. Finally, CCSE processes rebates for California’s Clean Vehicle Rebate Project. For those rebate recipients within SDG&E territory who requested information on energy efficiency, a

Home Energy Coach sent a personal email with information (see Figure 10) and action steps.



Figure 10. Home Energy Coach business cards – distributed at all outreach events

Participation rates

In addition to in-person communication at outreach events, Home Energy Coaches had 107 interactions with the public via phone or email. Limited access to data impeded us from evaluating the effectiveness of our marketing and outreach efforts. Because the target behavior was to engage in a program administered by the utility (and not CCSE), CCSE was not able to accurately track which program participants received home energy assessments or completed upgrades. Home Energy Coaches attempted to track this information by keeping in touch with program participants and requesting updates from participating contractors. This was a cumbersome effort with low-quality results.

CCSE has secured continued funding for community events through the end of 2014, and is pursuing continued funding for the broader Home Energy Coach program.

RESIDENTIAL ENERGY ROADSHOW

The Residential Energy Roadshow was designed to support CCSE's Better Buildings WNA and CBSM pilots by providing a mobile display that introduced home performance concepts and the associated technologies included in upgrades. As the Roadshow developed, CCSE determined that it would function well as a stand-alone exhibition, and CCSE booked it for its own events where it generated leads for Participating EUC contractors.

Since its debut in August 2011, the Roadshow has evolved and grown to include a second unit. The original vehicle (Version 1.0) was primarily focused on home performance technology. The newest version, the Energy Upgrade California Roadshow (Version 2.0), focuses on

norming messaging, the upgrade process, and relies on interactive displays to teach the concept of whole home performance.

Roadshow Version 1.0

The Roadshow was built in a 24-foot trailer typically used to transport cars (see Figure 11). The exterior is wrapped in an energizing graphic and features logos for Better Buildings, CCSE, Energy Upgrade California, and several sponsors who provided the building performance equipment for display. A door on the passenger's side and a ramp that opens up the entire rear of the trailer provide access.



Figure 11. Roadshow 1.0 set up at Home Show (left) and exterior view of Roadshow (right)

Best Practices for Engaging Roadshow Visitors

CCSE converted the trailer's 1600 cubic feet of space into displays that include renewable energy and energy storage, Energy Star appliances, water conservation and plumbing, lighting, insulation, HVAC, windows, energy management tools, and green flooring. Roadshow staff found that visitors gravitate toward technologies that are familiar to them, rather than to technologies that are new. They say, "Oh, my neighbor has solar panels. I've been thinking about that..." Or, "I've already had my windows done..." Or, "Is this one of those instant water heaters?"

Version 1.0 has many different technologies, so most homeowners can identify with at least one of them, which is a doorway to a conversation about home performance concepts. The most effective way to engage a homeowner is to congratulate them for what they have already done, talk about whatever they want to talk about, and then shift the conversation to home performance and issues they have not yet addressed. Having actual materials and equipment on display enhances the conversations and provides a tangible object with which homeowners can associate new information.

Lessons Learned from Version 1.0

In the first year of operation, CCSE displayed Roadshow 1.0 for 100 event days, and learned a great deal about effectively engaging homeowners. Success depended on a combination of

factors including selecting the right types of events, well-crafted promotions (such as give-aways), continuous improvement of trailer operations, and staff skilled in conversing with a range of visitors about home performance.

The main drawback of Version 1.0 was that if someone simply glanced inside or did not talk with a staff member, they were likely to walk away with an unclear message. The technology displays were intended to emphasize all the different parts of a home's system that can be installed in combination to achieve energy savings. However, if visitors failed to see the sign explaining whole home performance or did not talk with a staff member, they often left with the same single-measure mentality. Contractors liked this setup, however, because they could take homeowners on tour through the Roadshow and present themselves as an expert who could explain all of the technologies and how they affected a home's performance.

The displays did not serve to efficiently move homeowners through the Roadshow at busy events. Although there was a goal of having people spend less than five minutes in the Roadshow, displaying multiple technologies triggered in-depth discussions about individual products. Sometimes it would take several minutes of conversation to satisfy a visitor's curiosity before home performance could be discussed. This led to backups and people bypassing the Roadshow.

Roadshow Version 2.0

Just a year after Version 1.0 had been on the road, CCSE decided to revisit the design in order to decrease the time and cost required to operate the vehicle and better prompt action from visitors. We initially intended to remodel the existing trailer but found that it would cost nearly as much as constructing a new one. For Version 2.0, CCSE's objective was to create a simple design with a *single clear message* that would prompt Californians to take action. Everything in Version 2.0 revolved around visitors coming to the conclusion on their own that they needed to connect with a participating EUC contractor or rater and schedule an assessment.

Version 2.0 gives visitors the feeling that they are entering an upgraded, comfortable home. Displays include case studies, a television that loops an educational video, an interactive home upgrade simulation with touch-screen monitors, and an air sealing and insulation interactive display. The call to action is clearly displayed on the wall as a visitor exits: 1) Connect with a contractor, 2) Upgrade your home, and 3) Collect your rebate.

Interactive Displays

Test, Don't Guess – This display primes visitors to learn new information to correct their previous notions. It challenges visitors to determine which type of home is high performing, a solar home, a new home, or an old home. A picture of each choice is on the front of a

door they can open to read an explanation and find out if they are right or wrong. A fourth door reveals that one cannot tell a home's performance just by looking at it.

Insulation and Air Sealing Work Better Together – By pressing a button that turns on a fan, this display shows that air and heat can travel right through insulation where there is no well-sealed air barrier. The objective is to help homeowners understand that measures in a house often work together, so they start to think of the house as a system.

The Home Energy Game – This game allows visitors apply the concepts they learn from the other displays to help a fictional family save energy on a budget. On a touch-screen computer, players can select one of two homes with different sizes, ages, and locations. They are then presented with a selection of measures that they drag and drop into the graphic of a home. Each measure has a dollar sign value, and the challenge is to achieve a certain percent of energy savings while staying within budget.

Data Collection

Roadshows Version 1.0 and 2.0 have collectively completed 111 events and had 7,500 people walk through. This led to 1,900 leads and 600 connections with contractors.

CCSE initially used a response card to track lead generation out in the field. This two-sided document was revised in both design and content several times. It contained fields for contact information, check boxes to indicate whether the person was interested in more information about a particular product or company inside the Roadshow, or concerned about energy, comfort, and safety in the home, etc. It also asked if they were interested in more information from CCSE or wanted more information about a particular CCSE program. Most importantly for lead generation, they could indicate if they wanted to be contacted by a contractor. Visitors were often hesitant to complete the form, so CCSE included an incentive such as spinning a prize wheel (to get small premiums such as EUC-branded lip balm).

Because it was a challenge to read people's handwriting, CCSE switched to iPads with online forms in place of the Response Cards. The landing page provides two choices, one to have a contractor contact them and the other to sign up for more information from CCSE. Both choices lead to a form that collects contact information and information about concerns they have about their home. The forms automatically populate CCSE's CRM, eliminating the need for manual data entry. The only drawback is that visitors sometimes have difficulties using a touch screen, and staff are needed to assist.

Types of Events and Lead Quality

CCSE had multiple measures of success such as educating people, encouraging them to learn more by attending a workshop, connecting them with a contractor, convincing them to sign up for an assessment, and the ultimate goal of homeowners getting upgrades.

Participating in the right events was important for generating quality leads. Large events like the Miramar Air Show (with 700,000 attendees) generated hundreds of leads, but most were of low quality. Events that were not focused on the environment or the home, such as farmers markets or health fairs, did not generate quality leads. Self-produced community events where attendance was from 10 to 50 people generated limited, but higher quality leads, as did home shows.

Community events, funded by both Better Buildings and utility ratepayers, have had the best lead conversions. CCSE initially produced the events in partnership with SDG&E, who provided zip codes where there was a concentration of homes with high potential for energy savings. CCSE would then plan a series of Roadshow events in a particular geographic area for one week of the month. SDG&E promoted the events with as many as ten touches through direct mail, email, phone calls, etc. The events, which took place at a local venue such as a library or recreation center and featured simple catering, incorporated the presence of SDG&E and an Energy Upgrade California participating contractor.

These events were successful for a number of reasons. Having multiple event days during the week allowed people to attend when their schedule permitted. Sometimes people would even come back to a second day to ask more questions. There was also a balance of promotion. CCSE hosted the Roadshow event as an unbiased source of information. SDG&E provided information about other energy programs available in their territory. The contractor was able to answer technical questions and conveniently schedule assessments on the spot. Visitors did not have to talk to everyone, but they typically would.

Trailer Logistics

Coordinating events is just more one part of the picture. Operating the Roadshow also posed many challenges along the way. Roadshow Version 1.0 had several exterior displays that had to be transported inside the trailer. Displays were heavy and usually required two people to move. Set-up required a minimum of two people and took up to four person-hours.

After the significant effort it took to gain efficiency with Version 1.0, CCSE wanted to make sure the new Roadshow was lighter, faster, and cleaner looking. Reducing the number and complexity of components also reduced the training burden for new employees managing Version 2.0. Set-up takes less than one person-hour.

HVAC CONTRACTOR OUTREACH

TOP HVAC

The Training and Outreach Program for Heating, Ventilation, and Air Conditioning Contractors (TOP HVAC) program was created to promote comprehensive and effective energy upgrades at the time of HVAC equipment replacement and/or maintenance. The original concept for the HVAC Contractor Outreach Pilot was to encourage HVAC contractors to upsell home performance during routine sales, maintenance, and upgrades by incorporating some form of incentive. HVAC Contractors were identified as a natural fit to help to expand the home performance industry because:

1. They are frequently used by owners of homes with mechanical systems. Technicians can inform their clients about a home performance approach, rather than the typical single measure approach.
2. HVAC contractors deal with one of the most complex systems in the home, the heating and cooling system; therefore, their technical skill level is thought to be high with regard to home upgrades.

In October 2010, CCSE conducted a focus group meeting with 11 regional HVAC industry stakeholders to discuss approaches for reaching the pilot's goals. CCSE also distributed a questionnaire to energy industry stakeholders (general and HVAC contractors in the San Diego region) to obtain information about existing business practices and their plans for business growth. The questionnaire also addressed their willingness to expand their services to include whole home approaches in their upgrades. The preliminary research revealed that HVAC contractors in San Diego County felt that:

1. Homeowners made decisions primarily on cost and do not understand how quality effects prices
2. They are hesitant to upsell because their competition was selling for lower prices by cutting corners and not pulling permits
3. Most of their customers were skeptical of contractors who tried to expand a project to include additional measures

CCSE chose to develop a pilot that focused on training HVAC contractors to expand their business into home performance and give them the skills necessary to overcome homeowner concerns and industry competition. The TOP HVAC program offered technical and soft-skills training to expand HVAC contractors' skills so they could more effectively and proficiently sell home performance. The pilot offered a series of trainings to:

1. Introduce HVAC contractors to whole house upgrades
2. Teach HVAC contractors to conduct performance modeling
3. Improve HVAC contractors' business management skills
4. Build HVAC contractors' ability to market whole house upgrades

Cohort Approach

The pilot started with a three-month series of courses and a networking event to introduce HVAC contractors to both home performance concepts and other specialty contractors with whom they would need to establish a relationship (e.g., insulation contractors and energy raters). The strategy was to have eight to ten new companies go through the same training and networking curriculum several times each year.

In order to recruit the initial cohort, CCSE approached established HVAC contractors and leveraged the CCSE and EUC newsletters. CCSE also leveraged its access to industry groups and their member lists, such as the Industry of Heating and Air Conditioning industries (IHACI), Affordable Comfort, Inc. (ACI), Air Conditioning Contractors of America (ACCA), and the Building Performance Institute (BPI). CCSE also coordinated with SDG&E to promote the TOP HVAC program to contractors participating in their HVAC tune-up program.

CCSE designed a curriculum that addressed gaps in knowledge based on the stakeholders' responses to the questionnaire and their feedback at the focus group meeting. The pilot's initial offering consisted of a combination of training courses and networking opportunities. HVAC contractors work as needed, not on a typical 9-5/Monday through Friday schedule, so courses were short (2-3 hours), and some were offered via phone instead of in-person (e.g., Virtual Office Hours). Staff kept the initial number of trainings low to introduce the program at a manageable pace and frequency:

- Month 1: CCSE offered an orientation to TOP HVAC, which provided contractors an opportunity to meet each other, learn about CCSE, and learn about home performance. It also served to pique contractors' interest in "joining" TOP HVAC.
- Month 2: CCSE offered a one-day home performance overview, EnergyPro training, and Virtual Office Hours course to let TOP HVAC contractors ask questions to a home performance contractor who had successfully transitioned their HVAC businesses to provide home performance services.
- Month 3: CCSE held a networking event for TOP HVAC contractors and other specialty contractors to discuss potential partnerships and solutions to their problems.

Although CCSE found it more difficult than expected to recruit contractors for the free training, 20 contractors attended at least one of the three trainings in the first cohort.

Cohort Approach (Version 2)

After the first cohort completed the three-month TOP HVAC program, CCSE modified the training schedule to better accommodate contractors' schedules and training needs by shortened the training period and adding additional soft-skills classes. The two-month curriculum was designed to be a comprehensive set of classes that provided HVAC contractors with introductions to home performance concepts, energy modeling, combustion safety, and sales and marketing (See Table 5).

Table 5. Cohort 2 Curriculum

WORKSHOP NAMES AND DATES (2011)
WEEK OF SEPTEMBER 5 SEPTEMBER 7, 2:00-5:00 P.M. ENERGY UPGRADE CALIFORNIA ORIENTATION WITH JESSE FULTON (CLASSROOM) SEPTEMBER 9, 8:00-12:00 P.M. INTRODUCTION TO TOP HVAC PROGRAM, BUILDING THE HOME PERFORMANCE MODEL WORKSHOP WITH STEPHEN SELF (CLASSROOM)
WEEK OF SEPTEMBER 12 TURN IN TOP HVAC PARTICIPATION AGREEMENTS
WEEK OF SEPTEMBER 19 SEPTEMBER 20, 5:00-6:00 P.M. VIRTUAL OFFICE HOURS WITH BRIAN BOVIO (PHONE) CALL IN NUMBER: 712-432-3900, ACCESS CODE: 682209 SEPTEMBER 21, 12:00-2:00 P.M. ENERGY PRO TRAINING WITH MIKE BIGELOW (WEBINAR)
WEEK OF SEPTEMBER 26 WEDNESDAY, SEPTEMBER 28, 1:00-4:00 P.M. COMBUSTION SAFETY TRAINING WITH JESSE FULTON (CLASSROOM)
WEEK OF OCTOBER 3 WEDNESDAY, OCTOBER 5, 8:00-12:00 P.M. SALES WORKSHOP WITH STEPHEN SELF (CLASSROOM)
WEEK OF OCTOBER 10 OCTOBER 11, 8-11:00 OR 1:00-4:00 ENERGY PRO TRAINING PART ONE WITH JENNIFER GREEN, JESSE FULTON (FIELD HOUSE) OCTOBER 12, 2:00-5:00 P.M. ENERGY PRO TRAINING PART TWO MIKE BIGELOW (CLASSROOM)
WEEK OF OCTOBER 17 OCTOBER 19, 12:00-2:00 P.M. CONTRACTOR CONVERSATIONS: SALES/MARKETING TRAINING WITH STEPHEN SELF (WEBINAR) OCTOBER 20, 5:00-6:00 P.M. VIRTUAL OFFICE HOURS WITH FRED HUTCHINSON (PHONE) CALL IN NUMBER: 712-432-3900, ACCESS CODE: 682209
WEEK OF OCTOBER 23 OCTOBER 26 BUILDING THE HOME PERFORMANCE TEAM TUTORIAL AND NETWORKING EVENT AND FEEDBACK SESSION (CLASSROOM)

Discrete Trainings Approach

CCSE staff learned that although there were many HVAC contractors in the San Diego region, there were also numerous general and insulation contractors interested in transitioning their business model to include home performance (and whose partnerships many HVAC contractors needed to transition to home performance). In focus groups conducted by CCSE, we learned that HVAC technical training was being provided by other entities locally (e.g., NATE); however, no one was offering safety, health, and comfort trainings along with those technical trainings. Despite having different licenses, there were common training and education needs for all contractor types, not just HVAC contractors.

To foster more productive participation in TOP HVAC, staff invited general and insulation contractors and HERS raters to participate. Pilot staff anticipated that by including different types of contractors in the training, the pilot could improve all types of potential home performance contractors' knowledge of home performance contracting, marketing, administration, and sales, thus making their partnerships with HVAC contractors more

productive. If they all had the same reference points and training, the pilot could be more successful.

As a result of the Pilot's increased emphasis on facilitating partnerships among different types of contractors, and in order to more seamlessly integrate its trainings with other training offerings, pilot staff moved away from the TOP HVAC name. This change encouraged more involvement by additional groups, while keeping the pilot's goal to transition HVAC contractors to home performance.

Because many of contractors who had attended the first and second cohort's offerings returned to refresh their skills and network, the pilot moved away from the cohort approach. Rather than offering a set schedule of trainings spaced over two or three months, in February 2012 the pilot began offering training on an ongoing basis. This adaption aligned the pilot with contractors' general practice of selecting and attending training based on their interests and availability. The pilot also discontinued its practice of requiring contractors to commit to an entire series of workshops and networking events. Rather, the pilot encouraged contractors to take all of the trainings CCSE offers (TOP HVAC, EUC) to support their entry into home performance contracting. CCSE continued to provide information about local education and networking opportunities for the contractor community. Based on the overwhelming need for soft-skills training, CCSE added three trainings and brought on two seasoned veterans to lead the trainings.

Marketing and Outreach

To provide outreach for the program, CCSE produced e-announcements and fliers targeting contractors and raters. CCSE purchased the list of all California State License Board contractors and culled the list down to Southern California-based contractors to provide updates and invitations for TOP HVAC events. CCSE also leveraged its database of licensed contractors and raters interested in home performance by using the EUC contractor training outreach lists.

CCSE contracted with Efficiency First's Home Performance Resource Center to produce a startup guide for HVAC contractors looking to transition to home performance. The resulting Contractor Blueprint guides contractors from the beginning to the end of the transition process; however, this guide is meant to be used in concert with hands-on and virtual training and mentoring to produce successful results.

Pilot staff created, published, and posted four case studies on the CCSE website showcasing HVAC businesses from across the country that have used home performance to increase profits. Pilot staff also presented the TOP HVAC Pilot at numerous conferences, including ACI California, Better Buildings Conferences, and RESNET.

During the months the cohort approach was used, CCSE used a project management tool to collect and disseminate workshop handouts and to facilitate pre- and post-workshop online discussion. To jump start interest in the program, staff purchased and distributed t-shirts to all participating contractors and their staff as they joined TOP HVAC for the first year.

Accomplishments

The TOP HVAC program was successful at recruiting 39 licensed contractors, home energy raters, and HVAC professionals for 57 TOP HVAC-supported workshops, meetings, and webinars. A total of 158 individuals participated in in-person workshops, which developed business administration and technical skills and networking opportunities. Participation in workshops, meetings, and webinars totaled 750 Southern California attendees (see Figure 12).

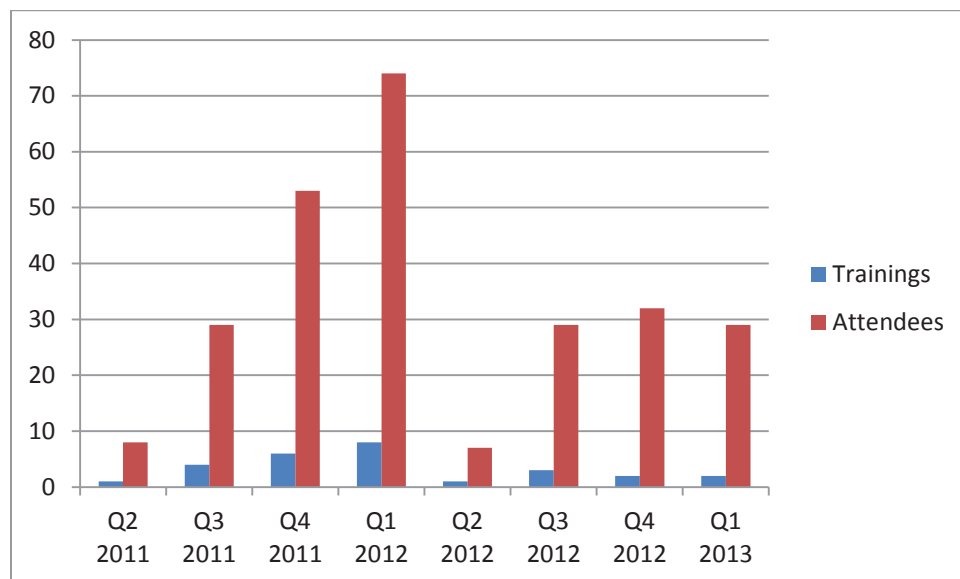


Figure 12. TOP HVAC trainings and attendees

REAL ESTATE OUTREACH PILOT

Overview

The Real Estate Outreach Pilot was designed to motivate real estate agents to promote home performance by providing them with tools and resources to inform clients about available programs at point-of-sale. Real estate agents were identified as a possible intermediary benefactor and non-traditional partner of the program due to their unique relationship with the client before, during, and after a point-of-sale transaction when the possibility of home renovation repairs is highest. CCSE hypothesized that if real estate agents could assist their clients in obtaining the improvements they wanted, and for less money, the agent would benefit by gaining stronger relationships with their clients. This could generate more business for the agent via referrals from satisfied clients or when it came time for the clients to sell.

This practice of staying “top of mind” with the client is one that agents commonly employ by reminding past, present, and prospective clients why their service is superior to the competition’s. CCSE identified two major opportunities for real estate agents:

1. Agents are in a unique position to drive the conversation on home energy because they represent the interests of a homeowner, or soon-to-be homeowner, who is looking for maximum value in what they are buying or selling.
2. An agent’s business model relies on preserving past clientele and leveraging this client base as a resource for generating new leads. This puts pressure on agents to distinguish them from the competition, which can include having access to tools and resources that help their clients save energy and live a greener lifestyle.

CCSE also identified possible threats to the overall success of this approach:

1. Any additional information given at the wrong time could delay or kill a home purchase deal.
2. Agents avoid being perceived by their clients as not knowing something, or unable to provide solutions to a specific client problem. Many would be unwilling to mention home energy to a client if they did not adequately understand the concept or have the ability to quickly call upon someone who did.

The objective of the pilot therefore was to turn these potential threats into opportunities in a feasible and sensible fashion, so agents would have little concern over promoting home performance to their clients.

CCSE found that program implementers could do little to address the first threat, with the exception of simply staying out of the way. Because the process of purchasing a home was not going to change just to take advantage of our program, we needed to figure how our process could fit within the existing model in order that it would appeal to a broad base of

agents. Furthermore, if the program's benefits were clearly understood, we believed agents would figure out where and how it could fit best into their existing landscape. CCSE found that agents initiated a conversation with their clients about the importance of home energy upgrades before or after, but not during, the escrow process.

Although the escrow process typically involves an inspection of the home's overall condition before sale, agents were disinclined to recommend anything additional, such as an energy audit, which could potentially derail the transaction. This makes sense because most agents' compensation structure only includes payment to the agent if, and when a deal goes through, ruling out any possibility of our services occurring under escrow. The pilot overcame this potential barrier by remaining flexible so agents could insert the program in the process where it made sense to them. For many, this was either well before a client listed their home for sale, or just after a new homebuyer had closed escrow.

Education and Training for Real Estate Agents

CCSE held a 4-part workshop series entitled "Stake Your Claim in Green", which covered topics from "Identifying and marketing green homes" to "Green building rating systems and 3rd party verification." The training also included Build-It-Green's Certified Green Real Estate Professional (CG-REP) training. The CG-REP course offered agents, as well as other real estate professionals, the opportunity to earn continuing education credits in the area of green building and energy efficiency, which could be applied in practice upon successful completion of the course. After two days of classroom instruction, and successfully passing a final exam, the agent, broker, home inspector, appraiser, etc. earns a certification and designation as a Green Real Estate Professional. This certification helped agents build confidence in communicating the value of energy efficiency, and also market themselves to a new, and growing, demographic of homeowner (i.e., green-minded).

Assessment Vouchers

CCSE held a trial run on an assessment vouchers process by giving participating EUC contractors and Raters \$300 vouchers that could be applied to offset the cost of an assessment to their clients. In two months, 18 contractors used the vouchers for 151 assessments. CCSE found that contractors charged exactly \$300 90% of the time, making the assessment free for the homeowner.

With the voucher process in place and tested, CCSE was confident that a third party could distribute the vouchers and contractors would know to give instant discounts to homeowners, and then submit the necessary paperwork to CCSE for reimbursement. Real estate agents interested in the program were required to demonstrate their active license status with the California Department of Real Estate and sign a participation agreement that

would be reviewed by CCSE staff. In return, the agent received a unique 4-digit promo code that they could use to print personalized vouchers in an unlimited quantity for their clients (until the program ended or funds were exhausted, whichever came first).

The agents' approach to the voucher program was to first test the value of a voucher by using one toward an energy assessment performed on their own home. Agents are cautious about presenting something to their client that they would not use themselves. With the training and vouchers, participating real estate agents developed partnerships with participating Energy Upgrade California contractors and raters. Agents typically preferred to provide interested clients with a list of participating contractors or raters rather than refer a single entity to perform the service. This approach is common among agents when working with a client to hire a home inspector, or even other home renovation work they may desire.

Accomplishments

The original goals of the pilot were to:

1. Recruit at least 50 licensed real estate agents
2. Generate 500 Energy Upgrade California test-in energy assessments
3. Perform 100 Energy Upgrades

Goal 1: Recruit at least 50 licensed real estate agents

The Real Estate Outreach Program exceeded this goal by recruiting 73 participating real estate agents from 62 different companies. On top of CCSE's efforts, word-of-mouth led to an additional 15% increase in participation because agents invited their coworkers to participate. Forty-one out of the 73 eligible agents handed out vouchers that led to assessments, but all were trained in home performance principles.

Goal 2: Generate 500 Energy Upgrade California test-in energy assessments

The program led to 154 energy assessments, short of the goal, due to a longer than expected learning curve for agents and the earlier than expected end of the voucher component of the pilot. In April 2013, CCSE started using ratepayer and California Energy Commission funding to provide rebates for HERS rating rather than BPI-scope assessments.

Goal 3: Complete 100 Energy Upgrade California whole-house upgrades

Of the 154 energy assessments that came as a result of the Real Estate Voucher Program, 27 are either in progress with their upgrade, or have already completed work.

Challenges and Opportunities in the Housing Market

1. An unconventional Seller's Market

During the grant period there was a shortage of available housing for sale and a highly competitive marketplace for real estate, factors that favor the seller. This non-traditional "seller's market" reduced the would-be seller's incentive to perform energy efficiency improvements in the home prior to listing it.

But this same set of circumstances was also an opportunity because, as sellers became scarce, a greater number of agents transitioned to represent buyers to sustain business. They also actively sought ways to differentiate themselves from the competition to attract clients. CCSE found that buyers present a greater opportunity for making energy efficiency improvements because they are most likely to reside in the home.

2. Investors Purchasing with Cash

The influx of investor-purchased properties represented another distinct challenge for home performance upgrades being included in the residential real estate transaction process. Investors seek to maximize their return on investment by keeping costs down. Cash-buyers typically invest in repairs to the home that will “show” well to both the consumer and the appraiser. Their focus is on quick, visually attractive upgrades, not comfort or reduced energy bills. Everything has to be done quickly and efficiently because they are carrying the cost of that asset until resale is possible.

Challenges with the pilot design

Agents did not have the ability to take their client all the way through the process. Once their client had been introduced to the Energy Upgrade California program and presented with a voucher, the homeowners was connected to a participating contractor rater and it was up to the contractor or rater to provide service well enough to close a deal and complete and upgrade. In the future CCSE’s Home Energy Coach will work with the homeowner, contractor and agent to facilitate the process and keep the agent involved.

Pilot sustainability

The Real Estate Outreach Pilot and voucher program will continue under the San Diego Regional Energy Partnership (SDREP) until the end of the 2014 program cycle. Through a Local Government Partnership contract consisting of key local municipal jurisdictions and SDG&E, CCSE will continue the efforts of this pilot by transitioning the voucher program to directly align with CCSE’s Home Energy Rating Rebate program. By doing so, participating real estate agents will continue to offer their clients discounts on energy efficiency services, however, beginning April 1, 2013, these discounts are only valid for certified Home Energy Ratings.

The shift away from contractor-led energy assessments to home energy ratings performed by a Whole-house Home Energy Rater ultimately gives agents and their clients greater value.

3. The home energy rating, when performed by a participating Energy Upgrade California Rater can double as the customer’s test-in energy assessment, and pre-qualify the home for the program just as an energy assessment would.
4. The home energy rating provides a score that the agent can use to communicate value and market the home more effectively on the Multiple Listing Service (MLS).
5. By transitioning the voucher program to home energy ratings, the client gains access to additional leverage in the form of the California Association of REALTORS® Real Estate Audit Program (\$250 rebate off an energy audit) as well as various energy efficiency financing products such as the EEM and 203k, which require a test-in audit to determine appropriate measures and their cost effectiveness.

VERIFICATION OF DATA

Renewable Funding (“RF”) served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE’s xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

Energy Efficiency and Conservation Block Grant (EECBG) – Better Buildings Neighborhood Program

Final Report: County of Sonoma/Regional Climate Protection Authority

Award Number: DE-EE0003562

BBNP Name: U.S. Department of Energy's Better Buildings Program

Project Title: Retrofit California

Name of Project Director/Principal Investigator: Suzanne Smith, RCPA Executive Director

Team Members:

Contracting Agency: Regional Climate Protection Authority (RCPA)

Contracted Partners: BKi, Climate Protection Campaign (CPC), David Energy Group (DEG), Energy Efficiency Institute (EEI), Community Solutions Group/Kathy Goodacre,

Non-Contracted Partners: Town of Windsor, Sonoma County Energy Independence Program (SCEIP)

The information contained in this report may be shared, used, or disclosed to the general public without expressed consent from Sonoma County Regional Climate Protection Authority.

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EXECUTIVE SUMMARY

The Regional Climate Protection Authority (RCPA) implemented three pilot programs through the Countywide Building Retrofit Program's Better Buildings Program grant: (1) On-Water Bill Financing (OWB), (2) Whole Neighborhood Approach (WNA), and (3) Sonoma Flex Package (SFP). The OWB and WNA pilots were conducted in parallel with the countywide promotion of Energy Upgrade California™, supported through RCPA's California Energy Commission (CEC) State Energy Program (SEP) grant. As part of *Retrofit California*, the aim of the OWB, WNA, and SFP pilot programs mirrored the goals of the American Recovery and Reinvestment Act (ARRA): (1) energy savings, (2) job creation/preservation, and (3) economic recovery. The pilot programs aligned with the guiding principles set out in the U.S. Department of Energy's (DOE) Better Building (formerly Retrofit Ramp-Up) Funding Opportunity Announcement (FOA): to achieve self-sustaining market momentum, documented economies of scale, and proof of innovations that can be replicated across the United States.

Pilot Programs Overview

On-Water Bill Financing Pilot

The RCPA worked with a Sonoma County municipality, the Town of Windsor, to design and implement a tariffed On-Water-Bill Financing pilot (OWB), branded as Windsor Efficiency PAYS®¹ for implementation.

The OWB pilot set out to:

- Remove barriers to energy and water efficiency upgrades by creating a financing mechanism that is assigned to the meter location rather than the customer, and a package of consumer assurances to eliminate all perceived risks associated with buying measures;
- Provide financing for energy and water upgrades that results in immediate positive cash flow on the customer's utility bill; and,
- Compliment local programs by financing upgrades that are not eligible for local property tax clean energy (PACE) financing offered through the Sonoma County Energy Independence Program (SCEIP)².

¹ www.windsorefficiencypays.com; <http://www.townofwindsor.com/index.aspx?nid=819>

² <http://www.sonomacountyenergy.org/>

The pilot also sought to serve as a supplement and feeder program to the statewide Energy Upgrade California program, which provides basic and advanced whole house upgrades and incentives. This program referral was specifically designed to harness positive customer experiences delivered by the Windsor Efficiency PAYS® customer offer. Pay As You Save® (PAYS®) is a market-based system³ in which customers, vendors, and capital providers, acting in their own interests, produce unprecedented resource efficiency investment that is also in society's interest.

The goal of the pilot was for 2,000 participants—nearly 25% of this utility's residential customers—to purchase an array of resource efficiency measures that meet customers' needs (e.g., showering, clothes washing, attractive landscaping), while using less water and/or energy. Homeowners, renters, and multifamily property owners were eligible to participate, with 10% of all program participants (i.e., 200 dwelling units) targeted to be customers living in multifamily housing.

While delays in program launch resulted in data collection from only six months of field services at the time of this report⁴, the pilot has already exceeded its multifamily target, and has built substantial momentum in the single family market. Pilot participants are currently served by a Certification Agent (a role fulfilled in the Windsor pilot by SCEIP), two certified Lead Contractors, one certified Landscaper, and one certified Appliance Vendor. Customers who meet program measure qualification thresholds are eligible to receive program installation and quality assurance services for: high-efficiency toilets, showerheads, aerators, clothes washers, compact fluorescent light bulbs (CFLs), on-demand water recirculation pumps, and refrigerators, as well as drought resistant landscaping. Measure purchase and installation costs for all measures are repaid by participating customers at the location of installation through a tariff on the meter at that location.

Whole Neighborhood Approach Pilot

The RCPA administered the design, planning, and management of a Whole Neighborhood Approach (WNA) retrofit pilot program in Sonoma County between August 2010 and May 2012.

The goals of the WNA pilot program were to:

- Drive down delivery costs through a neighborhood scale approach;

³ The PAYS® system was created by RCPA program design consultants the Energy Efficiency Institute: <http://eeivt.com/wordpress/>

⁴ Windsor Efficiency PAYS® was officially launched in August, 2012. Initial Lead Contractor site visits were first performed in October, 2012. The pilot was reauthorized for a second year of operation by the Windsor Town Council on April 17, 2013.

- Streamline participant, contractor, and administration processes for subdivisions with uniform home designs for neighborhood retrofitting; and,
- Create a sustainable replicable model for neighborhood-scale retrofitting that can be implemented beyond the ARRA funding.

Sonoma WNA was one of six WNA pilots, including San Francisco, San Jose, Sacramento, Los Angeles, and San Diego, conducted under the California Better Buildings Partnership (BBP) grant. The Sonoma WNA team participated in monthly calls with this group from August, 2010 through May, 2012 to share best practices and other program successes and lessons learned through the course of pilot implementation.

Initial program efforts focused on identifying target neighborhoods of similar housing construction that would minimize costs associated with assessments and purchase of materials, while also leveraging neighborhood networks for marketing and outreach. These efforts identified the pilot's first target neighborhoods (Copperfield, in Santa Rosa, and "D Section", in Rohnert Park). The pilot then selected an Energy Upgrade Advanced Path contractor to focus services in these neighborhoods, starting in July, 2011.

The retrofit program was designed to provide Home Energy Assessments (HEAs) and Home Energy Upgrades (HEUs) for residents living in the targeted neighborhoods. Following months of limited participation in Copperfield and "D Section", efforts were realigned to expand the geographic scope of the program by targeting two additional, larger neighborhoods in Santa Rosa (Coffey Park and Piner). The pilot also engaged enhanced marketing and sales strategies and applied them to the "D Section", Coffey Park, and Piner neighborhoods.

The four neighborhoods targeted through the pilot totaled 2,737 potential homes. By May, 31, 2012, the pilot's efforts had driven 36 leads to the pilot's selected contractor, which had resulted in 10 HEAs, one signed contract for a HEU, and no completed HEUs. As a result of this slow uptake, the pilot was discontinued on May, 31, 2012.

The remaining funding for the WNA pilot was used to implement the Sonoma Flex Package Pilot (SFP), a low-cost single family energy upgrade pilot based on the Los Angeles County Flex Path program⁵. The SFP Program is discussed below.

Sonoma Flex Package Pilot

The RCPA leveraged the BBP budget remaining from the WNA pilot to design and implement a "Flex Package" pilot starting in July, 2012.

⁵ Los Angeles Flex Path Pilot Program: https://energyupgradeca.org/county/los_angeles/flexpath_overview

Sonoma Flex Package (SFP) was based on the Flex Path model innovated by the County of Los Angeles and was designed to:

- Test an alternative to the existing Energy Upgrade Basic Path Rebate Program;
- Provide homeowners with limited budgets with a home improvement pathway to Energy Upgrade participation;
- Offer contractors a streamlined job development and sales process; and,
- Deliver a minimum of 15% energy savings on average.

The SFP Pilot offered a menu of single measures with assigned deemed energy savings scores. From this menu a homeowner could choose two or more measures whose scores equaled 150 or more points (yielding a 15% minimum energy savings) to receive an incentive between \$1,500 to \$2500. The SFP incorporated a unique set of program elements that included: a menu-of-measures, pre-energy modeled energy savings and point system, low-range incentives to target low/modest income households, streamlined application and project approval process, and on-ramp to Whole House Performance for consumers and contractors.

The SFP involved a month-long program design phase conducted in partnership with Sonoma County Energy Upgrade contractors, which resulted in program modifications to the original LA Flex Path concept. With this contractor support, pilot rebates were available from October 2012 to April 2013. The pilot was successful in delivering 22% energy savings on average. Additionally, the pilot model and contractor engagement informed the ongoing development of whole house retrofit programs targeted for implementation by the California Public Utilities Commission in their 2013-2014 Energy Efficiency Portfolio and beyond.

FINAL TECHNICAL REPORT

The RCPA's BBP pilot programs were proposed as components of the RCPA's larger Countywide Building Retrofit Program, also supported by the CEC's State Energy Program Retrofit Bay Area and the PG&E Whole House Retrofit Program. Collectively branded as Energy Upgrade California, the BBP pilots were designed to rapidly accelerate building energy retrofits in Sonoma County and achieve deep market penetration in focused geographic areas. The effort included the following pilots:

1. On-Water Bill (OWB) Financing
2. Whole Neighborhood Approach (WNA)
3. Sonoma Flex Package (SFP)

ON-WATER BILL FINANCING

The On-Water Bill Financing Pilot was proposed to remove both first-cost barriers to energy and water efficiency upgrades and all barriers related to perceived customer risk by creating a financing mechanism that is assigned to the meter location rather than the customer. The RCPA enrolled the Town of Windsor, California, as a partner utility, and worked with Town and Utility staff to implement the Windsor Efficiency PAYS® Pilot. Windsor approved launch of Windsor Efficiency PAYS® on July 18, 2012, and field services began in October, 2012. The Windsor pilot was originally authorized to operate through June 30, 2013. A unanimous Windsor Town Council vote on April 17, 2013, reauthorized Windsor Efficiency PAYS® for a second year, through June 30, 2014. With the pilot approved to operate well beyond the BBP grant, the RCPA has achieved its primary goal of creating an independent, self-sustaining on-bill financing model.

Institutional Design and Business Model

The RCPA proposed the majority of its OWB pilot funding to provide for program design efforts and technical assistance during program implementation, as well as offset a portion of startup costs that would have otherwise been borne by the implementing utility partner. This approach allowed for BBP funding to provide the initial components of a “On-Bill Financing” tool kit, a collection of program resources, tools, and templates that would provide for easier replication and expansion of the piloted on-bill financing mechanism. While certain tasks related to pilot design and developments were to be shared between the RCPA and partner utilities, pilot operation was to be conducted by partner utilities. Table 1 shows the roles and responsibilities of the RCPA and OWB Partners.

Table 1. RCPA and OWB Partner Roles and Responsibilities

BBP Timeline	RCPA On-Water Bill Pilot	Partner Utility: Windsor Efficiency PAYS®	Partner Utility Timeline
	BBP Grant Begins		
	Partner Utility Recruitment	Letter of Intent to Implement Pilot	 2011 Q1
	Program Concept and Design	Program Input and Design Review	
	Development of Program Tools + Templates	Rate Study; Rate Structure Changes and Billing System Updates	
	RFPs for Pilot Implementers/Contractors		
	Initial Implementer/ Contractor Training	Attend Initial Trainings	
	Windsor Efficiency PAYS® Launch: Q3, 2012		
	Initial Marketing Collateral	Ongoing Program Operation:	
	Technical Assistance and		

2013 Q2	Program Reporting for remainder of BBP grant	• Ongoing Implementer/Contractor Training • Management of Implementer/Contractor Services • Implementer/Contractor Payment • Program Marketing	End Date Determined by Utility
	Reauthorization of Program		

Partner utilities that implemented a pilot were responsible for contracting with, management of, and payment to program implementers, including a pilot's Certification Agent, Capital Provider, Certified Contractors, and Suppliers (these relationships can be adjusted because, under the PAYS® model, a utility could assume the role of Certification Agent and or Capital Provider). Once implemented, partner utilities would be able to continue pilot operation at their discretion, providing participating customers with immediate positive-cash-flow and achieving 100% operating-cost recovery through customer bill tariffs. Figure 1 shows the PAYS® Program Implementer Roles and Responsibilities.

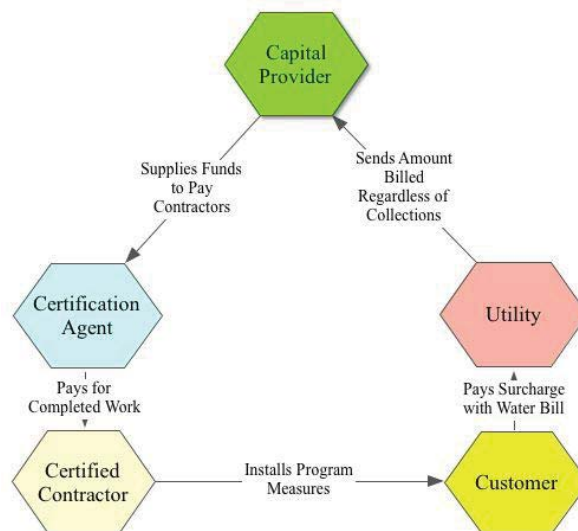


Figure 1. PAYS® Program Implementer Roles and Responsibilities

Program Design and Customer Experience

The purpose of the OWB pilot was to create a financing mechanism assigned to the meter location rather than the customer, and a package of consumer assurances to eliminate perceived risks associated with buying measures; provide financing for energy and

water upgrades that relates to financial savings on the customer's utility bill; and finance upgrades that are not eligible for property tax clean energy (PACE) financing (e.g., projects costing less than \$2,500 and portable measures such as home appliances).

As program design efforts evolved, the OWB pilot adopted the Pay As You Save® system (PAYS®; created by the resource efficiency consultant firm Energy Efficiency Institute, Inc.). This system offered unique strategies to remove typical barriers that keep customers from purchasing cost-effective efficiency measures and saving money, including: customer lack of capital (or reluctance to use available capital); limited debt capacity; uncertainty about length of occupancy; risk that measures might fail before savings exceed measure cost; split incentive issue associated with rental properties; and challenge of ensuring quality contractor services and appropriate measures packages. Through a partnership between the host water utility, a Certification Agent, capital provider, and certified OWB lead contractors, the PAYS® model created a “too good to refuse” offer that removed these barriers and allowed customers to purchase cost-effective measures with:

- No up-front payment, no new debt obligation, no credit checks, and no liens;
- The assurance that their monthly tariff will be lower than their estimated savings;
- The assurance they will pay only while they remain customers at the location where the measures were installed;
- None of the typical risks associated with contracting for or installing measures; and
- A promise that failed measures will be repaired or the payment obligation will end.

Program Partnerships

RCPA hosted a kickoff meeting in January 2011 to introduce the OWB pilot concept to potential municipal water utilities throughout Sonoma County. Two water utilities, the City of Cotati and the Town of Windsor, submitted Letters of Intent to participate in the pilot. While the City of Cotati did not move forward, the Windsor Town Council unanimously approved proceeding with program design and investigation of rate and rebate adjustments to support effective development of cost-effective measure packages that delivered energy, water, and waste water savings, becoming the only utility to test the pilot in Sonoma County.

To assist Windsor with the selection process for program implementers and contractors, RCPA developed and released Requests for Proposals and staffed joint bidders conferences with Windsor for the following program implementer roles: Capital Provider, Appliance Vendor, Certification Agent, and the Lead, Appliance, and Landscaping Contractor candidates. The following seven bidders were ultimately

selected to fill the Certification Agent, Contractor Installer, and Measure Supplier roles:

- Certification Agent: Sonoma County Energy Independence Program (SCEIP)
- Contractor Installers: Standards of Excellence, Bottom Line Utility Solutions (BLUS), Water Management Inc., and Sonoma Mountain Landscaping
- Measure Suppliers: Standards of Excellence, Niagara Conservation, and Chilipepper

The only role not filled through the RFP process was the Capital Provider. RCPA received letters from three local banks (One Pacific Coast Bank, Redwood Credit Union, and New Resource Bank) and larger capital funds (Ygrene Energy Fund and the Clean Fund), which expressed interest in providing the needed capital for the Windsor Efficiency PAYS® pilot. One of these institutions, New Resource Bank, offered to meet all conditions established by Windsor and the RCPA Team. In considering these third party capital options and the interest rates and other terms offered by lenders, the Town of Windsor ultimately decided to use \$4 million of the town's reserve fund to provide financing for Windsor Efficiency PAYS® projects. By self-funding the pilot, the Town of Windsor used percentage-based program charges (at rates and terms as competitive as the third-party options received) to pay for the cost of capital and to offset lost revenues caused by reduced water sales.

Program Measures

The OWB program design used an iterative measure evaluation process that resulted in the creation of three measure categories offered through Windsor Efficiency PAYS®: Basic, Basic Plus, and Co-pay. Eligible measures save water, gas, electricity, or a combination of these resources. Table 2 provides a summary of eligible measures that were available at pilot start up.

Table 2. Windsor Efficiency PAYS® Program Measures Chart

Measure	Basic (required if eligible)	Basic Plus	Co-pay (upfront cost)	Windsor Rebates	Measure Portability		
					Permanent	Portable	Owner's Choice
Showerheads	√				√		
Aerators	√				√		
Toilets	√			√	√		
Compact fluorescent lights (CFLs)		√				√	
Clothes Washers		√		√			√
Standard Landscaping		√		√	√		
Enhanced Landscaping			√	√	√		
On-Demand Hot Water Recirculation Pumps			√		√		
Full-Featured Clothes Washers			√				√
Clothes Dryers			√			√	
High-efficiency Refrigerators			√				√

The program offered customers Basic (i.e., required) and Basic Plus measures, both of which required no upfront customer payment. The program also offered interested customers the opportunity to purchase Co-pay measures (i.e., an upfront co-payment is required

for the measures to be eligible for billing as a water-bill tariff⁶). For this pilot, the only measures that required rebates were dry-summer, drought-resistant landscaping to replace turf and replacement of a clothes washer (i.e., if PG&E stopped its rebate to its customers).

An innovative feature of this program was bundling measures so that less cost-effective measures (e.g., replacement toilets and clothes washers) could qualify as program measures to provide immediate net savings. Both of these measures had to include a showerhead replacement. This approach also promoted comprehensiveness.

Certified Contractors marketed and sold eligible measures provided by Certified Manufacturers/Distributors (Suppliers) with the oversight of an independent Certification Agent (i.e., SCEIP). For all measures other than Co-pay measures, customers did not pay Contractors or Suppliers directly; the Certification Agent paid Contractors and Suppliers for the measures and their installation using funds from the Town of Windsor. Customers at the location where eligible measures were installed pay a tariff on their water bills over time. Contractor installation of measures and measure tariffs were verified by the Certification Agent to provide quality assurance and confirmation that annual tariffs are significantly less than estimated savings. The program sought to provide assurances that for every \$7.50 in PAYS[®] tariffs, customers receive an estimated \$10.00 in utility bill savings.

Driving Demand

Customers in Sonoma County had never been able to purchase goods or services with a tariffed charge and the types of consumer assurances provided by programs based on the PAYS[®] system. The marketing program outlined in the Program Design⁷ informs eligible customers of this new way to purchase resource efficiency products.

The OWB Team, Windsor water conservation manager, and Sonoma County Water Agency representative selected the pilot's brand name. The winning name was "Windsor Efficiency PAYS[®]", with the tag line: "Water and energy upgrades that pay you to save." This tag line made a clear connection to the statewide whole house program that refers to home energy improvements as *upgrades*. Key messaging focused on "an offer that works," and included the following supporting messages: saving money; eliminate water and energy waste; reduce demand for limited resources; enjoy new efficiency products such as clothes washers, toilets,

⁶ Matching clothes dryers are categorized as a Co-pay measure even though the customer pays 100% of their cost upfront. Some customers may want to purchase matching dryers and are not likely to be able to match the price and consumer assurances this program is able to leverage.

⁷ Current versions of the Windsor Efficiency PAYS[®] Program Design will be provided upon request to lcasey@sctainfo.org.

and super-efficient shower heads; replace turf with dry-summer, drought-resistant landscaping (“take the single most important action a customer can to protect the water supply”); work with pre-selected, bonded program contractors; purchase products with no out-of-pocket costs, credit checks, or new debt; and reduce your carbon footprint to help protect the environment.

Program marketing efforts were primarily implemented through news articles, public service announcements (PSAs), presentations to community groups by key partners, bill stuffers, tabling at community events, and leveraging marketing activities of aligned programs such as Energy Upgrade California in Sonoma County. Two phases of marketing were carried out by the pilot:

- **Marketing Phase I — Consumer Education Campaign.** Phase I began with a pre-pilot launch consumer education campaign to create interest and trust in the program and the program offer; communicate the key messages outlined above; generate excitement in being among those allowed to participate in this limited pilot; prepare utility customers to have contractors contact them about the program offer; and to explain the opt-out and opt-in provisions of the pilot.
- **Marketing Phase II — Contractor Marketing and Outreach to Consumers (July 2012, ongoing).** Phase II of the marketing/education/outreach campaign as supported by the Town of Windsor included a continuation of strategies outlined above as appropriate and as the budget allowed. However, Phase II was primarily focused on the PAYS® system requirement that Certified Contractors be responsible for marketing directly to customers. Certified Contractors could go door-to-door, tele-market, or use other marketing methods in coordination with the program marketing to reach potential customers.

Program marketing resources were primarily focused on developing leads for contract follow-up, targeting high water users as identified by the Town of Windsor. In addition to bill stuffers, direct mail, and other outreach identified above, a “Robo Call” strategy to these high users was implemented and proven to be a cost-effective strategy that delivered higher customer response rates.

Program Contractors were instructed by the program design to seek customer referrals from satisfied Windsor customers. This strategy was meant to capitalize on, and further promote, program marketing by word of mouth. Once the pilot experienced uptake and customers were reporting their savings, this word of mouth marketing (testimonials) was leveraged by earned media reports highlighting individual

customer experiences and savings⁸. These strategies built upon the program's central focus on maintaining, and promoting, the "too good to refuse" offer.

Workforce Development

The OWB pilot did not contain a workforce development element beyond the program specific Certification Training required of all program implementers and contractors. The OWB pilot established contractor requirements that leveraged the baseline set of contractor requirements for the California Public Utilities Commission's statewide whole house incentive programs and specific Town of Windsor requirements:

- Hold a California State Licensing Board (CSLB) license appropriate to the scope of work to be performed.
- Badges/Background Checks — all personnel having direct contact with program customers were required to wear an official badge. Background checks were conducted on all contractor staff that entered the home of prospective customers and were part of the process for receiving an official badge.
- Insurance — Contractors were required to supply insurance documents meeting requirements set forth by the Town of Windsor.

Program implementers and contractors were required to attend program trainings to make sure that the each of the key program personnel understood the vision of Windsor Efficiency PAYS®, the offer to the customer, the commitment of the program to the customer and the program partners, and the trainee's role in making the program work. The training sessions provided sufficient detail to alleviate problems associated with program staff making policy or operational decisions in the field that may not have been in alignment with program goals. Training sessions were held for the Certification Agent's staff, the Lead Contractor, and the Landscape and Appliance Vendor staff. Suppliers, the Appliance Vendor, and the Landscape Contractor were required to staff a booth at the training sessions with the products/measures they provided for the program. Certification Agent staff were required to attend the Contractor trainings in addition to a separate follow-up Certification Agent training session. A one-hour training for Windsor customer and field staff was also offered for billing, IT, and customer service-related issues.

Training, field experience, and ongoing discussions between contractors and program staff helped reinforce critical topics including:

⁸ <http://www.pressdemocrat.com/article/20130410/ARTICLES/130419951/1350?Title=Rave-reviews-for-water-savings-in-Windsor>

- How to better market products and services to customers;
- Which products were most likely to create savings and promote customer satisfaction; and,
- The range of cost-effectiveness of various products.

Comments from participants cited in newspaper articles attest to the success of this workforce development effort.

Quality Assurance

Quality Assurance for the OWB pilot was provided by the Certification Agent, who carried out the following program services:

- Certifying (and if necessary, de-certifying) Contractors and Suppliers, including arranging for them to sign Contractor and Manufacturer/Distributor Agreements, verifying Windsor's approval of insurance coverage, ensuring Contractors have bonding that protects owners/customers, and training contractors and suppliers to adhere to program standards.
- Verifying, either by telephone or selected on-site pre-inspections (or both), that Certified Contractors' savings calculation inputs accurately reflect resource usage in the home, that measures are appropriate for the home, that no unapproved claims have been made, that Contractors abide by up-selling limitations, and that installation will result in net savings for the occupant.
- Assuring that program limits on participation (i.e., 2,000 customers) and capital funding (i.e., \$4,000,000) are not exceeded by setting up and maintaining its own tracking systems for the number of customers and the amount of money committed by the program.
- Verifying appropriate measure installation by telephone or on-site, post-installation inspection. All participants were to receive telephone inspections; on-site post-installation inspections were to be completed for at least 10% of participants. Contractors whose performance necessitates additional on-site inspections will pay for any additional unbudgeted inspections that Windsor or the Certificate Agent deem necessary.
- Identifying, training, and scheduling one or more independent inspectors to fulfill penalty inspections. These independent inspectors must provide insurance that meets the Town of Windsor's requirements for Standard Services.
- Helping resolve disputes with Certified Contractors and Suppliers, and obtaining relief. The Certification Agent should refer to notes about complaints, disputes, praise, or comments, and to any responses recorded in each customer's file with duplicates filed in a central file for purposes of evaluation.

- Ensuring that manufacturers make good on their warranties and Contractors (or their bonding agent) make good on their contracts, including paying penalties for failed inspections, if warranted.
- Notifying Windsor when to stop tariffs if measures fail and cannot be repaired.

The responsibilities and duties of the Certification Agent could have been performed internally by an implementing utility, but Windsor decided to have these services contracted to SCEIP. This strategy was employed because Windsor deemed that an existing third party would be able to adjust its staffing to meet demand and eliminate any risk to the utility to pay for Certification Infrastructure. A larger utility might want to assume these functions so that, instead of paying a third party for oversight (Windsor's pilot was able to accommodate Certification Agent costs of \$100 a home per completed project), it could use these funds to retain or supplement its own staff. Utility staff oversaw the program Certification Agent and was involved whenever customer complaints or problems were reported.

Financing and Incentives

Although the OWB pilot was a financing initiative, the PAYS® system also incorporated more robust customer assurances that are typical of financing options. All BBP grant funding supported the program design and implementation (i.e., some start-up costs) of the PAYS® system (as opposed to, for example, being used to buy down interest rates for loans). Unlike traditional financing options, because the OWB pilot mechanism was based upon a line item bill tariff assigned to the meter location, customers were able to purchase cost-effective measures with no up-front payment, no new debt obligation, no credit checks, and no liens. This mechanism required the utility to assume responsibility for costs associated with measure failure that cannot be avoided by making repairs and for unpaid billed charges that cannot be recovered by extending payment terms (these costs in the Windsor pilot have been exceedingly small).

For measures to be eligible for the Windsor Efficiency PAYS® tariff, they must screen cost-effective under the 75% rule: annual billed tariffs cannot exceed 75% of the customer's estimated annual savings, and the maximum term used to calculate the bi-monthly tariff amount cannot exceed 75% of the useful life of the measure. The 75% threshold was used for two reasons. First, one incentive for customers to participate is immediate net savings. Previous PAYS® programs have demonstrated that reserving 25% of estimated savings to go directly to customers offers a sufficient incentive for customers to participate. Second, it is harder to predict resource savings for residential customers than for any other customer groups because of myriad changes in household behavior. Offering 25% of

estimated savings as a customer incentive also provides a sufficient safety margin to ensure that virtually all participants will have immediate net savings.

Once measure cost, useful measure life, savings estimates, and the interest rate for capital are known, qualifying a measure involves a simple annual percentage rate (APR) calculation, the same methodology used to calculate mortgage or financing payments. The three variables used to compute payments in an APR calculation are cost, interest rate, and term. For this pilot, because Windsor was the Capital Provider, there is a Program Activity Charge instead of an interest rate. The term is always 75% (or less) of the estimated useful life of the measure. The Program Activity Charge is set at 7% to make it worthwhile for Windsor to provide capital and establish a lost revenue amelioration fund. The cost in this APR calculation is the proposed cost of an installed measure (less any rebates or upfront co-payments) plus Certification charges. For Windsor's program, the Certification charge is calculated by adding fixed fees to the cost of specific measures (e.g., toilets, clothes washers, refrigerators, on-demand hot water recirculation pumps) and covers all costs associated with the Certification Agent. The fixed fees for measures simplified estimating costs for contractors and enabled Windsor to limit the number of potential tariff amounts added to customers' bills. The resulting APR monthly payment is then multiplied by 12 to determine the annual payment amount. As long as the annual payments are less than 75% of the estimated annual savings, the project (i.e., selected set of measures) can qualify for the Windsor Efficiency PAYS® tariff.

Savings estimates for most measures included the Windsor pilot are based on the customer's reported usage. While this is not the most accurate method of assessing usage, it is quick and will ensure customers have ownership of their savings. Conservative usage assumptions (all usage thresholds for qualifying measures are at or below national usage estimates) and the extra safety margin of using the 75% rule assure that the customer will receive net savings. Additionally, customers will be required to acknowledge they have read the following statement:

"Your estimated savings were based on your reported hours/times of use; if your actual use of replaced equipment was less than you estimated and reported, your actual savings will be less."

This helps to prevent customers from overestimating their usage. Additionally, the Certification Agent and/or Certified Contractors will be able to access customers' water use data by faxing or emailing a customer release form to Windsor's Water Conservation Program Coordinator to check suspect customer claims.

The OWB pilot did not offer incentives with BBP grant funding. In accordance with Town of Windsor requests during program design work, the pilot sought to reduce or eliminate the

need for existing Town of Windsor rebates as long as measures were sufficiently cost-effective to qualify for the Windsor Efficiency PAYS® tariff. Town-issued rebates of \$1.64 per square foot of replaced turf were necessary to qualify Standard Landscaping. The Town also sought to continue to leverage existing PG&E rebates to qualify clothes washers.

Data and Evaluation

The core theory behind the OWB pilot is that offering water utility customers a risk-free offer to purchase immediate net savings without upfront payment and without incurring new debt would increase demand for energy-efficiency retrofit projects. The OWB pilot team worked with the Evaluation, Measurement, and Verification (EM&V) Committee to establish the following researchable issues:

- Is the “offer” attractive to consumers?
- Is OWB attractive to utilities and capital providers?
- Is the OWB design achieving financial self-sustainment?
- Does the QA process work?
- Are marketing strategies effective?

The OWB team met with the EM&V implementer, Cadmus Group, to review and make recommendations for the OWB EM&V process. Results from the Cadmus evaluation will be shared with the RCPA OWB team and presented in a report separate from this document.⁹

For data reporting on the billing process, the OWB team utilized a “Data Sheet”¹⁰ (a detailed Microsoft Excel document) to establish and track project records for all pilot participants. The data points shown in Table 3 were used.

⁹ Parties interested in viewing a copy of this report should contact lcasey@sctainfo.org.

¹⁰ Parties interested in viewing a copy of the Data Sheet should contact lcasey@sctainfo.org.

Table 3. OWB Data Tracking Points

Monitoring and Verification Data	Operations Data
Number of OWB projects completed	Contractor contact and program information
Number of property owner reporting satisfaction with retrofit and pilot experience	Lead generation details (who found lead, what marketing process was used, etc.)
Amount of energy/water saved on average/OWB project as verified by quality assurance process	Property owner information (e.g., name, phone number, address, etc.)
Number of OWB contractors reporting satisfaction with pilot process via survey of business metrics	Contact dates and notes on conversation(s)
Amount of energy saved by a OWB pilot (average across retrofit projects within pilot)	OWB project confirmation (e.g., contract signed)
Statewide/ARRA Tracking Requirements (e.g., energy saved; greenhouse gas emissions reduced; jobs created)	OWB project schedule
	OWB project scope of work

WHOLE NEIGHBORHOOD APPROACH

The Whole Neighborhood Approach (WNA) pilot set out to address the need to accelerate and expand energy upgrades by focusing on developing highly efficient implementation and delivery of services to targeted neighborhoods, neighborhood-specific marketing strategies, and integration of bulk purchasing opportunities for multi-home retrofit projects to increase cost-effective results. The pilot program was designed to provide Home Energy Assessments (HEAs) and Home Energy Upgrades (HEUs) for residents in four neighborhoods within the cities of Santa Rosa and Rohnert Park. The WNA pilot was administered between August 2010 and May 2012. After limited participation, the pilot was canceled in May 2012 and the remaining funding was used to implement the Sonoma Flex Package Pilot (SFP).

Institutional Design and Business Model

As part of Retrofit California, the WNA pilot program sought to use new cutting-edge data and decision systems to reduce transaction costs for both contractors and sponsored funding programs. These innovations would contribute greatly to the growth and maturity of a building performance industry that would be capable of delivering home energy upgrades on a mass scale, resulting in a more reasonable cost per upgrade. The program also sought to raise public confidence and trust in the value of building performance retrofits through rigorous contractor training, public education, quality assurance, and credible evaluation and feedback. The WNA pilot program was part of the Retrofit California portfolio of market solution strategies that employed a variety of innovations in different locations around the State to address market barriers and create a foundation of guidelines, standards, and procedures to support widespread growth of the building performance industry.

Program Design and Customer Experience

Initially, program designers for the WNA pilot believed that the first step was to identify target neighborhoods. The WNA pilot team used market survey data developed by MIG, a Sonoma subcontractor through the RCPA's EECBG grant, to determine potential "hot spots" of retrofit-ready homeowners. In addition to the "hot spots" maps, the WNA team included the following criteria for target neighborhoods:

- Houses 15-35 years old;
- Homes 1200-3000 square feet;
- All houses built within 2 years of each other, preferably by same builder;

- More than 500 houses in a neighborhood;
- Production builder subdivision with a limited number of house designs;
- Indications of pride of ownership and neighborhood stability.

Demographic and housing data identified the Rohnert Park (Section D) and Copperfield neighborhoods in Santa Rosa as having high potential for retrofit uptake. These neighborhoods were selected for the initial pilot. After four months, however, the pilot WNA team realized that the target neighborhood approach did not account for unforeseen barriers to retrofit market penetration. The WNA team realized that the target area was too small (800 plus homes) to support sufficient penetration and uptake and to justify continued marketing activities.

Additionally, the limitations of the target area impeded the ability to draw out “early adopters”, which was a key strategy for influencing uptake, as identified through the Energy Upgrade countywide program. The Early Adopter category comprises those property owners who need little or no motivation to participate in the program. They are often highly educated professionals with a strong concern for the environment and awareness of the benefits of energy efficiency and green building. Overall, Sonoma County is a prime market for Early Adopters, with a strong community of environmentally aware and active citizens, leaders, and elected officials. However, the ability to identify and leverage these active citizens is very limited when targeting small neighborhoods, where they may or may not reside.

Based upon this outcome, the WNA neighborhoods were expanded (2,000 plus homes) to include the Coffey and Piner neighborhoods in northwest Santa Rosa in February, 2012. This expansion retooled the pilot to a larger market base in an attempt to facilitate more flexibility, broaden the opportunities for marketing, and to improve the odds of identifying early adopters.

Through the course of the Sonoma WNA pilot, a number of important lessons were learned regarding retrofit program design and management. The WNA team built a strong relationship with the pilot contractor and offered insight into marketing strategies and messaging, pilot challenges and successes, and views on the retrofit industry. These are discussed in the Challenges section of this report.

Contractor Selection

The installation contractor, Beanstalk Energy, was selected through a Request for Proposal (RFP) process. Beanstalk’s personnel are highly experienced contractors with a strong background in building science. Beanstalk, located in the City of Sonoma, a 40-minute drive from the targeted neighborhoods, was effectively trained and

engaged by the program, and their efforts were coordinated closely with pilot marketing and outreach. However, because Beanstalk also was seeing growth in its City of Sonoma business, their response time to some leads generated early in the program by the WNA pilot was adversely impacted. As a result, the WNA team worked with Beanstalk to develop strategies to better serve the Santa Rosa and Rohnert Park WNA neighborhoods. It was decided to hire a salesperson, who would participate in the lead generation, customer education, and closing process. These practices generated a portion of leads for potential projects attributed to the pilot.

Analysis of Houses

During neighborhood selection, the WNA team engineers analyzed houses in potential target neighborhoods through modeling software utilizing a series of tools, including vintage tables, geospatial applications such as Google Earth, permit information, and available plans. These models were used to differentiate housing types and estimate potential energy savings.

Once the neighborhoods and the contractor were selected, additional analysis was done on individual houses in the target neighborhoods as residents signed up for a Home Energy Analysis (HEA). All of the modeling and analyses on the initial houses were used to develop a standard energy upgrade package, which would achieve approximately 18-22% energy savings for a house in that neighborhood. The WNA team found that the standard upgrade package actually applied to more house types than initially thought.

The first Sonoma WNA energy upgrade contract was signed May, 31, 2012, the day the pilot was canceled. As of June 1, 2012, four additional projects were identified as involved in negotiations with the salesperson; final resolution of those sales processes were not be tracked by the pilot.

Driving Demand

In the target neighborhoods of Rohnert Park and Santa Rosa, the WNA team employed several marketing and outreach strategies, including door-to-door canvassing, flyers and mailers, homeowner events such as workshops, and community events in order to spread the message about Energy Upgrade California and the Whole Neighborhood Approach program. Sonoma WNA marketing was also augmented by countywide marketing efforts that were part of RCPA's CEC SEP grant to support Energy Upgrade California. These efforts included general Energy Upgrade California newspaper advertising, radio advertising, and community outreach throughout Sonoma County.

Sonoma WNA marketing activities began in March 2011 with the hiring of a program marketing consultant, Kathy Goodacre of Community Solutions Group. In April and May 2011, a draft communications and outreach plan for the WNA was developed. During May and June 2011, the program conducted initial outreach activities, meetings, and events in order to identify potential customers and early adopters, with special home energy analysis rates given to early adopters. Planning for canvassing operations began in July 2011, when two Energy Specialists were hired and trained. The program produced marketing collateral such as post cards, door hangers, and flyers. When launched in August 2011, the program distributed its first direct mailing, ran newspaper articles, and commenced on-the-ground canvassing activities. Canvassing, mailing, and coordinated outreach activities with local entities continued from August 2011 to April 2012, as shown in Table 4.

Table 4. WNA Outreach Activities

Neighborhood	Number of Homes	Distributed Door Hangers	Homeowner Conversations	Contractor Leads	Lead converted to Home Energy Upgrade
D Section	468	326	134	8	0
Copperfield	349	184	158	7	0
Quail Hollow	152	79	72	1	0
Coffey Park/Piner (conducted by salesperson)	290	290	32	10	0 ¹¹

The WNA team learned that marketing messages are most effective if focused on homeowner's concerns rather than rebates. While money is a key driver of consumer decision, it is difficult to establish a baseline price for retrofit packages relative to the rebate and energy savings because rebates are paid after utility review and energy savings vary with occupant behavior. As such, many consumers undertake a retrofit for reasons of comfort, health, or savings, rather than cost. Marketing efforts should capitalize on these factors to promote retrofits. Therefore, the Sonoma WNA pilot marketing efforts incorporated comfort, health, and savings as key messaging to capitalize on these lessons.

The WNA team hired a professional salesperson three months before the program was canceled. Sales personnel should be included in program design and marketing efforts from the

¹¹ One Sonoma WNA energy upgrade contract was signed May, 31, 2012, the day the pilot was canceled. The pilot did not track this job to completion.

outset because their expertise is critical to understanding market opportunities and selecting the most efficient marketing approaches.

Workforce Development

The WNA program required all WNA contractors to be enrolled in the PG&E Whole-House Performance Program, which provides training and certification standards for residential home performance service delivery; complete all WNA-specific contractor trainings or orientations; and agree to participate in WNA quality assurance monitoring.

Potential contractors were identified by talking with community leaders, champions, and neighborhood organizations. These potential contractors received an RFP developed for delivery of pre-designed upgrade measures packages based on pilot neighborhood housing characteristics. The installation contractor, Beanstalk, was selected through an RFP process.

The program team worked with Beanstalk to develop subdivision-specific training programs and to provide technical training and support with the Davis Energy Group to enable the sales team to properly present the packages and options designed for each house model. Customer support included training on the marketing strategy, marketing collateral and education/ outreach tools, and training for saturation marketing and homeowner recruitment. Financing package preparation included education and strategies for financial packages that apply rebates, incentives, and tax credits appropriate to the retrofit packages.

Financing and Incentives

As in many other retrofit programs, the available options to support residential energy retrofits were limited. The Sonoma WNA pilot managers worked with the contractor and a variety of groups to offer multiple financing options.

The Sonoma County Energy Independence Program (SCEIP) was established in March 2010 to help Sonoma County homeowners fund energy improvements for their homes. At the outset, the SCEIP program budgeted \$100 million for financing activities. To date, 1,667 residential and 55 commercial projects have been funded with a total value of over \$57 million. The program also administers energy analysis rebates, of which it has provided 625. SCEIP is one of the few active Property Assessed Clean Energy (PACE) programs in the country. The minimum financing amount for borrowers is \$2,500, which is repaid through a special assessment on property tax bills. Financing between \$2,500 and \$5,000 at 7% is set for repayment over 10 years, while projects over \$5,000 can be set for repayment over 10 or 20 years. Larger projects require special permission and analysis.

Finally, contact was made with Kevin Nunn, with Comstock Mortgage, a EUC Finance Advisor, regarding a concerted effort in Sonoma County for the U.S. Federal Housing Administration's Energy Efficient Mortgages program. FHA's Energy Efficient Mortgage program (EEM) helps homebuyers or homeowners save money on utility bills by enabling them to finance the cost of adding energy efficiency features to new or existing housing as part of their FHA insured home purchase or refinancing mortgage. Potential implementation of this strategy was to be further explored in June 2012.

Data and Evaluation

The WNA pilot program coordinated with the EM&V provider, the Cadmus Group, to properly evaluate, monitor, and verify program results, including: energy usage and greenhouse gas emissions reductions, renewable energy generation, jobs created, number and financed amounts of projects, number of contractors/workers trained, number of buildings and residences retrofitted, and utility bill savings by participants. Project-specific data were to include pre- and post-retrofit home performance test results and billing data. Data tracking points are shown in Table 5.

Table 5. WNA Data Tracking Points

Monitoring and Verification Data	Operations Data
Number of retrofits completed	Contractor contact and program information
Number of property owner reporting satisfaction with retrofit and pilot experience	Lead generation details (who found lead, what marketing process was used, etc.)
Amount of energy saved on average/retrofit as verified by quality assurance process	Property owner information (e.g., name, phone number, address, etc.)
Number of contractors reporting satisfaction with pilot process via survey of business metrics	Project house data (e.g., house size, historical utility bill info, house age, etc.)
Number of jobs created	Contact dates and notes on conversation(s)
Number of construction professionals (i.e., incumbent, under/unemployed construction) trained and employed in pilot	Energy audit (e.g., date schedule, provider, status, results)
Number of entry-level trainees employed in work-train positions in pilot	Retrofit project confirmation (e.g., contract signed)
Amount of energy saved by a WNA pilot (average across retrofit projects within pilot)	Retrofit project schedule

Monitoring and Verification Data	Operations Data
Number of projects using IOU and Home Star incentive programs	Retrofit project scope of work
Amount of money saved on-average-per-retrofit within pilot using bulk purchase and group retrofit options	Retrofit project list of items to be installed
Number of different bulk purchase options developed to address opportunities for cost savings	Financing data (e.g., what financing resource, timeline for obtaining funds, etc.)
Statewide/ARRA Tracking Requirements (e.g., energy saved; greenhouse gas emissions reduced; jobs created)	

SONOMA FLEX PACKAGE

The Sonoma Flex Package Pilot was proposed to test an alternative to the existing Energy Upgrade Basic Path Rebate Program. The Basic Path had been proposed as part of Energy Upgrade to provide contractors and homeowners with an “on-ramp” to whole house performance upgrades. However, there was limited participation in the Basic Path as implemented by PG&E, and a more flexible alternative arose to serve this same market (contractors entering the whole house performance market and homeowners looking to make moderate cost [in the \$5,000 dollar range] energy efficiency improvements to their home). The potential for a flexible model was underscored by the success for the Los Angeles County Flex Path program, which saw over 1,500 completed applications from January 2012 through October, 2012. The Sonoma County RCPA proposed to expand upon the Flex Model with its Flex Package Pilot, which built upon the LA Model by establishing energy modeling thresholds for the Sonoma climate zone, and program protocols designed to best serve Sonoma’s existing Energy Upgrade contractors. Sonoma Flex Package was launched on October 9, 2012. The pilot design process in Sonoma County was also informative in the statewide Regional Energy Network Flex Package Incentive coordination process.

Institutional Design and Business Model

The Sonoma Flex Package pilot sought to establish a practical on-ramp program for homeowners with modest budgets into the Energy Upgrade California whole house program, and provide an effective alternative to the prescriptive Basic Package. It incorporated key elements of the County of Los Angeles Flex Path program and feedback from Energy Upgrade Advanced Package contractors to strengthen the comfort and energy savings benefits that could be delivered by a streamlined, pre-modeled approach.

Program Design and Customer Experience

The Sonoma Flex Package program offered incentives from \$1,500 to \$2,500 to Sonoma County homeowners who installed two or more qualifying measures with a combined point value of 150 or greater. To qualify for the incentive, homeowners had to work with a PG&E Energy Upgrade California Advanced Package Contractor who (1) helped select measures that met the homeowners’ needs from a list of pre-qualified measures, (2) ensured effective installation, and (3) assisted with the online incentive application process.

As the SFP team commenced planning for the launch of the Flex Package pilot it received significant feedback from Sonoma County Energy Upgrade Participating Contractors. These

contractors expressed a desire to offer input into the program design to strengthen the comfort and energy savings benefits that could be delivered by a streamlined, pre-modeled approach. Recognizing how important it was that Sonoma County contractors be supportive and engaged in the Flex Package Pilot (particularly as the Flex Model was primarily contractor marketed), the SFP team initiated a Contractor Advisory Group and held three workshops at which key elements from the County of Alameda Flex Package program (launched in July 2012 and based on the LA program) were reviewed. Through these workshops, the SFP team worked closely with Sonoma County Energy Upgrade Participating Contractors to develop program design changes, a reworking of the point system and incentive levels, and technical modifications to measures and their pre- and post-project specifications to increase potential applicability based upon existing Sonoma housing characteristics. The collaboration also extended to marketing, education, and outreach strategies, which were developed through a Contractor Advisory Group subcommittee.

Homeowner Eligibility

The homeowner had to meet the following eligibility requirements to participate in the SFP:

- The home must be a single family detached residence;
- The home must be located in Sonoma County;
- The participant must be the property owner for the property;
- The participant must be the PG&E Account Holder for the property;
- The participant must use an Energy Upgrade California Advanced Package Contractor;
- The participant must provide access to utility billing information for program evaluation purposes;
- The upgrade cannot have started before October 9, 2012.

There were inquiries regarding rental properties and whether they could qualify for the program. The incentive could be extended to rental properties in future program offerings.

Qualifying Measures

The Flex Package model was designed to award incentive dollars based upon a point system. Energy upgrade measures eligible for the program were assigned points based upon software-modeled energy savings and whole house building science principles. For

the Sonoma Flex Package Pilot, RCPA developed the points, energy savings, and incentive dollars proportional to the following scale:

- 10 Flex Package Points; 1% average energy savings; \$100 incentive¹²

The Contractor Advisory Group voted to have more than one incentive level to allow for deeper energy savings and more extensive project scopes. This model worked well in Sonoma County because the majority of the projects submitted to the program had four or more measures and achieved on average deeper energy savings. The Group also identified additional options for flexibility in key measures that would allow them to cover more project conditions. The final Qualifying Measures list (see Table 6) was available on the Web in a downloadable consumer-friendly PDF format that contractors could distribute to potential clients.

¹² Points are based upon average energy savings. These energy savings are based upon the reduction in household energy consumption resulting from typical energy upgrades for a typical Santa Rosa single family detached home as modeled using EnergyPro, the energy modeling software required by the California Energy Commission for Energy Upgrade California project submissions.

Table 6. Sonoma Flex Package Qualifying Measures

INSULATION AND AIR SEALING				
FLEX PACKAGE MEASURE	PRE-UPGRADE CONDITION	POST-UPGRADE CONDITION	SUBMISSION REQUIREMENTS	POINTS
Attic Insulation	$\leq R-11$	$\geq R-38$	Air Sealing is required if no insulation is present or insulation is removed.	55
	$> R-11 \leq R-19$	$\geq R-50$	Submit spec sheet, before and after photos	
Whole House Air Sealing		0.15+ ACHn improvement	Mechanical ventilation is required for leakage ≤ 0.245 ACHn. Submit blower door test-in and test-out results, combustion safety test results	40
		0.10-0.149 ACHn improvement		25
		0.05-0.099 ACHn improvement		10
Attic Radiant Barrier	No radiant barrier	Continuous rolled or pre-laminated	Requires Whole House Air Sealing, unless blower door test-in results demonstrate $ACHn \leq 0.35$. Submit Spec. sheet, before and after photos	50
Wall Insulation	No insulation	$\geq R-13$	Requires Whole House Air Sealing, unless blower door test-in results demonstrate $ACHn \leq 0.35$. Submit spec sheet	110
Under floor Insulation	No insulation	$\geq R-19$	Requires Whole House Air Sealing, unless blower door test-in results demonstrate $ACHn \leq 0.35$. Submit spec sheet, before and after photos	45
HEATING, VENTILATION, AND AIR CONDITIONING				
FLEX PACKAGE MEASURE	PRE-UPGRADE CONDITION	POST-UPGRADE CONDITION	SUBMISSION REQUIREMENTS	POINTS
Replace existing furnace with new ENERGY STAR® furnace	Gas-fired; AFUE ≤ 0.80	ENERGY STAR® Gas-fired; AFUE ≥ 0.95	Permit required; HERS compliance test results required if Duct Sealing is not performed. Submit name plate, spec sheet, before and after photos	80

Replace existing central A/C with new central A/C	≤ 10 SEER	≥ 15 SEER 11 EER	Permit required; HERS compliance test results required if Duct Sealing is not performed. Submit name plate, spec sheet, before and after photos	50
Replace existing heat pump with new heat pump	≤ 5.6 HSPF, 8 SEER 6 EER	≥ 8 HSPF, 15 SEER 11 EER	Permit required; HERS compliance test results required if Duct Sealing is not performed. Submit name plate, spec sheet, before and after photos	125
ENERGY STAR® Whole House Fan	No whole house fan	ENERGY STAR® whole house fan	Submit spec sheet, before and after photos	10
Programmable thermostat	Manual Thermostat	Energy Efficient programmable thermostat(s)	Must operate the whole house. Submit spec sheet, before and after photos	10
Duct Insulation	$\leq R-4$	$\geq R-8$	Ducts must be sealed prior to being insulated. All accessible duct work must be insulated. Submit Duct Blaster® test-in and test-out results, spec sheet, before and after photos	40
Duct Sealing — 12% reduction	N/A	Reduce leakage by 12%	Submit Duct Blaster® test-in and test-out results, spec sheet, before and after photos	60
Duct Sealing — 20% reduction	N/A	Reduce leakage by 20%	Submit Duct Blaster® test-in and test-out results , spec sheet, before and after photos	90
Duct Replacement — 12% reduction	$\leq R-4$	Reduce leakage by 12% and $\geq R-8$	Submit Duct Blaster® test-in and test-out results, spec sheet, before and after photos	90
Duct Replacement — 20% reduction	$\leq R-4$	Reduce leakage by 20% and $\geq R-8$	Submit Duct Blaster® test-in and test-out results, spec sheet, before and after photos	110
Duct Replacement — 28% reduction	$\leq R-4$	Reduce leakage by 28% and $\geq R-8$	Submit Duct Blaster® test-in and test-out results, spec sheet, before and after photos	135
RIGHT-SIZING INCENTIVES FOR FURNACE, A/C, AND HEAT PUMP UPGRADES				
Infiltration Test	Perform Infiltration Test on any mechanical change out to inform system sizing			10
Right Size new furnace	Right Size unit to current home conditions; BTU output of installed unit must be less than existing unit. Submit existing model name plate, spec sheet, before and after photos, Manual J calcs if applicable			10
Right Size new A/C	Right Size unit to current home conditions; tonnage of installed unit must be less than existing unit. Submit existing model name plate, spec sheet, before and after photos, Manual J calcs if applicable			10 per ½ ton; max 40

				points
Right Size new heat pump	Right Size unit to current home conditions; tonnage of installed unit must be less than existing unit. Submit existing model name plate, spec sheet, before and after photos, Manual J calcs if applicable			10 per ½ ton; max 40 points
WINDOWS				
FLEX PACKAGE MEASURE	PRE-UPGRADE CONDITION	POST-UPGRADE CONDITION	SUBMISSION REQUIREMENTS	POINTS
Replace 80% of windows with ENERGY STAR® windows	Single or double clear pane	ENERGY STAR®; U-Factor ≤ 0.40; SHGC ≤ 0.30	Requires Whole House Air Sealing, unless blower door test-in results demonstrate ACHn ≤ 0.35. Permit required if window opening size changes. Submit spec sheet, before and after photos	100
WATER				
FLEX PACKAGE MEASURE	PRE-UPGRADE CONDITION	POST-UPGRADE CONDITION	SUBMISSION REQUIREMENTS	POINTS
Domestic hot water heater replacement (gas to gas)	Gas-fired; EF ≤ 0.575	Gas-fired; EF ≥ 0.67	Submit name plate, spec sheet, before and after photos	35
Domestic hot water heater replacement (gas to tankless)	Gas-fired; EF ≤ 0.575	ENERGY STAR® gas-fired; EF ≥ 0.88	Submit name plate, spec sheet, before and after photos	70
Pipe wrap for domestic hot water heating	Un-wrapped	Up to five-feet wrapped of accessible piping from unit	Submit before and after photos	10
Low flow showerhead with thermostatic shut-off valve and faucet aerators	No thermostatic flow controls	Showerhead ≤1.5 gpm Bathroom faucet ≤ 1.5 gpm Kitchen faucet ≤2.2 gpm	Install on all showers and aerators on all faucets. Submit spec sheet(s), before and after photos (one per fixture type)	10

LIGHTING				
FLEX PACKAGE MEASURE	PRE-UPGRADE CONDITION	POST-UPGRADE CONDITION	SUBMISSION REQUIREMENTS	POINTS
ENERGY STAR® Lighting Fixtures	1 incandescent fixture	1 ENERGY STAR® CFL or LED fixture permanently installed	Must be in primary living spaces (i.e., no bathrooms, closets, attics, or bedrooms). Submit spec sheet(s), before and after photos (all fixtures)	2; max of 30 points
COOL ROOF				
FLEX PACKAGE MEASURE	PRE-UPGRADE CONDITION	POST-UPGRADE CONDITION	SUBMISSION REQUIREMENTS	POINTS
Cool roof (R-11 to R-38)	≤ R-11	≥ R-38 Low slope (≤ 2:12): SRI ≥ 70; TEF ≥ 0.85; Steep slope (> 2:12): SRI ≥ 40; TEF ≥ 0.85	Requires Whole House air sealing, unless blower door test-in results demonstrate ACH _n ≤ 0.35. All of the requirements must be met for ≥ 75% of the roof over conditioned space. Submit spec sheet, before and after photos	70

Application Process

Sonoma Flex Package used an online application process similar to the Los Angeles and Alameda County Flex Package programs through the Energy Upgrade California state website. Homeowners were able to download program information and apply online for a set of measures or project scope with contractor assistance. Contractors were able to submit the Flex Package completion form to verify the project for incentive issuance and access support documents from the Contractor Document Library. Contractors appreciated the simplified application process and the ability to access program documents at any time. Additionally, the SFP team was flexible in how they accepted supporting documents when some contractors met with difficulties uploading documents to the website. Contractors greatly appreciated this flexibility because it allowed them to spend more time in the field selling jobs and less time learning administrative processes.

Driving Demand

The SFP marketing team focused a small marketing budget on SFP participating contractors and established a marketing subcommittee consisting of program contractors and the Program Marketing Manager, Kathy Goodacre. This group coordinated with, and

leveraged resources from, a SCEIP-sponsored Energy Upgrade marketing program, which ran from October to December 2012. During this period, SFP contractors (along with collateral) were integrated into the SCEIP outreach activities, including tabling at the two main shopping centers in Santa Rosa during the holiday season.

Contractor-developed messaging promoted SFP as part of the Energy Upgrade brand and maintained a consumer-focused message around promoting comfort and health. Contractors volunteering in the marketing subcommittee worked with the Marketing Manager to review the marketing, education, and outreach (MEO) recommendations in order to refine marketing strategies, finalize the MEO plan, identify messaging, and provide ongoing review and analysis of marketing collateral, budget, and results.

The subcommittee met separately from the three Contractor Advisory Group meetings and provided input on MEO strategies. Their suggestions helped design the SFP MEO plan which consisted of: (1) printed SFP brochures and flyers available to participating contractors, (2) option to apply for co-op marketing funds by submitting a proposal for a matching fund budget and marketing plan, and (3) a direct mail campaign conducted in early 2013 featuring contractors who had submitted projects before January 4, 2013, targeting homes built between 1970 and 1990. Contractors who participated in the co-op were given the opportunity to create their own messaging, emphasize their company brand, and select their target neighborhoods for a direct mail campaign. An additional \$1,500 was leveraged in the marketing budget as a result of three contractors participating in the matching funds co-op. Contractors, who had submitted SFP applications by January 6, 2013, were offered the opportunity to be featured and branded in their own direct mail piece to select neighborhoods. Five contractors were eligible for this incentive, which included two mail drops per neighborhood. Based on a request through a contractor survey and input from the SFP marketing subcommittee, SFP provided all participating contractors with co-brandable collateral pieces (i.e., brochure, postcards, and flyer). These resources were available in a PDF downloadable format for contractors to use in their company outreach and client communications processes.

The SFP used the Energy Upgrade California statewide website to host the incentive application and connect web visitors interested in SFP with local Energy Upgrade contractors qualified to provide services. The pilot used the same website to provide online education about home performance using respected energy resource data (e.g., U.S. Department of Energy) to illustrate the value of energy efficiency measures. The pilot also developed PDF and hard-copy collateral that provided “scenarios with costs”, showing how a single-measure problem (e.g., replacement of furnace or windows) can offer additional benefits using a whole house solution.

The program team booked speaking engagements with local community groups to feature participating contractors in a “Meet the Expert” format used in a prior consumer education campaign. The team scheduled four community presentations in the months of February and March, 2013.

Contractors appreciated the opportunity to help steer the marketing efforts, proving an important influence for a program that was mostly contractor marketed. With SFP available as a short-term program through BBP funds, marketing activities had a limited amount of time and budget to activate the market within the BBP grant period. However, program results and messaging will be available to the RCPA and the Association of Bay Area Governments (ABAG) region to inform marketing efforts under the Bay Area Regional Energy Network (BayREN) Flex Package continuation.

Workforce Development

The SFP pilot did not contain a specific workforce development element. The SFP program established contractor requirements that leveraged the baseline set of contractor requirements for the California Public Utilities Commission’s statewide whole house incentive programs and targeted PG&E approved Advanced Path contractors based in Sonoma County. For example, SFP contractors were required to:

- Be a California State Licensing Board (CSLB) licensed contractor with a license appropriate to the scope of work to be performed; and
- Be enrolled as an Advanced Package Contractor in the Energy Upgrade California in Sonoma County program so they may offer SFP customers’ additional energy upgrade services and incentives through the Energy Upgrade program.

Sonoma was the only Flex pilot that required participating contractors to be in an IOU Advanced Package program. This requirement eliminated an entire group of potential contractors, namely HVAC, from participating and selling Flex Package jobs in Sonoma County. The program could reach a larger market if it were open to Basic and Advanced Package PG&E participating contractors who have received adequate Flex Package training.

Quality Assurance

The Flex Package model was designed to streamline contractor and homeowner participation requirements while upholding the highest possible standard of project quality. In addition to requiring that Sonoma Flex Package eligible contractors be qualified for the PG&E Energy Upgrade California Advanced Package, the SFP team established the Quality Assurance and Quality Control protocols including:

- Diagnostic tests were to be performed by a Building Performance Institute Building Analyst (BPI-BA) for all projects that involved Air Sealing;
- All projects had to have a Combustion Appliance Safety (CAS) and a Combustion Appliance Zone (CAZ) test-out performed by a BPI-BA;
- All projects had to provide a Combustion Appliance Safety Test Acknowledgement Form; and
- All Flex Package projects had to include installation of a carbon monoxide (CO) monitor.

These requirements drove up the average price of projects. To help offset the diagnostic testing cost, the program also included “kicker” measures such as four “right-sizing” incentives to reduce the size of furnaces, air conditioning units, and heat pumps, as well as an air infiltration measure to support the measurement of air leaking from the building envelope.

Proper measure installation and diagnostic test and CAS/CAZ test-outs were verified via program field inspections in accordance with recommended Home Performance with Energy Star-tiered sampling rates (see Table 7). The SFP team coordinated with PG&E and participating contractors to provide documentation of contractor standing within the PG&E Whole House Program Field Quality Assurance Tiers. Contractors who could demonstrate advance standing in one of these tiers within the PG&E Energy Upgrade California program were able to enter the Sonoma Flex Package pilot at that same tier.

Table 7. Home Performance with Energy Star Sampling Rate Tiers

Tier	Sampling Rate (minimum and at program discretion)
Tier 1	3 of the first 5 submitted jobs
Tier 2	4 of the next 20 submitted jobs
Tier 3	5 percent of all additional submitted jobs

Financing and Incentives

The SFP was an incentive program. The Flex Package model was designed to award incentive dollars based upon a point system. Energy upgrade measures eligible for the program were assigned points based upon software-modeled energy savings and whole house building science principles. For the pilot, RCPA developed the following points, energy savings, and incentive dollars proportional to the following scale:

- 10 Flex Package Points; 1% average energy savings; \$100 incentive¹³
 - Minimum points that must be achieved – 150 points for a \$1,500 incentive
 - Maximum points that can be achieved – 250 points for a \$2,500 incentive
- Sonoma Flex Package projects were eligible for incentives that met the point thresholds shown in Table 8).

Table 8. Sonoma Flex Package Incentive Levels

Points	Incentive Value	Points	Incentive Value
150	\$1,500	210	\$2,100
160	\$1,600	220	\$2,200
170	\$1,700	230	\$2,300
180	\$1,800	240	\$2,400
190	\$1,900	250	\$2,500
200	\$2,000	250+	\$2,500

The SFP rebate budget was \$90,000, sufficient to fund between 36 and 60 rebates.

Data and Evaluation

As part of *Retrofit California*, the SFP pilot’s lead agency collected detailed project-specific data to support DOE and the CPUC’s EM&V efforts, including energy usage and greenhouse gas emissions reductions, renewable energy generation, jobs created, number and amount of projects financed, number of contractors/workers trained, number of buildings and residences retrofitted, and utility bill savings by participants. Project-specific data also included access to pre- and post-SFP customer billing data.

¹³ Points are based upon average energy savings. These energy savings are based upon the reduction in household energy consumption resulting from typical energy upgrades for a typical Santa Rosa single family detached home as modeled using EnergyPro, the energy modeling software required by the California Energy Commission for Energy Upgrade California project submissions.

Method of Administering/Tracking

SFP used project incentive completion forms, homeowner surveys, and tools provided by the BBP EM&V team to track project performance and energy savings based on the points system described above.

The SFP program monitored the data points shown in Table 9 to track and verify program performance.

Table 9. SFP Data Tracking Points

Monitoring and Verification Data	Operations Data
Number of SFP projects completed	Contractor contact and program information
Number of property owners reporting satisfaction with retrofit and pilot experience	Lead generation details (who found lead, what marketing process was used, etc.)
Amount of energy saved on average/SFP project as verified by quality assurance process	Property owner information (e.g., name, phone number, address, etc.)
Number of SFP contractors reporting satisfaction with pilot process via survey of business metrics	Project house data (e.g., historical electrical and natural gas utility bill info, etc.)
Amount of energy saved by a SFP pilot (average across retrofit projects within pilot)	SFP project schedule
Measures installed per project	

ACCOMPLISHMENTS

The RCPA worked to ensure that its pilots effectively pioneered new and innovative program models that would rapidly accelerate building energy retrofits and achieve deep market penetration in focused geographic areas. While the OWB pilot implementation process was intensive and took longer than originally expected, the RCPA believes the pilot is finally beginning to demonstrate the potential of the On-Bill model, as discussed below and in the Section 7: Program Sustainability Plans. Because the WNA pilot did not demonstrate sufficient potential for ramp-up, the RCPA shifted remaining funding in May 2012 to launch the SFP pilot in October 2012; the RCPA similarly believes this pilot demonstrated the potential of an alternative Whole House Retrofit incentive as discussed below and in Section 7: Program Sustainability Plans.

On-Water Bill Financing

The RCPA OWB Pilot successfully demonstrated the potential of an On-Bill Financing model as implemented by a local water utility. The program design and vetting process has established an initial “tool kit” that now serves Windsor homeowners and renters with measure packages that provide water, waste water, and energy savings. Furthermore, the RCPA has been successful in developing the opportunity to test and build upon this model under the San Francisco Bay Area Regional Energy Network, which will serve to expand the pilot’s tool kit and facilitate easier replication by other California utilities in the future.

The RCPA believes the OWB pilot accomplished the outcomes set forth in the BBP Statement of Project Objectives as follows:

BBP Retrofit California SOPO Subtask 1.1: Replicable OWB financing program model that can be implemented in multiple jurisdictions to maximize energy and water savings.

Target: Provide financing tool that:

- Serves renters as well as property owners
 - Actual: Owner occupied and rental properties can participate in Windsor Efficiency PAYS®. Windsor Efficiency PAYS® adopted a goal to serve 1,800 single family properties and 200 rental units in the program’s first year. With field services launched in October, 2012, by March 30, 2013 (i.e., five months of operation), the pilot had served 92 single family properties and 227 rental units.
 - Single family participation has accelerated in recent months. Project installation rates averaged 10 projects/month in months 1-3 of field services. That has increased to 35-40 projects/month as a second Lead Contractor was added to the program, customer word of mouth about the program has spread, and

contractors have better implemented marketing techniques enumerated in the Program Design.

- With the Town Council’s April 17, 2013 authorization to run the Windsor pilot through June 2014, the original participation goals for the pilot may be attained in the pilot’s second year. It should be noted that even if Windsor only achieves half of its target, this program will have served more than 10% of a utility’s customers in a short period of time.
- Actual: To market the program “offer”, several efforts were employed to generate leads from consumers who specifically asked for a follow-up call or appointment with the contractor.
 - Most noteworthy was the Robo-Call campaign that targeted 4,600 high-use utility customers explaining the program and how they could benefit, and asking them to indicate their interest in talking with the certified contractor. 290 customer leads were generated from this effort. Likewise, a direct mail program (9,000 Windsor residents) followed up by an earned media article generated 71 calls to the Certification Agent and 43 leads referred to the contractor. Overall, 616 leads were generated through the marketing program and referred to the lead contractor(s).
 - Additional outreach by the lead contractor included door-to-door canvassing of approximately 2,000 homes, which generated more than 150 leads.
- Addresses the energy impacts of water use (i.e., water delivery, treatment, hot water use)
 - Actual: As discussed above, OWB measures provide customers with resource savings related to energy, water, and waste water. In addition to these customer end-use savings, the OWB team worked with the Town of Windsor to capture estimated energy savings embedded in water delivery, as well as reductions in peak water demand offset during summer months. The program impacts on customer and Town of Windsor water use As of March 30, 2013 are shown in Table 10.

Table 10. OWB Program Impacts

Annual Savings	Total: All participants	Average: Single Family	Average: Multifamily Rental
Energy Savings (kWh-site only)	25,678	53	104.19
Energy Savings (kWh- embedded Windsor Utility savings)	18,947	105	65.86

Energy Savings (kWh-site and embedded)	44,624	158	170.06
Energy Savings (therm-site)	14,183	49	54.34
Water Savings (gallons-indoor only)	2,723,851	12,067	9,979.33
Water Savings (gallons-irrigation only)	121,153	30,288	-
Water Savings (gallons indoor+ irrigation)	2,845,004	15,255	9,979.33

- Covers upgrade not eligible for PACE Financing
 - Actual: PACE Financing in Sonoma County is offered by the Sonoma County Energy Independence Program (SCEIP), the Certification Agent for Windsor Efficiency PAYS®. SCEIP PACE Financing does not cover projects smaller than \$2,500 or portable measures. SCEIP PACE Financing does not cover the following specific measures offered by the Windsor pilot:
 - High-efficiency clothes washers
 - Compact fluorescent lights
 - Drought resistant landscaping
 - High-efficiency refrigerators
 - While SCEIP PACE Financing can be used to install water and energy saving measures such as high-efficiency showerheads and aerators, because of the focus on whole house building major measures, it has not been nearly as effective as Windsor Efficiency PAYS® in getting these low-cost/high-savings measures installed.
- Provides OWB customers immediate positive-cash-flow
 - Actual: As discussed above, OWB measure qualification for the Windsor Efficiency PAYS® pilot required that total resource savings (i.e., energy, water, and waste water savings) estimated to be delivered by program measures equals at least \$10.00 for every \$7.50 of tariff that would be added to customer bills. With Windsor customers billed once every two months for water and waste water, Table 11 shows the participants tariffs and savings, as of March 30, 2013.

Table 11. OWB Participant Tariffs and Savings

Annual Savings	Total: All participants	Average: Single Family	Average: Multifamily Rental
Bimonthly Tariff	\$3,097.00	\$19.72	\$10.34
Bimonthly Estimated Savings	\$10,816.21	\$46.88	\$39.80

Net Bimonthly Savings	\$7,719.21	\$27.16	\$29.46

- Program estimates of customer savings were designed to be conservative (see above discussion of OWB Program Measures and OWB Financing). Program participation does not have a sufficient track record as of this report to offer a statistically valid assessment of participant bill savings, however, the Town of Windsor will be able to report upon the majority of savings as the record accrues. Early customer testimonials as offered to the program on bill savings include:
 - “I knew I would probably save a little when I signed up for the program, but I am amazed by how much. Our first bill (bi-monthly) was reduced by \$76.00 after installing just the basic measures for our two-person home”
 - “It’s (PAYS) a wonderful program! My family saved \$86 on our first bill.”
- Provides water utilizers with 100% operating-cost recovery
 - Actual: As of March 30, 2013, total Windsor Efficiency PAYS® participant costs for products installed and services received totaled \$128,594. All of these costs will be repaid by participants through their bill tariffs.

Whole Neighborhood Approach

Due to the fact that no successful upgrades were completed as part of the RCPA WNA Pilot after 11 months of field activities, the RCPA did not feel the pilot was successful in demonstrating capacity to drive down upgrade delivery costs. This may be due to the fact that the home retrofit market in Sonoma in 2012 was not positioned (due to evolving contractor business models and lack of sufficient financing resources) to capitalize on a neighborhood scale approach.

Despite this challenge, the RCPA pilot offered significant lessons learned as it sought to accomplish the following as set forth in the BBP Statement of Project Objectives:

BBP Retrofit California SOPO Subtask 3.1: Model neighborhood scale retrofit process that can be applied and adapted to a variety of communities.

Target: Drive down retrofit delivery costs through neighborhood scale approach and achieve high concentration of retrofits in focused neighborhoods by:

- Utilizing neighborhood targeting metrics, policies, procedures, and application processes
 - Actual: By utilizing GIS and energy usage data, the WNA team targeted demographics to identify buildings of similar design, age, and construction that have

high energy bills and are occupied by the target audience. This information was used to determine the target neighborhoods for the program, Rohnert Park and Santa Rosa.

- Developing a bulk purchasing program
 - Actual: The bulk purchasing program developed as part of the pilot allowed participating contractors to purchase materials and equipment needed for the energy upgrades at reduced pricing due to volume purchasing. Participation in the bulk purchasing program allowed participating contractors the opportunity to realize significant savings in time and costs through centralized management of material deliveries. Purchasing was coordinated with manufacturers, distributors, and retailers at a product-specific level, with associated cost savings being passed to the contractors and eventually the consumers. While the lack of Sonoma WNA projects prior to the closing of the pilot did not offer evidence of success, the WNA bulk purchasing program was co-funded by the Los Angeles County WNA program and the California Energy Commission (CEC). It has been quite successful in Los Angeles County's EUC program, where all participating contractors can access the WNA-developed bulk purchasing program. While quantifiable metrics of cost savings are not available at this time, contractors have anecdotally cited both lower costs as well as time savings as benefits to participating in the bulk purchasing program.
- Employing a targeted marketing approach to generate demand
 - Actual: A targeted marketing strategy was developed for the targeted neighborhoods, Rohnert Park and Santa Rosa. Initial outreach activities, meetings, and events were conducted early in the pilot in order to identify potential customers and early adopters, with special home energy analysis rates given to early adopters. When launched in August 2011, the program distributed its first direct mailing, ran newspaper articles, and commenced on-the-ground canvassing activities. These marketing activities generated leads are shown in Table 12.

Table 12. WMA Cumulative Leads, HEAs and HEUs

Neighborhood	Leads	Home Energy Assessments	Home Energy Upgrades
Copperfield	9	1	0
Rohnert Park D	22	8	0
Coffey Park/Piner	5	1	0

Sonoma Flex Package

The SFP Pilot was not part of the original statement of project objectives (SOPO); however, the program goals and associated deliverables based upon the Implementation plan are discussed below.

Target: Develop a program that offered homeowners with limited budgets a home improvement pathway to Energy Upgrade California participation that:

- Offered a menu of qualifying measures with pre-energy modeled savings
 - Actual: The SFP team developed a local customization of a measure menu-based, pre-energy modeled program that allowed contractors to package multiple measures using an energy-value points system to qualify low- and modest-cost projects for incentives under the Energy Upgrade California program. This eliminated the need for energy modeling and streamlined the application process. Additionally, homeowners had the flexibility to choose the measures that best fit their needs as opposed to having to install a set list of measures as in the Basic Path program.
- Delivered a 15% minimum energy savings
 - Actual: The SFP pilot achieved on average 22% energy savings. This was calculated using the pre-energy modeled savings associated with the qualifying measure list for each project. Program impacts as of April 30, 2013 are shown in Table 13.

Table 13. SFP Program Impacts

Completed Projects	Total Rebates Paid	Avg. Energy Savings	Avg. Savings kWh	Avg. Savings therm
11	\$24,000	22.5%	12.8%	26.0%

- Offered Contractors a streamlined job development and sales process
 - Actual: The SPF team established a Contractor Advisory Group (Group) that integrated initial and ongoing contractor feedback on program design and implementation to ensure prompt response to challenges and identification of solutions to support a healthy market place and build a base of satisfied customers. The Group worked to refine and confirm appropriate options to streamline customer sales experience, contractor project scope development, incentive application/fulfillment processes, and confirm measure installation and energy savings results.

- Developed a Marketing Approach and Co-op marketing
 - Actual: A Marketing subcommittee was formed to assist with the MEO plan. The committee designed and developed 5 custom contractor outreach activities to include 13,000 direct mail targets (6,500 homes receiving two mailings) combined with neighborhood advertising and door hangers. Mail drops occurred on February 1, 5, 19, and 22.
 - Marketing program leveraged an additional \$1,500 toward the marketing budget through the contractor co-op.
- Established a streamlined QA process
 - To provide quality assurance, the SFP team leveraged existing QA program with PG&E and participating contractors to provide documentation of contractor standing within the PG&E Whole House Program Field Quality Assurance Tiers. Contractors were able to enter into the SFP program at the same Tier as their standing within PGE.

CHALLENGES

The RCPA BBP Pilots faced various challenges over the course of their implementation. Some of these challenges were inherent in any pilot or similar start-up effort; many of these initiatives had never been tried before in California. Other challenges were universal to the overall building retrofit ramp-up effort in California, including the Great Recession resulting in a significant drop in consumer discretionary spending and the suspension of PACE as an option for retrofit financing. Beyond these commonalities, pilot-specific challenges are noted as follows.

On-Water Bill Financing

The OWB pilot faced a host of unique challenges. Many of these were rooted in getting program partners, implementers, and contractors to understand and embrace the checks and balances built into the Pay As You Save® system, which are required to deliver a simple “offer that works” to the customer. These challenges delayed the launch of Windsor Efficiency PAYS® and slowed initial program participation, especially amongst single family Windsor customers. However, despite these challenges the OWB pilot has successfully achieved its primary proposed outcomes.

Utility Partners

Windsor dedicated both financial resources and staff time to support the program design and implementation of Windsor Efficiency PAYS®. This included approximately \$68,000 in hard costs (offset by \$17,000 from the RCPA BBP grant) for billing system upgrades and utility paid marketing efforts, and approximately 30 hours per week of staff time over two and a half years. This level of commitment was offset by the water savings achieved by the program; Windsor Efficiency PAYS® will meet minimum water efficiency program cost-effectiveness thresholds within its first year of operation.

Nonetheless, this level of commitment may be viewed as a potential barrier to participation for other interested utilities. Experiences and efficiency metrics from the Windsor pilot may help to alleviate such concerns for utilities, but the need for utility commitment should be communicated early in the utility recruitment process, including:

- While an OWB pilot based upon PAYS® should produce more savings at a much lower cost, it involves additional work requiring new staff or eliminating some responsibilities for current staff.
- Partner utilities must be willing to assign one person with field experience to oversee program; if possible, eliminating rebate program responsibilities may offset additional new duties.

- This is not a set-it and forget-it program; program operators need to be prepared to be able to adjust to realities as they occur.

Additionally, considering the time necessary for Windsor to adjust its rate structure and billing system to accommodate the program design for its PAYS® pilot, a utility may be able to more quickly implement a PAYS® pilot if it already meets the following conditions (however, utilities that do not already meet these conditions should not be precluded from pursuing a PAYS® pilot):

- Provides volumetric billing throughout all tiers for both water and water reclamation (sewer); tiers with flat rates will not work;
- Uses single gallon billing for both water and waste-water; and,
- Allows for rate adjustments due to an individual participant's savings upon completion of installations (e.g., water reclamation rates could not be calculated on annual basis or adjusted once each year).

Program Measures

The OWB program design team worked to develop a menu of Windsor Efficiency PAYS® eligible measures that would have market appeal, provided customers with product choice, and delivered sufficient resource savings to meet the program's 75% cost-effectiveness threshold. Factors that should be considered in future measure evaluation and selection processes include:

- Measures that offer water, waste water, and energy savings offer the best opportunity to overcome residential transaction costs.
- Bundling high savings/low-cost measures (aerators and CFLs) with less cost-effective measures can help to overcome residential transaction costs.
- Packaging measures in groups (e.g., basic, basic plus, and copay) can:
 - Prevent customers from cherry picking (creating lost opportunities for less desirable measures such as toilets);
 - Simplify costs for customers and ensure sufficient revenues to pay Lead Contractors for bundled measures (e.g., CFLs, aerators, education); and,
 - Simplify utility billing.
- For utilities with mild or Mediterranean climates, many traditional whole house building measures will not qualify for the tariff because payment cannot be structured to offer significant and immediate net savings; however, customers may be willing to use a co-pay and a tariff to purchase "more appealing" measures such as solar hot water or PV.

Balance is needed between the program's requirement for stable pricing in order that the program offerings can be maintained versus fluctuating market prices (labor, equipment costs, etc.), which may vary widely amongst potential contractors and product manufacturers.

Program Implementers and Contractors

The OWB pilot required that all program implementers understand and embrace the various duties and responsibilities as assigned within the PAYS® system. For the checks and balances within the system to work, each party must carry out their assigned role, or the offer to the customer can be compromised, eroding the assurances that help drive high customer participation rates in PAYS® programs.

Implementer/Contractor Recruitment: RFPs were used to enable Windsor Efficiency PAYS® to obtain fixed-cost contractor prices for measure packages and supplier costs:

- RFPs and Contracts must emphasize customer service especially clarifying how long contractors can take before getting back to customers and consequences for their failure to do so
- RFPs and Contracts should require a dry run before “going live” in order that program implementers can test their internal systems for dealing with referrals, scheduling, interacting with customers, each other (e.g., ordering materials) and paperwork with the Certification Agent.
- Program operators should be urged to continue conversations and efforts to recruit potential program implementers to secure program back-ups, even after initial implementer selection.

Certification Agent: Through the RFP process, Windsor and the RCPA selected SCEIP to serve as the Certification Agent for Windsor Efficiency PAYS®:

- By working with SCEIP, Windsor, a small utility with a small staff, did not have to hire additional internal staff to handle Certification Agent functions.
- A utility might want to assume Certification Agent functions itself, as the PAYS® system embeds Certification Agent costs in the tariff; instead of paying a third party for oversight, a utility could use these funds to retain its own staff.
- An existing third party capable of serving irregular numbers of customers such as SCEIP eliminates any risk to the utility to pay for Certification Infrastructure.

Capital Provider: As discussed earlier, a utility implementing a PAYS® pilot may elect to self-fund as in the case of Windsor. However, if a third-party capital provider is to be used, this party needs to be engaged as early as possible in the program design process. While the success of the Windsor pilot should help to facilitate easier access to

third-party capital for other California PAYS® pilots, capital provider recruitment should anticipate:

- It is easier to obtain commitments for small amounts of capital (below \$1 to \$2 million) or large amounts of capital (at least \$20 to \$25) than other amounts.
- If necessary, there are organizations that will set up mini bonds in increments of \$5 million.
- A security fund such as the \$250,000 provided by the Sonoma County Water Agency facilitates the effort to seek capital.

Lead Contractors: Given the range of measures offered under Windsor Efficiency PAYS®, a single contractor was not able to install all measures a participant might elect to pursue (i.e., a contractor who installs toilets is rarely able to install drought resistant landscaping). Therefore, the pilot relied upon a Lead Contractor to initiate customer contact, qualify customers for the Basic package, and refer customers to other program contractors for Basic Plus and Co-Pay measures. While residential energy efficiency transactions leave slim margins for “extra costs” under PAYS® cost-effectiveness threshold, Contractor duties and responsibilities similar to those in Windsor necessitates program pricing that accounts for:

- Lead Contractor payment for referrals to other contractors that result in sales for these other vendors.
- Miscellaneous extra costs (e.g., storage site for materials, snake waste line when customer complains of reduced water causing problem, local cell phone number for telemarketing, etc.)

Program Tracking and Data Collection/CMS/Data Sheet

The OWB Pilot worked with the Town of Windsor and SCEIP (as the pilot’s Certification Agent) to develop the pilot’s “Data Sheet” (a detailed Microsoft Excel document) to establish and track project data for all pilot participants. This Data Sheet and all program forms were then integrated into SCEIP’s online Content Management System (CMS) so that program contractors could access and record customer information in the field. There were delays in the development and roll out of this Field Tool, however, it was available for the most of time services were offered to customers, and allowed for easier access to and submittal of project information. Final adjustments to this Data Sheet and CMS Field Tool are being made at the close of the BBP grant in order that these tools may best serve Windsor as it continues the pilot into 2014. However, future pilots should:

- Consolidate and simplify language in program forms and structure any customer record database to simplify the transaction for the Lead Contractor and potential participants.

- Ensure that all program contractor—and especially their accounting staff—understand how the Data Sheet doubles as the only invoicing process.
- Effectively work with program contractors to track customer leads from program entry to project completion. This will improve tracking of “program offer” acceptance rates and better inform adjustments in program services and marketing, as needed.

Marketing

The two-phase marketing approach pursued by the OWB Pilot (as outlined above) encountered several challenges including:

- Program launch delays that prevented initial marketing leads from being served immediately by program contractors. Phase 1 marketing efforts were proposed to start in the months before program launch, to build a “buzz” about the program. While program services were initially targeted to be in the field by March, 2012, delays involving Town of Windsor rate adoption and billing system updates and contractor training and onboarding resulted in field services not being offered until October. This delay meant initial marketing leads had “cooled” by the time the program was ready to serve them.
- Program marketing efforts need to involve better coordination and more clearly assumed responsibilities at the onset between program marketing and contractor marketing efforts such as:
 - Develop and implement marketing strategies, plan and create a timeline with specific approaches identified and scheduled by program and contractor(s);
 - Establish and commit to an adequate budget for marketing activities by the program, the contractor, or combination of both parties;
 - Hire paid canvassers to go door-to-door and inform occupants about the program; give them with the ability to book contractor appointments on site through Google calendar;
 - Utilize a local telemarketer to make calls from a local number; and,
 - For the purposes of caller id screening, purchase local cell phones or phones with utility program name for staff to make outreach calls.
- The refusal of initial Lead Contractor to aggressively market itself for its first three months of program participation, and the second contractor not being assertive when seeking referrals. This might be addressed by utilizing RFPs and contracts that:
 - Clearly specify the responsibilities of the Lead Contractor to conduct marketing and outreach including outlining recommended strategies, budget, and timeline;

- Outline the responsibility of Lead Contractor to qualify and sell other vendor's products, including the option for Lead Contractors to be paid for referrals that lead to sales by other vendors; and,
- Require each contractor to have one on-site field person to handle all aspects of customer service, including generating referrals and problem resolution.

Conclusions

The RCPA OWB Pilot has effectively demonstrated the potential of a tariffed On-Bill Financing Pilot with a California water utility. Despite delays in pilot launch and field operations of only six months in April 2013, the Windsor Town Council voted unanimously to extend program through June, 2014, attesting to the pilot's sustainability. This is the first tariffed on-Bill Financing effort in California by any utility.

As discussed in the following section on "Program Sustainability", the California Public Utilities Commission approved a second series of tariffed On-Bill Financing Pilots to be conducted in 2013-2014 under the Bay Area Regional Energy Network. This will provide the opportunity to address some of the challenges encountered by the RCPA OWB Pilot, and further expand the "tool kit" for On-Bill systems to further the replicability and scalability of this model to advance energy and water efficiency programs in California.

Whole Neighborhood Approach

The most challenging aspect of the WNA pilot was getting homeowners to participate in the program. In developing the WNA pilot concept, the WNA team made initial assessments of effective strategies concerning the ideal chronology of a pilot roll out, such as using a single contractor to perform both sales and marketing activities as well as installing the upgrades. Initial program efforts focused on identifying target neighborhoods of similar housing construction that would minimize costs associated with home energy analyses and purchase of materials, while leveraging community networks for marketing. After months of slow uptake, however, program efforts were realigned to expand the geographic scope of the program, while also engaging in enhanced marketing and sales strategies.

In areas where the initial assessments did not pan out, the WNA team instituted moderate program adjustments in the pilot, including: (1) adding professional sales staff; (2) instituting consistent outreach efforts rather than big pushes followed by periods of silence; (3) holding small events and gatherings for homeowners; and (4) simplifying program requirements for the contractors and the homeowners. Each of these will be discussed in further detail below.

Program Design and Scope

Based on experiences from the Sonoma WNA and other pilots, retrofit programs must identify and target geographic areas that provide a sufficient number of potential customers. The WNA pilot recognized that retrofit programs should concentrate on areas larger than single neighborhoods. At a community level, contractors and program administrators should work to understand the local marketplace, using input from energetic community members to identify best efforts for targeted marketing efforts.

Target areas need to contain a housing stock on the order of thousands of homes in order to sustain a viable business model. The initial target market of 800 homes was not sufficient to achieve a desired uptake in assessments or upgrades. Moreover, target communities should focus on more affluent neighborhoods because residents often have greater access to capital and are less likely to be behind in their mortgages. Low- and moderate-income areas are often dominated by renters or homeowners with limited or no home equity, which is a major financing instrument for retrofits. Evaluation of such economic indicators was complicated by the state of the economy and real estate market, and the evolving financing market suitable for retrofit programs at the time of the program. The limited geographic scope of the effort also limited marketing and media opportunities. Social networks through schools, community organizations, and even online platforms also crossed over neighborhood boundaries, underscoring the advisability of targeting entire communities. Finally, the whole neighborhood approach was difficult to communicate and resulted in some confusion amongst residents.

Analysis of neighborhoods to understand the existing housing stock is an important step in retrofit program design. Standard upgrade packages can be developed based on this analysis. This facilitates bulk purchasing and other program components. WNA also identified that the standard upgrade package actually applied to more house types than initially thought. This aligns with the need to expand the geographic scope of program areas because the sole focus on particular housing stock is less important than potential customer base.

Importance of Contractors

Contractors must have solid credentials and a strong reputation. Homeowners tend to work with local contracting firms that are known entities. It is important that contractors be embedded in the community and considered to be “truly local.” Retrofit programs with strong contractors who make a commitment to a community have been shown to reap benefits of increased retrofit uptake.

Originally, Pinnacle Homes located in Santa Rosa was the WNA-selected contractor, however, the company filed for bankruptcy three days before the contractor selection was made. Beanstalk, located in the City of Sonoma, a 40-minute drive from the targeted neighborhoods, was then selected. As the pilot progressed, Beanstalk became increasingly focused on the City of Sonoma instead of expanding into other parts of the county. Beanstalk noted that they were gaining traction in the City of Sonoma due to an excellent local reputation that generated many referrals. As capitalization and cash flow are issues in the contracting business, it was easier and less costly for Beanstalk to spend its time and resources in building this market rather than expanding to other parts of the county. This adversely impacted response time to some leads generated by the WNA program. In light of these factors, the WNA team engaged Beanstalk to develop strategies to best serve the Sonoma WNA neighborhoods. One of the primary outcomes of this was the hiring of a salesperson. Many contractors are excellent installers and building scientists, and programs can assist contractors by offering support and training in sales and marketing techniques.

Marketing and Sales

Marketing and sales are critical components of retrofit programs and sales professionals are essential to this process. Sales personnel can help identify better approaches that respond to market realities. They are incentivized to follow up and close sales, and are motivated to generate leads and referrals. For instance, in another similar retrofit pilot program in Los Angeles County, a contractor with a professional salesperson integrated into the daily business operations is outperforming the contractor without a professional sales person by a margin of 3:1. In the WNA pilot, the project team hired a professional salesperson three months before the program was canceled. The first energy upgrade contract was signed the day the program was canceled. The absence of this sales expertise with the Sonoma WNA neighborhoods likely contributed to lack of earlier program uptake. Professional salespeople can build rapport with homeowners that most contractors don't have time for, providing homeowners with a level of trust. Finally, contractors need to be educated regarding the importance of their role in consumer education, especially sales. Unrealistic expectations were set by contractors who anticipated that leads would be "contract ready" once referred to them, when in fact, most consumers required an educational meeting with a trained professional, which prolonged the time before a contract could be signed.

Discussions with Sonoma pilot personnel noted that marketing messages are most effective if focused on home performance rather than rebates. While money is a key driver of consumer decision, it is difficult to establish a baseline price for retrofit packages relative to the rebate and energy savings, as rebates are paid after utility review

and energy savings vary with occupant behavior. As such, many consumers undertake a retrofit for reasons of comfort, health, or energy savings rather than cost, and marketing efforts should capitalize on this to promote retrofits. Sonoma WNA pilot marketing efforts incorporated comfort and health messaging to capitalize on these lessons.

Relationship between Consumer Education and Marketing

Better Buildings Programs around the country have all reported the need for greater public awareness and consumer education campaigns before and during retrofit programs. While all the WNA team expected more leads from the marketing and outreach efforts in the Sonoma pilot, it was quickly understood that without a large-scale consumer education program for retrofits conducted at the national and statewide levels by the likes of the Department of Energy and California state agencies, most homeowners would not be aware of, much less take part, in the program. This has proven to be true across the country. The marketing budget allocated for this pilot program was insufficient to provide this level of consumer education on a county-wide scale.

Retrofit programs must provide consistent and constant market outreach messages as opposed to large, limited-term pushes. During the brief history of retrofit programs in the United States, few have emphasized broad homeowner education. More emphasis has been placed on immediate sales and installations of home energy upgrades. Homeowners must better understand why a retrofit, or maintenance in general, is advantageous for their home or family. Somehow the industry decided that return on investment (ROI) or payback periods are the selling point for homeowners. In fact, results indicate that homeowners are more receptive to messaging around enhanced comfort and indoor air quality, and as mentioned previously, WNA incorporated this messaging into its marketing efforts.

Through conversations with contractors, the WNA team learned that more consumer education is needed regarding the rebate structure. Many consumers expected free upgrade services and did not understand the difference between home energy assessments, upgrades, and payment schedules. In combination with significant first costs, many potential customers were confused by multiple and overlapping rebate offers and had little understanding of the long-term benefits of energy upgrades. Although these multiple offers were designed to address identified barriers to retrofit uptake (i.e., the high cost of home energy analyses), rebate programs require sufficient funding and time to allow for the development of structures that are easily understood and can be clearly communicated to homeowners at the onset of the process.

Bulk Purchasing

The bulk purchasing program developed during this pilot is a work in progress. Purchasing is a relationship-based business. Volume purchases do not always result in the best price unless there is a relationship associated with that volume. There are instances where the relationship alone will get you a better price allowing time to build the volume. The lesson learned is that building a bulk purchasing program is time and resource intensive and needs constant nurturing.

Sales personnel are needed in the field to encourage contractors to try this new purchasing paradigm. Without this encouragement, most contractors will not take the initiative to change their habits and adapt to a more sophisticated buying protocol, even if the results include increased savings of time and money for the contractor.

Perhaps the greatest advantage of the bulk purchasing program cited by contractors has been time savings and convenience. The involvement of a professional purchasing agent provides contractors with the assurance of low pricing. When this is combined with a focused customer service orientation and a record of on-time deliveries, the results are excellent.

Conclusions

Through the program, the WNA team has gained significant insight into several key questions. First, ideal neighborhoods for retrofit programs may not align with pre-determined demographic or geographic indicators. Second, contractor participation is a key component of a successful program design, and contractors who invest in local retrofit program efforts are most successful in achieving uptake. Working with a small number of contractors afforded the opportunity to learn lessons about marketing strategies, lead generation and follow-up, and quality assurance, which would be difficult to learn in a program with many contractors. Third, marketing and sales efforts are critical to achieving uptake. Employing professional salespeople can significantly increase market penetration. Fourth, homeowners need targeted, accessible, and attractive financing options that meet their needs. Finally, program managers and participating contractors must focus on Quality Assurance (QA) efforts in order to ensure quality work in the nascent industry.

Even with these lessons, further research must identify how to optimally replicate such programs elsewhere. A key question is to identify the point(s) where incentives are no longer useful in attracting early adopters, who help grow the retrofit industry to self-sufficiency, and instead simply subsidize bargain hunters. This is important to determine because monetary incentives cannot exist indefinitely.

For designing a future retrofit program, the WNA team has identified seven key components including:

- Target communities rather than neighborhoods;
- Use contractors who are already embedded and respected in the community;
- Employ professional sales staff, who are involved from the beginning;
- Utilize consistent, constant marketing and outreach throughout the program;
- Simplify necessary paperwork and procedures for both the contractor and the homeowner;
- Maintain focus on people. In an early stage industry, identify early adopters; and,
- Retrofit programs are more effective as a catalyst for efforts that are already underway.

Overall, retrofit programs must seek to answer a key question: why do homeowners complete a residential retrofit? It remains for retrofit program managers to determine homeowner motivations. Our early homeowner survey results show that comfort and utility costs are primary motivators. This is where early adopters in a community can help as spokespersons. Each of the early adopters had their own reasons for doing the upgrade and these will resonate with other homeowners.

Sonoma Flex Package

The SFP pilot did not face many ramp-up challenges due to the short time frame in which the pilot was conceived and implemented. The SFP team did anticipate a higher volume of projects and a larger percentage of eligible contractors participating in the program. The anticipated launch date of the program was delayed by 4 weeks to incorporate contractor feedback within the program design.

Program Design and Diagnostic Testing Requirements

As the RCPA began to roll out a Flex Package pilot in late August, local contractor interest to provide program design feedback was shared with Sonoma EUC Contractors, community stakeholders, and the RCPA. As a result, RCPA requested a two week “design review” process to allow for contractor comments to be heard and incorporated as appropriate for any Sonoma Flex Package pilot.

RCPA convened a Flex Package Contractor Advisory Group and held a workshop on September 6, 2012, to begin a dialogue with contractors, which included two additional working group meetings on September 12 and 19. The goal of these meetings was to delve into the technical details of the program design in order to provide input and improve the Flex model for Sonoma County.

The contractors were shown the budget details and the deliverables required of the RCPA BBP grant. Revision ideas and suggestions on the measure contents, requirements, and point values were explored. Contractors expressed many ideas for improvement including integrating loading order, aligning testing requirements with industry standards, and following standard building performance procedures and best practices. The outcome of these meetings was a revised measure sheet (Qualifying Measures) and the staff recommendations on program design and marketing.

The program intended to reach a market that was not ready to commit to an advanced package upgrade either financially or because they had a smaller scope of work. One of the major decisions made by the Contractor Advisory Group was that a contractor had to be an Advanced Path contractor to participate in the SFP program and all projects had to have a combustion safety test out following the protocols of a Building Performance Institute Building Analyst. Although in excess of code, this requirement was viewed as important by the Sonoma Energy Upgrade Contractors because 51 of 54 such contractors are Advanced Path. Sonoma was also striving to promote market transformation to motivate as many homeowners as possible to achieve the deepest energy savings possible and maintain the highest building performance standards. These requirements precluded typical HVAC contractors from participating in the program, and ultimately led to much larger work scopes than the intended three-measure upgrades. This also drove up the cost of the average project to be similar to an advanced path upgrade.

Application Process

Initially, the SFP team thought contractors would appreciate the homeowner having some control and responsibility in applying for the incentive, but surveys taken from participating contractors indicated

that homeowner involvement only made the process more challenging. Contractors preferred to have control over the entire rebate application and submission process. Additionally, homeowners were required to submit a W-9 and a Terms and Conditions document on the front end in order for their incentive to be reserved. Asking for supporting documentation on both ends of the process led to some confusion, and we believe all documents should be submitted after the project has been completed, along with the completion form. The application should be for reserving the funding and collecting basic homeowner and contractor contact information. Additionally, contractors preferred to send supporting documents via email or Dropbox because they had trouble uploading documents to the online completion form. The program administrators allowed flexibility in how contractors submitted their supporting documents.

- Contractors, who had submitted SFP applications by January 6, 2013, were offered the opportunity to be featured and branded in their own direct mail piece to select neighborhoods. Five contractors were eligible for this incentive, which included two mail drops per neighborhood. Additionally, three contractors participated in the co-op with matching funds, which was leveraged to expand their direct mail reach and allowed for the custom design and messaging on their respective direct mail collateral.

Driving Demand

The SFP marketing program faced the following challenges:

- Limitation of time and budget (October, 2012 – February 2012; Budget, \$8,500), and
- Lack of broader Energy Upgrade marketing and messaging to support the two-touch approach of the SFP direct mail program.

Sonoma Flex Package (SFP) was an incentive to be featured in marketing efforts as a “NEW” product within the Energy Upgrade California Sonoma County brand. As a pilot program, SFP was a limited time offer. Therefore the marketing program promoted SFP as an expanded feature of the Energy Upgrade program, targeting homeowners on a limited budget who were looking for a “flexible” and affordable way to perform energy upgrades on their homes.

The primary challenge with the marketing program for SFP was the limitation of time and budget to allow for a broad-based consumer education campaign that would drive consumer demand. Therefore, initial marketing efforts focused on co-marketing strategies and collateral that would support Participating Contractors in their own outreach and sales.

In order to leverage the minimal budget available for the SFP marketing program, a co-op strategy was offered to contractors who would provide matching funds on a dollar for dollar basis. An additional \$1,500 was raised to match the \$8,500 program marketing

budget, and 13,000 direct mail targets— combined with neighborhood advertising and door hanger—were mailed to residents in Sonoma County.

A marketing subcommittee, comprised of Participating Contractors and the Program Marketing Manager, directed the allocation of the marketing budget and defined the marketing strategies. The subcommittee did not believe the marketing budget was sufficient enough to invest in advertising or other mass media opportunities and therefore allocated the budget toward a more targeted approach through direct mail.

Contractors who had submitted SFP applications by January 6, 2013, were offered the opportunity to be featured and branded in their own direct mail piece to select neighborhoods. Five contractors were eligible for this incentive, which included two mail drops per neighborhood. Additionally, three contractors participated in the co-op with matching funds, which was leveraged to expand their direct mail reach and allowed for the custom design and messaging on their respective direct mail collateral.

A direct mail campaign, by design, does not allow for the level of consumer education that the program needs and is proven more successful when supported by additional touches and supporting messages that are delivered in the market through other media and communication channels. The subcommittee was anticipating that a mass marketing campaign would launch and support our efforts through SCEIP and their Energy Upgrade marketing program. Unfortunately, that campaign did not produce any advertising or mass media and was only able to offer exposure through an educational booth, which was set-up at two shopping centers during the holiday and paid for by SCEIP.

Conclusions

Through the pilot program, the SFP team gathered invaluable contractor feedback that can be used for future program designs. Contractor participation is a key component of successful program design, and contractors who invest in local retrofit program efforts are most successful in achieving uptake. Implementers must also be cautious about how much of the program design is dictated by outside third parties whose interests are not aligned with that of the programs. The goal of the SFP was to provide an alternative to the Basic Path program and serve as an onramp for the Advanced Path program. In practice, it served more as an alternative to the Advanced Path program and did not capture any of the potential basic path market. This was due to the stringent test-in and test-out requirements, which essentially prohibited a pool of HVAC contractors from participating. The LA County program experienced success and high participation primarily because the program was open to Basic Path contractors. The cost of diagnostic testing drives

up the cost of the project and ultimately increases the scope of work. The Flex Package model should serve as an on-ramp for the Advanced Path program and target the low/modest income households. Lastly, more consumer education is needed over a longer period of time to allow for market penetration and program uptake.

PROGRAM SUSTAINABILITY PLANS

On-Water Bill Financing

The RCPA OWB Pilot has demonstrated the viability of the pilot concept in two ways.

First, in terms of developing a self-sustaining program model, the Windsor Efficiency PAYS®¹⁴ pilot has been authorized to run through June 30, 2014, by the Windsor Town Council. With BBP funds providing program design and technical assistance for the first year of pilot operation (until the BBP program concludes), Windsor is now primed to carry the pilot into its second year, with all operating costs for measure installation and quality assurance paid for by participating customers through the pilot's tariff on their Windsor water bill. Windsor Efficiency PAYS® will continue to serve residential customers (single and multifamily) and will maintain the same measure offerings from year one of the pilot, as discussed previously in the report. Windsor, and its program implementers and contractors, will continue to market the program to the public.

Second, in terms of developing a replicable and scalable program model, the RCPA worked with the Association of Bay Area Governments to include a PAYS® Pilot as part of ABAG's proposal for a Bay Area Regional Energy Network (BayREN) to the California Public Utilities Commission for their 2013–2014 ratepayer-funded energy efficiency program cycle. BayREN is a collaboration of local governments in the nine-county Bay Area region. The RCPA is leading outreach to water utilities in these jurisdictions to recruit one to three new partner utilities to design and implement a tariffed on-bill pilot suited to local needs and appropriate for the partner utility's rates. At the time of this report, additional details (such as target market, pilot names, etc.) for these BayREN PAYS® Pilot have yet to be determined because partner utilities have not been selected. Tools and lessons learned from the Windsor Efficiency PAYS® pilot will be leveraged to inform BayREN PAYS® development efforts in an attempt to expand the "tool kit" for tariffed on-bill resource efficiency programs that may be operated in California.

Whole Neighborhood Approach

The value of neighborhood targeting was not demonstrated. Neighborhood targeting was expected to enable: (1) streamlined retrofits through applying standard packages of upgrades to similar housing stock and (2) neighbors to influence prospective participants. Neither of these benefits was realized during the pilot, so RCPA decided to close the pilot and used the remaining funding to test the Flex Package pilot program.

¹⁴ www.windsorefficiencypays.com

Therefore, there are no WNA program sustainability plans for the post-grant period.

Sonoma Flex Package

The BBP Flex pilots in the ABAG region will be continued or evolved into new programs based on lessons learned, and sustained through California ratepayer funding. The pilots across California were successful in demonstrating local governments' ability to administer and implement energy efficiency programs directly. As a result, the California Public Utilities Commission invited and approved proposals from regional collaborations of local governments to administer ratepayer funded programs beginning in the 2013–2014 program cycle. ABAG will oversee programs in the nine-county Bay Area region through the BayREN, including a single family program based on the Flex Package pilot.

The revised ABAG program will be marketed as the Energy Upgrade California Home Upgrade program. It will be similar to the Flex Package program design in terms of deemed savings and using a point-based system for homeowners and contractors to evaluate project options. The name Flex Package will be rebranded under the BayREN effort; at the time of this report, this new program name has yet to be determined. It is expected that this program will launch in July of 2013, and it is projected to serve up to 2,500 Bay Area single family residents by December 2014.

VERIFICATION OF DATA

Under the direction of the prime contractor, BKi, Renewable Funding ("RF") served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE's xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

DEVELOPED PRODUCTS

The RCPA has identified the following products developed under its BBP activities.

On-Water Bill

- Website or other internet sites that reflect the results of this project:
 - www.windsorefficiencypays.com
- Other products, such as data or databases, physical collections, audio or video software or netware, models, educational aid or curricula, instruments or equipment
 - Program Design and Training Curriculum
 - Certification Agent Content Management System On-line Field Tool for customer qualification and installation/purchase documentation

Energy Efficiency and Conservation Block Grant (EECBG) – Better Buildings Neighborhood Program

Final Report: Sacramento Municipal Utilities District

Award Number: DE-EE0003562

BBNP Name: U.S. Department of Energy's Better Buildings Program

Project Title: Retrofit California

Name of Project Director/Principal Investigator: Richard Oberg

Team Members: Christie Rodriquez

The information contained in this report may be shared, used, or disclosed to the general public with expressed consent from the Sacramento Municipal Utility District.

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EXECUTIVE SUMMARY

Sacramento Municipal Utility District (SMUD) partnered with Los Angeles County and joined the California Center for Sustainable Energy and the Association of Bay Area Governments to apply for a competitive “Retrofit California” Department of Energy (DOE) American Recovery and Reinvestment Act (ARRA) Energy Efficiency and Conservation Block Grant (EECBG). As the lead applicant and prime recipient, Los Angeles County was awarded \$30 million from the DOE, with \$2,813,426 allocated to SMUD as a subrecipient.

SMUD’s portion of the ARRA funds were used to implement the Sacramento Neighborhood Performance Program, which focused on engaging two Sacramento neighborhoods to achieve 20% energy savings per participating customer through comprehensive retrofits. Specifically, SMUD used the \$2.813 million in funding to:

- Work with Sacramento City and County representatives to implement neighborhood energy efficiency packages at volume-discount prices. Selected neighborhoods included a mix of single family, multifamily, and commercial building types.
- Provide weatherization and retrofit services through SMUD’s low-income weatherization contractor.
- Hire a third-party contractor to implement and administer small commercial retrofits.
- Team with neighborhood organizations such as schools, neighborhood associations, business owners, business associations, and churches to promote the program within the community.
- Design a neighborhood website to encourage participation and energy savings.
- Develop and share lessons learned to enable the program to be implemented in other communities.

The Sacramento Neighborhood Performance Program leveraged the single family and multifamily program designs and incentive structures established in the Home Performance Program funded by the California Energy Commission’s grant and local jurisdictions’ EECBG funds to provide incentives for single family and multifamily energy efficiency improvements. The program also leveraged the small commercial program design and incentive structure established as part of Sacramento City’s EECBG program.

A total of 622 SMUD customers directly benefited from this grant by receiving energy retrofits and rebates. Participating customers immediately achieved reduced energy costs and greater comfort levels.

INSTITUTIONAL DESIGN & BUSINESS MODEL

Serving a population of 1.4 million people in a 900-square-mile service territory, SMUD is the nation's sixth largest customer-owned electric utility. SMUD began delivering power to the Sacramento region in 1946 and has since provided electricity for most of Sacramento County, as well as small portions of Placer and Yolo Counties. SMUD's 2,000 employees serve a customer base of roughly 530,000 residential customers and 68,000 business customers.

SMUD employees working in the following areas were budgeted for in the BBP grant: Resource Planning & Pricing, Supply Chain, Customer Operations, Customer Programs & Services, and Customer Programs & Operational Planning. Figure 1 below outlines the high-level organization structure for these individuals.

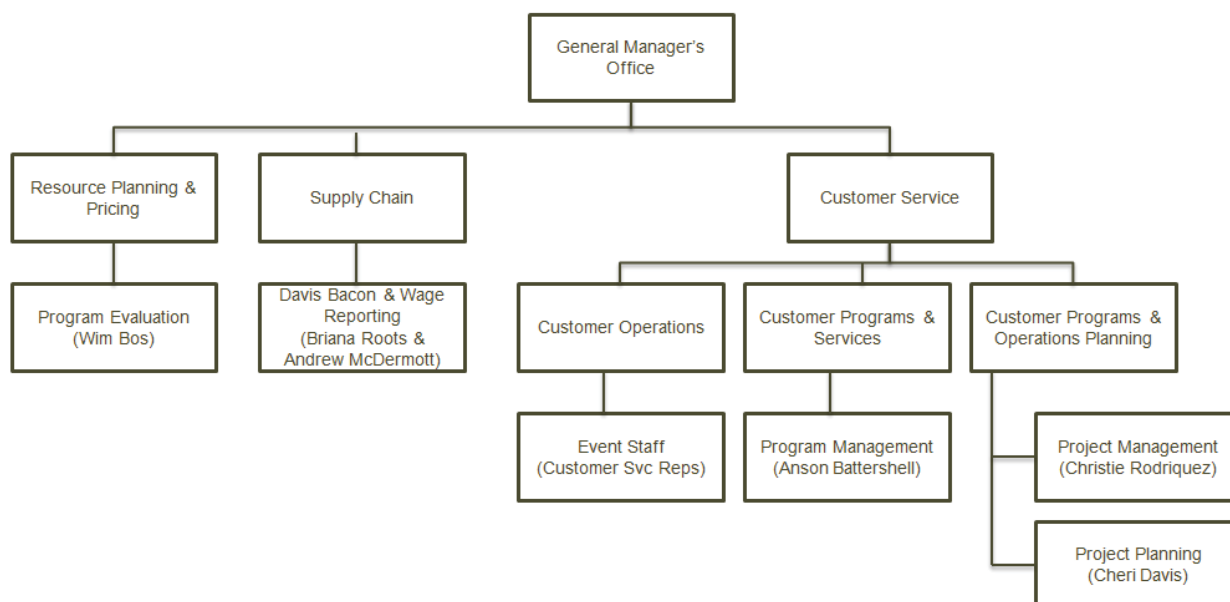


Figure 1. Regional programmatic categories

This grant was also supported by staff throughout SMUD but no labor hours were billed. These included the following individuals: Andrew Meditz (General Counsel); Arthur Starkovich (Government Affairs Representative); Bob Hollowell (Audit & Quality Service); Bruce Cenicerros (Single Family Planner); Cathy Roberts (Accounting); Collette Bragg (Rebate Processor); Daniel Hamilton (Multifamily Planner); Denise Watts (Community Outreach Specialist); James Mills (Single Family Program Manager); Jason Casella (Communication & Advertising); Joshua Drysdale (Tradeshows); Kathy Ketchum (Accounting); Maureen Vowell (Accounting); Michelle Giles (Low-Income Planner); Misha Sarkovich (Multifamily Program Manager); Ravi Patel (Single Family Planner); Rian Troth (Low-Income Program Manager); and Richard Oberg (Supervisor).

Expenses and/or labor hours were also included in the BBP budget to allow the following SMUD vendors to charge to the grant: AESC (Evaluation); BKi (Data Collection); Community Resource Project (Low-Income Program Administrator); ConSol (Single Family Program Administrator); Heschong Mahone Group (Multifamily Program Administrator); JD Franz Research (Evaluation); NDS (Community Award Project); Wallrich (Web Design); and Willdan Energy Solutions (Small Commercial Program Administrator).

This grant was also supported by, but no labor or expenses were bill for, the following external resources: Sacramento City and Sacramento County.

PROGRAM DESIGN AND CUSTOMER EXPERIENCE

The Sacramento Better Buildings Program – Whole Neighborhood Approach focused on engaging customers in two selected neighborhoods to complete comprehensive retrofits and achieve energy savings. We targeted neighborhoods with a mix of residential (single family and multifamily) and commercial building types, covering a broad spectrum of energy consumers to obtain regional representation that could serve as a replicable model elsewhere. The maps in Figure 2 and Figure 3 show outlines of the selected neighborhoods.

Map of Rosemont and La Riviera



Residents within the shaded area are eligible for My Rosemont Energy Upgrade.

Figure 2. Map of Rosemont and La Riviera neighborhoods

Map of Downtown and East Sacramento

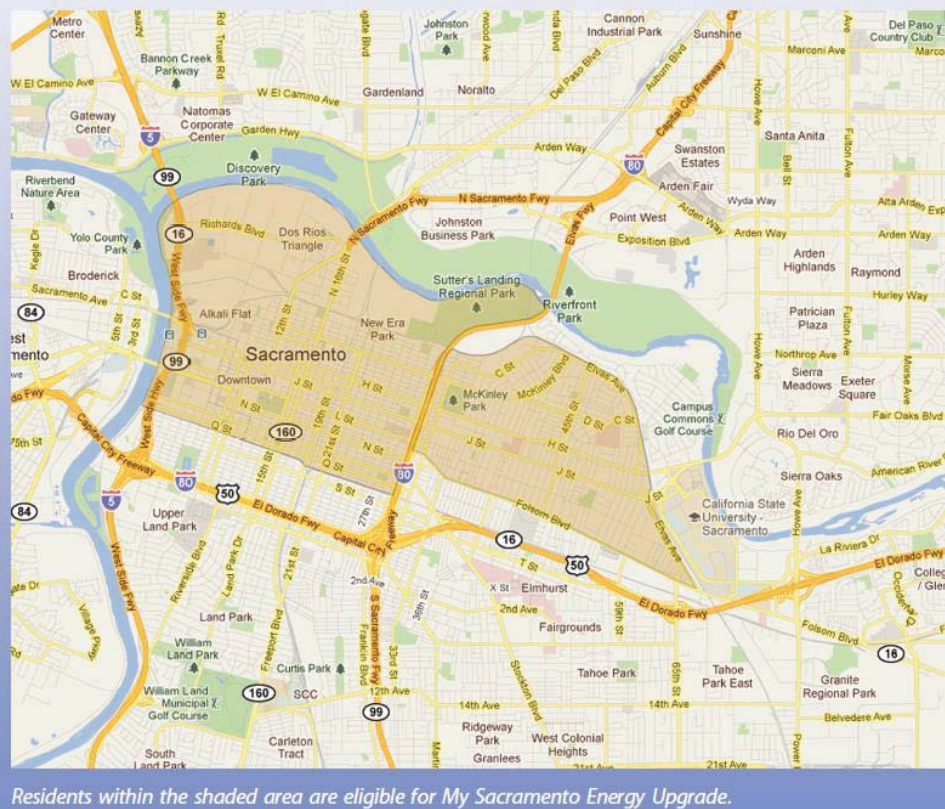


Figure 3. Map of Downtown and East Sacramento neighborhoods

Below are the selection criteria and delivery models that were used to support the Better Buildings Program.

Single Family Selection Criteria

The Single Family target market was owner-occupied, single family homes. The program relied on community events within the neighborhoods to recruit and sign up homeowners. Thus it was essential that targeted neighborhoods were represented by an active neighborhood association, community-based organization, or neighborhood advocacy group.

Other desired characteristics included:

- Tract homes (built after the mid-1950s), so that solutions for the prototypes are likely to be applicable to most homes

- High energy use (indicating good savings potential)
- Built before 1990, prior to implementation of energy efficiency standards, which began to make homes much more efficient
- Above-average household incomes and/or equity in home, indicating the potential means to invest in home improvements

Single Family Delivery Model

SMUD contracted with ConSol to develop and implement a neighborhood approach to existing home energy efficiency retrofits. Program activities included: targeted neighborhood research; assessment of the neighborhoods; development of the performance-based good, better, best packages; marketing collateral and neighborhood meetings to elicit participation; a competitive Request for Proposal (RFP) process for and selection of the contractors; introduction of the contractor to participants; and retrofits.

ConSol and SMUD identified the target neighborhoods based on several variables that included energy use, average age of homes, average square footage, neighborhood size, average household income level, and the presence of an active homeowners association (HOA).

Package development: Program experience demonstrated that the packages should not be considered static and should be utilized primarily as a tool to simplify the sales process for the contractor and homeowners. Therefore, the packages created for the single family neighborhood program, as shown in Figure 4, incorporated the most cost-effective improvements while providing homeowners with choices to customize the specific energy efficiency measures of their retrofit package based on various factors such as their budget and needs for their home.

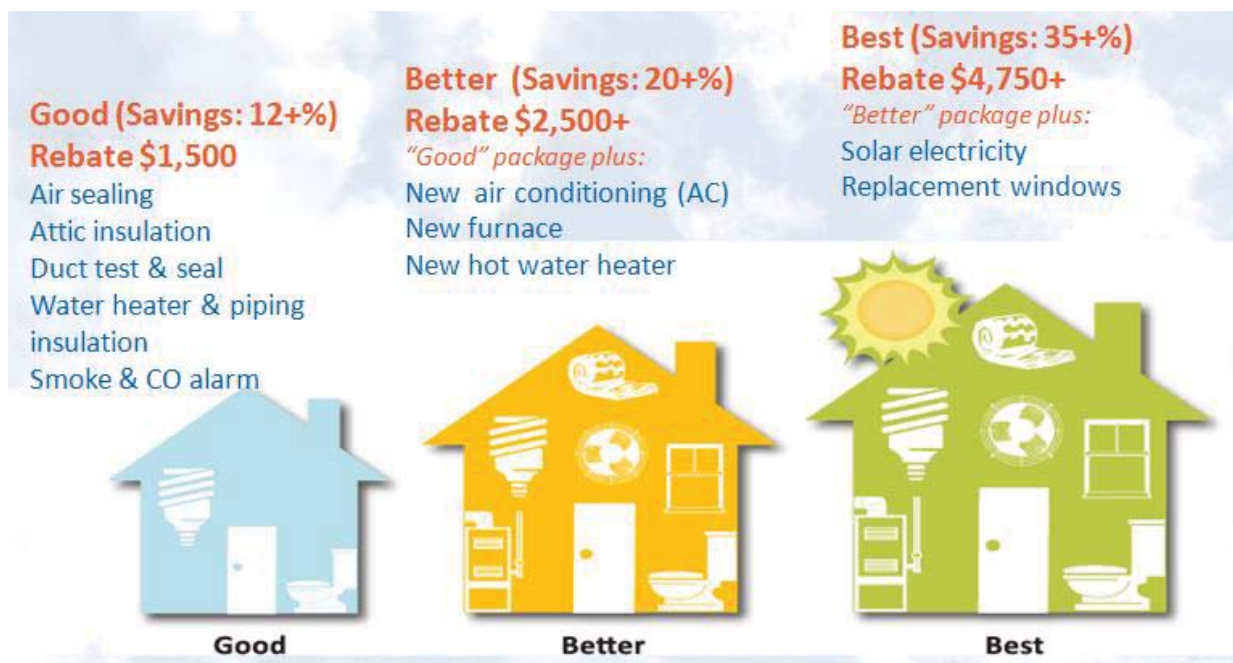


Figure 4. Packages for the single family neighborhood program

Once the packages were developed for each neighborhood, a Request for Proposals (RFP) was released to secure one contractor to support each neighborhood. In order to bid on the RFP, contractors had to meet all of the training and certification requirements of the Home Performance Program and be listed on the eligible contractor list. Contractor proposals were reviewed and contractors were select based on the bids received.

SMUD, ConSol, and the selected contractor for the neighborhood attended neighborhood meetings and community events to explain the program and packages to the homeowners. Interested homeowners then signed up for a free energy assessment.

The process through which retrofit jobs were accepted and completed, and parties involved, is as follows:

1. Home assessment (Building Performance Institute [BPI] Contractor for the neighborhood)
2. Define work scope with customer (BPI Contractor for the neighborhood)
3. Required pre-retrofit testing (BPI Contractor for the neighborhood)
4. Completion of the Job Reporting Template (JRT) (BPI Contractor for the neighborhood)
5. Completion of EnergyPro modeling software (BPI Contractor for the neighborhood)
6. Submission of project through Vision database (BPI Contractor for the neighborhood)
7. Pre-retrofit desk check QA (mandatory, California Building Performance Contractors Association [CBPCA])
8. Pre-retrofit in-home QA (depending upon random selection, CBPCA)
9. Fast-Track approval may be used instead of (7) and (8)
10. "Authorization to Proceed" with retrofit (CBPCA)
11. Required post-retrofit testing (CBPCA)
12. Required post-retrofit submissions through Vision database (BPI Contractor for the neighborhood)
 - a. Data
 - b. Rebate Application
13. Post-retrofit desk check QA (mandatory, CBPCA)
14. Post-retrofit QA (depending upon random selection, CBPCA)

15. Rebate processing (SMUD)

16. Customer survey (CBPCA)

Across the two targeted neighborhoods, there were 101 homeowners who took advantage of the program rebates to complete their energy efficiency upgrades (i.e., signed contracts), including 101 completed retrofits. Table 1 shows the number of homeowners who participated and the extent to which they participated.

Table 1. Homeowner participation breakdown

	Interested Homeowners	Energy Assessments Scheduled or Completed	Consultations Completed or Scheduled	Signed Contracts	Retrofits Completed
Rosemont	238	146	105	34	28
Downtown/East Sacramento	278	208	187	74	73
Total	516	354	292	108	101

Multifamily Selection Criteria

The Multifamily target market included owners of multifamily affordable, market-rate apartments and those who were planning a large upgrade. This included owners with portfolios of properties and single property owners. We found that redevelopment agencies and housing authorities that owned multiple properties were more likely to participate because of their familiarity with Davis Bacon Act and Prevailing Wage reporting requirements. For this reason, the primary target group was the Sacramento Housing and Redevelopment Agency (SHRA) and the Capital Area Development Authority (CADA).

Multifamily Delivery Model

SMUD's Better Buildings Program Multifamily (MF) component was administered by Heschong Mahone Group (HMG). HMG was tasked with program development and administration, trade contractor solicitation and qualification, implementation and management, field training and mentoring, and marketing. The program utilized Home Energy Rating System (HERS) II Raters, who assessed the performance of MF buildings, diagnosed energy performance problems, and identified the most effective solutions to those problems.

Building owners were provided with a recommended list of improvements based on energy savings and cost-effectiveness. Although measures varied by building condition and owner preferences, the measures that were most prevalent in achieving 20% energy reduction in Sacramento's climate zone (CZ 12) were: attic insulation, air sealing, duct sealing and insulation, AC replacement, programmable thermostats, and compact fluorescent lights (CFLs) in dwellings and common areas. To achieve up to 40% savings, the project could add wall insulation, window replacement, and domestic hot water (DHW) controls, if the building used a central DHW system. HMG helped customers determine which building improvements to make.

HERS II rebates were available to increase rating and retrofit activities. The program developed by HMG and SMUD included: a multifamily apartment complex assessment, upgrade options for the multifamily property owner of selected measures, installation of agreed-upon measures to improve energy efficiency, and verification of the job. Incentives of up to \$3,800 (SMUD only) for 50% improvement

could be achieved if large-scale energy savings improvements were made. Incentives were paid to the contractors based upon 50% and 100% completion of construction.

SMUD's Program Administrator was responsible for conducting and administering the Quality Assurance (QA) of the completed retrofitted MF units. SMUD's Program Administrator performed post-inspections of 100% of completed sites to verify energy efficiency equipment installation and to ensure that the quality of work performed by contractors met program standards and specifications. HERS II raters also performed independent quality assurance checks on 100% of completed sites as part of program process.

The process by which retrofit jobs were accepted and completed, and parties involved, is as follows:

1. MF complex energy assessment (HERS II Rater)
2. Define work scope with customer (Contractor)
3. Completion of EnergyPro energy simulation modeling software (HERS II Rater)
4. Submission of project EnergyPro modeling to HMG (HERS II Rater)
5. Pre-retrofit desk check QA (mandatory) by HMG
6. "Notice to Proceed" letters with retrofit issued by HMG
7. Required post-retrofit energy assessment and verification (HERS II Raters)
8. Post-retrofit QA (10% of the jobs for HERS II raters at random selection)
9. Submittal and Certification of Payroll (SMUD)
10. Rebate processing of checks for contractors (SMUD)

The goal of MF program was to save a minimum of 20% energy and to improve the safety, durability, comfort, and environment of the occupied multifamily units. The original retrofit goal of the MF program was retrofit 50 units. This goal was increased to 130 units. The final count was 135 units retrofitted.

Low-Income Selection Criteria

SMUD targeted customers who were on its Energy Assistance Program Rate (EAPR) and lived within the predefined Better Buildings neighborhoods. The discounted rate offers eligible low-income customers a discount of about 30% on monthly energy costs. Table 2 contains the EAPR income guidelines* (effective November 1, 2012).

Persons in Household	Monthly Income	Annual Income
1	\$1,861	\$22,340
2	\$2,521	\$30,260
3	\$3,181	\$38,180
4	\$3,841	\$46,100
5	\$4,501	\$54,020
6	\$5,161	\$61,940
Additional members (each)	\$660	\$7,920

*Households are eligible for the discounted rate if their income doesn't exceed 200 percent of the federal poverty level. These figures reflect that percentage.

Table 2. EAPR income guidelines

Low-Income Delivery Model

SMUD's low-income weatherization contractor, Community Resource Project (CRP), provided home testing, weatherization, and retrofit services. Once a weatherization specialist determined a household's eligibility, a trained technician assessed the dwelling for energy efficiency needs. A typical inspection included:

1. A visual assessment to document current efficiency levels of the building, as well as installed equipment and lighting
2. A diagnostic test on the building envelope and air distribution system to find where air was leaking out
3. A check of the efficiency of heating and cooling equipment
4. A check for potential health hazards, such as appliances, that could be leaking carbon monoxide

During the assessment, technicians determined which measures were most cost-effective for each individual dwelling. Once energy conservation opportunities were identified, experienced installers made the repairs and installed the improvements. SMUD performed independent quality assurance checks on roughly 10% of completed sites.

Across the two targeted neighborhoods, 95 low-income customers received energy efficiency upgrades. The cost per unit amounted to \$3,500. Of this amount, CRP contributed \$1,500 per residence. Grant funds contributed approximately 50% toward free retrofits offered to low-income qualified households in the selected neighborhoods.

Small Commercial Selection Criteria

The Small Commercial target market was defined as follows:

- The business must be a small or mid-sized customer for SMUD, which is defined as having a peak load of no more than 299kW.

Small Commercial Delivery Model

SMUD hired Willdan Energy Solutions as the Program Administrator to provide comprehensive turnkey energy efficiency upgrade services including energy audits, design and specification work, oversight and inspection of retrofit jobs, rebate processing, program marketing, and tracking and reporting.

The program process was as follows:

1. A SMUD authorized energy professional performed a NO COST, comprehensive energy assessment of the business, looking at lighting, HVAC, refrigeration, and other systems to identify where customers could save the most energy and money.
2. Customers received a customized report with recommended efficiency improvements and estimated energy savings. This report also showed the estimated project cost, the amount that would be covered by the rebate, and how quickly the investment would pay for itself. A sample of the report can be found at <https://www.smud.org/en/business/save-energy/energy-management-solutions/documents/CES-Sample-Audit-Report.pdf>.
3. When the customer was ready to move forward, the energy professional would help them find a SMUD Complete Energy Solutions Certified Trade Contractor to install the energy-saving upgrades.

Rebates covered up to 80% of the project costs for small businesses. Rebates were processed by Willdan Energy Solutions.

Willdan Energy Solutions was responsible for QA functions. SMUD staff Program Manager also conducted independent QA checks and worked with the Program Administrator to make any necessary corrections.

Large Commercial Selection Criteria

Although the program was eventually discontinued due to lack of private funding and resource issues, the original target market included private sector large commercial customers with buildings greater than 50,000 sq. ft. and less than 100,000 sq. ft., and public buildings that were shovel ready.

Large Commercial Delivery Model

Prior to the large commercial program component being discontinued, SMUD developed the following program design.

SMUD developed a pilot program to test out a comprehensive whole-building approach to commercial buildings, with a goal of achieving a minimum of 20% energy savings per building. This program design facilitated building benchmarking, comprehensive energy assessments, base incentives, and bonus incentives for energy efficiency improvements that have a long payback or are accompanied by investments in renewable generation.

The purpose of the program was to provide customers with the information, incentives, and tools to drive more comprehensive whole-building retrofits. The benchmarking and energy assessments would have provided information for the customer about their building's performance and the best opportunities for cost-effective improvements. Working with the customer, SMUD and/or the energy assessment contractor would have developed a 5-year strategic implementation plan that identified possible energy efficiency retrofits in order of priority, costs, payback periods, incentives, and suggested packages of measures. SMUD planned to use contract labor to provide the energy assessments and benchmarking assistance, and would have leveraged its existing commercial labor for the general oversight and management of incentives.

One year after installation of the measures, SMUD account representatives would have followed up with these customers to encourage the updating of their Energy Star Portfolio Manager account. This feedback to the customer would have played a key role in encouraging ongoing attention to energy performance.

Driving Demand

As dictated by this neighborhood approach, the success of the program relied heavily on community outreach and engagement. The Program Administrators and SMUD's Community Engagement shared an equally important role in garnering community buy-in and conducting in-person contact.

The marketing campaign targeted homeowners and building owners in the selected neighborhoods. A substantial amount of time was dedicated to building a "critical mass" of interest in the neighborhood. SMUD and our Program Administrators attended community-based organization meetings to present program to the neighborhood, explained financing options, and distributed marketing collateral.

SMUD aimed to remove the barriers to action (cost, lack of knowledge, inconvenience, apathy) by highlighting the benefits of participation (saving energy, money, and benefits to the environment; health, safety and comfort; incentives and available financing sources). SMUD implemented an ongoing multi-faceted approach to marketing which included a variety of channels and tactics including:

- Articles in local publications
- Brochures/fliers
- Booths at community events
- Community websites & social media
- Contractor marketing material
- Direct mail
- Door hangers
- Door-to-door canvassing

- Emails
- EUC website
- Informational Sessions
- Inserts into local publications
- Partnerships
- SMUD Website
- Videos
- Window clings
- Word of mouth & testimonials
- Yard signs

As a direct link to the community at large, SMUD's Community Engagement team collaborated with the SMUD Marketing team to promote the program. To drive public awareness among key stakeholders, the Community Engagement team identified and developed partnerships with community leaders, high-profile organizations, and other affiliations (individuals and organizations). The goal of the outreach was to reinforce the advertising and promotional effort with impartial third-party supporters to drive the message home. Such efforts built credibility for the program while simultaneously establishing a healthy dose of competition. The Community Engagement team collaborated with SMUD's Media Relations team on this effort to generate earned and added-value media when possible.

A part of SMUD's process for driving customer sign-ups included employing on-the-ground activities within the targeted communities, supporting local events, and identifying local opinion leaders. Upon selection of the neighborhoods, we began systematically researching opinion leaders, associations, events, and activities in the areas. Over 40 community associations and organizations were identified as potential partners. Those regionally-focused organizations included, but were not limited to:

- Business Associations
- Chambers of Commerce
- Faith-based Organizations
- Schools and Parent-Teacher Associations

The program design and implementation process provided valuable lessons learned in marketing outreach, including:

- Early adopter focus – initial energy efficiency retrofits provided a marketable program proof of concept through positive testimonials from knowledgeable homeowners.
- Utility support and involvement in homeowner outreach and education, which along with early adopter testimonials provided programmatic trust and legitimacy to the mass market.
- Adoption took time, utilizing frequent and sustained educational outreach through traditional and new (web-based) media to reach a broader pool of homeowners.

- The neighborhood word-of-mouth approach has promise, as shown by the cluster maps in Figure 5 and Figure 6.

Downtown Neighborhood



Figure 5. Cluster map showing completed retrofit jobs in the Downtown neighborhood

Rosemont Neighborhood



Figure 6. Cluster map showing completed retrofit jobs in the Rosemont neighborhood

As a best practice, SMUD integrated findings from ongoing research and other BBP programs to revise the Marketing and Community Engagement plan as necessary throughout the grant. The greatest lesson SMUD learned about marketing was that utility support and involvement in outreach and education were crucial and by having the contractors attend community events we can better educate property owners and build a greater sense of trust within the community.

Community events were not only the major leading cause of homeowner interest in the program, the events also generated a higher conversion rate from assessments to retrofits. By tracking how a homeowner heard about the program, we were able to determine that if a homeowner heard about the program through a community event they were more likely to convert from an assessment to a retrofit (47% converted compared to the overall conversion rate of 37%). Figure 7 shows the results of our Single Family marketing efforts, as of March 2013.

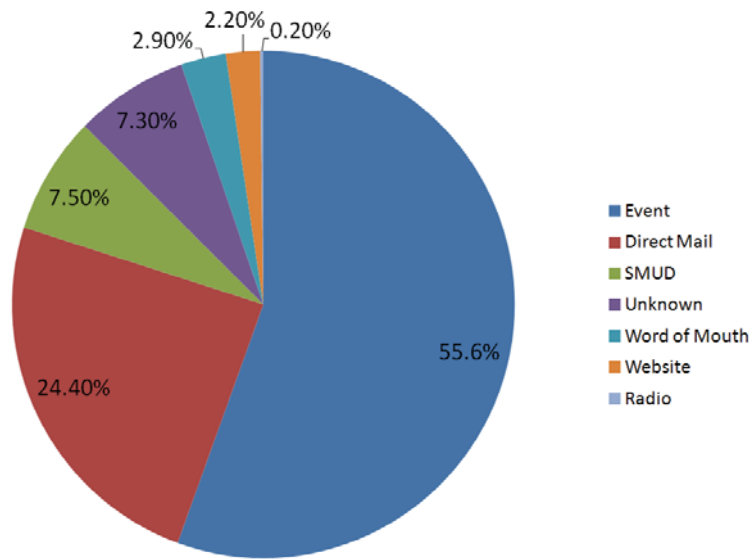


Figure 7. Results of the single family marketing efforts, as of March 2013

In July 2012, an analysis was completed on 12 community events, some of which were free for SMUD and others where we paid a sponsorship fee to attend. These 12 events reached over 5,000 people and generated over 180 solid leads (signed interest forms). The analysis (see Table 3) shows that smaller, more intimate meetings usually have a greater percentage of signups than larger events. In addition, we found that free events can be just as successful as sponsored events, with as many as 51% of attendees signing up in a single free event such as a contractor meeting at the home owner's association.

Table 3. Results of community events analysis

Event	Total Cost	Attendees	\$ p/Potential Lead	Solid Leads	\$ p/Solid Lead	% of Attendees Signed Up
Rosemont						
July 2011 HOA Mtg	\$0	25	\$0	11	\$ -	44%
Aug 2011 Picnic	\$1,000	1000	1	37	\$ 27.03	4%
Oct 2011 Contractor Mtg	\$0	35	0	18	\$ -	51%
April 2012 Essence	\$500	250	\$2	12	\$ 41.67	5%
April 2012 HOA Mtg	\$0	125	\$0	25	\$ -	20%
May 2012 Pizza Party	\$152	3	\$50.67	1	\$ 152.00	33%
Total	\$1,652	1438	\$1.15	104	\$ 15.88	7%
Downtown						
Sept 2011 Maydestone	\$1,000	300	\$3	54	\$ 18.52	18%
Sept 2011 HOA Mtg	\$0	15	0	5	\$ -	33%
Oct 2011 Music Fest	\$300	3000	0.1	0	\$ -	0%
Oct 2011 HOA Mtg	\$0	25	\$0	3	\$ -	12%
Nov 2011 PTA Mtg	\$0	15	\$0	7	\$ -	47%
April 2012 PTA Gala	\$500	300	\$1.67	10	\$ 50.00	3%
Total	\$1,800	3655	\$0.49	79	\$ 22.78	2%
Combined Neighborhoods	\$3,452	5093	\$0.68	183	\$ 18.86	4%
Total with Marketing Costs	\$17,904		\$3.52		\$ 97.84	

Workforce Development

Single Family

The Sacramento Better Buildings Program leveraged contractor recruitment and support efforts developed under the Home Performance Program funded by the State Energy Program (SEP) grant. The SEP efforts included: partnerships with CBPCA, ConSol, Build It Green, Los Rios Community College District, and other subject matter experts to develop, market, and implement training curriculum.

One single family contractor was selected through a Request for Proposal (RFP) to support each neighborhood. The RFP required that to participate in the SMUD Better Buildings Program, Contractors must employ at least one person in the Sacramento area who acquires and maintains a BPI Building Analyst certification. Additional BPI certifications and full company level BPI Accreditation were highly recommended.

Prior to inclusion in the program, participating contractors were required to demonstrate proof of applicable licenses, permits, insurance, and bonds required by federal, state, and local laws.

Contractors were required to hold an active California State Contractor's License and be in good standing. Contractor's sales personnel were required to be registered with the Contractors State License Board as a Home Improvement Salesman.

Single Family Contractor Support

The following services and support were provided to the single family contractors selected to work in the BBP neighborhoods:

- SMUD agreed to promote the Better Buildings Program to SMUD customers within the selected neighborhoods.
- SMUD conducted Contractor meetings to provide information on program updates, changes, and marketing activities.
- Contractors attended SMUD's finance workshop and could submit loan documentation in accordance with requirements set forth by SMUD's Finance Services. When a customer utilized financing from SMUD, SMUD issued a payment to the Contractor on behalf of the customer for the approved financeable project installation cost. Any applicable rebates were paid directly from SMUD to the customer to offset the customer's installation costs.
- SMUD could initiate changes to the SMUD Better Buildings Program as circumstances dictated. SMUD made every effort to provide thirty (30) days written notice of changes, which affected financing or other SMUD Better Buildings Program activities. However, SMUD reserved the right to make immediate changes, without notice, as deemed necessary or in the best interest of SMUD and its customers.

The Home Performance Program (HPP) Contractor Handbook was utilized to provide a basic reference for the program implementation details, including protocols for how trade contractors should conduct a home performance assessment, estimate energy savings, summarize findings, provide recommendations for the homeowner, install measures to meet standards, and report information. Furthermore, the handbook included a detailed description of the program's quality assurance and quality control plan. SMUD's Program Administrator maintained and updated the document and posted the most up-to-date version on Contractor's website in accordance with changes in program policies, procedures, or other parameters that impact information contained in the Handbook.

Multifamily

SMUD's Program Administrator was responsible for the identification of building contractors with the necessary skills and certifications to deliver the program.

Low Income

SMUD's low-income weatherization contractor was authorized to conduct audits and install weatherization measures.

Small Commercial

SMUD's Third party Program Administrator was responsible for the identification of building contractors with the necessary skills and certifications to deliver the program.

Large Commercial

No workforce development was conducted prior to program being discontinued.

FINANCING

Single Family Financing

BBP customers were eligible to take advantage of two SMUD loans per project, a secured and unsecured product. SMUD's unsecured loans allowed customers to borrow up to \$5,000 for 36 months at 10.75% interest. A SMUD secure loan allowed customers to borrow up to \$30,000 for 120 months at 8.75% interest. In September 2011, SMUD reduced its interest rates for comprehensive projects from 8.75% to 5.5%. The application process was also changed to allow for customers to apply for both the secure and unsecured loans through one process and only have to pay one application fee of \$100.00. SMUD experienced an increase in application activity as a result of the changes to the application process and interest rates. However, there was no mechanism in place to establish how many BBP customers participated in the SMUD financing solutions. Nor was there a way to quantify the number of customers taking advantage of private funding sources, energy efficient mortgages, Property Assessed Clean Energy Financing (PACE), or California Rural Home Mortgage Finance Authority Homebuyers Fund (CHF) financing.

Multifamily Financing

SMUD financing was not available for the multifamily program.

Small Commercial Financing

SMUD financing was not available for the small commercial program.

Large Commercial Financing

SMUD financing was not available for the large commercial program.

INCENTIVES

Single Family Incentives

SMUD customers within the BBP neighborhoods were eligible to earn rebates up to \$9,000, depending on the scope of work and level of energy savings achieved, as shown in Table 4. If a customer's proposed

work scope did not meet an estimated energy savings of 20%, they could participate in the prescriptive program and receive a rebate in the amount of \$1,500 by installing required measures.

Table 4. Single family energy savings and rebates

Energy Savings Achieved ¹	Customer Total Rebate ²
20%	\$2,500
25%	\$3,000
30%	\$3,750
35%	\$4,750
40%	\$6,000
45%	\$7,500
50%	\$9,000

The selected contractors for the BBP neighborhoods also offered tiered discount packages to encourage more retrofits to be completed in the neighborhood. Tiered discounts offered by contractors were as high as 11% based on the package the customer selected and the number of customers participating in the program.

Ninety-nine percent of all single family projects completed under the BBP grant were performance-based projects. The average cost for performance-level retrofit, as of March 2013, was \$13,893. The largest project that had been completed at that time cost the homeowner \$38,089. The smallest project cost \$2,850. On average a customer participating in the Performance program received a rebate in the amount of \$3,400. The maximum SMUD rebate was \$6,578, which applied to customers who achieved at least 50% energy savings. In addition to SMUD rebates, PG&E customers could receive an additional rebate for qualifying measures, bringing their total rebate amount to \$9,000.

Multifamily Incentives

Base incentives were available per unit for achieving 20% savings and an additional incentive based on kWh, kW, and therm savings, escalating for each additional percent saved beyond 20% up to \$3,800 p/unit, as shown in Table 5. In addition, incentives in the amount of \$300 were paid for each HERS II audit/rating conducted. The average rebate as of March 2013 was nearly \$50,000 per apartment complex. Incentives were paid to the contractors based upon 50% and 100% completion of construction.

¹ Savings and rebate potential

² Combined rebate from SMUD and customer's local gas utility. Rebate levels were subject to change and availability was on first-come, first-served basis.

Table 5. Multifamily energy savings and rebates

Energy Savings Achieved	Rebate Amount
20%	\$2,300
21%	\$2,350
22%	\$2,400
23%	\$2,450
24%	\$2,500
25%	\$2,550
26%	\$2,600
27%	\$2,650
28%	\$2,700
29%	\$2,750
30% - 39%	\$2,800 - \$3,250
40% - 49%	\$3,300 - \$3,750
50%+	\$3,800

Low-Income Incentives

Estimated cost per unit was \$3,500. Of this amount, our partner contributed \$1,500/residence. Grant funds contributed approximately 50% toward free retrofits offered to low-income qualified households in the selected neighborhoods.

Small Commercial Incentives

SMUD structured the customer incentives to ensure that the program was paying for kWh savings. First, measures were divided up into three tiers representing the complexity and/or difficulty of selling that measure (e.g., Tier 1 contained easy-sell measures with a short payback, whereas Tier 3 contained measures that were more complex, had a higher initial cost, or for various reasons were more difficult to sell). The Program Administrator committed to a different incentive level for each tier, based on lifetime kWh. Because the incentives were based on lifetime kWh rather than first year kWh savings, measures with a long life (e.g., LEDs) would be eligible for a higher incentive. Additionally, the incentives available to one customer for a given measure might be different than the incentives for another customer installing the same measure, as the kWh savings varied by business type and operating hours. Thus, a business with high operating hours and therefore larger kWh savings potential would receive a higher incentive than a business with low operating hours. The final control was that incentives were capped at 80% of project cost.

SMUD's Program Administrator developed a survey tool that was used for each site survey. The tool included a comprehensive electronic worksheet and a database that performed calculations on energy savings and rebate amounts based on proposed measures. A worksheet with the list of all available rebates was created so surveyors had an easy menu of rebates to choose from if they were filling in the data instead of the survey tool. The average cost for small commercial projects was \$2,710. On average,

a customer participating in the program received a rebate in the amount of \$2,010 or 74% of the project costs. A complete [list of rebate amounts per measure](#) can be found in the zip folder.

Large Commercial Incentives

No incentives were paid for the large commercial program before it was discontinued.

DATA

The goal of data tracking was to ensure the effective and confidential tracking of all data gathered through the neighborhood program and to fulfill both DOE and Los Angeles County's reporting requirements. SMUD, our contractors, and Program Administrators collected detailed project-specific data to support reporting requirements and to evaluate energy usage, number of buildings and residences retrofitted, and estimate utility bill savings by participants. Depending on the program component, project-specific data includes pre- and post-retrofit home performance test results and billing data.

Program administrators worked with SMUD to fulfill all confidentiality concerns while capturing all necessary data. Program administrators used commercially reasonable physical, operational, and technical safeguards to preserve the confidentiality, integrity, and security of the information and data while in their possession and control.

Program administrators prepared monthly and quarterly reports to submit to SMUD, which documented activities, progress, and topics required for grant reporting. To report audit and retrofit information, Program Administrators were provided with the BETTER BUILDINGS PROGRAM WORKSHEET (excel spreadsheet) developed by Los Angeles County. On a quarterly basis, the Program Administrators submitted the BBP WORKSHEET to SMUD. SMUD reconciled the information into one spreadsheet and submitted it to Los Angeles County.

EVALUATION

Los Angeles County has secured The Cadmus Group, Inc. to work on the process evaluation of the pilot. As part of the evaluation, they have developed an interview guide and conducted interviews with SMUD staff to collect information on the program design and process, marketing, successes, challenges, goals, and achievements to date. They also conducted a series of short interviews with contractors performing work incented through the pilot in the residential and small C&I market segments, and conducted a short survey with program participants, starting with customers in the residential and small commercial market segments. The results of this evaluation were not available at the time of this report. The survey instruments developed for [Residential Participants](#), [Small Business Participants](#), [SMUD Staff](#), and [Contractors](#) can be found in the zip folder.

In addition, as part of the Better Buildings Program grant, SMUD contracted with AESC to conduct an evaluation to quantify the energy savings and cost-effectiveness of the program. The objectives of this evaluation were to measure and verify the program kWh and kW savings and to evaluate the events and activities where SMUD is supporting business, community, ethnic, and neighborhood organizations. Performance verification will be accomplished by review of the energy and demand consumption. Specific research included:

- Verify program goal of 20% energy reduction
- Measure demand savings where possible
- Verify and review effectiveness of partnerships established with associations and community based organizations
- Verify and review the effectiveness of neighborhood events
- Verify and review effectiveness of community sponsorship or events
- Characterize the measures employed by sector

The [results of the partner interviews](#) that were conducted by AESC through JD Franz Research, Inc. can be found in the zip folder. With such a small sample and such distinct programs it was impossible to disguise the respondent's feedback. To ensure confidentiality, some respondent's verbatim comments have been hidden.

The evaluation of energy savings is expected to be delivered by May 8, 2013.

ACCOMPLISHMENTS

1. SOPO Task 2.7a Community Based Marketing & Outreach

Target: The program will include a website and community events to motivate neighbors to participate and encourage greater energy savings.

Actual: www.smud.org/myrosemont & www.smud.org/mysacramento were developed and launched in August 2011.

21 community events were held reaching over 7,000 customers

2. SOPO Task 2.7c Neighborhood Targeted Marketing

Target: The program will include marketing materials.

Actual: The following marketing material was developed:

- Generic event invitation letter
- Bookmarks promoting Low-Income and Single Family programs
- Door Hangers promoting Single Family program
- Brochures promoting Single Family program
- Flyer promoting Single Family program (in English & Spanish)
- Flyer promoting Small Commercial program
- Postcard promoting Small Commercial program
- Letter promoting Low-Income program

3. SOPO Task 2.4a Single Family Rebates

Original Target: 138

Revised Target: 104

Actual: 101

4. SOPO Task 2.4d Multifamily Incentives

Original Target: 50

Revised Target: 130

Actual: 135

5. SOPO Task 2.4g Small Commercial Incentives

Original Target: 286

Revised Target: 286

Actual: 291

6. SOPO Task 2.4h Large Commercial Incentives

Original Target: 6

Revised Target: 0

Actual: 0

7. SOPO Task 2.4i Low Income

Original Target: 84

Revised Target: 44

Actual: 95

CHALLENGES

A significant effort is required to identify neighborhoods that contain the right combination of building types (single and multifamily, low income, small and large commercial) and desirable demographics (income, age of house, environmentally friendly, etc.).

It's important to spend time and effort identifying neighborhoods with active neighborhood social networks, such as homeowners associations, in which a significant number of homeowners were actively engaged. SMUD did this. It was useful to have existing neighborhood communication channels to reach homeowners and facilitate conversations about the program, supplementing other marketing strategies such as yard signs, door knob hangers, direct mailers, community events, meet the contractor meetings, and internet coverage (web-based channels and third-party websites).

- Significant time is required to design and deliver the program.

Policies and procedures for contracting processes, approvals, and checks and balances should be well outlined and streamlined to ensure that adequate time can be provided for the program to achieve its potential levels of adoption.

- Gaining traction within the community and getting adoption takes time.

Consumers need time to absorb the information before committing. Several years would probably be needed for adoption to spread to anywhere near its full potential in a neighborhood.

- Davis Bacon Act (DBA) compliance requires significant administrative efforts for the contractors and the grant recipients.

DBA compliance requirements must be understood from the very beginning and proper training should be provided to ensure success.

- Hiring only one contractor to support a neighborhood can have its drawbacks.

Since only the selected contractor was able to offer the substantial rebates, customers may have felt that their choices were limited. If the customer was not satisfied with the selected contractor's proposal or recommended measures, they may have felt obligated to pursue the retrofit or lose out on the additional rebate. Future neighborhood programs should consider the area to be special and offer higher rebates, but allow multiple contractors to work in that area instead of selecting just one.

PROGRAM SUSTAINABILITY PLANS

With Sacramento expected to grow significantly by the year 2050, SMUD is particularly concerned with the impact that growth will have on peak demand. Peak demand occurs during the summer when temperatures soar to 100 degrees or more, and customers turn up their air conditioners. Today, SMUD customers push the peak demand for energy to approximately 3,000 megawatts. SMUD has to account for an additional 400 megawatts of electricity for approximately 40 hours a year. By 2050, that peak demand is expected to be about 5,000 megawatts, which would create a need for another 600 megawatts during those 40 hours.

Energy efficiency is the best way to address this challenge—every kilowatt of electricity saved is one less kilowatt that needs to be generated by a power plant. The programs outlined below are being offered for the post-grant period (years 4 to 6) in support SMUD's 10-year strategic goals.

Single Family Sustainability Plan

Once the BBP grant ends, the SMUD Home Performance Program (HPP) will be offered to single family homeowners in the Better Buildings Program neighborhoods. The goal of the SMUD HPP program is to complete 250 retrofits and save 1.4MW in 2013.

SMUD's HPP was redesigned to be sustainable. The program is now prescriptive-based and more transparent to the customer and contractor. Under the SEP grant and BBP, contractors were required to perform EnergyPro modeling for each job (test in and test out). Furthermore, rebates were based on an estimated percent savings. Therefore, the exact rebate level was never known until the test out occurred and the software modeling was performed. The new HPP provides a "HPP Menu," which lists

all the eligible measures and rebates. The program still requires that the building envelope be improved to a specific level for each job. Once the basic measures are installed, the customer is encouraged to select additional measures for a greater rebate.

All SMUD customers will be eligible to receive rebates up to \$5,000. Only SMUD's rebate is now mentioned. PG&E's program rebate is no longer combined (contractors/customers can still pursue PG&E's rebate, if eligible). Energy efficiency measures covered by the SMUD Home Performance Program include: air sealing, attic insulation, duct sealing, wall and floor insulation, vapor barrier, right-sized air conditioner, heat pump water heater, variable speed pool pump, and windows. Over 30 contractors have qualified to support the on-going program, and more will be added if they meet the HPP qualification criteria. The program will be communicated to customers through standard marketing channels including direct mail, bill inserts, radio, billboards, print ads, etc.

Multifamily Sustainability Plan

SMUD will also continue the multifamily program component once the grant ends. Through SMUD's multifamily program, apartment owners can save up to \$500 for 10% improvement plus \$40 for each additional percent improvement, up to \$2,100. Qualified contractors will be hired by the owners to install the following measures: attic insulation, air sealing, duct sealing and insulation, AC replacement, programmable thermostats, CFLs in dwellings and common areas, wall insulation, window replacement, and domestic hot water controls if the building uses a central DHW system. The multifamily program is expected to complete 1,200 units in 2013. Since this is a contractor driven program, the program would be communicated to customers (multifamily property owners) through HERS II raters and other contractors (i.e., HVAC, windows, insulation, lighting contractors) who are involved in this particular retrofit marketplace.

Low-Income Sustainability Plan

Qualifying customers throughout Sacramento can take advantage of up to \$1,200 in free weatherization measures including attic insulation, weather-stripping, electrical water heater wraps, pipe insulation, low-flow showerheads, aerators, hardwired lighting fixtures, ceiling fans, CFLs, torchiere lamps, microwave ovens, and minor home repairs directly related to infiltration problems. SMUD is currently partnering with four contractors, who are expected to implement energy saving measures for 975 homes in 2013, generating 1Gwh of savings.

Small Commercial Sustainability Plan

Small- to mid-sized businesses (up to 299kW) are eligible to participate in SMUD's new Complete Energy Solutions (CES) program. In 2013, CES aims to retrofit 250 locations and offer rebates to cover up to 80% of project costs for small businesses and 60% for mid-sized businesses for many types of energy-efficient upgrades and services, including those shown in Table 6. The program will be communicated to customers through standard marketing channels including direct mail, bill inserts, radio, billboards, print ads, etc.

Table 6. Small commercial energy efficiency upgrades offerings

Lighting	Linear Fluorescents, CFL, LED, Hi Bay, Exit Signs, Exterior Lighting, Lighting Controls, Refrigeration Case Lighting, and more.
HVAC	Programmable Thermostats, Package Unit Tune-Ups, Refrigerant Charge, Duct Test & Seal, Economizer Adjustment, Window Film, and more.
Food Service	Oven, Fryer, Griddle, Steamer, and Insulated Holding Cabinet Replacement.
Refrigeration	Anti-Sweat Heater Controls, Evaporator Fan ECM for Display Case Cooler/Freezer/Walk-in, Evaporator Fan Controls, Auto Door Closers, Night Covers, Strip Curtains, and Vending Machine Controllers.
Water Heating	Low Flow Showerheads, Faucet Aerators, High Efficiency Water Heaters, Water Heater Thermostat Setback.
Motors	Standard Efficiency to Premium Efficiency Electric Motor Replacement.
Other	Single Speed to Two-Speed or Variable Speed Electric Motors and Pool Pumps, Network Desktop Computer Power Management Software.

VERIFICATION OF DATA

Sources of information:

- Utility billing data
- Demographic data
- Census data
- Data obtained by contractors in the field
- Information provided by customers
- Outcomes from energy analysis and energy modeling software (EnergyPro, DEER, REM)

In addition, as part of the Better Buildings Program grant, SMUD contracted with AESC to conduct an evaluation to quantify the energy savings and cost-effectiveness of the program. The [evaluation work plan](#) can be found in the zip folder. The results of this evaluation are expected to be delivered by May 8, 2013.

Renewable Funding (“RF”) served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed. RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE’s xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

DEVELOPED PRODUCTS

The following products were developed under the award:

- [Marketing material](#) (included in zip folder)
 - Brochures
 - Fliers
 - Postcard
 - Bookmarks
 - Letters
 - Door Hangers
 - Emails
 - Shopping Cart Ads
- [Articles / News Releases](#) (included in zip folder)
 - Rosemont Patch
 - Butterfield Riviera East Community Association (BRECA) Newsletter
 - Downtown Sacramento Partnership ran an article in their July issue
 - Article on Small Commercial Program appeared in Sacramento Asian Pacific Chamber of Commerce – eNEWSLETTER
 - Downtown Sacramento Partnership ran an article in their July issue

- News Release appeared in Bright Energy (trade publication), American River Messenger & affiliates (Arden Advocate, Carmichael Times, Natomas Messenger, Orangevale Sun, Sacramento Oracle), and the Sacramento Bee
- Sponsored the East Sacramento Home Remodeling Tour – received recognition in the publication Inside East Sac
- Article appeared on Rosemont neighborhoods Home Owners Association webpage
<http://rosemont.patch.com/articles/smud-offering-rebates-for-home-efficiency-upgrades>
- City of Sacramento Newsletter on Small Commercial Program
<http://www.cityofsacramento.org/transportation/cityexpress/index.html>
- Article appeared on Rosemont neighborhoods Home Owners Association webpage
<http://rosemont.patch.com/articles/smud-offering-rebates-for-home-efficiency-upgrades>
- City of Sacramento Newsletter on Small Commercial Program
<http://www.cityofsacramento.org/transportation/cityexpress/index.html>
- Videos
 - Small Commercial Video
<http://hpp.smud.org/neighborhood-approach/downtown-east-sacramento/special-offer-for-business-owners> and <http://hpp.smud.org/neighborhood-approach/rosemont-neighborhood/special-offer-for-business-owners>
 - Single Family Testimonial Video
<http://hpp.smud.org/neighborhood-approach/downtown-east-sacramento/neighborhood-buzz>
- Websites/Social Media
 - Small Commercial
www.smud.org/ces
 - Single Family
www.smud.org/mysacramento

www.smud.org/myrosemont

- “House Smart Are You” Facebook quiz

<http://apps.facebook.com/house-smart-are-you/>

Energy Efficiency and Conservation Block Grant (EECBG) – Better Buildings Neighborhood Program

Final Report: City and County of San Francisco

Award Number: DE-EE0003562

BBNP Name: U.S. Department of Energy's Better Buildings Program

Project Title: Retrofit California

Name of Project Director/Principal Investigator: Cal Broomhead and Reuben Schwartz

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EXECUTIVE SUMMARY

Leveraging a Community Block Grant, other American Recovery and Reinvestment Act (ARRA) funds, and the ratepayer-funded Energy Upgrade California (EUC) home performance program, San Francisco's Better Building Partnership (BBP) program (titled EUC-SF) succeeded in creating great public awareness of the home upgrade rebates, engaged 7,000 San Franciscans in direct discussions on home performance, created a cadre of stable and active home performance contractors in the City, and accomplished 353 home energy upgrades.

San Francisco's Single Family BBP initiatives were focused on achieving comprehensive retrofits in single family homes (units in 2-4 unit buildings were also eligible); supporting the home performance industry in San Francisco; and raising awareness of the concept of whole home performance among the homeowners most likely to do an upgrade. Green Building Labeling and outreach to the real estate community were also priorities. We experimented with several approaches to our outreach, constantly readjusting to incorporate lessons learned, and refining those channels that were most successful.

Community Based Social Marketing employed financial incentives for upgrades, contractor support, and a segmented, choreographed, layered, and personal outreach approach to carefully targeted market segments. Granular demographic research, directed by the small initial sample of upgraders through the earlier EECBG programs, revealed on a block-by-block basis which residents would mostly likely be receptive to the offer of an energy upgrade rebate. We then overlaid broad-based publicity with local advertising (bus shelters, posters in local businesses), a zip+4 online ad campaign, open houses hosted by program "alumni", carefully mapped door-to-door outreach, and other community events, which were all timed to cluster in a specific area over a short time frame. Referral vouchers worth \$250 were also available for both the referrer and the new customer. The community-based approach gave people both the knowledge and confidence to proceed with the substantial investment of an upgrade. Nearly all are enthusiastic advocates for the program, as evidenced by the twenty open houses that upgraders were willing to host. We reached over 7,000 people one-on-one in person, online, by phone or email; 900 qualified homeowners connected with EUC-SF contractors through our online portal; and 353 retrofits are scheduled for completion.

Promoting Green Building Labeling, San Francisco partnered with Alameda County to commission the first comprehensive academic study of its kind studying the effect of green building labels on property sale values of single family homes in California. Economists from UC Berkeley and UC Los Angeles completed an analysis of all 1.6 million single family homes sold in the state from 2007-2012 (Q1). The study found that the approximately 4,000 green labeled homes (Energy Star, LEED for Homes, and GreenPoint Rated) sold for 9% more ($\pm 4\%$) than comparable, non-labeled homes. The study was widely publicized nationwide. The San Francisco Assessor-Recorder has now begun adding green building labels to the official tax rolls. Significant efforts went into greening the various Bay Area Multiple Listing Services, although more work needs to be done to standardize inputs and data collection and verification methods. Education of real estate agents was also part of our efforts. Ten agents took

advantage of the \$500 home energy upgrades vouchers for their customers (paid to customers but distributed by agents).

San Francisco's Multifamily efforts expanded our ongoing measures-based EnergyWatch program to take a whole-building approach. Audits of over 17,000 units in 280 buildings revealed that just over 1,000 had achieved close to a 20% total building savings. While exceeding our BBP goal, this whole building analysis led to development of a comprehensive calculator tool to both package and sell the deepest retrofit appropriate for a given building and owner.

Valuable lessons were learned from two pilots, which saw very little uptake. The Whole Neighborhood Approach was not viable for either customers or contractors in San Francisco. Contractors were very resistant to altering their supply chains, did not see the value in bulk purchases or savings in geographical proximity of jobs. As a result, the "discounts" they offered were minimal and impossible to verify. Customers, while appreciating the support of the neighborhood group, did not have projects that shared characteristics, and felt a lack of project control because of the constricted contractor choices and the pace of their neighbors' projects. Eventually, one neighborhood was targeted and ten projects were completed by one contractor. The retail approach proved similarly ineffective. Tear-away "shelf-talkers" highlighting home performance-related products were placed in four local hardware stores for a month. Staff was trained, the program was publicized in their 50,000-circulation newsletter, and blurbs announcing rebates were printed at the bottom of every receipt. Hits to the dedicated website address were almost non-existent. Home performance contractors do not supply from local hardware stores, and non-professional "Do-It-Yourselfers" are not likely participants in home upgrade programs.

FINAL TECHNICAL REPORT

Institutional Design and Business Model

Single Family Program

The San Francisco BBP program was designed to promote market transformation: to build the nascent home performance industry and mainstream its best practices into the overall business of home renovations. Most homeowners are not aware of the concept of home performance, and even among those who seek energy improvements, most will act only at a trigger event (home sale, refinance, major renovation, etc.). Therefore, the program featured rebates to enhance the value proposition for consumers, marketing support for contractors to gain a market foothold, very targeted and layered outreach to connect with homeowners whose demographic and home types made them most likely to reach their trigger events, and word of mouth through neighbors and other trusted sources.

The program was also designed to leverage public and industry awareness of home performance created by utility and statewide advertising, as well as the rebates offered by PG&E's Whole Home program.

Green Labeling

Green labeling was an important component in raising both market awareness and property values. Once labels are trusted, more widely adopted, and shown to increase property values, they will become demand and supply-side drivers. San Francisco's model included commissioning the first comprehensive academic study of its kind to assess the effect of green building labels on property sale values of single family homes in California. Supported by BBP funds, San Francisco's Assessor-Recorder has now begun adding green building labels to the official tax rolls.

Multifamily

San Francisco's multifamily efforts were designed to leverage our ongoing measures-based EnergyWatch program by expanding it to take a whole-building approach. The EnergyWatch program, in partnership with PG&E, provides rebates according to specified formulae for specific retrofit measures. It does not address whole building performance. Through numerous relationships with building owners and managers developed over the last several years by in-house staff, we began with a wide range of building targets, which we hoped would yield deeper retrofits.

Program Design and Customer Experience

Single Family

The rebates in our program piggybacked on Energy Upgrade California rebates offered through PG&E's Whole Home program. Rebates are tiered to modeled energy savings, from \$1,500 for 15% savings up to \$4,500 for 45% savings. (Note that PG&E lowered their threshold to 10% = \$1,000 midway through the program, but San Francisco maintained the 15% floor.)

The program was conceived as contractor-driven, so contractors would need to be well-informed and see the value proposition for their business. Program participation made as easy as possible for them. Streamlined and consistent submittal requirements, as well as constant support and an open channel of communication were essential components for this strategy to work. San Francisco staff were always available to answer questions, work out problems, offer encouragement, and make every effort to find solutions for projects that had not gone according to plan. This approach, along with bi-weekly contractor conference calls, created trust and credibility between the Department and our most active contractors.

We also offered strong marketing support, generating quality leads to contractors. (See “Driving Demand” section below, and attached Marketing Analysis for complete details.)

Customers also had to gain the confidence to participate in this major decision. We helped achieve this with a combination of friendly and timely customer support; market-moving rebates; the trusted name of the City of San Francisco (who could corroborate what customers were hearing from their contractors); and a layered marketing approach with broad-based awareness coupled with targeted outreach.

Multifamily

We conducted audits of over 17,000 units in 280 buildings that had received upgrades during the grant period. The audits revealed that in only about 1,000 of those units—about 6%—had the upgrades achieved anything near to a 20% savings on a whole-building basis. While exceeding our BBP goal, this whole building analysis led to the development of a comprehensive calculator tool to both package and sell the deepest retrofit appropriate for a given building and owner.

Driving Demand

Single Family

San Francisco’s experience corroborated the relevance of all the following points, noted in the July 2012 Residential Energy Efficiency Solutions workshop, to recruiting customers:

1. Identify discrete target audiences; adapt your tactics and messages to their needs
2. Offer what people want and value (not necessarily energy efficiency)
3. Make it easy for homeowners to understand how to participate
4. Contractors are your sales team—empower them and give them something to sell
5. Leverage “early adopters” and engage trusted messengers to market the program
6. Work with your customers’ existing trusted partners for more effective marketing
7. Word of mouth is powerful, so give people something to talk about

8. Use competitions, time-limited offers, and other deadlines to motivate action
9. Use language that resonates with your target audience
10. Make benefits visible by showcasing completed projects and actual results
11. Follow through with customers—one touch is not enough
12. Door-to-door marketing works better to advertise events than to “make a sale”
13. Follow up quickly on leads to take advantage of the “opportunity window”
14. Track and evaluate what works (and doesn’t), and adapt your marketing approach

We have prepared a comprehensive recap of our efforts in our Marketing Analysis, which is attached here for reference.

Multifamily

Driving demand was not a primary program element for multifamily because pent-up demand existed throughout the grant period. This was due in part because of the rebate amounts offered through EnergyWatch, as well as our prior EECBG-funded boiler replacement program. It was also due to our in-house staff’s numerous existing relationships with building owners and managers. Finally, with a measures-based program, owners tend to implement improvements piecemeal, so we served a significant number of repeat customers.

Workforce Development

Single family

We found the following points to be most relevant to a productive relationship with our contractors:

2. Help your contractors drive sales; they are the obvious ambassadors
4. Help smaller, local contractors enter the market by lowering the cost of entry
6. Don’t be afraid to differentiate contractors based on certification or skills
7. Create value for contractors through leads and coordination so they can be effective and bring value to the program
9. Listen to your contractors to evaluate and adapt your program

We hired a full-time marketing coordinator, one of whose responsibilities was supporting contractor outreach and sales skills. Our engaging customer-facing online portal, powered and customized for us by EnergySavvy, brought in high-quality leads. All our outreach efforts drove customers to this site (<http://sfe.energysavvy.com/>), where they would complete a quick and easy survey and receive an energy assessment, indicating if they were likely to be good candidates for the program and making some preliminary recommendations for upgrade measures. Customers could then share their contact

information with us, and were offered a choice of participating contractors with whom they could share their energy profile and request a call back. These were people who had already given an upgrade some serious thought. Our excellent rate of survey completion (and job conversion, both described in our marketing report) attests to this, as well as to the power of the intake tool.

However, contractors demonstrated varying levels of skill in converting those leads to jobs. Often we found that contractors were not responding to customers' inquiries, simply by not returning calls. We offered a direct line for customers to call us for information and support, and were also aggressive with our contractors, following up with them to discuss the list of warm leads that our site had generated for them. This builds credibility for the program when customers' needs are met. Contractors' credibility in the eyes of customers was also enhanced as they (most often) found that we corroborated the information they had received from the contractors, or conversely, we were better prepared to engage a contractor if the customer had spoken with us first. It also encourages contractors because they see that our leads do in fact lead to jobs.

Bi-weekly contractor conference calls (and the announcements for them) provided an opportunity to share news about the programs and, more importantly, to field contractor feedback and complaints. This not only improved the program structure, but built trust.

Of the sixteen or so participating contractors, about a half dozen were active and reliable participants in the program. However, differentiating among them for our customers, as well as distinguishing them from the lesser-known less active contractors, proved challenging. City regulations, as well as best practices as program administrators, prevented us from recommending a specific contractor. Various sorting metrics, such as how many jobs completed, completion %, etc., each had drawbacks and also tended to tilt against newcomers or small businesses. We would, however, try to pose questions to lead customers to high performers: "Do you want someone based in San Francisco?" "Large company or small shop?" "Is time of the essence for your job?" "Did your first choice return your call promptly? Treat you with respect? Answer all your questions?" Often we would be aware that certain contractors were overextended, and would try to steer prospective upgraders to others with more availability. Eventually, we dropped the less active contractors from the list on the online portal, making customer choice easier and more likely to be a good match.

Multifamily

The EnergyWatch program is contractor-driven, allowing owners to employ the contractors with whom they have existing and ongoing maintenance relationships. Contractors are aware of the rebates, and sell (or up-sell) them to their customers. However, decisions are generally determined by maintenance needs and availability of capital. Whole building energy use is rarely a factor, so while improvements are made across a broad swath of the market, the building performance segment remains largely unaffected under this model.

Financing and Incentives

Single Family

San Francisco offered a number of incentives (there was no financing component to our program) both to spur participation and to gather data (more on that under “Data and Evaluation,” below). Uptake fluctuated based on rebate amounts and, importantly, approaching deadlines. While deadlines can and should remain fixed, incentive budget necessarily fluctuated (with funds being drawn from other budget line items) to honor all rebate reservations. As learned from previous ARRA-funded programs, predictability of rebate availability is absolutely essential. Nothing kills a program’s credibility quicker, or more surely drives contractors away from this business, than renegeing on a promise and running out of money.

In July 2012, after the conclusion of our EECBG incentive program, which had San Francisco rebates ranging from \$2,000-\$4,000, we implemented a BBP-funded \$1,000 incentive. In both cases, these incentives were on top of the \$1,500-\$4,500 incentive offered by Energy Upgrade California through PG&E. Initial uptake was sluggish, due to a combination of the lower rebate amounts and the likely lack of marketing by contractors as they rushed to finish work on the previous program. In September 2012, in the run-up to the Presidential election, we launched a promotion called the “October Surprise,” whereby anyone getting an audit in the two months prior to the election would be eligible for a double rebate of \$2,000. The deadline and incentive boost coaxed dormant projects back to life and nudged hesitant customers to act. Project starts increased 500% over these two months.

Referral vouchers, where a new customer and the referrer each received \$250, were popular and especially useful in enticing alumni of the program to open their homes for promotional neighborhood events. Real estate agent vouchers, whereby agents could give \$500 vouchers to their clients (the agents were not paid), saw limited uptake but were popular among the realtors who used them. Our experience suggests that with further education in the real estate market, this would be an effective outreach tool.

Overall, the entire incentive budget of \$200,000 (increased from \$175,000) was spent.

Multifamily

Rebates were limited to the individual measures-based EnergyWatch and Boiler Replacement incentives noted above.

Data and Evaluation

Single Family

San Francisco’s rebates/incentives were directly tied to our Data and Evaluation, because the offering of incentives was the only way we could collect meaningful data. In San Francisco, PG&E understands itself to be bound by certain privacy protection rules, so we are unable to access project-specific data for all the upgrades that go through the Energy Upgrade California program. Without rebates of our own, we

are essentially blind as to what is happening in the field. We would have no information about who is doing rebates, what types of customers have participated or any data about their homes, the types of measures that are being installed, or energy savings being predicted. Moreover, lack of these data would severely hamstring development of any further market segmentation or outreach strategies. Fortunately, our rebates provide us with a wealth of information on completed projects, both to gauge the effectiveness of our efforts and to formulate continuing targeted outreach efforts. These activities are described in detail in the attached Marketing Analysis.

Project data and completion status were monitored in a number of ways. After a short initial period of manual data input (to be strongly avoided if at all possible), contractors input data and uploaded documents to the Green Energy Compass online tool (by PSD). While the interface was difficult and counterintuitive, it had the advantage of being able to extract data directly from uploaded EnergyPro models (.bld files). Contractors were also familiar with it because it was the same system PG&E was using for their rebate program. Information from the Compass system was downloaded weekly into a project tracking spreadsheet, which organized the data in a much more digestible manner.

A few salient metrics worth noting:

- The amount of money spent had no relation to the amount of energy saved. There was no correlation between cost and any energy metric (total saved, kBtu/sf used post-retrofit, kBtu/sf saved, etc.)
- The strongest correlation (that we found) exists between the amount of energy used pre-retrofit (per sf) and the amount saved. High users save more. This strongly suggests identifying and targeting high users.
- Average modeled energy savings was 34%.
- Air sealing was done in 89% of all projects, by far the most prevalent measure. (Air sealing eventually became a requirement of participation.)
- In the coastal San Francisco climate, 96% of the modeled savings was from reductions in natural gas use.
- Fifty-nine customers gave consent for us to request their actual energy use data for 12 months before and after the retrofit. Receipt of data is pending.

Multifamily

The key finding, that upgrades achieved over 20% savings on a whole-building basis in only about 1,000 units—about 6%—was noted above. Gathering this data, however, proved to be a major challenge. For a measures-based program, minimal information is required to pay the rebate, and in many cases even basic information such as number of units in a building had to be retrieved from other sources. Additionally, we seldom had immediate access to baseline energy usage data or actual post-retrofit energy usage. In the rare cases, where this information was available (or obtained), it was not always clear when the baseline should be determined, given that serial improvements had been made over

time, or that enough time had elapsed since the upgrades to glean meaningful information. Finally, the accuracy of predicting savings in complex high-rise multifamily buildings is still an inexact science at best.

For more information and examples of the six pillars, see the PowerPoint

Presentation by the BBNP program manager at the July 2012 Residential Energy Efficiency Solutions workshop:

www.betterbuildings.energy.gov/neighborhoods/pdfs/bbnp_lessons_learned_weds_lunch_07-11-12.pdf

ACCOMPLISHMENTS

Task 2.0 – Develop Marketing & Outreach Innovations

Subtask 2.1: Community Based Social Marketing & Outreach

“Layered” approach of coordinated, overlapping marketing strategies and tactics: Door-to-Door, Open Houses, Targeted Direct Mail, Online ads, Bus Shelter ads, Neighborhood events, Realtor outreach, Tax Assessor’s insert.

19,000,000 mass marketing impressions to create brand awareness

7,059 people interacted with SF Environment in person, online, by phone or email

900 qualified homeowners connected with EUC-SF contractors through innovative customer-facing portal

Detailed market demographic segmentation for optimal yield of CBSM efforts

Target of 375 retrofits 94% achieved

Subtask 2.2: Home improvement retail store partnerships

10 related products in 4 Cole Hardware stores were tagged with tear-away “shelf talkers”

Staff floor trained

Remained in place for 6 weeks

Promo message at bottom of all cashier receipts

Subtask 2.4: Green Building Labeling

Commissioned statewide research, which showed a 9% value premium for green labeled homes

Partnered with County Assessor to list green labels for all properties on tax rolls

Generated HEScores for 200 projects to test viability in California. DOE revisions pending.

Task 3.0 Develop Project Delivery Innovations

Subtask 3.1 Whole Neighborhood Delivery for Single Family Residences

Goal of 10 retrofits completed in targeted neighborhood

Whole Neighborhood Approach proved a hindrance rather than a motivator

Subtask 3.2 Multifamily building retrofit delivery innovations

Whole building quantitative audits of over 17,500 units in 280 buildings.

Audit revealed difficulty of achieving deep energy savings with measures-based interventions

Nevertheless, 1,093 units achieved building-wide savings in excess of 20%.

Task 4.0 Program Administration and Reporting

Subtask 4.1 Project Management and Reporting

Marketing leads and contractor connections made and tracked through innovative customer-facing portal

Portal creates energy profile for customer, which motivates participation and can be shared with contractors

Rebates enabled collection of large amounts of data showing correlations between predicted energy savings and outreach tactics and home energy characteristics. Marketing leverages such correlations to target most fertile segments.

CHALLENGES

Lack of Data/Transparency – Our inability, in the absence of offering our own rebates, to collect any type of data on individual homes that have gone through our upgrade program or people who are considering doing so, is a significant barrier. The idea of running a program and having no idea of who is participating in it is patently ludicrous. Without this data, the local governments, who are, by and large, the drivers spurring residents to participate in the program, have no way to measure the success of our efforts, either from an energy savings or marketing perspective. Further, we have no way to improve on our outreach channels, market segmentation analysis, messaging, or contractor performance. Fortunately, San Francisco structured its program, both under EECBG and the subsequent BBP programs, to continue to offer rebates on top of the utility's whole home program rebates. With the close out of BBP funding, we will be back "in the dark."

A corollary to this is the difficulty in gathering actual post-retrofit energy usage data, to judge both the accuracy of our predictive models and the influence of other "real world" factors that influence how predicted savings are or aren't realized by customers. Obstacles, while not insurmountable, include the difficulty in ascertaining the exact date that a retrofit is completed (work often drags on, or is combined with other renovation construction), the cumbersome nature of submitting client-authorized energy data requests to the utility, and the sensitive nature of inquiring about other life changes that may influence use fluctuations (more or fewer people in the house, deaths, births, teenagers, etc.). We have given gift cards to entice about one in six of our participants to share this data.

Poor contractor follow-up – As described above, we instituted a system for providing high-quality leads for our contractors. These were customers who were interested enough to fill out a quick energy survey, leave their contact info, and select one or more contractors with whom to take the next steps. We consistently received complaints from customers, wondering why their emails or phone calls had not been returned. Even the simple courtesy of a return call explaining that the contractor was too busy would have enabled the customer to move on, and more importantly, would have maintained the credibility of the program. We emphasized this repeatedly in our bi-weekly contractor conference calls, and immediately followed up with contractors when we received specific complaints from customers.

Onerous program requirements – Undertaking a comprehensive home energy upgrade is a taxing construction project for most homeowners even without having to deal with additional program requirements. Customers were largely shielded from this burden, which was largely shifted to the contractors. However this shift, while appropriate, had a number of drawbacks. Firstly, because of the utility's unwillingness to share a data entry portal, contractors had to enter identical information into two identical but separately permission-restricted program portals. They also, therefore, had to wait receive two separate Notices to Proceed, one for each rebate. (Ours would follow no later than 48 hours after the utility's EUC approval.) Perhaps understandably, contractors would often disregard this awkward program workflow in preference to their own. Frequently they would actually finish work without a Notice to Proceed, and submit all the paperwork at the end when applying for the rebate. This made it difficult for us to understand how many projects were happening at any given time (we often

underestimated as a result), and also led to customer complaints when problems were discovered at the eleventh hour, often as deadlines approached.

Looking at the requirements more broadly (keeping in mind that the ultimate goal is installation of certain measures to effect increased energy efficiency), research is needed to determine whether special, expensive BPI training and testing procedures of our narrowly targeted efforts outweigh the benefits of scaling the program by allowing customers to choose their contractors without restriction, followed, at job completion, by a simple QA to determine that the work was actually done.

Difficulty for customers selecting contractors and difficulty for us in sorting/rating them. Because customers were not allowed to use their own contractors and, in most cases, were not familiar with any of the BPI-certified participating ones, selecting a contractor proved challenging for many customers. They would often ask us for recommendations, which we were not allowed to give them, even though our experience gave us a good idea of who was delivering and who was not. We would, however, try to pose questions to lead customers to high performers: “Do you want someone based in San Francisco?” “Large company or small shop?” “Is time of the essence for your job?” “Did your first choice return your call promptly? Treat you with respect? Answer all your questions?” Initial selection became all the more important because of the cost of switching contractors. Not only was the test-in audit expensive, but a second contractor was often unwilling to accept the results of the first.

As described above in “Workforce Development” (question 4), we considered various sorting metrics for our online contractor list, such as number of jobs completed, completion %, etc., however, each had drawbacks and also tended to tilt against newcomers or small businesses. Eventually, we dropped the less active contractors from the list on the online portal, making customer choice easier and more likely to be a good match.

Lack of budget consistency and support from grantors – The City and County of San Francisco was a sub-awardee to the Association of Bay Area Governments (ABAG), which was in turn a sub-awardee to Los Angeles County. After the start of the grant, LA County provided little programmatic support, and proved to be little more than a bureaucratic conduit with frequently changing and increasingly time-consuming reporting requirements. More problematically, especially in the absence of support, LA County instituted a series of unworkable spending projection targets that ignored the inherent unpredictability of and consequent need for flexibility in program spending and issuing rebates. The lack of predictability of our promised funding had an adverse effect on program planning, our credibility in the eyes of our contractors and customers, and had the perverse effect of accelerating spending in a way that was not optimal for the program objectives. Programs, especially challenging, groundbreaking ones aimed at building the credibility needed for long-term market transformation, cannot function effectively if funding is continually in danger of being pulled midstream.

PROGRAM SUSTAINABILITY PLANS

San Francisco's efforts under BBP are being continued through a new partnership program approved for funding by the Public Utilities Commission (CPUC) for 2013 and 2014. With the other eight Bay Area counties, we formed a Regional Energy Network (BayREN) under the auspices of ABAG and approved by the CPUC for \$26.5 million.

The program has four components: Single family, Multifamily, Financing, and the new component of Codes and Standards. The Single Family program offers incentives and is designed to engage single-trade contractors and home owners who are not prepared for a whole-house Advanced Package retrofit. Homeowners can select from a menu of measures to earn points and the incentive funds (up to \$2500) are paid according to the number of points earned.

The Multifamily program is designed after the BBP percentage reduction approach, and requires the installation of measures from at least two categories among shell, HVAC, and lighting. The incentive of \$750 per apartment unit will be paid if the entire building achieves savings of at least 8%. San Francisco's work to develop a simplified energy and financial model is proving useful in the development of a tool that can serve all nine counties in the BayREN multifamily program.

Brand: BayREN will use the statewide brand, "Energy Upgrade California", as ordered by the CPUC for all energy efficiency programs funded with ratepayer funds. A tag line may be added for the program, however, this is yet to be determined.

Goals: San Francisco has proposed specific measurable goals under BayREN:

Multifamily: reach 73 building owners, provide technical assistance to cover 2,186 units of housing, provide incentives to 1,200 units, and train 12 contractors to participate in the program.

Single family: Reach 500 homeowners, provide incentives to 276 projects, and train 10 contractors

Market: Both programs will serve market rate housing. However, the single family program will target more moderate income neighborhoods than the neighborhoods where the Whole House approach was most successfully marketed.

Offering: The Single Family program will offer Home Energy Advisor service, providing homeowners with consultation on the program, the incentives, their project, the contractor, and any other question related to energy use in their home. The Advisor will also refer homeowners to other programs such as the SF Water Department programs, Recycling and Composting, Toxics Reduction.

The Multifamily technical assistance will include: site visits, identification of potential measures, assistance in measure selection, consultation during contractor selection and the construction process, and post-construction site visits for quality assurance. Incentives of \$750 per apartment unit will be paid if the entire building achieves savings of at least 8%.

Partnerships: BayREN partners include consultants selected through an RFP process to assist with various stages and functions of the program. They are ICF, BKi, and Jody London Consulting. Other Single family partners include the same partners used for the successful completion of BBP: neighborhood

associations, neighborhood newspapers, neighborhood fairs, the SFE Environment Now staff, and other local community based social marketing resources.

The Multifamily program partners include the SF Apartment Owners Association, the SF chapter of the Professional Property Managers Association, and SF Energy Watch (our partnership program with our utility PG&E).

Outreach: For Single Family, we plan to use the same multi-layered neighborhood-based social marketing that proved successful during BBP. In addition, the BayREN consultant will perform some general broadcast marketing through earned and paid advertising, working with supply chains, and other regionally based marketing strategies. We do not plan any broad-based communication to the general public. We do plan to inform local elected officials, in addition to outreach through local marketing channels to reach building owners.

Future: To continue this work beyond 2014, BayREN will submit another application to the CPUC for the 2015-17 program cycle.

VERIFICATION OF DATA

BKi, Renewable Funding (“RF”) served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE’s xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

DEVELOPED PRODUCTS

Purpose and Instruction:

- Publications:
“The Value of Green Labels in the California Housing Market”
<http://www.sfenvironment.org/article/sf-home-improvement-performance/green-homes-worth-9-more>
- Web-based diagnostic tool: Customized intake and on-ramping tool:
<http://sfe.energysavvy.com/>
- Mobile app: LightBulb Finder partnership with Cole Hardware.
- Networks:
Board of Supervisors; SF Assessor-Recorder; SF Public Library; SF Board of Realtors; SF Apartment Building Owners Association; SF Professional Property Managers; Community-based organizations; various neighborhood associations.
- Technologies:
Tool to translate .bld building models (pre- and post-retrofit) into equivalent DOE Home Energy Scores.
- Inventions: None
- Other Products:
Flyers, e-newsletter text, door hangers, Tax notice insert, incentive vouchers, standing retractable banner, newspaper ads.
New tabling home performance exhibit; “Dollhouse” pressure diagnostic training tool used to demonstrate home performance and spur interest at public events.
MF prospectus and energy/investment calculator tool.

Energy Upgrade California – San Francisco Marketing Campaign, Post-Analysis

April 2013

by Luke Easdale and Anya Deepak

Department of the Environment – City and County of San Francisco



SF Environment

Our home. Our city. Our planet.

A Department of the City and County of San Francisco

The San Francisco Department of the Environment creates visionary policies and innovative programs that promote social equity, protect human health, and lead the way toward a sustainable future. We put our mission into action by mobilizing communities and providing the resources needed to safeguard our homes, our city, and ultimately our planet.

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1. Executive Summary

This report highlights the outcomes of the Energy Upgrade California – San Francisco marketing campaign for the Third and Fourth Quarter 2012. In response to the San Francisco Board of Supervisors Green House Gas (GHG) reduction goals the San Francisco Department of the Environment created the San Francisco Home Improvement and Performance (SFHIP) program in 2011 to reduce the GHG emissions of single family homes. In March 2012, a partnership with Energy Upgrade California was formed and the name of the program changed from SFHIP to Energy Upgrade California – San Francisco. For the purposes of this report, the focus will be on Energy Upgrade California – San Francisco marketing activities conducted in the Third and Fourth Quarter 2012.

Energy Upgrade California – San Francisco provides homeowners with financial incentives and the resources needed to upgrade the energy efficiency of their homes. The San Francisco Department of the Environment was tasked with developing a nascent home performance market in San Francisco and increasing the number of energy efficient homes in the city through marketing and outreach efforts.

Before developing this marketing campaign, an in-depth situational analysis was conducted. The analysis included reviewing program participant census block demographics, incentive amounts and correlation to program participation, geographical location of program participants, customer tapestries, location of past marketing efforts and correlation to program participation, Google analytics, past program participant survey results, hotline inquiries, collateral and anecdotal evidence provided by contractors, past and present participants and program implementers.

Not only did this analysis provide insight into the current home performance market, brand awareness and program participation factors in San Francisco, it also identified three target market segments with a high propensity for program participation. Owing to budgetary restraints, SF Environment was not able to target marketing efforts to engage everyone in these three market segments, so additional analysis was conducted to further refine the target market.

By adding layers of census block and market segmentation data (percentage of owner occupancy, income, net worth, retail spending potential, utility cost, environmental group participation etc.) to Geographic Information Systems (GIS) we were able to visualize and refine this target market to areas with the highest propensity for program participation in San Francisco.

By analyzing the refined market segment's barriers and motivation to program participation, we were able to craft a layered engagement strategy/marketing plan that appealed to them.

Marketing tactics were chosen to engage homeowners at every stage of the engagement cycle from lack of awareness through participation.

Similarly to building science professionals selecting energy efficiency measures that build upon each other and work as one complete system; SF Environment's marketing plan used a balance of overlapping marketing strategies and tactics that worked as one cohesive marketing campaign to engage these homeowners.

These overlapping marketing strategies and tactics used over 19,000,000 mass marketing and advertising impressions to increase brand awareness. This was done through online, mobile device, transit shelter and newspaper advertisements, direct mail, earned media and in person outreach.

Leveraging this awareness more targeted and localized outreach and customer engagement tactics were implemented to drive over 7000 individuals to interact with SF Environment representatives in person, online, on the phone or via email. These tactics included but were not limited to door to door outreach, targeted direct mail and online advertising, neighborhood presentations and earned media.

These tactics were directly responsible for connecting over 900 qualified homeowners with approved Energy Upgrade California – San Francisco contractors. This campaign raised brand awareness, drove participation and laid the foundation for future Energy Upgrade California – San Francisco marketing campaigns.

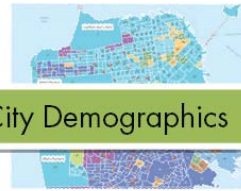
Marketing Process

Research

Past Customer Data



City Demographics



Barriers to Participation



Identify Customers & Targeting



=

Homeowner

Connoisseurs

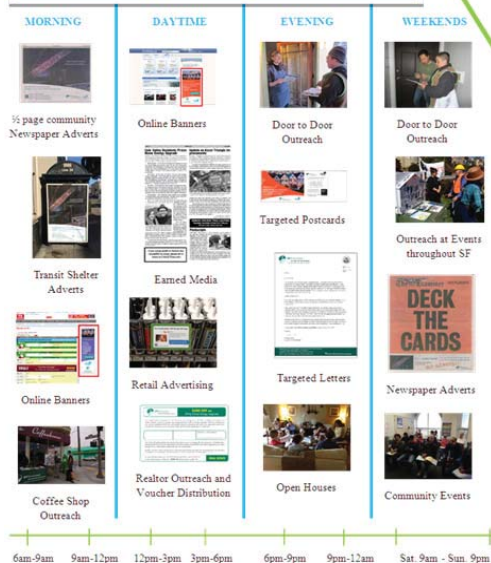
Pacific Heights



Laptops & Lattes

Strategy & Tactics

Marketing: A Day in the Life



Impressions: 18,951,489

Interactions: 7,059

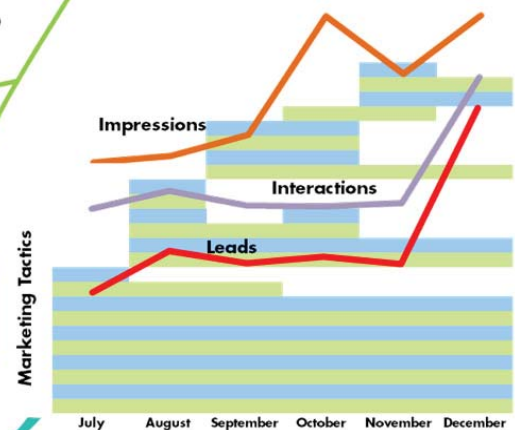
Leads: 937

Result



Happy Homeowners

Tactic Timeline and Results



2. Background

2.1 Overview

In 2008, the San Francisco Board of Supervisors extended the City's climate goals when it adopted an ordinance establishing Greenhouse Gas (GHG) reduction targets of 80% below 1990 levels by 2050 (SF Environment, 2004). With residential housing accounting for 22% of the city's Greenhouse Gas emissions, reducing energy consumption in the home has never been more critical.



Approximately 68.5% of the housing stock in San Francisco is made up of multi-family buildings and 31.5 % single family homes (US Census Bureau 2010). To address the GHG emissions of single family homes, in September 2010, the San Francisco Department of the Environment created the San Francisco Home Improvement and Performance (SFHIP) program. In March 2012, a partnership with Energy Upgrade California was formed and the name of the program changed from SFHIP to Energy Upgrade California – San Francisco.

The goal of Energy Upgrade California – San Francisco is to reduce the Greenhouse Gas emissions of single family residential housing units in San Francisco by permanently increasing the home's energy efficiency with a retrofit. The program provides financial incentives and support to homeowners who complete approved energy efficiency upgrades to their single-family residences. The rebate amount provided by the program fluctuated between \$5,000 and \$11,000 per unit until May 2012. From May 2012, the rebate amount was fixed at a maximum of \$5,000 per unit.

The Program Objectives:

1. Educate the public about the benefits of a more efficient home
2. Promote the Home Energy Upgrade program to San Francisco homeowners
3. Upgrade 375 homes by April 30th 2013

2.2 About Energy Upgrade California

Energy Upgrade California is a statewide program that offers incentives to homeowners who complete select energy-saving home improvements on single-family residences. These incentive packages encourage customers to take a "whole house" approach by combining several related improvements at once to increase a home's overall energy efficiency and achieve greater savings. Improvements include but are not limited to; insulation, air sealing, duct work, combustion safety checks and replacing hot water heaters and furnaces with newer more energy efficient models.



2.3 Funding

Funding for Energy Upgrade California – San Francisco comes from multiple sources including the American Reinvestment and Recovery Act Energy Efficiency and Conservation Block Grant; US Department of Energy's Better Buildings Program funding and a California Energy Commission discretionary grant.

3. Introduction

The San Francisco Department of the Environment was tasked with promoting Energy Upgrade California – San Francisco to San Francisco residents using all available local resources and methods. This report outlines the San Francisco Department of the Environment's situational analysis, market research, positioning, marketing strategies, budget,

implementation and performance analysis of the marketing campaign for Energy Upgrade California – San Francisco in the Third and Fourth Quarter of 2012.

4. Situational Analysis

Before making recommendations on how to market Energy Upgrade California – San Francisco, an in-depth situational analysis was conducted. This analysis included reviewing the First and Second Quarter 2012 marketing goals, strategies and performance, reviewing incentive amounts and correlation to program participation, geographical location of program participants, program participants census block demographics, customer tapestries, budget, locations of past marketing efforts, past program participant survey results, hotline inquiries, collateral, earned and paid media submissions and articles, website content and analytics, presentation materials, brand guidelines and anecdotal evidence provided by contractors, past and present participants and program implementers.

4.1 Key Findings

- 1) Comfort and indoor air quality are more important to San Francisco residents than efficiency.
- 2) Higher financial incentives increase program participation. The program incentive was fixed at \$5,000 in May 2012 and therefore further investigation into what drove customers to participate at the lower incentive amount of \$5,000 was needed.
- 3) Participating in Energy Upgrade California – San Francisco is a complex process. An in-depth conversation with a building performance expert or energy advisor was referenced by many past participants as how they attained critical program information. In addition to local government and contractor interactions, many past participants referenced word of mouth as an influence.
- 4) There is a niche market for Energy Upgrade California – San Francisco. Landlords have little incentive to make the capital investments necessary to save energy compared to owner occupied housing. Of the 376,400 housing units in San Francisco, the total number of single family, owner occupied homes is 79,545 (San Francisco, California Census Data & Community Profile, 2012). This coupled with the average out of pocket cost of \$7,000 per upgrade indicates that Energy Upgrade California – San Francisco has a niche target market.

- 5) There is a geographical pattern to past program participation. The addresses of previous participants were loaded into Esri's Community Analyst web-based mapping and reporting tool to determine locations of program participants. Overall, program participation was highest in Districts 1, 2, 4 and 5. There were outliers in District 9 and other parts of the city but the density of program participation in these four districts was deemed significant.

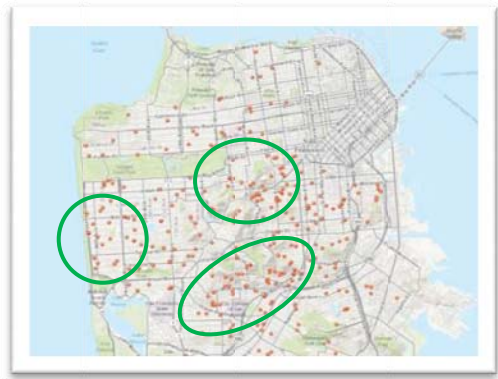


Image courtesy of Esri's Community Analyst

- 6) The majority of program participants fall into one of three personas. Using census block demographic data and Esri's Tapestry Segmentation data, three key Tapestries were identified. Tapestry's *Connoisseurs* segment had the highest density of program participation (shown in purple) and was identified as the primary segmentation type. This segment was mainly located in District 7. Tapestry's *Laptops and Lattes* was the secondary type and mainly located in Districts 8 and 2 (shown in dark green). Tapestry's *Pacific Heights* was the tertiary segment type and appears in districts 11, 4 and 1 (shown in yellow).

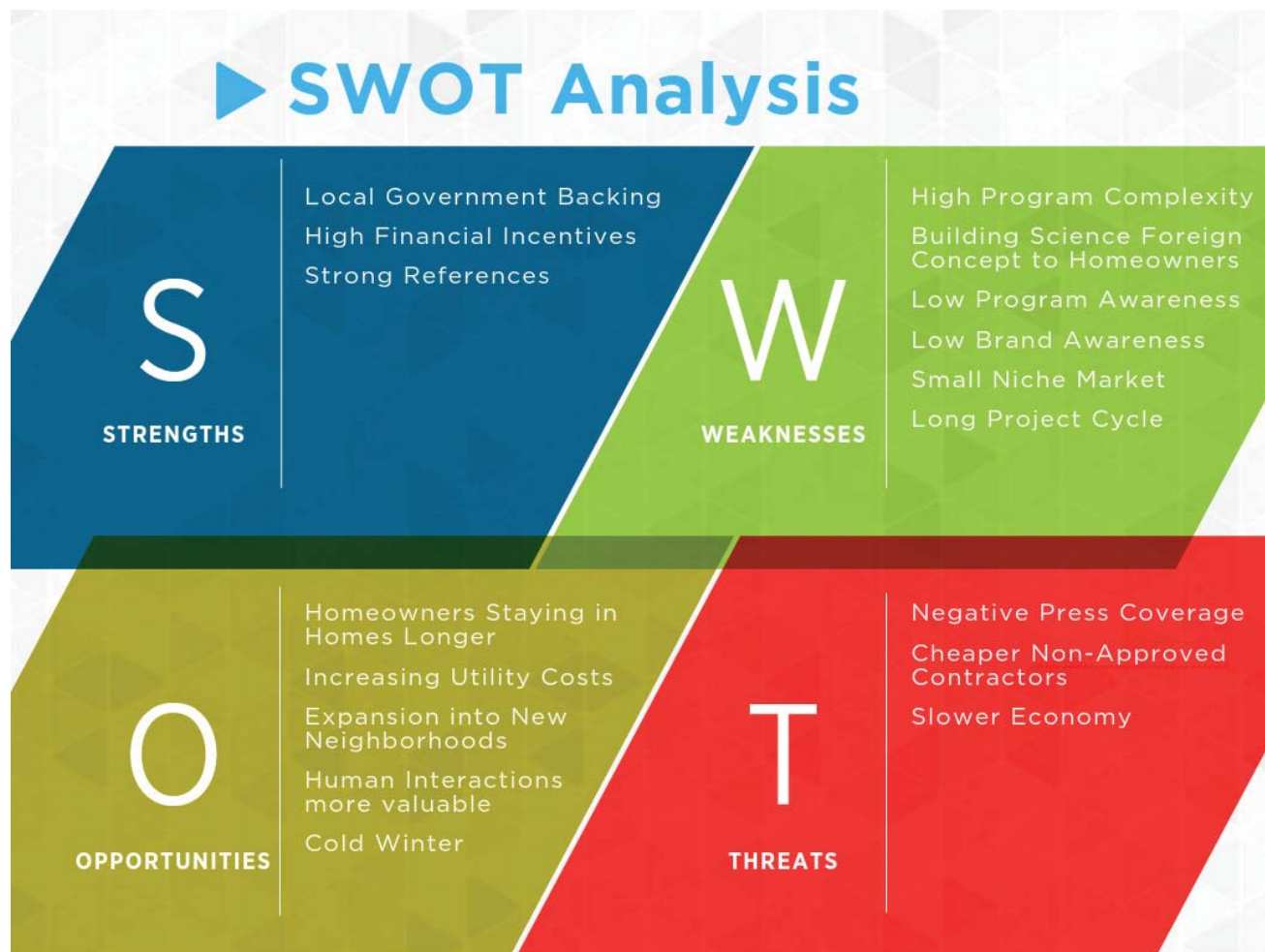


Image courtesy of Esri's Community Analyst

- 7) Word of mouth is indicated as the most powerful tool for influencing program participation followed by information from local news sources.
- 8) Having program information available in multiple languages and having staff available to communicate in multiple languages is critical. 23% of San Franciscans (age 5+) speak English "less than well". Of the San Franciscans that speak English "less than well" 53% speak Chinese as their primary language and 23% Spanish (Census 2011).
- 9) Increased website traffic, clearer content and improved conversion of visitor to lead is needed. In the First and Second Quarter 2012, the Energy Upgrade California – San Francisco website landing page hosted by the San Francisco Department of the Environment received 2035 unique page views. Of these 2035 visitors, 739 took the next step and visited our online audit page hosted by Energy Savvy, 319 completed the online audit and 90 leads were captured.

5. SWOT Analysis

A Strengths, Weaknesses, Opportunities and Threats (SWOT) assessment was conducted to increase awareness of the position of Energy Upgrade California – San Francisco in the marketplace and to help with both strategic planning and decision-making with regards to marketing objectives.



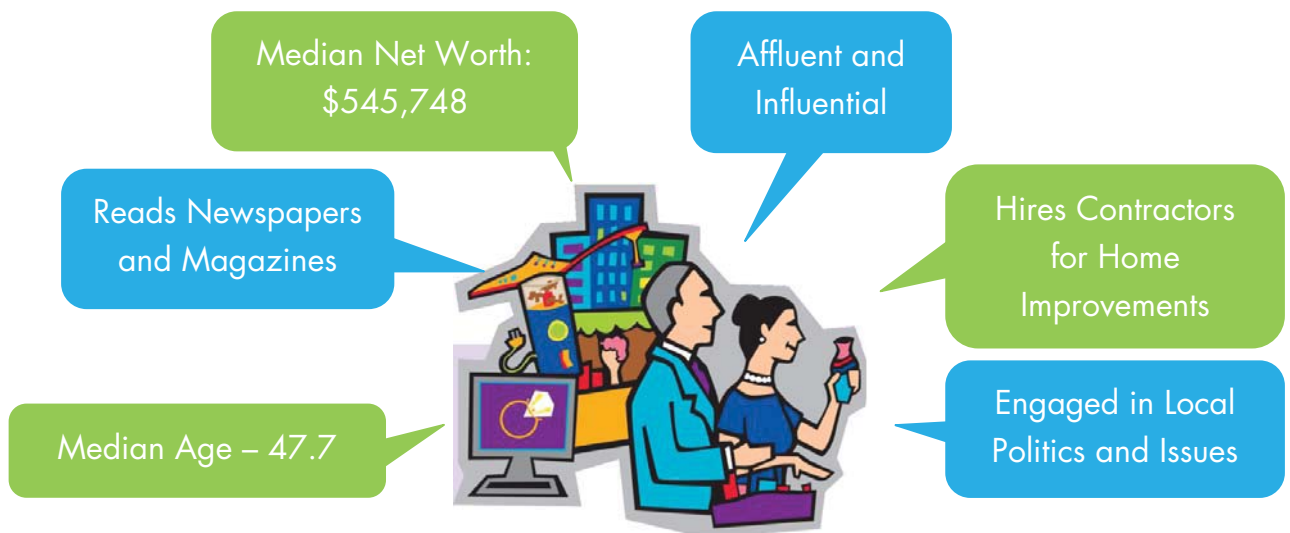
6. Segmentation and Targeting

In addition to the situational analysis, further investigation into the type of market segment to target and their location was needed. The goal of this segmentation and targeting investigation was to determine the type of “persona” or “personas” that were most likely to participate in Energy Upgrade California – San Francisco, where they live and how to engage them.

A comparison of census block groups was conducted using Esri's Community Analyst web-based mapping and reporting solution. As landlords have little financial incentive to upgrade their properties compared to owner occupied housing, census blocks with higher owner occupancy percentages were prioritized. The high out of pocket cost of an energy upgrade was identified as one of the largest barriers to homeowner participation. Finding homeowners with available means to pay for an upgrade was essential and therefore, the second considerations were financial: income, net worth and market spending potential. The tertiary considerations focused on behavior and extrinsic motivators relating to Energy Upgrade California. These considerations were energy consumption, utility cost, climate, temperature of homes, environmental group participation and community involvement.

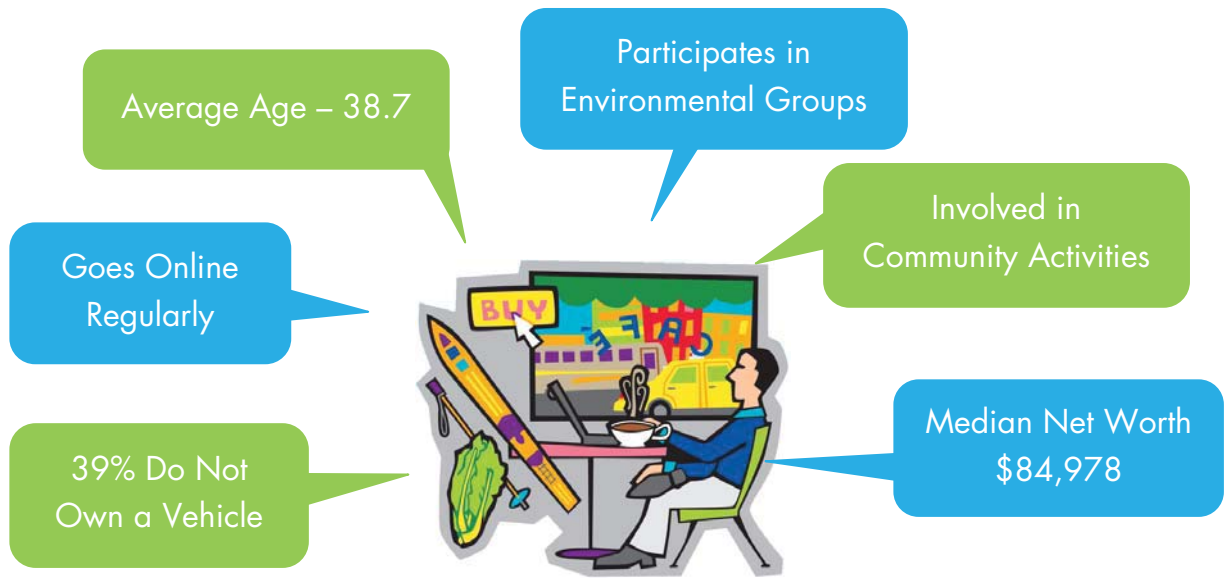
This targeting highlighted three personas of homeowners that have a higher than average propensity to upgrade their home’s energy efficiency, if the correct extrinsic motivators (lack of comfort, higher utility costs, etc.) are aimed at but also their locations.

Primary Target Persona- Connoisseurs



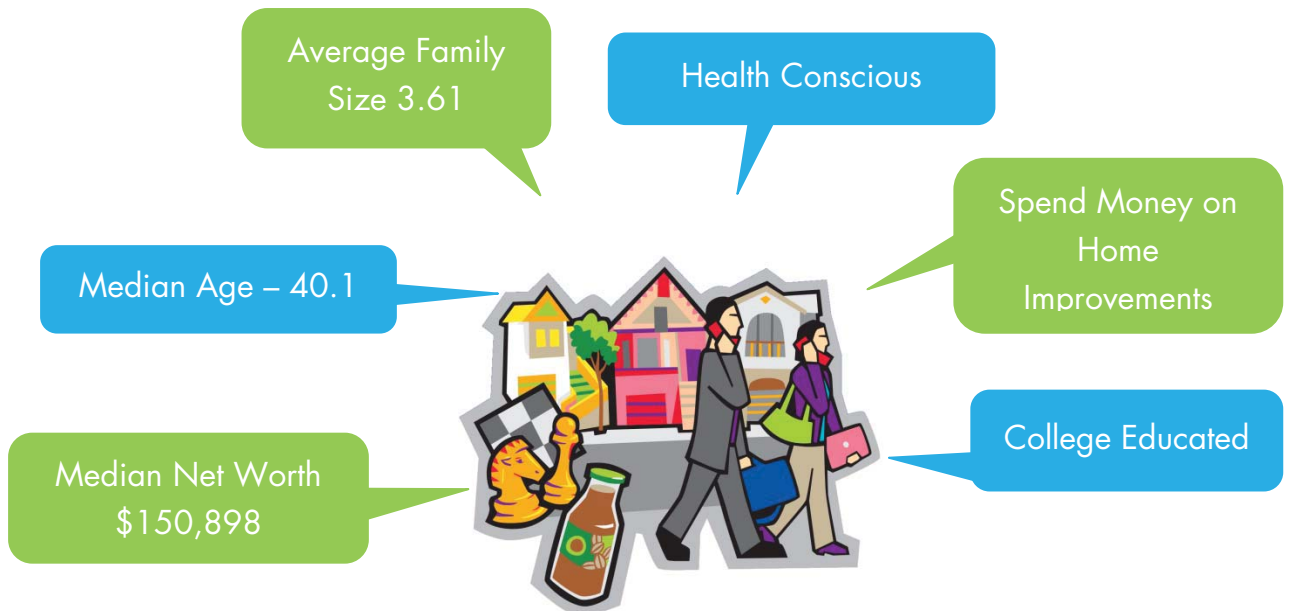
Tapestry segmentation image courtesy of Esri

Secondary Target Persona – Laptops and Lattes

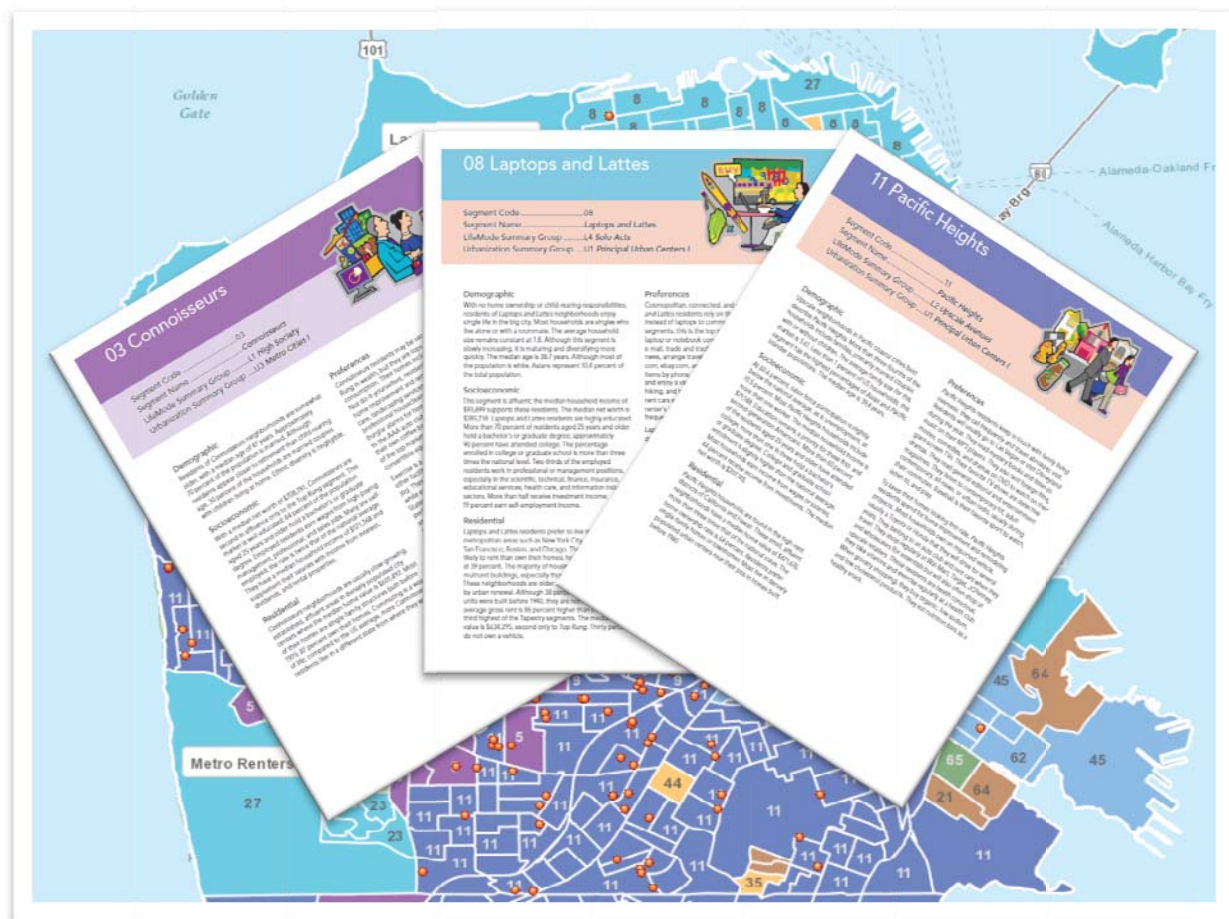


Tapestry segmentation image courtesy of Esri

Tertiary Target Persona – Pacific Heights



Tapestry segmentation image courtesy of Esri



Tapestry segmentation image courtesy of Esri

The locations of these personas were identified using Esri's Tapestry Segmentation system and the Community Analyst web-based reporting and mapping solution and plotted on a map of San Francisco. The demographic, socioeconomic, and segmentation profiles of each neighborhood were described using information from Esri's Tapestry Segmentation Reference Guide (ESRI 2012). This is a segment map at the block geographical level highlighting the different locations of each tapestry segment.

Once the target segments had been identified and their locations determined, investigation into their intrinsic and extrinsic motivators was needed. This investigation was used to tailor marketing and outreach tactics in addition to the messaging of marketing and advertising collateral.

Target segment	Existing persona based characteristics	Extrinsic motivators	Barrier to overcome	Motivators to aim at
Connoisseurs	•Conspicuous consumption •Latest upgrades	•Visible upgrades like solar installation	•Might not need the rebate •Home may already be efficient	•Comfort instead of amount of rebate •Options for solar installations •Upgrades that might have been overlooked
	•Not DIYers •Hire contractors	•A qualified contractor giving professional opinion	•Negative contractor reviews	•Having a shorter list of approved contractors •Keeping the feedback channel open •Taking them step by step through the process
	•Daily newspapers •Active in communities and civic issues	•Word of mouth •Seeing neighbors getting upgraded	•Negative media coverage	•Earned media in newspapers, neighborhood newsletters •Presentations in community groups •Open Houses and presentations to neighbors •Referral incentives
Laptops and Lattes	•Affluent segment that shops at Target for essentials	•Value for money	•High audit cost	•Possibility of contractor absorbing initial assessment cost •Referral coupons •High rebate amount
	•Participate in environmental groups	•Energy efficiency	•Urgent problem that cannot be put on hold for an assessment	•Proactive stance on replacing water heater/furnace •Energy efficiency is an easy and effective way to reduce carbon footprint and mitigate climate change
Pacific Heights	•Gadget friendly	•High energy cost	•Long gestation period of program	•Energy Audit to show percentage of efficiency upgrade possible
	•Spend on home improvement and remodeling	•Keep their homes looking first-rate	•Most upgrades do not improve aesthetics	•Long term energy savings and comfort

7. Positioning

Research into brand positioning was completed by Energy Upgrade California. This research yielded a succinct “mass market” brand positioning message; an intellectual play on words that utilized three prominent customer motivators; comfort, saving money and saving energy;

“Get Comfortable with Energy Savings.”

The Energy Upgrade California – San Francisco brand was positioned as a way for homeowners to increase their home’s comfort, indoor air quality and energy efficiency.

8. Budget

The marketing budget for Energy Upgrade California – San Francisco from the Third and Fourth Quarter 2012 was \$8,000. In June 2012, the San Francisco Department of the Environment submitted a proposal to secure funding for additional marketing efforts from Pacific Gas and Electric (PG&E). This proposal (Appendix A) outlined marketing strategies,

tactics and budget. In July 2012, PG&E awarded the San Francisco Department of the Environment \$156,000 for marketing Energy Upgrade California – San Francisco through the end of 2012. This proposal was used as a guide in writing this marketing plan.

9. Marketing Goal, Strategies and Timeline

The goal of this marketing campaign is to increase the awareness of Energy Upgrade California – San Francisco, develop a nascent home performance market and increase program participation in San Francisco. Using the marketing review key findings, SWOT analysis, programmatic goals, positioning and other available information, the following marketing strategies were proposed:

9.1 Increase brand awareness and program participation

Tactics Based on Strategy		Budget	July	Aug	Sept	Oct	Nov	Dec	Goals
Strategy 1: Increase Brand Awareness and Program Participation									
1.1	Introduce Energy Upgrade California – San Francisco to the public								
	<i>Earned media</i>	\$0							6,000 impressions resulting in 10 leads
	<i>Direct mail</i>	\$10,000							200,000 impressions resulting in 100 leads
	<i>Neighborhood newspaper print advertising</i>	\$12,000							100,000 impressions resulting in 50 leads
	<i>Metropolitan newspaper print advertising</i>	\$10,000							1,000,000 impressions resulting in 50 leads
	<i>Transit shelter advertising</i>	\$18,000							2,000,000 impressions resulting in 10 leads
	<i>Community outreach at events</i>	\$0							1,000 interactions resulting in 100 leads
	<i>Retail Promotion</i>	\$10,000							1,000,000 impressions resulting in 20 leads
	<i>Presentations to realtors</i>	\$0							4 presentations resulting in 20 leads
	<i>Online display advertising</i>	\$50,000							5,000,000 impressions resulting in 100 leads
1.2	Increase Website Traffic								
	<i>Social media presence</i>	\$0							10 likes, 2 re-tweets and 5 leads
	<i>Online display advertising</i>	See Above							See Above
	<i>e-newsletter promotion</i>	\$0							One e-newsletter feature resulting in 5 leads
	<i>Direct mail</i>	See Above							See Above
	<i>Transit shelter advertising</i>	See Above							See Above
	<i>Neighborhood newspaper print advertising</i>	See Above							See Above
	<i>Metropolitan newspaper print advertising</i>	See Above							See Above
	<i>Community outreach at events</i>	See Above							See Above
1.3	Increase the Number of Hotline Calls								
	<i>Social media presence</i>	See Above							See Above
	<i>Online display advertising</i>	See Above							See Above
	<i>e-newsletter promotion</i>	See Above							See Above
	<i>Direct mail</i>	See Above							See Above
	<i>Transit shelter advertising</i>	See Above							See Above
	<i>Neighborhood newspaper print advertising</i>	See Above							See Above
	<i>Metropolitan newspaper print advertising</i>	See Above							See Above
	<i>Community outreach at events</i>	See Above							See Above

9.1.1 Introduce Energy Upgrade California – San Francisco to the public

Objective: Introduce 250,000 people to the Energy Upgrade California – San Francisco brand.

Strategy: Conduct advertising and outreach efforts on a citywide and neighborhood basis, increase brand impressions and overlap messaging with other marketing strategies.

Tactics: Earned media, direct mail, print advertising in neighborhood newspapers, print advertising in major metropolitan newspapers, advertising on transit shelters, community outreach at events, presentations to realtors and online display advertising.

9.1.2 Increase website traffic

Objective: Increase website traffic to the homepage by 50%.

Strategy: Drive traffic from traditional and online advertising vehicles to the homepage.

Tactics: Increase social media presence, online display advertising, e-newsletter promotion, direct mail, advertising on transit shelters, print advertising in neighborhood newspapers, and print advertising in major metropolitan newspapers.

9.1.3 Increase the number of hotline calls

Objective: Increase hotline call volume by 20%.

Strategy: Direct audiences from traditional and online advertising vehicles to call the hotline.

Tactics: Host workshops and customer engagement events, realtor presentations and engagement, increase social media presence, online display advertising, e-newsletter promotion, direct mail, advertising on transit shelters, print advertising in neighborhood newspapers, and print advertising in major metropolitan newspapers.

9.2 Identify and engage market segments with a high propensity for program participation

Tactics Based on Strategy	Budget	July	Aug	Sept	Oct	Nov	Dec	Goals
Strategy 2: Identify and Target Key Market Segments								
2.1 Identify Market Segments with a High Propensity for Program Participation								
Analysis of previous review data	\$0							Self Explanatory
Mapping using GIS	\$0							Identify 10,000 target homes
Tax Assessor parcel map review and overlay	\$0							Attain the addresses of all 10,000 identified homes
2.2 Target Identified Market Segments with Advertising, Marketing and Outreach								
Door to door campaign	\$25,000							Knock on 6000 homes, talk to 2000 people and get 200 leads
Targeted direct mail	\$10,000							Mail out a letter to 5000 homes resulting in 50 leads

9.2.1 Identify market segments

Objective: Using available data, identify 10,000 households in San Francisco with a high propensity for program participation.

Strategy: Use segmentation review data, available census information and Tax Assessor's parcel information to identify market segments that have a high propensity for program participation.

Tactics: Analysis of review data, mapping, Tax Assessor parcel review and overlay.

9.2.2 Target identified market segments with advertising, marketing and outreach

Objective: Engage 10,000 homes using a tapestry of tailored marketing tactics; receive 5% response rate and 10% response to lead capture rate.

Strategy: Use targeted marketing to reach homeowners while they are in their homes.

Tactics: Door to door campaign and targeted direct mail.

9.3 Improve customer experience

Tactics Based on Strategy		Budget	July	Aug	Sept	Oct	Nov	Dec	Goals
Strategy 3: Improve Customer Experience									
3.1 Improve Website Clarity and Lead Capture Mechanism									
	Review website analytics	\$5,000							Increase audit start rate by 10% and completed audits to leads by 5%
	Review website content	\$0							Improved clarity of website information
3.2 Add Customer Relationship Management (CRM) to Continually Engage Leads									
	Review available CRMs	\$0							Find a CRM tool to use
	Select implement and utilize CRM	\$500							Add all leads to CRM and achieve 10% response rate to emails
3.3 Host Workshops and Customer Engagement Events									
	Open houses	\$20,000							Host 10 open houses and get 100 leads
	Presentations to neighborhood associations	\$0							Present to 5 neighborhood associations resulting in 10 leads
	Presentations to community groups	\$0							Present to 2 community groups resulting in 10 leads
	Events at community centers	\$0							Host 5 events at community centers resulting in 20 leads

9.3.1 Improve website clarity and lead capture mechanism

Objective: Reduce bounce rate from homepage by 5%, increase the number of online audits started by 10% and increase the percentage of leads captured after audit completion by 5%.

Strategy: Review website from a customer experience perspective and make improvements.

Tactics: Review website analytics and content with a customer experience consultant and update content accordingly.

9.3.2 Add Customer Relationship Management (CRM) to continually engage leads

Objective: Increase interactions between leads and energy advisor by 10% (hotline and email).

Strategy: Develop a CRM to engage, update and manage customers.

Tactics: Review available CRM, select, implement and utilize CRM to keep lead information up to date, provide announcements and continually engage leads.

9.3.3 Host workshops and customer engagement events

Objective: Speak with over 100 interested homeowners at 10 events.

Strategy: Host a series of events to talk to interested individuals in smaller group settings.

Tactics: Open houses at upgraded homes, presentations to neighborhood associations and groups and events at community centers.

10. Marketing Strategy Implementation

10.1 Collateral

Create collateral that follows brand guidelines, appeals to the target market, reflects the diverse nature of San Francisco and speaks with one clear voice in multiple languages.

10.2 Budget, Task Timeline and Evaluation

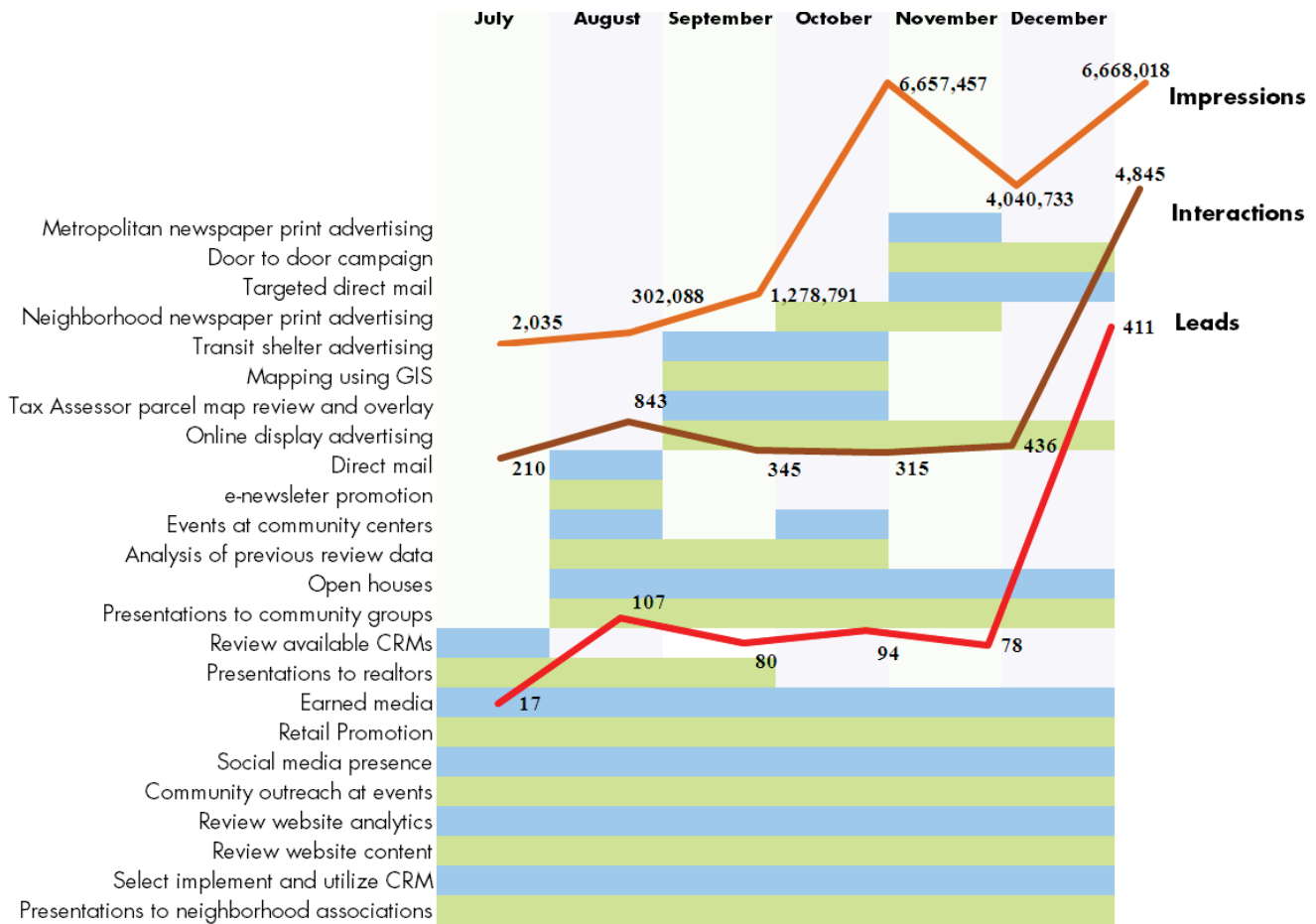
A detailed budget and task timeline for implementing the strategy's marketing tactics was developed (Appendix B). Marketing requires constant fine tuning and adjustment to react to shifting environments. Using realistic quantitative and qualitative targets, the marketing program constantly measures its actual performance and compares it to the target outcomes.

11. Marketing Implementation and Results

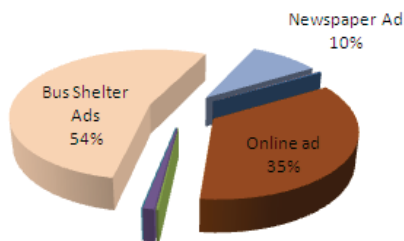
11.1 Overview

Marketing Energy Upgrade California – San Francisco was dynamic and challenging. Adjustments were made to the budget, strategies and timeline of the marketing plan as needed to ensure programmatic goals were met. \$164,000 in awarded marketing funds was expected to be available for marketing use in July; however, unforeseeable delays prevented \$156,000 of this funding from being available until late November. This delay was particularly unfortunate as it resulted in marketing efforts being condensed during the December holiday season.

Marketing Tactic Timeline and Generation of Impressions, Interactions and Leads

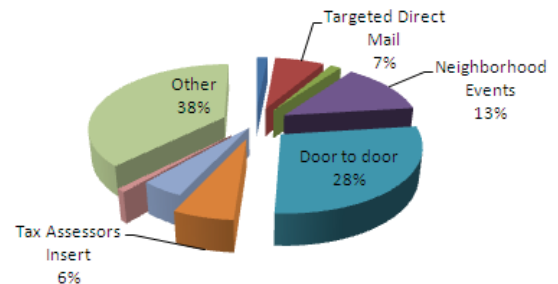


Impressions by Tactic Source

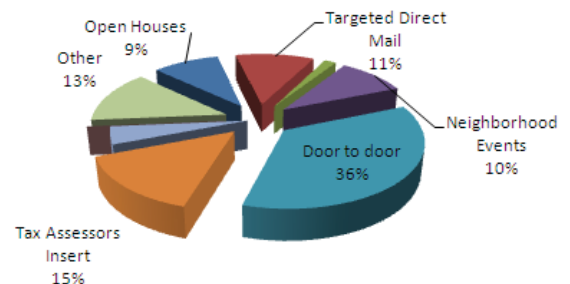


Marketing efforts were directly attributed with increasing Energy Upgrade California - San Francisco participation by displaying 19,000,000 advertising impressions, facilitating over 7000 interactions with interested homeowners and San Francisco Department of the Environment representatives and driving approximately 900 qualified leads to approved Energy Upgrade California contractors.

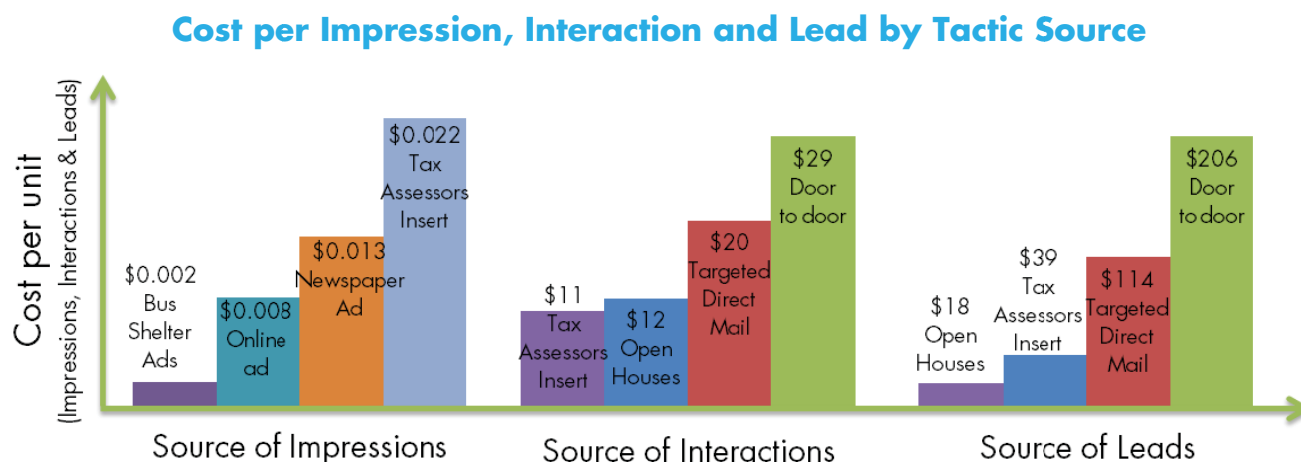
Interactions by Tactic Source



Leads by Tactic Source



In addition, this campaign raised brand awareness of Energy Upgrade California and laid the foundation for future Energy Upgrade California campaigns in San Francisco.



11.2 Collateral

For collateral pieces, please see Appendix C.

11.3 Tactic Results

Door to Door Outreach

The goal of the door to door outreach was to increase awareness of the program and capture 200 leads by knocking on the door of 6000 homes. Using the results of the segmentation and targeting analysis, 12 census blocks (a total of approximately 6000 homes) were selected to engage. The addresses of houses within these census blocks were attained from address and parcel information available from Data SF provided by the San Francisco Office of the Treasurer and Tax Collector.

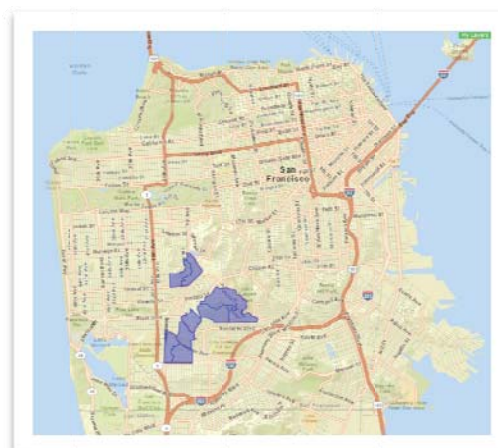


Image courtesy of Esri's Community Analyst

Walk-sheets were created that maximize the time available for outreach by cleaning the data (removing businesses, apartment complexes etc.), mapping all of the addresses using Esri's Community Analyst web-based mapping and reporting tool, ensuring individual walk sheets were organized to be on one side of the street or the other, not both (no zigzagging



Image courtesy of Esri's Community Analyst

between odds and evens) and planning the route so that staff could walk continuously from address to address.

Street Address	City	State	Zip	Latitude	Longitude	Phone	Notes
1000 BAY ST	SAN FRANCISCO	CA	94133	37.7749	-122.4206		
1002 BAY ST	SAN FRANCISCO	CA	94133	37.7749	-122.4206		
1004 BAY ST	SAN FRANCISCO	CA	94133	37.7749	-122.4206		
1006 BAY ST	SAN FRANCISCO	CA	94133	37.7749	-122.4206		
1008 BAY ST	SAN FRANCISCO	CA	94133	37.7749	-122.4206		
1010 BAY ST	SAN FRANCISCO	CA	94133	37.7749	-122.4206		
1012 BAY ST	SAN FRANCISCO	CA	94133	37.7749	-122.4206		
1014 BAY ST	SAN FRANCISCO	CA	94133	37.7749	-122.4206		
1016 BAY ST	SAN FRANCISCO	CA	94133	37.7749	-122.4206		
1018 BAY ST	SAN FRANCISCO	CA	94133	37.7749	-122.4206		
1020 BAY ST	SAN FRANCISCO	CA	94133	37.7749	-122.4206		

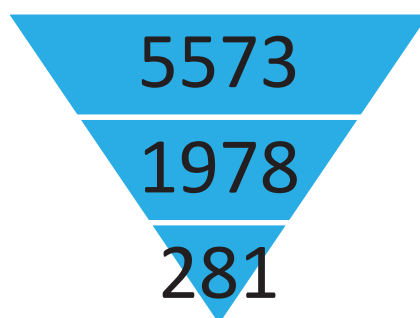
A script was crafted using social sciences to evoke a high engagement and response rate from homeowners. A team of 10 staff members from San Francisco's Environment Now program were selected and trained for a minimum of 8 hours on building science, program requirements, benefits, goals and frequently asked program questions.



Staff went to the addresses provided on their walk sheets and knocked on the door. They engaged the homeowner using the script, educated them about the program, provided collateral, giveaways and if the homeowner was interested in the program, staff asked for their information. This lead information was then provided to program staff to call and engage homeowners in a deeper level discussion about the program. Staff also invited homeowners to a series of events and provided them with socket insulation pads

and compact fluorescent bulbs.

5573 doors were knocked on, 1978 conversations took place and 281 leads were captured. 5% of all houses targeted turned into a lead. 14% of all conversations turned into a lead. Based off of past campaigns, the goal of converting 10% of all conversations into a lead was deemed to be very aggressive, but owing to the targeting, script and exceptional nature of the Environment Now staff, this goal was surpassed.



Targeted Direct Mail

The goal was to increase brand awareness and capture 100 leads by mailing out a targeted letter. Upgrades are more likely to take place when a home is just purchased or refinanced. A list of homes that were recently bought or refinanced was purchased from a list service.

A letter was written using the principles of social sciences and mailed to the list. A follow-up postcard was created and mailed five weeks later to the same list. 5000 addresses received both the letter

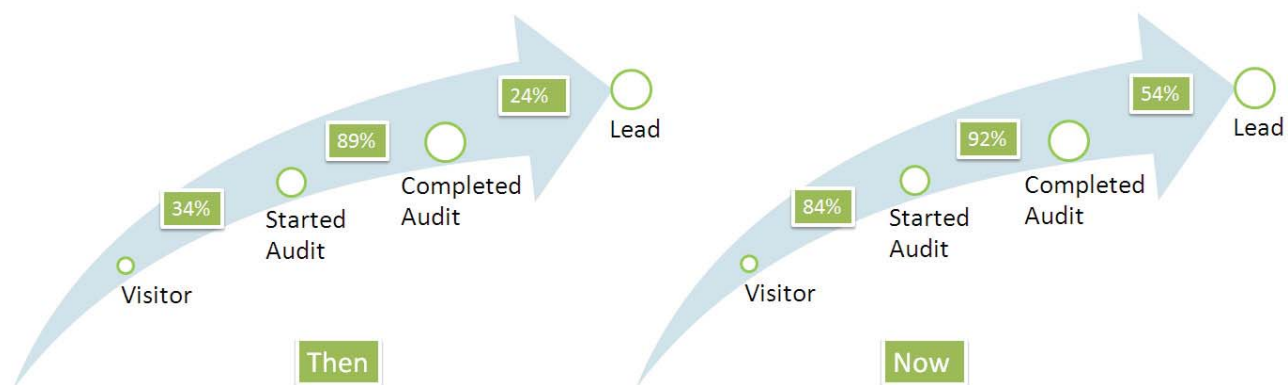


and a postcard. The letter received a 10% response rate and 18% of the responses turned into leads. The postcard data is not yet available.

Review Website Analytics and Edit Content

The goal of this review and edit was to increase the number of Energy Savvy online audits started by 10% and the leads captured after audit completion by 5%. A consultant at Energy Savvy assisted with this task. Website content was edited. Analytics from the Energy Savvy online audit platform were reviewed and compared to the results of other similar platforms. Results indicated that a higher start rate and conversion from completed online audit to lead were achievable. The Energy Savvy platform start page was changed to display an example of the result you might see and to make sure the “Get Started” portion of the site was visible above the fold. The lead capture page went from users selecting contractors from a list of 10, to a simpler round-robin method where a user was connected with 3 contractors at random by clicking “Send Request”.

The percentage of visitors starting the online audit after landing on the page went from 34% before changes to 84% afterwards. Of the started audits, originally 89% completed the online audit, with the modification this increased by a total of 3% and the percentage of visitors that completed and audit and elected to be connected with an approved contractor (then considered a lead) increased from 24% to 54%.



Add Customer Relationship Management (CRM) to Continually Engage Leads

The goal of adding a CRM was to increase customer engagement and increase interactions between leads and the energy advisor by 10%. Zoho CRM was chosen as the best fit from a cost and usability perspective. Lead information was captured and uploaded to Zoho CRM. Leads were emailed and called regularly. The average response rate for emails to new leads went up to 13%. Zoho CRM was used to update leads on program changes, request

feedback and invite them to participate in events. This continued engagement post lead sign-up helped increase participation at events and furthered interest in the program.

Host Workshops and Customer Engagement Events



The goal was to setup 10 events with a group size of 10 people per event. Past program participants were emailed and called to ask if they would be willing to host an open house to show the work completed or attend a library event and share their insight into the program. Past participants spoke at these events and gave out vouchers to attendees. These vouchers provided an additional \$250 in rebates towards an upgrade and provided \$250 in referral rebates to the past participants for every voucher redeemed. 10 open houses were hosted resulting in 74 leads.

Tabling at Community Events

The goal was to table at 10 community events, interact with 1000 individuals and attain 100 leads. Tabling took place at 16 events resulting in approximately 916 interactions and 185 leads. More photos can be found in Appendix G.



Presentations to Realtors



The goal was to present to 5 realtor offices/groups resulting in 10 realtors distributing program information to their client base. Realtors were given program information and \$500 vouchers to distribute to their client base. These vouchers provided homeowners with an additional \$500 in rebates towards their upgrade. 3 presentations were made to an audience of over 90 realtors. 12 realtors confirmed that they distributed program information to their clients.

Direct Mail

The goal was to receive a response rate of 0.5% from a color insert in the San Francisco Tax Assessor's letter that goes out to over 200,000 homeowners annually. A color insert was designed and 205,000 copies were printed and included in the Tax Assessors letter. There were 425 inquiries from the insert resulting in 115 leads. There was a 0.2% response rate with a conversion from response to lead rate of 27%.



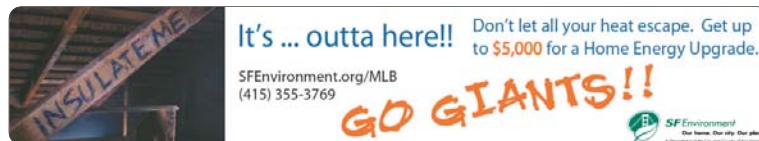
Neighborhood Newspaper Advertisements



The goal of advertising in a local neighborhood newspaper was to increase brand awareness and result in 200 inquiries. 12 neighborhood newspapers were selected. A half page color advertisement was taken out in each of these 12 newspapers displaying the collateral shown in Appendix C. There were 167 inquiries from the newspapers resulting in 51 leads.

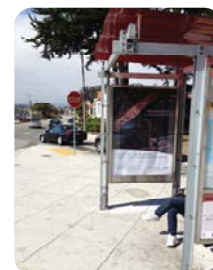
Citywide Newspaper Advertisements

The goal of advertising in citywide newspapers was to increase brand awareness and result in 500 inquiries. Two newspapers were selected and collateral was produced with a San Francisco Giants theme to complement the team's success during the 2012 World Series. A quarter page color advertisement was taken out in the San Francisco Chronicle's Sporting Green section that ran for 4 consecutive game days. A front page color strip was taken out in the San Francisco Examiner for one day (on game day). There were a total of 29 inquiries from the two newspapers resulting in 1 lead.



Transit Shelter Advertisements

The goal of the transit shelter advertisements was to increase brand awareness and result in 100 inquiries. Collateral was produced and displayed on 22 transit shelters. These shelters were chosen using segmentation analysis results and shelter availability. There were 55 inquiries from the transit shelters resulting in 13 leads.



Earned Media

The goal of earned media was to have local newspapers, newsletters and radio stations cover information on Energy Upgrade California – San Francisco. Press releases were sent to newspapers, e-zines and community newsletters. Articles were printed in 4 newsletters. One radio station covered Energy Upgrade California – San Francisco. These resulted in 43 inquiries and 13 leads.

Online Advertising

The goal of online advertising was to increase brand awareness, drive 1000 visitors to the website and generate 50 leads. The segmentation analysis findings were used to select target areas for the online display and mobile advertising tactics. Collateral was produced using the principles of social sciences to evoke a high click-through-rate (CTR). Adverts were displayed

to both traditional and mobile devices. There were 2369 interactions and 40 leads as a result.

Retail Advertising

The goal of the retail advertising was to engage consumers in a retail setting resulting in 50 leads. 10 energy related products were selected and a “shelf talker” was created for each of them outlining the benefits of the product and Energy Upgrade California – San Francisco. There were 13 inquiries as a result.



Social Media and e-Newsletter Advertisement

The social media and e-newsletter goal was to engage the San Francisco Department of the Environment’s social media and e-newsletter followers and get 10 leads as a result. Newsletter articles, Facebook and Twitter posts were written and provided to the San Francisco Department of the Environment’s Social Media team for distribution. One newsletter article, one Facebook post and one Tweet were published. There were 6 interactions from the newsletter, 5 likes on Facebook and no re-tweets.

12. Additional Influencing Factors

All homeowners that completed an audit in the months of August, September or October 2012 were eligible to receive an additional \$1,000 in rebates. This was called the “October Surprise”. By adding an additional \$1,000 and setting a hard deadline, homeowners that may have been on the fence about moving forward with an upgrade were incentivized to do so in a timely manner. This promotion was announced to all leads and contractors at the beginning of October. This promotion did not have a major impact on marketing strategy or tactics as there was not sufficient lead time to create a marketing strategy to promote the additional \$1,000 “October Surprise” outside of at events and presentations. Anecdotaly this did help push people to move forward with a project within the “October Surprise” window of availability.

13. Conclusions

There are several barriers to high participation in Energy Upgrade California – San Francisco; low brand awareness, owner-occupancy rates, high out of pocket cost and the complexity of Energy Upgrade California.

Through their marketing and outreach efforts, the San Francisco Department of the Environment exposed San Francisco residents to Energy Upgrade California – San Francisco and guided them from awareness of the program to interest and ultimately to participation and advocacy.

This marketing campaign was directly attributed with increasing Energy Upgrade California - San Francisco participation by displaying 19,000,000 advertising impressions, facilitating over 7000 interactions with interested homeowners and San Francisco Department of the Environment representatives and driving approximately 900 qualified leads to approved Energy Upgrade California contractors. In addition, this campaign raised brand awareness of Energy Upgrade California and laid the foundation for future Energy Upgrade California campaigns in San Francisco.

The findings from the Energy Upgrade California – San Francisco Marketing Campaign have several implications for marketing future energy efficiency programs in San Francisco. The following list captures the most important conclusions:

- 1) Targeting marketing efforts to audiences with a high propensity for program participation is cost effective and successful. SF Environment's understanding of who Energy Upgrade California – San Francisco's target audience was, where in San Francisco they were located, what barriers to program participation they faced and what tactics and strategies were most likely to motivate them to upgrade their homes laid the foundation for developing a successful marketing campaign. This hyper local targeted marketing resulted in higher return on investment than tactics that did not utilize the same level of targeting.
- 2) Layering of targeted marketing tactics improves market penetration. Running multiple marketing tactics simultaneously to target a specific audience was more successful than marketing tactics that did not overlap.
- 3) Timing is everything. Getting the message in front of homeowners at the right time in their homeownership cycle is critical. New homeownership, refinancing and cold weather (lack of comfort) are noted as major influencers in program uptake.
- 4) The efficacy of each tactic should not be judged solely on the number of leads generated; increase in brand awareness and overlap with other marketing tactics should also be considered.

- 5) The complexities of Energy Upgrade California – San Francisco are difficult to succinctly summarize in collateral or advertisements. Collateral and traditional advertising should be used to drive awareness and peak interest in the program and be judged as such, rather than solely on their lead generation capabilities. These tactics need to be complemented by targeted local outreach strategies.
- 6) Word of mouth is a powerful marketing asset and should continue to be harnessed in the form of customer testimonials and referral incentives. Many homeowners cited word of mouth or talking to a past program participant as a major influence in deciding whether to move forward with an upgrade.
- 7) Homeowners that engage in conversations with an Energy Advisor were more likely to move forward with a project. Consumers often have questions or need reassurance from a non-contractor affiliated entity to feel comfortable in making the leap from being interested in the program to participating. Jeff Narvid, a San Francisco homeowner noted: “[the Energy Advisor] made the Energy Upgrade process easy by very quickly answering all of our questions and providing accurate information throughout. All city programs should be like this!” From a contractor perspective, SDI Insulation also noted that, “the leads have definitely been more qualified [than before Q2 2012] more leads [are] being converted to tests and genuinely interested in considering retrofit work”. Contractors should not be relied upon to act as the sole brand ambassadors for Energy Upgrade California management as they do not often have the bandwidth to provide the level customer service needed by many homeowners.
- 8) Due to the long project cycle between first interaction and program completion, CRM software is needed to manage, engage and update leads regularly. This helps to keep leads on track with their project, assists them overcome any barriers to completion they face and provides vital pipeline/marketing impact metrics that can be utilized to guide future campaigns. Patience is needed in this regard as leads often take several months to move forward with and complete a project. This causes a lag between the time of marketing effort implementation and seeing the results in the form of completed projects.
- 9) Continually reviewing website analytics and optimizing content accordingly improves the customer experience, reduces the bounce-rate of potential leads and increases program participation.
- 10) With niche market in San Francisco, targeted outreach in the form of direct mail and door to door canvassing is an affordable and effective lead generator.

Similarly to building science professionals selecting energy efficiency measures that build upon each other and work as one complete system; marketing professionals need to craft their marketing plans using a balance of overlapping and complimentary marketing strategies and tactics that work as one cohesive marketing campaign.

Future Energy Upgrade California – San Francisco marketing campaigns should incorporate a similar blend of marketing strategies and tactics outlined in this report.

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15. Selected Appendices

Appendix C – Collateral

Appendix F – Metrics

Appendix G – Event Photos

Appendix C – Collateral

Marketing: A Day in the Life

MORNING



½ page community Newspaper Adverts



Transit Shelter Adverts



Online Banners



Coffee Shop Outreach

DAYTIME



Online Banners



Earned Media



Retail Advertising



Realtor Outreach and Voucher Distribution

EVENING



Door to Door Outreach



Targeted Postcards



Targeted Letters



Open Houses

WEEKENDS



Door to Door Outreach



Outreach at Events throughout SF



Newspaper Adverts



Community Events

6am-9am

9am-12pm

12pm-3pm

3pm-6pm

6pm-9pm

9pm-12am

Sat. 9am - Sun. 9pm

Newspaper Advertising Creative and Placement

Your house is trying to tell you something.

But don't fear. You can get up to **\$5,000 in Rebates for a Home Energy Upgrade.**

Hotline: (415) 355-3769
 English: SFEnvironment.org/SFHip
 Español: SFEnvironment.org/SFHip/ES
 中文: SFEnvironment.org/SFHip/ZH

Your house is trying to tell you something.

But don't fear. You can get up to **\$5,000 in Rebates for a Home Energy Upgrade.**

Hotline: (415) 355-3769
 English: SFEnvironment.org/SFHip
 Español: SFEnvironment.org/SFHip/ES
 中文: SFEnvironment.org/SFHip/ZH

Neighborhood Newspaper Adverts

It's Outta Here!!
 Don't let all your heat leak away

GIANT Rebates!
 Get up to **\$5,000** for a Home Energy Upgrade.

Hotline: (415) 355-3769
 English: SFEnvironment.org/HomeRun
 Español: SFEnvironment.org/SFHip/ES
 中文: SFEnvironment.org/SFHip/ZH

Citywide Newspaper Adverts

It's ... outta here!!
 Don't let all your heat escape. Get up to **\$5,000** for a Home Energy Upgrade.

SFEnvironment.org/MLB
 (415) 355-3769

GO GIANTS!!

NLCS: GIANTS vs. CARDINALS

Epic at-bat provides backdrop for Romo

Sergio Romo made his big-league debut with the Giants in 2010. He went 2-1 with a 2.2 ERA that year.

Romo played baseball and caught fire. He made 1000 hits and was named a center fielder and broke out. He was named a center fielder and broke out. He was named a center fielder and broke out.

Romo played baseball and caught fire. He made 1000 hits and was named a center fielder and broke out. He was named a center fielder and broke out. He was named a center fielder and broke out.

The Examiner 2012 PLAYOFFS

DECK THE CARDS

It's ... outta here!!
 Don't let all your heat escape. Get up to **\$5,000** for a Home Energy Upgrade.

SFEnvironment.org/MLB
 (415) 355-3769

GO GIANTS!!

Going, Going... Gone!
 Don't let all your heat leak away

GIANT Rebates!
 Get up to **\$5,000** for a Home Energy Upgrade.

Hotline: (415) 355-3769
 English: SFEnvironment.org/HomeRun
 Español: SFEnvironment.org/SFHip/ES
 中文: SFEnvironment.org/SFHip/ZH

Direct Mail Creative



Get up to \$5,000 for Home Energy Upgrades

Upgrade the comfort, safety and energy efficiency of your home today. Call a participating contractor for a customized home assessment.

Find a participating contractor at:
SFEEnvironment.org/SFHip
 or call: (415) 355-3769

Obtenga hasta \$5,000 para mejoramientos para ahorrar energía del hogar. Para obtener más información, visite:
SFEEnvironment.org/SFHip/ES
 o llame a: (415) 355-3769

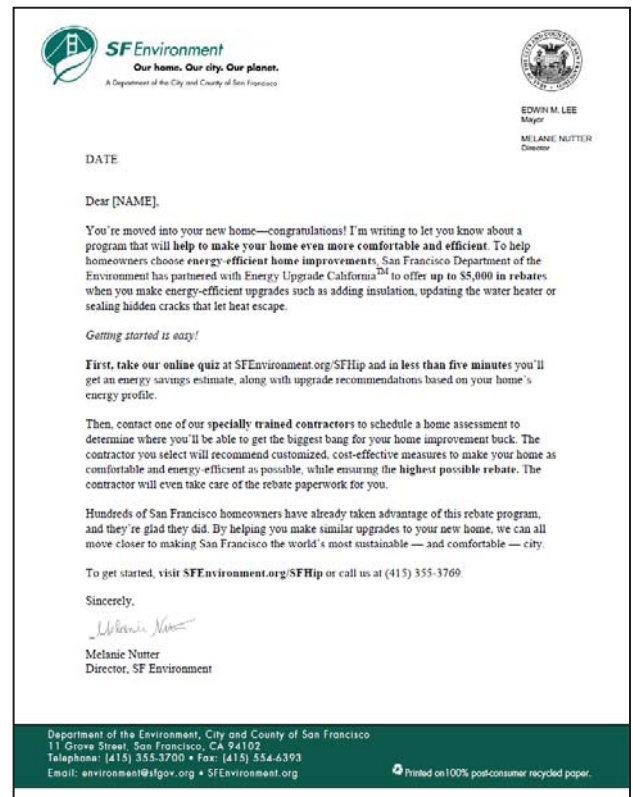
可為升格住家能源取得至\$5,000
 詳情請上網:
SFEEnvironment.org/SFHip/ZH
 或致電: (415) 355-3769

Get Comfortable with Energy Savings
Rebates up to \$5,000!
SFEEnvironment.org/SFHip
 Para mas información: SFEEnvironment.org/SFHip/ES
 詳情請上網: SFEEnvironment.org/SFHip/ZH

Printed on 100% post-consumer recycled paper

Assessor's Insert



 **SF Environment**
 Our home. Our city. Our planet.
A Department of the City and County of San Francisco


 EDWIN M. LEE
 Mayor
 MELANIE NUTTER
 Director

DATE

Dear [NAME],

You're moved into your new home—congratulations! I'm writing to let you know about a program that will help to make your home even more comfortable and efficient. To help homeowners choose energy-efficient home improvements, San Francisco Department of the Environment has partnered with Energy Upgrade CaliforniaTM to offer up to \$5,000 in rebates when you make energy-efficient upgrades such as adding insulation, updating the water heater or sealing hidden cracks that let heat escape.

Getting started is easy!

First, take our online quiz at SFEEnvironment.org/SFHip and in less than five minutes you'll get an energy savings estimate, along with upgrade recommendations based on your home's energy profile.

Then, contact one of our specially trained contractors to schedule a home assessment to determine where you'll be able to get the biggest bang for your home improvement buck. The contractor you select will recommend customized, cost-effective measures to make your home as comfortable and energy-efficient as possible, while ensuring the highest possible rebate. The contractor will even take care of the rebate paperwork for you.

Hundreds of San Francisco homeowners have already taken advantage of this rebate program, and they're glad they did. By helping you make similar upgrades to your new home, we can all move closer to making San Francisco the world's most sustainable — and comfortable — city.

To get started, visit SFEEnvironment.org/SFHip or call us at (415) 355-3769.

Sincerely,

 Melanie Nutter
 Director, SF Environment

Department of the Environment, City and County of San Francisco
 11 Grove Street, San Francisco, CA 94102
 Telephone: (415) 355-3700 • Fax: (415) 554-6393
 Email: environment@sf.gov • SFEEnvironment.org

Printed on 100% post-consumer recycled paper.

New Homeowner & Refinanced Letter



Happy New Year!

Make one of your resolutions an energy efficient home and save up to \$5,000.

 **SF Environment**
 Our home. Our city. Our planet.
A Department of the City and County of San Francisco



 **SF Environment**
 Our home. Our city. Our planet.
A Department of the City and County of San Francisco



SF Environment has partnered with Energy Upgrade CaliforniaTM to offer homeowners:

Up to \$5,000 in rebates for energy-efficient upgrades, such as replacing hot water heaters or adding insulation.

Our online tool gives energy savings estimates tailored to your home in just five minutes.

Visit SFEEnvironment.org/SFHip or call (415) 355-3769.



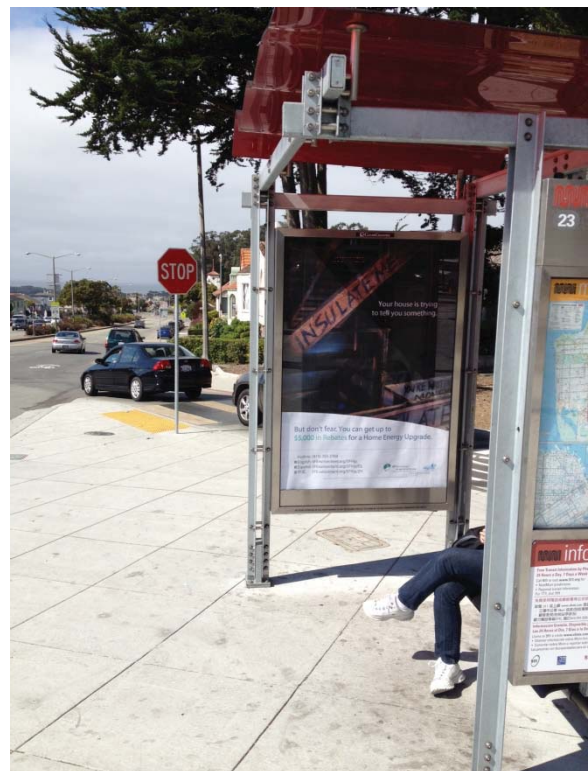
New Homeowner & Refinanced

Transit Shelter Creative and Placement



But don't fear. You can get up to **\$5,000 in Rebates** for a Home Energy Upgrade.

Hotline: (415) 355-3769
 English: SFEnvironment.org/SFHip
 Español: SFEnvironment.org/SFHip/ES
 中文: SFEnvironment.org/SFHip/ZH



Retail Shelf Talker Creative and Placement

Get Comfortable with Energy Savings!

Tip #1 Carbon Monoxide Detector
Appliances can leak carbon monoxide into your house. Have your gas furnace, stove or water heater checked annually and get a carbon monoxide detector.

Find out how to get up to \$5,000 to upgrade your home's efficiency!

SfEnvironment.org/SFHip/Cole

Get up to \$5000 in rebates to upgrade the comfort, safety and energy efficiency of your home!

English: SfEnvironment.org/SFHip/Cole
Español: SfEnvironment.org/SFHip/ES
詳情請上線: SfEnvironment.org/SFHip/ZH
or call (415) 355-3769

SfEnvironment
Our home. Our city. Our planet.
A Department of the City and County of San Francisco

Printed on 100% postconsumer recycled paper

Get Comfortable with Energy Savings!

Tip #2 Insulation Film
Insulation film acts like a blanket for your home, keeping the heat inside. Upgrade the efficiency of your windows without having to replace them.

Find out how to get up to \$5,000 to upgrade your home's efficiency!

SfEnvironment.org/SFHip/Cole

Get Comfortable with Energy Savings!

Tip #3 Caulk
Stop air (and money) from leaking out of your home. Use caulk. Even when it's not windy, warm air leaks out through unseen cracks and gaps.

Find out how to get up to \$5,000 to upgrade your home's efficiency!

SfEnvironment.org/SFHip/Cole

Get Comfortable with Energy Savings!

Tip #4 Weather Stripping
Even if your windows are closed, air can infiltrate through cracks and gaps. Adding weather stripping gives your windows the snug fit needed to prevent heat loss.

Find out how to get up to \$5,000 to upgrade your home's efficiency!

SfEnvironment.org/SFHip/Cole

Get Comfortable with Energy Savings!

Tip #5 Furnace Filter
Make life easier for your furnace. An old dirty filter slows air flow, and can contaminate the air you breathe. Install a fresh furnace filter.

Find out how to get up to \$5,000 to upgrade your home's efficiency!

SfEnvironment.org/SFHip/Cole

Get Comfortable with Energy Savings!

Tip #6 Water Heater Blanket
Insulate your water heater and keep the heat in. If your water heater is warm to the touch then it's not efficient. Have it tested.

Find out how to get up to \$5,000 to upgrade your home's efficiency!

SfEnvironment.org/SFHip/Cole

Get Comfortable with Energy Savings!

Tip #7 Programmable Thermostat
Don't heat an empty house! A programmable thermostat automatically turns the heat on and off based on your schedule.

Find out how to get up to \$5,000 to upgrade your home's efficiency!

SfEnvironment.org/SFHip/Cole

Get Comfortable with Energy Savings!

Tip #8 Twin Draft Guard
Slam the door on heat loss! Stop drafts from creeping inside and maintain the warmth of your home with a draft guard.

Find out how to get up to \$5,000 to upgrade your home's efficiency!

SfEnvironment.org/SFHip/Cole

Get Comfortable with Energy Savings!

Tip #9 Insulation Foam
Keep the heat in. Use insulation foam to insulate the edges of your window and stop unwanted heat loss.

Find out how to get up to \$5,000 to upgrade your home's efficiency!

SfEnvironment.org/SFHip/Cole

Get Comfortable with Energy Savings!

Tip #10 Electric Blanket
Electric blankets should be an indulgence, not a necessity. So indulge and get cozy. But do it in a draft-free, energy-efficient home.

Find out how to get up to \$5,000 to upgrade your home's efficiency!

SfEnvironment.org/SFHip/Cole



THANK YOU FOR SHOPPING AT
Cole Hardware Polk
(415) 674-8913

Follow us on Twitter @colehardware, and
Facebook, www.facebook.com/colehardware.
8/01/12 9:41AM LEO 317 SALE

927033 1 EA 1.99 EA N
VIT WATER 0 - RISE 1.99

SUB-TOTAL: 1.99 TAX: 1.99
TOTAL: 1.99
CASH TEND: 2.00 CHANGE: .01



==> JRNL#166481/4 <==
CUST # 44

No cash refunds without original
purchase receipt or invoice.

Get up to \$5000 for home energy upgrades
www.sfenvironment.org/sfhip/cole
415.355.3769



Tactic Source	Impressions	Interactions	Leads	Cost	Cost per Impression	Cost per Interaction	Cost per lead
Open House	129	109	74	\$ 9,708.00	\$ 75.26	\$ 89.06	\$ 131.19
Targeted Direct Mail	5,000	493	88	\$ 11,681.60	\$ 2.34	\$ 23.69	\$ 132.75
Earned Media	54,200	108	13	\$ 2,102.00	\$ 0.04	\$ 19.46	\$ 161.69
Online ad	6,652,845	2,373	40	\$ 56,366.30	\$ 0.01	\$ 23.75	\$ 1,409.16
Energy Savvy Online Audit Platform	2,367	-	150	\$ 8,153.00	\$ 3.44	-	\$ 54.35
Neighborhood Events	45,945	916	76	\$ 9,669.20	\$ 0.21	\$ 10.56	\$ 127.23
Door to door	5,573	1,978	281	\$ 64,831.50	\$ 11.63	\$ 32.78	\$ 230.72
Tax Assessors Insert	205,000	425	115	\$ 6,602.00	\$ 0.03	\$ 15.53	\$ 57.41
General Events	1,000	310	35	\$ 2,184.00	\$ 2.18	\$ 7.05	\$ 62.40
Bus Shelter Ads	10,205,288	84	13	\$ 20,102.00	\$ 0.00	\$ 239.31	\$ 1,546.31
Presentations	65	65	-	\$ 2,122.00	\$ 32.65	\$ 32.65	-
Newspaper Ad	1,774,077	198	52	\$ 27,154.00	\$ 0.02	\$ 137.14	\$ 522.19
Total	18,951,489	7,059	937	\$ 220,675.60	\$ 0.01	\$ 31.26	\$ 235.51

Appendix G – Event Photos

Open Houses and Street Event Photos



Presentations and Vouchers




SFEnvironment
Our home. Our city. Our planet.

\$500 OFF on
SFHip Home Energy Upgrade

As a single family homeowner in San Francisco, you can get up to \$5,000 in rebates to increase your home's comfort, indoor air quality and energy efficiency with an energy upgrade! With this voucher you can save an additional \$500 too! Get started today by connecting with one of our approved contractors. Just give this voucher to your contractor when you fill out the application. It's that easy!

		Address of home upgrade:

Your local real estate professional realizes the value to you of an energy efficient home and is therefore partnering with the San Francisco Department of the Environment to spread the word about upgrading your home through SFHip. Real estate professionals are not compensated.

Fine print: This coupon is valid for a discount only for a home energy upgrade performed through the San Francisco Department of the Environment's SFHip program. All SFHip rules apply. Funds are available on a first come, first served basis. This coupon expires 12/31/2012.

For more information please visit: www.SFEnvironment.org/SFHip, or call 415-355-3769
 Español: SFEnvironment.org/SFHip/ES 詳情請上網: SFEnvironment.org/SFHip/ZH

REAL ESTATE




SFEnvironment
Our home. Our city. Our planet.

\$250 for you + \$250 for your neighbor
SFHip Home Energy Upgrade

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NEIGHBOR

Door To Door Campaign Photos



Energy Efficiency and Conservation Block Grant (EECBG) – Better Buildings Neighborhood Program

Final Report: City of San José

Award Number: DE-EE0003562

BBNP Name: U.S. Department of Energy's Better Buildings Program

Project Title: Retrofit California

Name of Project Director/Principal Investigator: Mike Foster

Team Members: Paul Prange, Adrianna Masuko, Jorge Ceballos, William Sudduth

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EXECUTIVE SUMMARY

The City of San José found the most effective way to communicate with the Hillview-TOCKNA (Tully, Ocala, Capital, King Neighborhood Association) community was to become immersed in the community rather than formulating strategies based on generalized marketing assumptions. This approach involved identifying organizations that were involved in the community and building a relationship with them so that the program could be successful.

The Whole Neighborhood Approach to the Hillview-TOCKNA (previously Dorsa-TOCKNA) neighborhoods focused on existing housing and energy programs in San José that target lower-income residents to provide the basic needs of hot water, heat, and safe shelter. Although there are energy efficiency components to the local utility and federal programs, they are not measured. Those programs are focused on the number of installations and the items installed rather than the energy reduced. For example, when appliances are replaced, energy efficiency is not a major consideration and therefore is not measured or reported. This results in organizations missing the opportunity to expend the incremental additional cost to install an energy efficient appliance.

By providing an additional layer of training and coordination to staff already in the field, we can greatly increase the energy efficiency of the low-income housing stock. Low-income programs should be implemented as part of a larger community outreach approach and build upon existing community institutions and programs. In low-income communities, energy efficiency is not a priority when weighed against other economic factors. Nevertheless, it can be incorporated seamlessly into existing projects. As a result, the same program that is coordinating energy efficiency efforts can also be working on graffiti abatement, gang prevention, community coordination, and trash clean up.

This program becomes economically feasible when it is incorporated by localities into the scope of existing community outreach or other high-touch community activation programs (e.g., litter clean-up or anti-graffiti efforts). This will allow the local agency to offer alternative service delivery models to the community, increase access to the neighborhood, and provide a positive experience for community members. This can all be achieved while coordinating with utility, federal, state and other local programs.

FINAL TECHNICAL REPORT

Institutional Design and Business Model

Since May 2011, Better Buildings Program San José (BBPSJ) and its community partners have offered affordable energy efficiency home upgrades to low-income families in the Hillview-Tully, Ocala, Capitol, and King Neighborhood Association (TOCKNA) community in San José, California. Seventy percent of the neighborhood's residents are Hispanic, and according to San José State University Urban Studies Program, 29% of the Hillview-TOCKNA community's households have more than seven people under one roof.

BBPSJ, a sub-grantee to Better Buildings Neighborhood Program partner Energy Upgrade California, was created as a pilot program with a targeted geographic focus on the Hillview-TOCKNA community from May 2011 to September 2012. The pilot program serves as a model for other energy efficiency upgrade programs with limited budgets looking to reach low-income populations. Targeting a single community for a limited period of time helps reduce program costs by allowing staff to focus their resources. Leveraging partnerships and resources while gaining traction by collaborating with local organizations helps drive demand.

Driving Demand

Grassroots Marketing Utilizes Local Organizations

Because BBPSJ was working with a limited budget and targeting a finite service area for which large-scale advertising is not effective, the pilot program implemented a grassroots campaign by joining forces with a local church and nonprofit group. BBPSJ further saved on overhead costs when Most Holy Trinity Catholic Church lent its office space free of charge to program officials. BBPSJ staff used the space for meetings with homeowners to discuss residents' upgrade options and to schedule home energy assessments. Additional events were held at a Boys and Girls Club in the community.

The pilot program engaged residents through door-to-door canvassing, presentations at neighborhood meetings and local schools, program announcements in church bulletins, participation in community events, yard sign campaigns, and letters sent to offsite property owners. The program identified and worked with community leaders, both to provide outreach opportunities and to achieve early energy efficiency upgrades. These leaders were then able to provide direct and influential testimonials to the community about the benefits of the programs.

Partners

San José State University Urban Studies Program
Energy Upgrade California
Quality Conservation Services
Sacred Heart Community Service
GRID Alternatives

City of San José Housing Department
Boys & Girls Smythe Clubhouse
Most Holy Trinity Catholic Church

Workforce Development

Events Share “Green” Education and Career Training Opportunities

BBPSJ held four events featuring presentations by local organizations, trade schools, adult education centers, and vocational academies that had courses available on “green” career paths. The events, offered at no cost to residents, informed the Hillview-TOCKNA community of the different types of education and workforce training available. More than 60 job seekers attended each event, held at community-based locations such as a local Boys & Girls Club, a high school, and an adult education training center.

FINANCING AND INCENTIVES

Leveraging Existing Resources Gets Services to Local Residents

Although all San José residents were eligible to purchase Basic and Advanced energy efficiency upgrade packages offered by the statewide [Energy Upgrade California program](#), the packages’ upfront costs (as much as \$2,500) made them a hard sell to Hillview-TOCKNA’s low-income residents. To ensure all residents could achieve energy savings and an improved comfort level, BBPSJ collaborated with various community organizations and the City’s Housing Department to offer no-cost home repair assistance and affordable energy efficiency upgrade services. The City program offers grants of up to \$6,500 to install energy efficiency measures, as well as up to \$15,000 to repair leaking roofs, electrical problems, and plumbing issues. In addition, the program offers loans up to \$150,000 with 0% interest, based on eligibility. In collaboration with the City’s program, BBPSJ’s pilot offset the cost of certain energy efficiency measures installed through the program by offering an additional \$1,500 offset to install energy efficient equipment that met BBP reporting requirements.

Community ties also helped expand the reach of existing financial assistance to Hillview-TOCKNA’s low-income residents. Initial funding didn’t cover the full costs of home energy assessments or efficiency upgrades for all Hillview-TOCKNA low-income residents, so the group fostered relationships with local organizations already offering low- or no-cost energy efficiency assistance in San José, and brought them to Hillview-TOCKNA residents.

For example, Pacific Gas and Electric Company (PG&E) has a Moderate Income Direct Install Program that provides free home energy assessments and weatherization services to income-qualified residents of single family and multifamily homes and common areas. After learning about the program, BBPSJ worked with PG&E’s local contractor, Quality Conservation Services, to implement the program. BBPSJ and Quality Conservation Services also offered an Energy Savings Assistance Program with more

extensive services, while Sacred Heart Community’s free [Weatherization Assistance Program](#) was made available to Hillview-TOCKNA residents.

“It is good to know that the city has implemented a program that focuses on the betterment of the East Side community. I am glad that two angels knocked on my door to offer me energy efficiency and solar power. I am extremely happy with my tank-less water heater and solar system.”

Angela Rios

Resident and Program Participant

DATA AND EVALUATION

San José leveraged approximately \$235,000 in loan and grant funds through the Housing Department and local utility funds, with \$10,500 in subsidies provided by the BBP. Data on installations are provided in Table 1.

Table 1. Installations under the San José BBP

Program	Applications	Installations*	Reportable
Energy Upgrade California	0	0	0
Neighborhood Stabilization Program 2 (NSP2)	1	1	1
City of San José Home Repair Grants and Loans	73	7	7
WAP Program	59	24	2
MIDI/ESAP	277	225	16
Total	410	257	26

**Due to the nature of the San José BBP in coordinating of programs in which BBP did not have jurisdiction to mandate process/procedure, not all program energy efficiency installed are reportable through the BBP. We are reporting all installations to indicate penetration into the community and benefits provided above and beyond the basic scope of BBP. BBP funds were only directly provided to installations with reportable results.*

As an additional benefit of the BBP in San José, we were approached by the organization GRID Alternatives, a non-profit organization that installs Solar Photovoltaic (PV) systems in low-income communities. Hillview-TOCKNA became the first community in the Country to have GRID install PV systems on older homes. This resulted in 19 homes receiving solar PV. Those same homes also received energy efficiency upgrades.

The Hillview-TOCKNA low-income community was not targeted by and did not have the resources to participate in the Energy Upgrade Program as offered in the region, which was specifically marketed to middle- and upper-income residents. It proved more effective to work with existing programs to increase penetration in the community and to augment the energy efficiency work done when those other programs were not focused on energy efficiency.

San José found that its low-income communities prioritized employment, food, heat, housing, and safety over environmental health and energy efficiency. With that understanding, BBP found traction in the community when the program provided a benefit by leveraging existing programs and listening to the community to address its needs.

Although the City of San José will not provide energy efficiency outreach using the BBP model in the foreseeable future, this program has the potential to be replicated by incorporating similar programs into the scope of existing community outreach or other high-touch community activation programs (e.g., litter clean-up or anti-graffiti efforts). This will enable the local agency to offer alternative service delivery models to the community, increase access to the neighborhood, and provide a positive experience for community members. This can all be achieved while coordinating with utility, federal, state, and other local programs

By providing an additional layer of training and coordination to staff already in the field, we can greatly increase the energy efficiency of the low-income housing stock. Low-income programs should be implemented as part of a larger community outreach approach, and build upon existing community institutions and programs. As a result, the same program that is coordinating energy efficiency efforts can also be working on graffiti abatement, gang prevention, community coordination, and trash clean up.

ACCOMPLISHMENTS

Task 1:

Target: 45 installations of energy upgrades in homes

Actual: 26 installations were made that met DOE minimums.

Task 2:

Target: 10 install commercial upgrades.

Actual: 0 installs. We quickly realized that due to the nature of this sector within the identified service area, this would not be a viable option. Commercial consisted of residential businesses, absentee land lord strip retail, and a recently upgraded large commercial center, which was already energy efficient.

CHALLENGES

- Survey findings suggest that time and resource constraints are likely limiting Energy Champion (EC) success in promoting EUC. The interviewed Energy Champions most often (15 of 25 responding) reported that they would be more successful in promoting EUC if they could spend more time doing so. These contacts most often (9 of 15) reported that a lack of staff or financial resources prevented them from spending more time promoting EUC. Five contacts also cited competing priorities within their organization as a factor that prevented them from devoting more time to promoting EUC. One contact stated that his organization could better promote EUC if fewer individuals were able to devote a greater proportion of their time doing so, allowing them to develop more detailed knowledge of EUC, rather than spreading the task among multiple individuals.
- While EC organizations serve a diverse populations, interview findings do not suggest that this diversity poses a substantial barrier to the pilot. The majority of survey respondents (74%) indicated that their constituents are good targets for the EUC program. While almost all of the respondents with at least one Homeowner Action Forms HAF submission (8 of 9) stated that their constituents are a good target for EUC, a majority (12 of 17) of those without HAF submissions also said their constituents are a good target. Energy Champions reporting that their constituents are not good targets for EUC either stated that their constituents could not afford the cost of EUC upgrades (5 of 7) or were not interested (2 of 7).
- Due to a complicated and time-consuming project completion process, Energy Champions were unable to receive their incentives until a project was verified as completed by the utilities. This stifled interest in promoting the program because the goal line for incentives appeared to keep moving back. Although the process has been streamlined as all parties involved have become more familiar with the process, it has been deemed necessary to adjust the incentive in the coming program design to allow for a non-monetary, upfront incentives. These will most likely take the form of a suite of marketing options to increase both Champion and programmatic visibility.

PROGRAM SUSTAINABILITY PLAN

The San José program will not be continuing past the grant period.

VERIFICATION OF DATA

Under the direction of the prime contractor, BKi, Renewable Funding (“RF”) served as a subcontractor responsible for retrofit reporting. Each quarter, RF coordinated and collected data from each of the pilots in regards to their residential, commercial, and multi-family retrofits. This data was provided in a variety of formats.

Due to inconsistencies in reporting data, RF manually inspected each file for completeness and accuracy and worked with each pilot if corrections were needed.

RF developed automated scripts that imported, normalized, and formatted the retrofit data per the DOE’s xml requirements. The Quarterly Programmatic data was reported via Excel spreadsheet, as this format was easier for the grantor, Los Angeles County, to review and submit.

Since all of the pilots concluded in April 2013, the Q2 2013 retrofit report and grant retrofit closeout process were completed early. The schedule is detailed below.

- May 30th, 2013 – Q2 2013 retrofit report submitted to DOE
- June 2013 – DOE provided aggregate and individual project reports
- July 2013 – RF provided corrections and then approved final reports

Appendix C

Retrofit California Process Evaluation Final Report



RETROFIT CALIFORNIA PROCESS EVALUATION FINAL REPORT

November 12, 2013

Los Angeles County Office of Sustainability
Bevilacqua-Knight, Inc.



research/into/action^{inc}

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Retrofit California Grant Partners

Association of Bay Area Governments
California Center for Sustainable Energy
City of San Jose
LA County Office of Sustainability (Prime Grant Recipient)
Regional Climate Protection Authority
Sacramento Municipal Utility District
San Francisco Department of the Environment
StopWaste

Implementation Partners

Bevilacqua-Knight, Inc.
Renewable Funding
Build it Green
Climate Protection Campaign
The Energy Coalition
Davis Energy Group
InterEthnica
ConSol
Willdan
Energy Efficiency Institute, Inc.
Matadors Credit Union
Town of Windsor
Sonoma County Energy Independence Program

List of Abbreviations and Acronyms

ABAG	Association of Bay Area Governments
ARRA	American Recovery and Reinvestment Act
BayREN	San Francisco Bay Area Regional Energy Network
BBNP	Better Buildings Neighborhood Program
BKi	Bevilacqua-Knight, Inc.
CBSM	Community Based Social Marketing
CCSE	California Center for Sustainable Energy
CEC	California Energy Commission
CPC	Climate Protection Campaign
CPUC	California Public Utilities Commission
DOE	U.S. Department of Energy
EECBG	Energy Efficiency and Conservation Block Grant
EUC	Energy Upgrade California
GBL	Green Building Labeling
HIRP	Home Improvement Retail Partnership
OWB	On-Water Bill
PACE	Property Assessed Clean Energy
PAYS	Pay As You Save
PG&E	Pacific Gas & Electric
QI	Quality Installation
RCPA	Regional Climate Protection Authority
SEP	State Energy Program
SDG&E	San Diego Gas and Electric
SCE	Southern California Edison
SF Environment	San Francisco Department of the Environment
SMUD	Sacramento Municipal Utility District
SoCalREN	Southern California Regional Energy Network
WNA	Whole Neighborhood Approach

Executive Summary

This report describes the results of a process evaluation of the Retrofit California portfolio of 24 pilot projects, conducted between 2010 and mid-2013 and funded through a \$30 million American Recovery and Reinvestment Act (ARRA) grant from the U.S. Department of Energy's (DOE) Better Buildings Neighborhood Program (BBNP).

Los Angeles County (LA County), as prime grantee, partnered with StopWaste in Alameda County; Regional Climate Protection Authority (RCPA) in Sonoma County; San Francisco Department of the Environment (SF Environment); the City of San Jose; the California Center for Sustainable Energy (CCSE) in San Diego; and Sacramento Municipal Utility District (SMUD).

LA County engaged Bevilacqua-Knight, Inc., (BK) to oversee its Retrofit California partnership; BK in turn retained Cadmus and its subcontractor, Research Into Action (the evaluation team) to conduct this process evaluation.

Process evaluations systematically document and assess energy efficiency program design, operation, and outcomes to yield insights that increase program efficiency, effectiveness, and participant satisfaction.

All Retrofit California pilots sought to expand the energy-efficiency retrofit market and many were designed to promote the California investor owned utilities' (IOUs) Energy Upgrade California (EUC) program, which sought to accomplish retrofits that achieve at least a 10% reduction in energy use. The pilots made use of various program approaches, including community based social marketing, whole neighborhood strategies, retail partnerships, financing, green building labeling, and pilots targeted to HVAC contractors and multifamily decision-makers.

This executive summary describes the overarching lessons and recommendations from the process evaluation. The body of this report describes the evaluation approach; gives an overview of Retrofit California; provides pilot-specific findings, conclusions, and recommendations; and ends with a fuller version of the overarching insights included here. Detailed evaluation reports for each pilot are provided in the appendices.

Evaluation Objectives and Methods

The goals for this process evaluation of Retrofit California pilots were to:

- Examine the effectiveness or influence of pilots in meeting their stated goals
- Assess participant and market actor experience with the pilots
- Capture lessons learned that would improve and expand future energy efficiency efforts

The evaluation methods were tailored for each pilot, but typically included a review of program documents and materials, a database review, in-depth interviews, and survey research.

Crosscutting Lessons and Recommendations

The evaluations across the 24 pilot programs produced these overarching insights.

Retrofit California provided a valuable learning experience for grant partners, many of whom will continue on to administer programs within the new Regional Area Networks (RENs).

The grant partners tried out many different approaches to encourage market uptake of energy upgrades, and learned a good deal about designing, implementing, modifying, and evaluating programs.

Recommendation: For ongoing REN operations, efforts should focus on a manageable number of programs that have been developed based on lessons learned, evaluation results, and careful research.

Recommendation: Avoid replicating approaches that did not work, such as HIRP. Focus on making successful pilots, such as LA County's Flex Path, SMUD's WNA, or RCPA's OWB, sustainable over the longer term.

The pilots would have benefitted from formal program theory and logic models.

Investment in theory and logic models – which carefully describe program assumptions and linkages to short and longer term outcomes – would have helped the grant partners avoid design faults and failure due to faulty logic (e.g., see the HIRP and some WNA pilots). While planned as part of the process evaluation, they were set aside in the rush to launch pilots.

Recommendation: In the future, avoid skipping this essential step in program planning. Map out program theories to identify potential weaknesses in proposed program logic and adjust designs to minimize the risks of program failure.

The presence or lack of infrastructure strongly affected the time needed to launch pilots.

SMUD, the only utility grantee, was able to quickly launch its pilots because it could leverage programs it had already developed and had many existing procedures in place. In contrast, the RCPA OWB pilot took more than a year to design and launch because much of the infrastructure needed to be developed.

Recommendation: When developing new programs, take into account existing infrastructure, such as the presence of a trained workforce, building codes and policies, and infrastructure that still needs to be developed. Reflect these conditions in the program's timeline.

Customer knowledge of the benefits of improved home performance affects how likely they are to take action.

The market was not prepared to demand – or supply – high volumes of whole-house retrofits during the grant period.

Recommendation: During the 2013-2014 program cycle, continue efforts to educate customers about the value of whole-house energy upgrades, stressing the energy and non-energy benefits. Work with qualified contractors to train them how to reach and market whole-house retrofits to interested homeowners.

Linking pilot success to programs run by other entities created numerous challenges.

When the grant partners¹ decided to drive participation to IOU administered programs, they took on many risks and unknowns without much ability to control them. In addition, because the grant partners did not have access to IOU program tracking data, the tracking and accounting of retrofits was not consistent from pilot to pilot. Finally, no clearly defined and agreed-upon protocols existed to assign attribution to completed retrofits.

Recommendation: The RENS and IOUs need to coordinate their efforts in the 2013-2014 program cycle to ensure coverage and reduce redundancy. Consider creating a master list of programs and identify for each program the target market, activities, and the administrator, as well as how each program interacts with other efforts in the region.

Recommendation: The RENS should develop their own specific and separate program performance metrics.

Recommendation: The RENS and IOUs should agree upon an approach for tracking, reporting, and attributing accomplishments through their joint efforts. Consider ways to track needed information throughout the retrofit process, such as how customers heard about the program, if the RENS provided marketing support, or whether the customer used a special REN financing program.

Recommendation: The IOUs and RENS should determine if the RENS need access to customer information to run successful programs, and if so, they need to develop secure and effective protocols for accessing or transferring that data.

Mechanisms to ensure effective coordination and oversight of pilots were insufficient.

Overall, the pilots had few design elements in common, and DOE did not require the pilots to be coordinated or to share the same design elements. As a result, each pilot was unique and many were too small to move the market very far (e.g., LA HVAC and all the multifamily pilots). Initial grant management mechanisms also did not allow LA County to effectively police the pilots.

Recommendation: The CPUC, IOUs, and RENS efforts should work in concert to have the greatest impact on the whole-house retrofit market. A formal mechanism for coordination among the various entities should be established, along with adequate funding for this purpose. A joint approach to evaluation should be adopted.

¹ Except SMUD

1. Introduction

Los Angeles County (LA County) engaged Bevilacqua-Knight, Inc., (BK_i) to oversee its Retrofit California partnership, which was funded through a \$30 million American Recovery and Reinvestment Act (ARRA) grant from the U.S. Department of Energy's (DOE) Better Buildings Neighborhood Program (BBNP). Eight entities in California participated in the partnership, with LA County serving as the prime grant recipient. The other partners included:

- The Association of Bay Area Governments (ABAG), which represents:
 - The San Francisco Department of the Environment (SF Environment)
 - StopWaste in Alameda County
 - Regional Climate Protection Authority (RCPA) in Sonoma County
 - City of San Jose
- The California Center for Sustainable Energy (CCSE) in San Diego
- Sacramento Municipal Utility District (SMUD)

All of the pilots sought to expand the energy-efficiency retrofit market. In addition, many but not all pilots were designed to promote the California investor owned utilities' (IOUs) Energy Upgrade California (EUC) program offerings, which sought to accomplish retrofits that achieve at least a 10% reduction in energy use.

BK_i retained Cadmus and its subcontractor, Research Into Action (the evaluation team), to conduct a process evaluation of Retrofit California's portfolio of pilot projects between 2010 and mid-2013. The evaluation team followed this definition of process evaluations to conduct its work.²

Process evaluations systematically document and assess energy efficiency program design, operation, and outcomes to provide insights that increase program efficiency, effectiveness and participant satisfaction.

In keeping with this definition, the goals for this evaluation of Retrofit California pilots were to:

- Examine the effectiveness or influence of pilots in meeting their stated goals
- Assess participant and market actor experience with the pilots
- Capture lessons learned that would improve and expand future energy efficiency efforts

This report summarizes our research approach, the overview and context for Retrofit California, and key evaluation results and insights for each pilot approach and across pilots. **We encourage readers to consult the appendices, which contain full evaluation reports for each pilot, to understand the methods used and to obtain greater insights about pilot performance.**

² The definition is consistent with the CPUC's *California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals*, April 2006.

1.1 Research Approach

The evaluation team began in January 2011 with the hope that early evaluation efforts could be conducted to provide ongoing feedback. However, most of the Retrofit California pilots were not fully designed and did not ramp up until much later in the grant period. Many pilots were also redesigned or stopped ahead of schedule so that grant funds could be reallocated toward efforts that were expected to be more successful.

Thus, the evaluation team worked with the pilot sponsors to better understand the pilot designs, to keep up with changes, and to help ensure that the pilot could eventually be evaluated. We then timed the evaluation of each pilot to maximize the success of our data collection efforts, while at the same time providing as much on-going feedback as possible.

For some pilots, evaluation information was limited to secondary data or primary data collection had to be scaled back due to competing evaluation activities (for instance, by the IOUs), other research being conducted by pilot staff, or because pilot records did not allow for more robust evaluation approaches. These instances are noted in the pilot-specific reports that form the appendices for this main report.

This project evaluated the BBNP funded pilots of all the grant partners, as shown in Figure 1. Although pilots with the same name often shared similar design elements, each pilot was unique.

- **LA County** offered seven program components: Financing, Flex Path, HVAC contractor training (HVAC), Whole Neighborhood Approach (WNA), Community-Based Social Marketing (CBSM), a Multifamily pilot (Multifamily), and Green Building Labeling (GBL).
- **CCSE** offered HVAC, a WNA pilot, CBSM, and a Home Improvement Retail Partnership (HIRP).
- **SMUD and City of San Jose** each implemented a WNA pilot.
- **StopWaste** offered HIRP, CBSM, Multifamily, and GBL.
- **SF Environment** offered HIRP, CBSM, GBL, WNA, and Multifamily pilots.
- **RCPA** implemented WNA and an On-Water-Bill (OWB) financing pilot.

Figure 1. List of Partners and Pilot Programs



Table 1 summarizes the evaluation methods used for each pilot.

Table 1. Evaluation Methods for Each Pilot

Grant Partner	Pilot	Pilot Staff and Implementer Interviews	Contractor or Trade Ally Interview/Survey	Homeowner/Property Owner Interview/Survey	Materials/Database Review
LA County	CBSM	✓	✓**	✓	✓
	WNA	✓	✓	✓	✓
	HVAC	✓	✓	Not Applicable	✓
	Multifamily	✓	✓	✓	
	GBL	✓	✓	✓	
	Flex Path	✓	✓	✓	✓
	Energy Loan	✓	✓	✓	✓
RCPA	WNA	✓	✓	✓	✓
	OWB	✓	✓	✓	✓
SMUD	WNA	✓	✓	✓	✓
SF Environment	HIRP	✓			*
	GBL	✓	Not Applicable	Not Applicable	*
	CBSM	✓			
	WNA	✓	Not Applicable	Not Applicable	*
	Multifamily	✓	Not Applicable	Not Applicable	*
CCSE	HVAC	✓	Secondary Data Only	Not Applicable	✓
	Retail	✓	✓		*
	CBSM	✓			
	WNA	✓	✓		✓
San Jose	WNA	✓		✓	✓
StopWaste	HIRP	✓	✓		*
	CBSM	✓		Secondary Data Only	
	GBL	✓	✓		
	Multifamily	✓		✓	

* Indicates tracking database was not available

** Only for the Home Energy Makeover Contest component

2. Retrofit California Overview and Context

The goal of the Retrofit California program at the beginning of the grant period was to test new and innovative program models that would result in comprehensive energy efficiency retrofits. The grant partners and project officer at the DOE recognized that not all of the approaches piloted would necessarily succeed. Indeed, over the course of the grant period, sponsors discontinued several unsuccessful pilots and, in addition, some launched new pilots that were successful.

This evaluation captures the original set of pilots, including those that were discontinued earlier than planned. It also captures two of the more significant innovations that emerged from the Retrofit California effort, but were not part of the original set of pilots: LA County's Flex Path and Energy Loan offerings. Grant partners in the San Francisco Bay area also reallocated grant funds to develop a parallel Flex Path program that was getting underway toward the end of this project and were not evaluated.

The Retrofit California pilots operated within the context of many utility-administered energy-efficiency programs, in addition to EUC, being offered to customers. The utility-administered programs, coupled with a number of significant developments outside of the BBNP grant, influenced the direction of Retrofit California. The larger context for the Retrofit California pilots, and how it affected the pilots during their operation and into the future, is described in more detail in the remainder in this section.

2.1 Retrofit California Grant Funding

The allocation and final amount that each partner spent under the grant is shown in Table 2.

Table 2. BBNP Funding Allocation Under Award DE-EE0003562

Partner	Final Allocation	Amount Spent as of 6/1/2013	Percent of Allocation Spent
LA County	\$14,848,094	\$13,238,380.93	89%
StopWaste	\$3,800,000	\$3,774,632.47	99%
CCSE	\$3,942,773	\$3,865,168.24	98%
SMUD	\$2,813,246	\$2,812,978.32	100%
SF Environment	\$1,670,000	\$1,644,100.44	98%
RCPA	\$1,414,000	\$1,385,326.54	98%
City of San Jose	\$788,479	\$748,622.99	95%
ABAG	\$723,408	\$654,675.04	90%
Total	\$30 million	\$28,123,884.97	94%

Based on interviews with those who crafted the grant proposal, the proposal was designed as one large request rather than several smaller requests for funding. The partners described their original objectives as follows: "Retrofit California will facilitate energy upgrades for over 18,000 buildings, generate over \$7 million in annual energy savings, create or preserve over 2,600 jobs, and contribute an economic impact

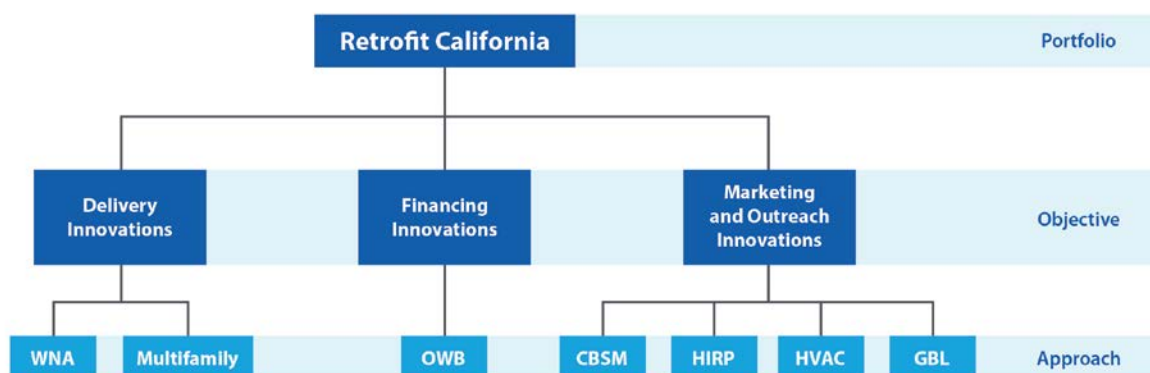
of more than \$240 million. Retrofit California will achieve self-sustaining market momentum, document economies of scale, and prove innovations that can be replicated across the United States.³

To this end, the Retrofit California partners identified three core strategies to address major market barriers to the widespread adoption of comprehensive building energy-efficiency retrofits:

1. Streamline participant, contractor, and administration processes to reduce transaction costs for delivering retrofits
2. Provide attractive financing options to address the high up-front cost barrier
3. Demonstrate effective marketing and outreach methods to inform and motivate property owners to take action

Figure 2 shows how each of the original pilots fits with these three main objectives.⁴

Figure 2. Original Retrofit California Pilots



Delivery Innovation. The WNA approach was developed to drive down retrofit delivery costs through a contained neighborhood focus, a high concentration of retrofits within those neighborhoods, and the ability to offer volume discounts for retrofit materials. The multifamily approach intended to overcome barriers to energy retrofits in the multifamily sector, such as split incentives.

Financing Innovation. OWB, by introducing a financing mechanism, was the only original pilot designed to remove the first cost barrier to conservation.

Marketing and Outreach Innovation. Many of the pilots planned to provide marketing and outreach support to the IOU-administered EUC programs. The CBSM approach intended to work with community-based organizations to raise awareness, while the HIRP was designed to leverage the in-store marketing and service delivery channels of retailers. The HVAC approaches were designed to leverage existing

³ Retrofit California Statement of Project Objectives, DE-EE0003562 Attachment #2

⁴ LA County's Flex Path and Energy Loan pilots were not part of the original Retrofit California pilots and are not included in Figure 2

marketing and service delivery channels for HVAC contractors. GBL intended to capture opportunities for energy upgrades through marketing green building labels and promoting their value.

Other Recovery Act Grants

In addition to the BBNP grant, many of the Retrofit California partners also received funding from the other ARRA grants shown in Table 3. Some partners also leveraged California ratepayer-funded resources (not shown in the table).

Because each grant covered a different period during which partners could use funds, partners prioritized their activities to maximize total spending across all their funding sources. BBNP's period occurred later than the Energy Efficiency and Conservation Block Grant (EECBG) and CEC State Energy Program (SEP) efforts, and spending against BBNP was often deferred so the partners could first spend monies from other grants with nearer-term end dates.⁵

Table 3. Additional ARRA Grants Supporting Retrofit California Partners

Grant	Partner	Amount
Energy Efficiency and Conservation Block (EECBG) Grant DE-EE0000896	LA County	\$15.4 million
California Energy Commission (CEC) EECBG Grant	LA County SMUD	\$9.2 million \$18 million
CEC State Energy Program (SEP)	LA County SMUD RCPA StopWaste CCSE SF Environment	\$11 million \$20 million \$1.215 million \$3.079 million \$315,000 \$876,000
City of Sacramento EECBG Grant	SMUD	\$500,000
EECBG	SF Environment*	\$1.67 million
EECBG/San Diego County	CCSE	\$1.5 million
EECBG/City of San Diego	CCSE	\$2.8 million
EECBG	RCPA	\$413,000
EECBG	San Jose	\$8,840,600
Solar America Cities Program	San Jose	\$1,301,636
Local Energy Assurance Planning	San Jose	\$299,983
*SF Environment also received privately funded grants through the Frank Foundation and Living Cities Foundation		

2.2 Grant Management and Staffing

This section describes the entities involved with administering and operating BBNP, including grant partners, contractors (both non-profit and for profit), and market actors, such as retailers.

⁵ Please note that we did not analyze the use of other funds for pilot programs as part of this evaluation.

GRANT PARTNERS

LA County. As the prime grant recipient, LA County provided project oversight and reported results to DOE. Staff from LA County's Office of Sustainability administered the grant and hosted monthly check-in calls with each grant partner to discuss progress made, challenges, and next steps.

ABAG. While ABAG did not directly implement any of the pilots, they assisted with reporting and coordinated among SF Environment, RCPA, StopWaste, and City of San Jose.

- **RCPA** is a part of the Sonoma County Transportation Authority. It coordinates climate protection efforts among Sonoma County's nine cities and across multiple county agencies.
- **StopWaste** is the Alameda County Waste Management Authority and Alameda County Source Reduction and recycling Board operating as one public agency. Its mission is to achieve environmentally sound solid waste management and provide effective resource conservation programs for Alameda County.
- **City of San Jose.** Staff from the East San Jose Neighborhood Resource Center implemented their pilot program under Retrofit California. The City leveraged its existing partnership with Pacific Gas and Electric (PG&E)—the Silicon Valley Energy Watch—to facilitate outreach efforts.
- **SF Environment** manages many programs to promote sustainability, including energy efficiency, clean transportation, zero waste, green buildings, and environmental justice. It is also a partner to PG&E under the SF Energy Watch partnership, which provides services and financial incentives for energy efficiency.

CCSE is a nonprofit corporation that promotes saving energy, reducing grid demand, and distributed generation through a variety of rebate, technical assistance, and education program offerings.

SMUD is the only grant partner that is also a utility – the nation's sixth-largest consumer-owned electric utility. SMUD has offered ratepayer-funded energy-efficiency programs since the 1970s.

IMPLEMENTATION CONTRACTORS AND COLLABORATORS

The grant partners contracted with the following firms to implement significant crosscutting elements of the Retrofit California pilot programs:

- **BKi**, an energy consulting firm, provided support to LA County and the grant partners from grant submission through the close of Retrofit California. They facilitated communication among the grantees, hosted the project website, managed contracts and other administrative functions, implemented a number of pilot programs and oversaw the evaluation of Retrofit California.
- **Renewable Funding** was the primary information technology (IT) contractor for the development and maintenance of the CEC's EUC web portal and also served as the IT consultant for Retrofit California, under contract to BKi. It provided website support to the Retrofit California pilot programs and facilitated the grant partners' quarterly reporting to the DOE. Renewable Funding also provided financing pilot design and management services to LA County.

- **Build It Green (BIG)** provided evaluation oversight support to LA County and BKi. BIG is a nonprofit that manages the GreenPoint Rated building label program and processes EUC applications for PG&E. BIG also implemented the Multifamily and Green Building Labeling pilots for LA County.
- **The Energy Coalition** led marketing efforts and administered the HVAC and CBSM pilots for LA County.

Each grant partner also contracted or collaborated with one or more other entities to design, deliver, or assess Retrofit California efforts, as shown in Table 4.

Table 4. Retrofit California Contractors and Collaborators

Grant Partner	Collaborated with...	
LA County	MIG InterEthnica	Matadors Credit Union Davis Energy Group
City of San Jose	Quality Conservation Services Sacred Heart	City of San Jose Housing Department
StopWaste	Action Research	Lowe's
SF Environment	Local hardware store	UC Berkeley and UC Los Angeles
CCSE	Best Buy Action Research	City of Chula Vista
RCPA	Energy Efficiency Institute Town of Windsor Community Solutions Group	Sonoma County Energy Independence Program Davis Energy Group Climate Protection Campaign
SMUD	ConSol Willdan Community Resource Project	Heschong Mahone Group Broward Mechanical Comfort City Heating and Air

2.3 Retrofit California Context

This section describes three developments that strongly influenced Retrofit California efforts:

- The loss of Property Assessed Clean Energy (PACE) financing for energy-efficiency projects
- The need to coordinate with EUC, the statewide energy efficiency program
- The advent of Regional Energy Networks (RENs)

LOSS OF PACE FINANCING

PACE is a financing mechanism that provides property owners with up-front capital to purchase and install energy-efficiency and renewable energy systems. The financing is repaid through an assessment added to the property tax bill, which transfers to the next owner until the obligation is paid off. The assessment creates a tax lien on the property that is senior to existing mortgages.

In July 2010, the Federal Housing Finance Agency instructed Fannie Mae and Freddie Mac, the nation's largest mortgage lenders/purchasers, to use more restrictive mortgage underwriting standards⁶ for all

⁶ <http://www.fhfa.gov/webfiles/15884/PACESTMT7610.pdf>

residential borrowers in jurisdictions with senior lien PACE programs. This decision prevented many grant partners, including LA County, from moving forward with PACE financing programs.⁷ Because the original Retrofit California proposal to DOE relied on PACE financing to cover up-front costs for energy-efficiency retrofits, this decision forced the grant partners to develop other approaches to help property owners fund energy upgrades.

COORDINATION WITH ENERGY UPGRADE CALIFORNIA

EUC is a statewide collaboration among the CPUC, CEC, local government agencies, and utility companies. Funding for the program comes from multiple sources, including ARRA, the CEC, publicly owned utilities, and investor-owned utility (IOU) ratepayers. EUC's charge is to provide a "one stop shop" for Californians who wish to make energy upgrades, connecting them with local programs to help them complete upgrades. The program, primarily targeted to residences during the BBNP grant period, emphasizes a whole-house approach that treats the home as a complete system.

The IOUs (PG&E, SDG&E, SCE, SoCalGas) offered two energy upgrade packages: Basic and Advanced. The Basic Upgrade Package provides incentives up to \$1,000 to install a required set of measures that will result in an average savings of 10%. For Advanced Upgrade packages, the rebates scale with the energy savings of the project, up to \$4,500. Advanced Upgrades require an energy assessment of the house, an Energy Pro Model (from the qualified contractor), installation of the Basic Upgrade package plus new systems (HVAC or water heating), replacement of ductwork, or other shell measures.

Table 5 shows the required measures for the Basic Upgrade Package and typical measures for Advanced Upgrades. The 2010-2012 process evaluation study⁸ of PG&E's and SCE's EUC program showed that the basic upgrade package received little uptake and that most IOU participants (97%) opted for the advanced package.

Table 5. IOU Basic and Advanced Upgrade Packages

Basic Upgrade Package	Advanced Upgrade Package
• Air sealing • Attic insulation • Duct sealing • Hot water pipe insulation • Thermostatic shutoff valve • Carbon-monoxide monitor • Combustion safety testing • Low-flow showerheads (recommended)	Basic Upgrade Package plus: • High-efficiency furnace • Energy-efficient cooling • Water heater system • Energy-efficient windows • Duct replacement • Wall insulation • Other custom energy-saving measures

⁷ One notable exception is Sonoma County, which has a residential and commercial PACE program

⁸ SBW Consulting and Opinion Dynamics and ASW Engineering, *2010-2012 PG&E and SCE Whole House Retrofit Program Process Evaluation Study*

PG&E launched its EUC program in the summer of 2010 as a pilot. In July 2011 the pilot phase ended and PG&E hired a new team of implementers for the official program.⁹ SCE and SoCalGas did not have a pilot phase, but they did change their program offerings and processes substantially before the program began receiving applications in January 2012.¹⁰

Many of the Retrofit California pilots were designed to support the IOUs' EUC offerings, either as complementary efforts (e.g., financing pilots) or to drive customers to participate. The delays in implementing EUC presented these types of challenges to grant partners:

- LA County staff indicated they had to delay their EUC-related pilots due to the Southern California IOUs' delayed schedule. LA County reported they had program processing, marketing, and call center functions ready months before the southern California IOUs were ready to start processing Basic or Advanced Upgrades. Once LA County began implementing its programs, it found significantly less demand for EUC upgrades than expected because the utilities and other organizations (via other ARRA grants) had just begun marketing EUC. LA County credited the slow IOU program launch as the cause for the slow initial uptake of its Retrofit California pilots.
- In Sonoma County and other areas, Retrofit California staff agreed that creating demand was a challenge because of the nascent state of the whole-house retrofit industry. Substantial EUC marketing efforts were not launched until spring of 2011 under the CEC's SEP grant. At the time the Retrofit California pilots were launched, general consumer awareness about whole-house offerings was still low.
- StopWaste anticipated PG&E would release an EUC rebate program for the multifamily sector in 2012. When this program was delayed, StopWaste's multifamily pilot program was significantly limited because no grant funds had been allocated toward rebates.

The 2010-2012 process evaluation study¹¹ of PG&E's and SCE's EUC program documents the tension between the IOUs, which were planning for long term programs, and local governments, which were trying to quickly expend their ARRA-funded grants. Although the local governments did not have control over the IOUs or their programs, the IOUs felt the ARRA funding to the local governments "forced the [IOU] program to go to market before it was ready."¹² The IOUs also say they experienced delays due to having to coordinate the program with each other and with the regional entities, contributing to the reason why the local governments were ready to begin marketing before the IOUs.

REGIONAL ENERGY NETWORKS

In its decision of May 10, 2012 (Decision 12-05-015), the California Public Utilities Commission (CPUC) invited proposals for regional energy networks (RENs) from local government entities to be piloted in

⁹ *Ibid.*

¹⁰ Cadmus correspondence with SCE staff

¹¹ SBW Consulting and Opinion Dynamics and ASW Engineering, *2010-2012 PG&E and SCE Whole House Retrofit Program Process Evaluation Study*

¹² *Ibid.*

the 2013-2014 bridge period. The RENs will use ratepayer funding to independently administer regional energy conservation programs that complement and supplement existing IOU programs, including the continuation of a number of pilots started under Retrofit California.¹³ Many of the Retrofit California partners are included in the RENs and will continue providing conservation programs through them after the end of the BBNP grant period. For these partners, implementing ARRA-funded programs served as an important learning experience and helped prepare them to deliver programs through the RENs.

SF Bay Area Regional Energy Network (BayREN)

The BayREN is a regional group of local governments that will implement regional energy-efficiency programs from PG&E's electricity ratepayer funds starting in the 2013-2014 program cycle. Members of BayREN include ABAG (as the lead), StopWaste (representing Alameda County), City and County of San Francisco County, City of Suisun City (representing Solano County), County of Contra Costa, County of Marin, County of Napa, County of Santa Clara, and the RCPA.

Figure 3. BayREN Members



Source: ABAG

SoCalREN

The SoCalREN serves public agencies and their constituents in the SCE and Southern California Gas (SoCalGas) Company service territories. LA County will lead a committee of representatives from cities

¹³ Pilots may need to be modified to comply with CPUC's guidance.

and counties served by SoCalREN, which include all or portions of the following counties: Los Angeles, Orange, Ventura, Santa Barbara, Riverside, San Bernardino, Kern, Tulare, Inyo, Mono, and portions of King and Fresno.¹⁴

2.4 Performance Against Internal Targets

DOE wanted the BBNP grant to promote the whole-house approach to energy upgrades and generally required reported retrofits to have an average of 15% or more energy savings. Originally, DOE was most interested in testing new and innovative approaches to whole-house retrofits and transforming the market for these services; however midway through the grant period DOE began to place greater emphasis on grant spending rates and retrofits achieved. In 2012, DOE also changed its rules on reporting retrofits. Rather than requiring individual homes to achieve 15% energy savings, a group of retrofits could qualify as long as the group's average savings met the 15% energy savings threshold.

LA County and the other grant partners created internal performance targets for each pilot. These targets are summarized in Table 6, along with their achievements.¹⁵ The table shows that many pilots were not able to meet their performance targets.

Notably, however, accounting system for retrofits varied greatly. In some cases, marketing efforts that led to participation in a program sponsored by another entity was counted as a retrofit. In other cases, the issuance of a rebate signaled a completed project. In addition, when multiple sources of funding were involved, it was not possible to attribute retrofits to a single source. Finally, delays in project implementation interfered with pilots' ability to reach performance targets they had set during pilot planning. The reports in the appendices provide more insights about the ability of the pilots to reach their retrofit targets.

¹⁴ http://www.lgc.org/events/docs/seec/seec_webinar15-SoCalREN_Overview_8-13-12.pdf

¹⁵ The process evaluation team did not review the energy savings estimates made by the grant partners.

Table 6. Retrofit Targets (15%+ Savings) and Actual Performance

Pilot *	Grant Partners	Performance Target	Achieved through June 1, 2013** (unless noted)
WNA	RCPA	206	0
	LA County	328	5 by September 2012
	City of San Jose	45	27
	SF Environment	10	0
	CCSE	200	2 (Based on contractor reports)
	SMUD***	Single Family: 104 Multifamily: 130 units Small Commercial: 286 Large Commercial: 6 Low-Income: 44	Single Family: 102 Multifamily: 135 units Small Commercial: 291 Large Commercial: Not Implemented Low-Income: 95
HVAC	LA County	100	99 projects received contractor QI incentives
	CCSE	600	No retrofits, contractor training only
CBSM	LA County	900	94 completed through February 2012
	SF Environment	325	Not reported at the pilot level
	StopWaste	1,186	78 homeowner action forms (HAFs)
	CCSE	420	12
Multifamily	LA County	550	720 units in 10 multifamily buildings
	SF Environment	765	0 attributable to the pilot
	StopWaste	460	820 units in 14 multifamily buildings (Some also qualified as projects completed for GBL)
OWB****	RCPA	Single Family: 2,500 Multifamily: 200 units	Single Family: 101 Multifamily: 227 units in four buildings
HIRP	CCSE	255	0
	SF Environment	30	0
	StopWaste	0	0
GBL	LA County	505	567 single family projects 174 units in 2 multifamily buildings
	SF Environment	50	0 attributable to the pilot
	StopWaste	840	6 single family projects 572 units in 6 multifamily buildings

* No internal retrofit targets were set for Flex Path and Energy Loan; these pilots are not included in this table

** Retrofits reported to DOE. The evaluation team was unable to determine attribution to BBNP for some pilots with multiple funding sources.

***Values listed are revised targets

**** Retrofits based on 10% or greater energy savings. Reporting through April 2013.

2.5 After the Grant Period

LA County required its partners to submit final invoices by May 2013. Table 7 shows the start and end dates for all of the pilots¹⁶, and indicates which ones continue past the BBNP grant period under other auspices. Overall, 11 Retrofit California pilots will continue, with modification, and 13 will not for the 2013-2014 program cycle. Pilots that will continue will either become part of REN or SMUD offerings. CCSE, while not continuing any pilots, will promote energy efficiency as the implementer for the California Statewide Marketing, Education, and Outreach program.

Table 7. Retrofit California Pilot Operation Dates and Continuation

Grant Partner	Pilot	Start Date	End Date	Ratepayer-Funded Continuation?*
LA County	CBSM	Energy Champions – August 2011 Contest – March 2011	February 2013	EC – Yes (SoCalRen) Makeover Contest - No
	WNA	October 2011	September 2012**	No
	HVAC	July 2011	February 2013	Yes (SoCalRen)
	Multifamily	August 2011	February 2013	Yes (SoCalRen)
	GBL	August 2011	February 2013	Yes (SoCalRen)
	Flex Path	January 2012	February 2013	Yes (SoCalRen)
	Energy Loan	July 2011	NA	Yes (SoCalRen)
RCPA	WNA	July 2011	May 2012	No
	OWB	August 2012	Continues as Windsor PAYS	Yes (BayRen)
SMUD	WNA	July 2011	May 2013**	Yes (SMUD ratepayers)
SF Environment	HIRP	August 2012	November 2012	No
	GBL	NA***	NA	No
	CBSM	August 2012	April 2013	No
	WNA	NA****	NA	No
	Multifamily	September 2011	April 2013	No
CCSE	HVAC	August 2011	April 2012	No
	Retail	May 2011	November 2011	No
	CBSM	Soft launch fall 2011, full launch March 2012	December 2012	No
	WNA	Phase 1: February 2011 Phase 2: January 2012 Phase 3: July 2012	May 2013	No
San Jose	WNA	May 2011	May 3, 2013	No
StopWaste	HIRP	February 2011	March 2011	No
	CBSM	September 2011	April 2013	Yes (BayRen)
	GBL	Phase 1 – July 2011 Phase 2 – February 2012		Yes (BayRen)
	Multifamily	January 2011		Yes (BayRen)

* Continuation of the pilots may be conditional or require modification to pilot design

** Varies by subpilot

***Not a program, funds used toward an academic study on the value of green building labels

****Pilot was repurposed

¹⁶ Notably, start or end dates do not apply to some programs. For instance, the financing pilots have no end date because the programs were started using BBNP funds and are sustained with other sources of funding.

3. Pilot Approach Results

This section presents key evaluation findings for each pilot – findings that support conclusions and recommendations. Please refer to Table 6 for a listing of how well each pilot met its comprehensive retrofit targets (15% energy savings or greater). Please consult the appendices listed for further details about evaluation findings, conclusions, and recommendations for individual pilots.

3.1 LA County Flex Path and Energy Loan Pilot Programs (Appendix A)

3.1.1 DESCRIPTION

Using EECBG funding, LA County developed two pilot programs that for LA County residents that offered them options beyond the IOU offerings: a rebate program called Flex Path and a low interest Energy Loan product. These two pilots were complementary; homeowners in LA County could obtain both rebates from the Flex Path program and financing from the Energy Loan program for their energy upgrades. LA County used BBNP funding to increase the level of incentives available through Flex Path and to support management of the Energy Loan program.

Flex Path

The slow launch of the IOUs' EUC offerings and the lack of program options for customers of LA Department of Water and Power led to the development of Flex Path. LA County and its prime BBNP contractor, BKi, designed Flex Path to provide options for homeowners who were interested in energy efficiency but whose projects were unsuited for Basic or Advanced Path. Flex Path offered more flexibility in measure choice and a greater incentive than EUC's Basic Path. Flex Path also simplified the upgrade process by eliminating energy modeling and pre-installation inspection requirements. Table 8 compares the different features of the Basic Path, Flex Path, and Advanced Path programs.

Table 8. Comparing 2012 EUC Options in LA County

Program Features	Basic Path (IOUs)	Flex Path (LA County)	Advanced Path (IOUs)
Incentive level	\$1,000	\$1,500 per application	Tiered based on estimated energy savings. Up to \$4,000 from IOUs for 40% energy savings*
Incentives basis	Applicability of prescriptive measure list	Measures achieving 100 points	Depth of energy savings as estimated by EnergyPro
EnergyPro modeling	Not Required	Not required	Required
Application	Job Reporting Template	On-line Application	Job Reporting Template
Blower door test	Required	Not Required	Required
HVAC upgrade eligible	No	Yes	Yes

*Additional incentives were available from LA County for qualified Advanced Path jobs, but these payments were not part of the Advanced Path program design.

Nineteen measures qualified for Flex Path incentives and, based on modeled energy savings for a typical single-family home, they were assigned a value between 5 and 95 points. Measures included new furnaces, insulation, air sealing, water heaters, efficient windows, and cool roofs. The incentive was available when homeowners installed at least two measures that totaled at least 100 points. Applicants could apply for multiple rebates at the same address, provided they applied for different measures.

Energy Loan Program

Because the IOUs did not offer financing for residential customers participating in EUC during the BBNP grant period, LA County's Energy Loan program filled this gap, offering low-interest loans to homeowners interested in completing a project. LA County partnered with Matadors Community Credit Union to provide low-interest financing to homeowners completing Flex Path, Basic Path, or Advanced Path projects. Financing was also available for solar projects that were installed at the same time or after energy-efficiency upgrades when participants enrolled in the California Solar Initiative. Only homeowners of single-family detached properties in LA County were eligible to participate. For a limited time, LA County used EECBG funds to buy down the interest rate to 2%.

Matadors Credit Union originated and serviced the energy loans. To encourage Matadors to offer more favorable terms, LA County and BKi's finance subcontractor, Renewable Funding, created a loan loss reserve fund to reduce the risk of default. The fund allowed LA County to set aside 10% of the amount of each loan to reimburse the lender for 90% of the losses associated with any loans that defaulted. As borrowers repay loans, the money set aside for their loan is returned to the fund to support additional loans. LA County staff reported that assuming the risk associated with energy loans motivated Matadors to reduce the interest rate for an unsecured five-year loan from a variable rate starting at 8.66% to a fixed rate of 6.99%.¹⁷ Staff members at Matadors reported they would not have offered the energy loan at all without the loan loss reserve fund. Table 9 summarizes the program's financing terms.¹⁸

Table 9: Energy Loan Program Terms*

Term	Value				
Tenor	5 Years			10 Years	15 Years
Interest Rate	6.99% (7/27/11 – 12/5/11)	2.0% (12/6/11 – 12/31/12)	4.99% (After 12/31/12)	5.99%	6.99%
Loan Type	Unsecured (UCC-1 lien)				
Loan Amounts	\$2,500 - \$50,000				
Minimum FICO Score	660				
Maximum debt-to-income ratio	50%				

*Source: Loan Application Packet, December 2012

¹⁷ Source: LA County's *Retrofit LA* Final Report submitted to the California Energy Commission June 19, 2012.

¹⁸ Customers who were not members of the credit union automatically become members when they obtain a loan.

3.1.2 FINDINGS

Flex Path

The Flex Path pilot launched in January 2012, and consumers responded strongly. It received 1,656 applications before the pilot ended in November 2012, when it became fully subscribed. At the time of the evaluation, 858 projects had been completed. LA County will re-launch a modified Flex Path program in 2013, called Home Upgrade, through the SoCalREN, and it will replace the EUC Basic Path option.

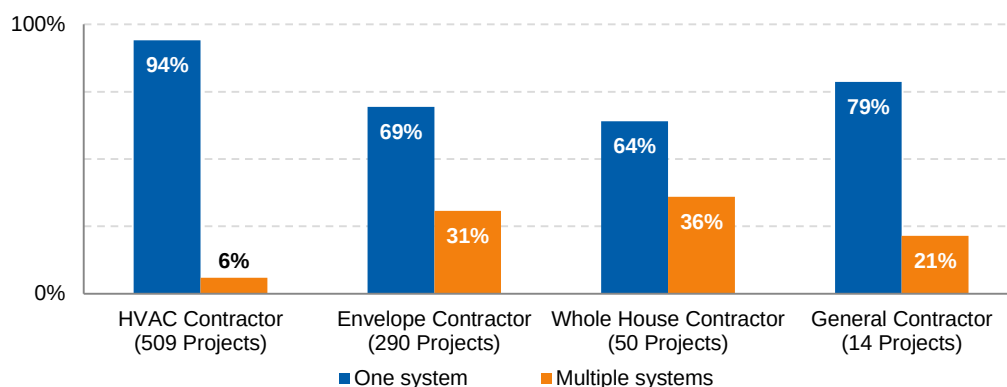
Based on Flex Path applications, most completed projects (83%) relied either on upgrades within a single system or large upgrades to a single system coupled with small measures from other systems; only a minority of completed projects (16%) relied on large upgrades to multiple systems (Table 10).

Table 10. Percent of Projects with Single versus Multiple System Installations

System Upgrade	Number of Installs	Percent of Installs
HVAC Only	260	30%
Insulation and Air Sealing Only	196	23%
Water Only	2	0%
Total Single System Upgrades	458	53%
Large HVAC + Small Measures from Other Systems	225	26%
Large Insulation and Air Sealing + Small Measures from Other Systems	31	4%
Large Water + Small Measures from Other Systems	3	0%
Total Large Single System Upgrades + Small Measures from Other Systems	259	30%
Large Upgrades in Multiple Systems (comprehensive retrofits)	141	16%
TOTAL	858	100%

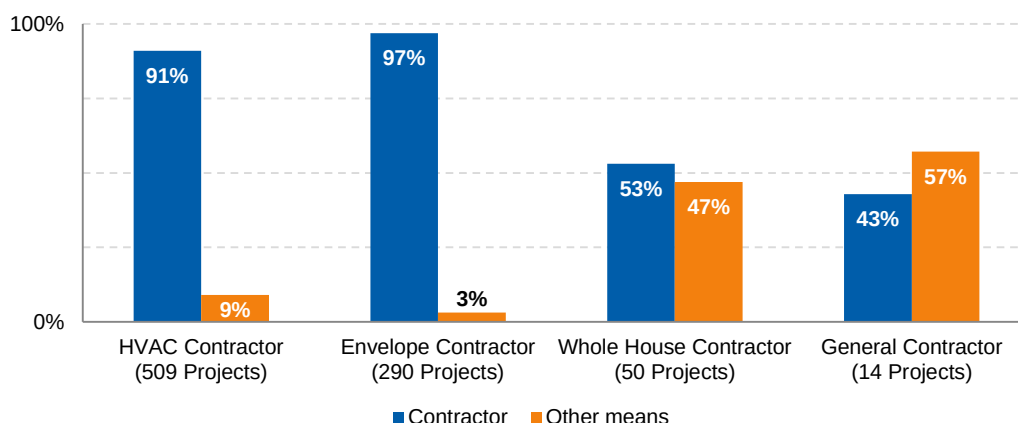
As shown in Figure 4, HVAC and envelope contractors completed most Flex Path jobs and, across all contractor types, they largely installed single system jobs, even whole house and general contractors.

Figure 4. Type of Completed Projects by Type of Contractor (n = 863 projects)



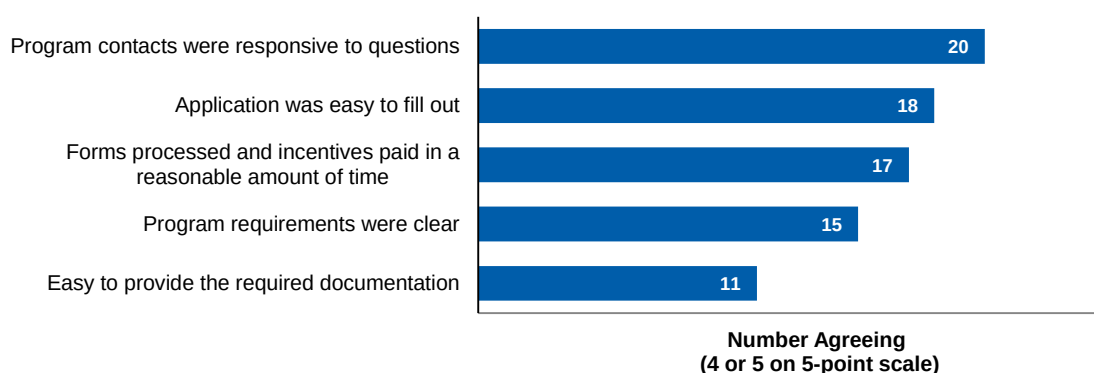
Nearly all (90%) participants with completed projects had heard of Flex Path from a contractor, but this varied by contractor type as shown in Figure 5.

Figure 5. Method of Participant Program Awareness by Contractor Type (n = 863 projects)



Contractors were largely satisfied with the Flex Path process reported that the Flex Path process is easier than the EUC options from the IOUs (Figure 6). Contractors rated the pilot staff highly, with one contractor saying, “We are really the middle man, and with programs like Advanced Path, EUC tends to test us rather than work with us. With Flex Path there was someone we could work with who wanted to work with us.” Most also said the application was easy to fill out and that processing and payment were timely.

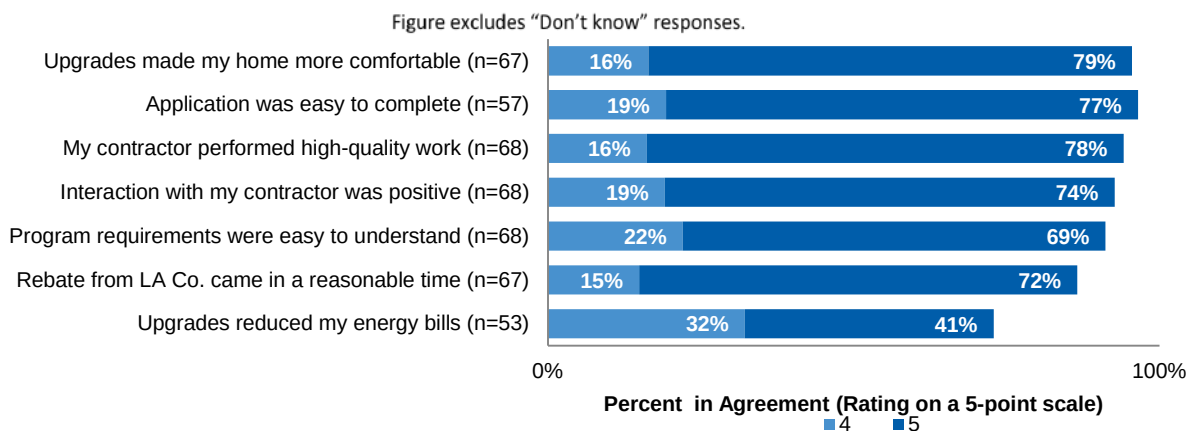
Figure 6. Contractor “Agreement” Ratings for Program Elements (n=21)



The reasons for lower ratings for clear program requirements and ease of providing the required documentation overlap to some degree. Five of ten contractors said they had problems providing the required documentation due to a lack of clarity about what was required. One contractor stated, “There was a learning curve . . . not knowing how to do it caused me to have to submit the findings twice.” Other documentation issues included meeting the level of detail required and finding required information on old equipment when nameplates were faded or worn. Respondents also reported challenges with providing acceptable photos.

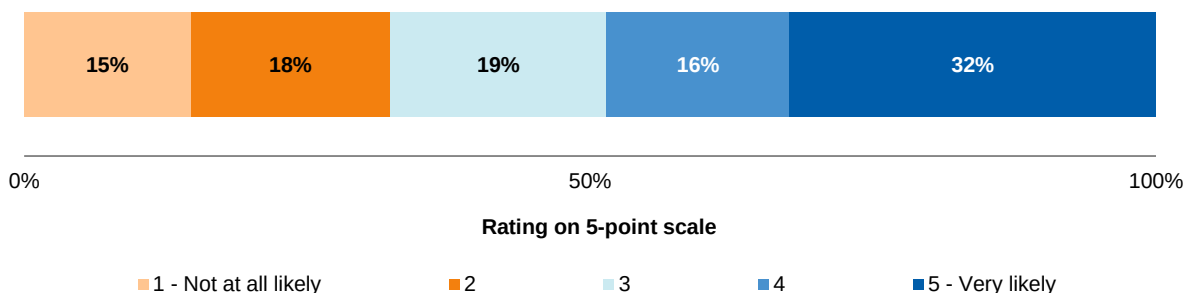
Participant survey findings indicate most participants were satisfied with the Flex Path process (Figure 7). Over 90% of respondents agreed the upgrades made their homes more comfortable, that the application was easy to complete, that contractors workmanship and interactions were positive, and that it was easy to understand program requirements (91%).

Figure 7. Participant Agreement Ratings with Statements about the Flex Path Process



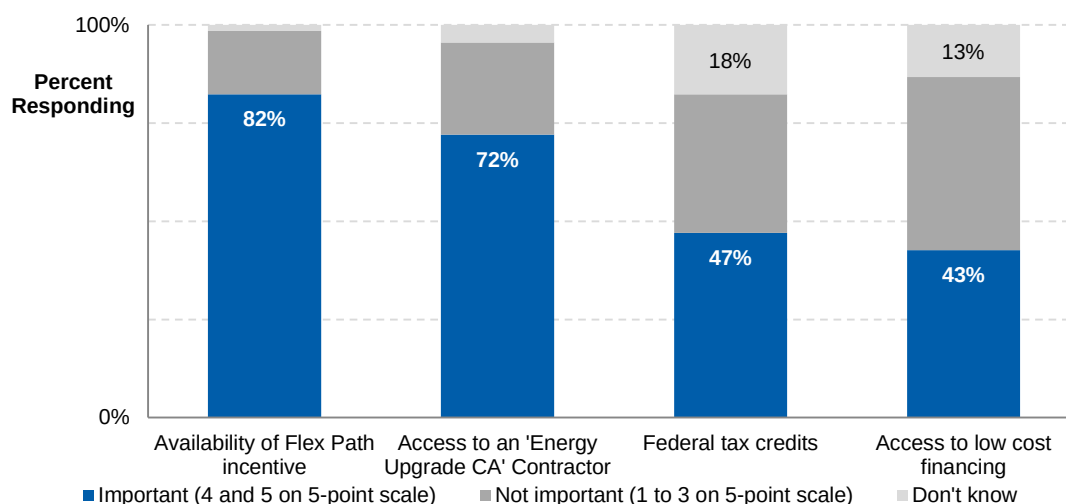
While 32% of the surveyed participants reported they would have been very likely to complete their projects if Flex Path had not been available (Figure 8), it is much less likely for the remaining two-thirds. It is also not clear that participants would have installed equally efficient equipment or made all of the upgrades they did within the same time frame.

Figure 8. Likelihood of Completing the Same Project without Flex Path (n=68)



In addition, a strong majority of participants reported the Flex Path incentive and access to an EUC participating contractor were important factors in deciding to proceed with energy upgrades (Figure 9).

Figure 9. Importance of Program Offerings in Upgrade Decision



Energy Loan Program

According to LA County's April 2013 Dashboard report, Matadors received a total of 608 loan applications for Flex Path and Advanced Path projects, and approved/funded 290 of them. Renewable Funding staff stated that applicants were more often declined because they failed to meet debt to income ratio requirements than because of their credit scores. The April 2013 Dashboard report supports this assessment.

As of March 2013, in the financing program's second year, only two of the 263 funded loans had defaulted. In both cases, Matadors drew on the loan loss reserve to cover the loss. Matadors staff stated that it was too early to draw conclusions about the long-term profitability of the loan product because similar programs had found that most losses occurred in the third and fourth years.

Matadors' role in the financing program was focused on accepting applications and underwriting loans. Matadors staff also addressed questions from contractors and homeowners directly related to lending. Both Renewable Funding staff and Matadors staff reported that Matadors had made an effort to communicate effectively with participants and contractors and to be responsive to their needs.

In December 2012, LA County provided the evaluation team with a program database extract with application information from 455 homeowners. Most applicants (80%) sought loans for Advanced Path projects, while 20% wanted loans for Flex Path projects. Of the 305 loan applications where the interest rate was given, almost all had applied for five-year loans at the special 2% interest rate (see Table 11).

Table 11: Energy Loan Applications Received as of December 12, 2012

Interest Rate	Loan Tenor	Number of Applications	Loans Funded or Approved
2%	5 years	295	271
6.99%	5 years	4	4
5.99%	10 years	1	1
8.99%	10 years	5	5
Interest rate and term not specified		150	0
Total		455	281

LA County's financing database specified the loan amount for 210 of the 455 applications received. Consistent with the higher average cost of Advanced Path projects, homeowners pursuing Flex Path projects, on average, sought smaller loans than Advanced Path participants (Table 12).

Table 12: Typical Energy Loan Amounts for Flex Path and Advanced Path Participants (December 2012)

Group	Average	Median	Minimum	Maximum	Total in Category
All	\$14,814	\$14,464	\$3,159	\$32,134	210
Flex Path	\$11,708	\$11,335	\$3,422	\$20,000	56
Advanced Path	\$15,944	\$15,548	\$3,159	\$32,134	154

The average project cost of projects receiving energy loan financing was larger than the average cost of all projects for both Flex Path and Advanced Path; the difference was more pronounced for Flex Path (Table 13).¹⁹

Table 13: Average Costs for Projects Receiving Energy Loan Financing and All Projects

Group	Average Cost	
	Matadors Financed Projects	All Projects
Flex Path	\$11,708 (n=56)	\$6,874 (N=1,287)*
Advanced Path	\$15,944 (n=210)	\$13,653**

*Source: LA County Flex Path database, December 12, 2012.

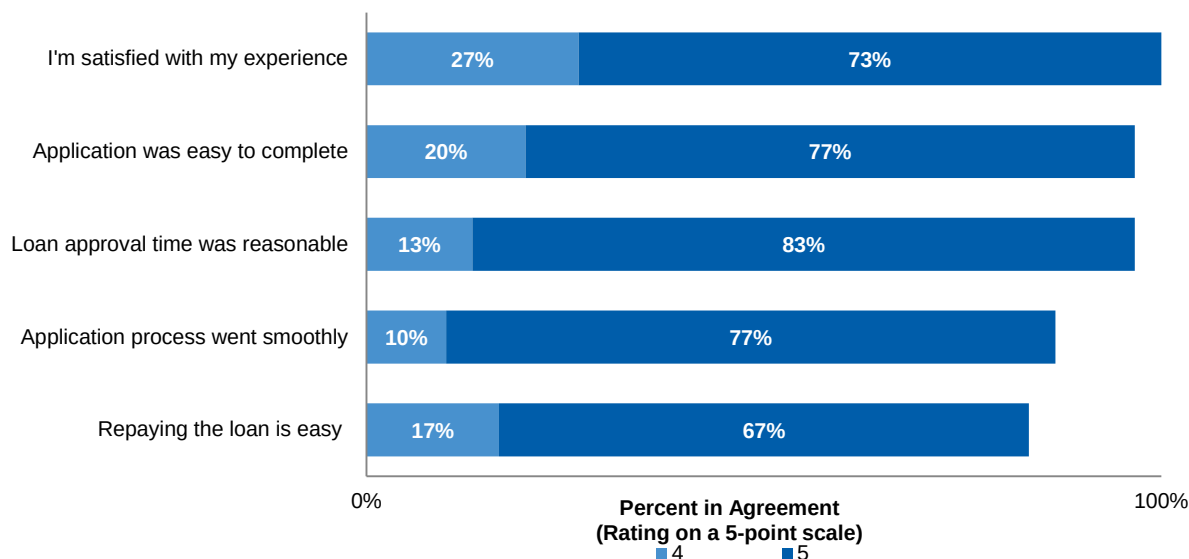
**Source: LA County Master Dashboard Report, April 2013.

In a telephone survey with 30 loan recipients, recipients gave high ratings for their dealings with Matadors Community Credit Union, with all survey respondents agreeing that they were satisfied with their experience. Participants also agreed that the loan application was easy to complete and the time required to receive approval of their loans was reasonable (Figure 10). Participants expressed the lowest

¹⁹ Available data do not indicate how participants paid for projects that did not receive Matadors energy loans. Some may have received financing from other sources.

level of agreement when asked about the ease of repaying the loan, with many saying they would have liked to be able to submit payments online.

Figure 10: Loan Recipients’ Ratings of the Financing Process (n=30)



Two-thirds of the 30 respondents reported that access to the Matadors loan product was important in their decision to make energy upgrades.²⁰ However, 9 of these 20 respondents who said the loan was important also said they would have made upgrades even if they had not received the loan. This finding is consistent with contractors’ reports that homeowners whose loan applications were denied still tended to move forward with their upgrade projects.

Overall, 13 of the 30 respondents (43%) reported they would not have completed their upgrades if they had not received the loan. This suggests the loans were an essential strategy to widening participation in retrofit programs. Participant survey data do not indicate whether these respondents would have altered the scope of their projects, as contractors reported some homeowners had done.

3.1.3 CONCLUSIONS AND RECOMMENDATIONS

The success of the Flex Path and Energy Loan demonstrate the importance of having a variety of tools in the upgrade “tool box.” These pilots facilitated energy efficiency projects for many LA County homeowners that likely would not have happened otherwise, or as quickly and conveniently. Flex Path offered a more inclusive, tailored alternative to EUC’s Basic Path and a more doable, if less comprehensive, option compared to EUC’s Advanced Path. In addition, many of those who took out financing reported the loan was an important influence on their decision to complete an energy upgrade, whether through Flex Path or through Advanced Path.

²⁰ These respondents rated the importance of the loan’s availability at a four or a five on a five-point scale.

Recommendation: Position Flex Path as an alternative option for those who are not able to pursue comprehensive whole-house projects. Provide attractive and accessible financing to further facilitate upgrades. Track opportunities for further upgrades in Flex Path homes (especially large system upgrades) and follow up with offers that encourage homeowners to take additional energy efficiency upgrades over time.

The simplicity and flexibility of the Flex Path and Energy Loan programs are attractive to implementers and homeowners. However, Flex Path’s simple and flexible design is not likely to result in a high proportion of whole house retrofits. Once past the initial learning curve, most contractors rated the Flex Path process as “much easier” than Advanced Path. Participants were also largely satisfied with their Flex Path experience. With help from Renewable Funding and contractors, Matadors was able to focus on lending transactions and stay out of energy-efficiency program administration.

Still, only 16% of Flex Path projects can be counted as comprehensive, with major improvements installed across multiple systems. Most homeowners heard about Flex Path through contractors, with most specializing in one type of energy system upgrade.

Recommendation: Continue to offer as streamlined an incentive process as data collection and QA/QC requirements will allow, and clearly and consistently communicate program requirements to contractors.

Recommendation: To increase the number of Flex Path projects that include major improvements across more than one key end use system, consider a tiered incentive structure that provides greater rewards for more comprehensive projects and scales back incentives for projects that meet only minimum program requirements. Also consider conducting research with participating contractors to assess if it is possible for them work with Flex Path – and across contractor specialties – to find ways to encourage more comprehensive retrofits.

3.2 Whole Neighborhood Approach Pilot Programs (Appendix B)

3.2.1 DESCRIPTION

The whole-neighborhood approach (WNA) pilots selected neighborhoods in the hopes that a geographic focus, similar demographic and household characteristics, or other factors would streamline program delivery and reduce costs. Table 14 shows the targeted neighborhood for each grant partner, the criteria used to select each neighborhood, and whether or not volume discounts for contractor supplies or standard upgrade packages were part of the pilot design. To cover all WNA projects, we have included SF Environment’s pilot in the table and briefly discuss it in this section. However, SF Environment only partially implemented this pilot due to lack of contractor interest and discontinued it in its early stages. Appendix F contains a fuller write-up of all SF Environment pilots including WNA.

Table 14. WNA Pilot Summary

Grant Partner	Target Area	Targeting Criteria	Volume Discounts for Contractor Supplies	Standard Upgrade Packages
SMUD	•Rosemont •Downtown/East Sacramento	Diversity of residents and businesses likely to support goals	X	X
RCPA	•Piner •Coffey Park •D section •Copperfield	Homes with similar construction and age	X	X
LA County	•Palmdale •Walnut •Diamond Bar	Homes with similar construction and age	X	X
SF Environment	•Noe Valley	Considered similar housing stock or close knit communities as criteria	X	X
CCSE	•Chula Vista (Phase I)	Newer tract homes (1980-1995) with high energy consumption and higher household income		
City of San Jose	•Tully-Ocala-Capitol-King Neighborhood	Size and eligibility for low/middle income programs		

3.2.2 FINDINGS

Commonalities

All the WNA pilot sponsors initially assumed that a targeted geographic area would help yield a greater concentration of energy efficiency projects. However, all WNA pilots expanded their boundaries to increase the pool of eligible property owners or did away with the geographic restrictions entirely.

Sponsors also hoped the criteria they used to select neighborhoods would enhance pilot performance. LA County, RCPA, and SMUD targeted neighborhoods with similar building stock, believing a limited number of contractors could be used to install standardized retrofit packages. They assumed that over time the contractor(s) would be able to reduce costs as they became more efficient at installing the same measures in similar homes. They also assumed that if contractors had standardized retrofit packages that they could offer volume discounts.

None of the grant partners using standardized retrofit packages or volume discounts found these strategies effective. RCPA and LA County's WNA pilot contractors reported the standardized packages did not fit all homes in the targeted neighborhoods. SMUD's WNA contractors found that even if homes were similar, homeowners often wanted upgrades to match their particular retrofit goals. Both these situations resulted in contractors being unable or reluctant to purchase in bulk. SF Environment, which planned to offer both standardized packages and volume discounts, found early on standardization was impractical due to diverse building stock and that contractors did not want to deviate from their existing materials supply chains.

Differences

While the LA County and RCPA WNA pilots were discontinued due to low uptake, SMUD's WNA pilot exceeded its retrofit goals. The SMUD effort differed in these ways from the other two pilots:

- SMUD offered free energy assessments while LA County and RCPA did not.
- SMUD's marketing emphasized community events and used SMUD staff, which homeowners consider a credible source of information, to educate customers about home performance. In contrast, the LA County and RCPA pilots relied more on canvassing and door hangers to promote incentives, placing less emphasis on sponsor face-time and education about energy efficiency.
- For both its single-family and small commercial pilot components, SMUD and the pilot program administrators, ConSol and Wildan, generated project leads. The LA County and RCPA pilots relied on contractors for marketing and sales. Findings suggest having a financially neutral party such as SMUD and ConSol support sales gave the WNA contractors more credibility. Two homeowners surveyed in Sonoma and LA County said the contractors contacting them focused more on making a sale than explaining the benefits of energy efficiency.
- Finally, SMUD customers were more receptive to a program with a pre-selected contractor, whereas homeowners in Sonoma (RCPA) and LA County preferred selecting their own.

The CCSE and San Jose pilots bore little resemblance to the other WNA pilots. Initially, CCSE promoted EUC upgrades in the Chula Vista neighborhood in San Diego, holding open houses at a recently upgraded model home and hosting a block party. Because these approaches did not generate enough demand, CCSE expanded the pilot area to all of San Diego and decided to use the demonstration open houses as its main outreach strategy. CCSE eventually developed the demonstration home into a marketing and educational tool that contractors could use to generate leads after the grant period. While contractors reported the demonstration home open house tool was an effective outreach and lead generating strategy, and wanted to continue using it, many were unsure if they would use it on their own.

San Jose's WNA pilot focused on a low- to middle-income neighborhood that pilot staff thought would be unlikely to undertake retrofits through EUC. Instead, the pilot encouraged residents to participate in PG&E's income-qualified programs, in a weatherization assistance program offered through a local non-profit, and in the City of San Jose's Home Repair and Rehab program. The pilot also funded tankless water heaters for homes going through the Repair and Rehab program.

City of San Jose staff walked the targeted neighborhood knocking on doors and offering application assistance. This approach helped 300 households take energy saving actions at low or no cost, including households where language was a barrier to participation. A survey conducted with participants showed they were highly satisfied with the services they received and that their interest in improving their home's energy efficiency increased. They also said they wanted the City to continue referral programs such as this one. Households participating in more than one referral program demonstrated it was possible to layer services to reach energy savings of 15% or more, even though overall the pilot fell short of comprehensive retrofit goal.

3.2.3 CONCLUSIONS AND RECOMMENDATIONS

The evaluation team drew the following conclusions and recommendations from the WNA pilots.

The criteria used to select neighborhoods were not robust enough to enhance the uptake of retrofits.

Targeting geographic areas with similar housing stock did not effectively account for key barriers and motivations to making energy efficiency upgrades.

Recommendation: Expand neighborhood selection criteria to consider these factors:

- Income: Upgrades require access to financial resources.
- Owner occupancy rates: Owner-occupied homes and businesses are more likely to take action.
- History of community action and cohesiveness
- Incidence of underwater mortgages and foreclosures

Standard packages are unlikely to work no matter how similar the housing stock appears. Contractors ended up customizing the packages to fit the needs of decision-makers and the requirements of the buildings, which in turn were barriers to volume discounts.

Recommendation: Allow contractors to recommend the most appropriate measures to meet the program's energy-saving requirements and use existing supply chain(s) to source materials.

Consumers have limited understanding of comprehensive retrofits and their benefits. These substantial barriers to taking action require strong educational and marketing efforts.

Recommendation: Work with high-quality contractors to educate homeowners (or business owners) about the benefits of comprehensive energy upgrades. Consider more use of demonstration homes or interactive displays as educational tools. Trusted entities, such as utilities or local governments, should work with contractors help them build marketing skills and credibility with customers.

Door-to-door strategies using trusted messengers are appropriate for promoting no-cost or low-cost programs. SMUD's low-income and small commercial pilot components and San Jose's WNA pilot successfully used door-to-door approaches by trusted organizations to promote participation in low- or no-cost programs.

Recommendation: Consider using a door-to-door approach when identifying eligible participants is the main barrier and when participants don't need to make major decisions/commitments to participate,

3.3 HVAC Contractor Pilot Programs (Appendix C)

3.3.1 DESCRIPTION

The LA County and CCSE pilots targeting HVAC contractors took very different approaches to working with HVAC contractors as shown in Table 15.

Table 15. Summary of HVAC Pilots

Grant Partner	Desired Outcomes	Offerings
LA County	HVAC contractors install systems to QI standards	•Subsidy for QI software training* •QI software licenses •\$500 for each QI load calculation submitted to the pilot for review •Mentoring and feedback on load calculations
CCSE	HVAC contractors transition to home performance contracting and sell whole-house retrofits through EUC	•Various trainings to support HVAC contractor's ability to support and conduct home performance retrofits •Blower doors for contractors completing CCSE's entire training course •Networking events to encourage EUC and HVAC contractors and raters to form partnerships to deliver home performance energy upgrades

*QI software training provided by The Energy Coalition and SCE

LA County encouraged HVAC contractors, through a monetary incentive and mentoring, to meet ENERGY STAR's Quality Installation (QI) standards²¹ on the HVAC installations they completed through EUC. By encouraging QI, which ensures properly sized and installed units, the pilot sought to increase the energy savings from HVAC measures.²² Pilot staff members also hoped contractors would build upon EUC experiences and incorporate QI into their standard business practices.

In contrast, CCSE designed their pilot, called TOP HVAC, to motivate and train licensed HVAC contractors²³ to offer whole-house energy upgrades in addition to their standard HVAC services. The pilot offered training that would help HVAC contractors transition to a whole-house upgrade business model. The training:

- Introduced them to whole-house retrofits
- Taught them to conduct performance modeling
- Improved their business management skills
- Increased their ability to market whole-house retrofits

²¹ ENERGY STAR Quality Installation Guidelines, are based on the Air Conditioning Contractors of America's (ACCA) HVAC Quality Installation Specification, and is recognized as an American National Standard. These industry best practices help ensure that new equipment is: correctly sized to meet a home's needs, connected to a well-sealed duct system, operating with sufficient airflow in the system, and installed with the proper amount of refrigerant. More information can be found here: http://www.energystar.gov/index.cfm?c=hvac_install.hvac_install_index

²² According to SCE's 2013-15 Program Implementation Plan, the utility will continue offering Energy Star® Quality Installation incentive as a local effort until a new statewide quality installation sub-program design is available. This sub-program is based on the assumption that energy and demand savings are achievable through the application of QI; however a central effort for 2013-15 is to quantify those potential savings and ensure that the "measures eventually included in the program can be reasonably assured to save energy and lower peak demand."

²³ Contractors with C20 Warm-Air Heating, Ventilating and Air-Conditioning licenses.

3.3.2 FINDINGS

QI Installations

The LA HVAC pilot provided subsidies for 27 contractors to attend QI software training and provided 31 contractors with QI software licenses. Eight contractors received incentives for QI calculations they submitted as part of 99 EUC HVAC jobs; 97 of those jobs were linked to LA County's Flex Path program. The pilot's target was 180 retrofits (see Table 6).

Contractors said they valued QI as a way to differentiate themselves in the market. They also reported that QI load calculations allowed them to more accurately size equipment. Most contractors were QI certified before participating in the pilot and some had extensive experience with QI. All of the contractors who applied for the pilot's QI calculation incentives were QI-qualified before the pilot began. Contractors who were new to QI, and who took advantage of the pilot's training subsidies and software licenses, found this support valuable.

Interviews with participating contractors suggest the pilot had little influence on whether or not they conducted QI load calculations. These contractors said they already completed load calculations on all or most of their installations.

TOP HVAC

In response to feedback from pilot's initial set of trainings, CCSE modified the program design, its training completion requirements for contractors, and its training schedules in these ways:

- Discontinued the requirement for HVAC contractors to commit to an entire series of workshops and networking events because contractors said this level of commitment was a barrier to participation. The revamped training let contractors select from discrete workshops that addressed their technical and administrative gaps and encouraged contractors to attend other CCSE educational offerings.²⁴
- Expanded training offerings that contractors said they wanted, including specific aspects of completing home performance upgrades and developing a home performance business.
- Opened the training to general and insulation contractors who had similar training needs. The training, along with other networking opportunities, also intended to help contractors form complementary partnerships among EUC and TOP HVAC contractors and raters.

An analysis of pilot tracking data showed the training had strong uptake from contractors outside of HVAC, including energy raters, and insulation and general contractors, with a minority of attendees (12%) being HVAC contractors (Table 16).

²⁴ During the pilot period, CCSE provided a variety of contractor training offerings in addition to TOP HVAC, including training funded by San Diego Gas & Electric

Table 16: Types of Contractors Attending TOP HVAC Training (n=140, multiple responses allowed)

Contractor Type	Number of Attendees	Percent of Attendees
General (B)	53	38%
Rater	36	26%
HVAC (C20)	16	12%
Administrator	6	4%
Insulation (C2)	4	3%
Unknown	25	18%

As a result of the pilot's increased emphasis on facilitating partnerships among different types of contractors, and to integrate it with other training offerings CCSE provided for SDG&E, pilot staff reported that they stopped using TOP HVAC as a label or training path.

3.3.3 CONCLUSIONS AND RECOMMENDATIONS

QI Installations

While HVAC contractors see value in QI certification and conducting load calculations, findings suggest the pilot created little new QI activity. All of the eight contractors who applied for QI incentives through the pilot were already QI-qualified and most of the participating contractors who were interviewed for the evaluation said they already conducted load calculations.

Recommendation: To promote expanded use of QI, only newly trained QI-qualified HVAC contractors should receive calculation incentives and those incentives should be reduced after their first few jobs.

Recommendation: Track newly trained and QI-certified HVAC contractors to see if the QI training changed their standard practices for sizing and selecting HVAC equipment.

While contractors view QI-certification as a way to differentiate the quality of their services, their customers may not understand its importance. Since customers rarely select HVAC equipment, it is unlikely they are familiar with QI issues and benefits.

Recommendation: Directly engage the HVAC industry to develop strategies to educate customers about the benefits of proper sizing and selection of HVAC equipment. Program support can augment, but not replace, the role of the industry in packaging and selling QI-certified projects.

TOP HVAC

The pilot identified a need for specialized training and networking among a wider set of contractors. However, results to date could not show that it influenced HVAC contractors to change their business model or that it helped build stronger contractor partnerships for home energy upgrades. Limitations and inconsistencies in the pilot's tracking system, along with a limited time frame to accomplish these types of changes, hampered the evaluation team's ability to assess these desired programs outcomes.

Recommendation: Take steps to improve the completeness and consistency of the data tracked for training attendees, including their contact information and the services they offer. Consider adding more data about the attendees that will help define the market being served, such as business size

(number of employees), and years of experience. To assess the longer term effects, conduct follow-up research with attendees to track changes in business practices and partnerships.

3.4 Community Based Social Marketing Pilot Programs (Appendix D)

3.4.1 DESCRIPTION

Three grant partners offered community based social marketing (CBSM) pilots: LA County, StopWaste, and CCSE. All three of the CBSM pilots sought to leverage the “trusted messenger” relationships that non-profit groups had with target audiences in their communities with the hope of influencing the uptake of retrofits. The pilots are summarized in Table 17.

Table 17. Summary of CBSM Pilots

Grant Partner	Promotional Name	Communities Targeted	Offerings
LA County	Energy Champions	Various nonprofits, schools, faith based organizations (called Energy Champions)	•Home Makeover Contest •Referral incentives for Energy Champions for every homeowner that completes a retrofit (Homeowner Action Form)
StopWaste (Alameda County)	Energize for the Prize	School organizations (called Energy Ambassadors)	•Referral incentives for school organizations for every homeowner retrofit contract signed (School Reward form) •Incentives for school organizations to host events and conduct outreach
CCSE (San Diego County)	Hero Alliance	Military/Defense	•Home energy assessment vouchers •Pilot website

LA County’s CBSM pilot consisted of two elements: a home makeover contest and Energy Champions. The makeover contest was designed to build awareness of EUC and generate leads for contractors. Energy Champions provided technical and marketing support to over 100 community organizations to help them promote EUC to their constituents. It also offered participating organizations referral incentives for each homeowner who completed an EUC upgrade.

StopWaste sought to use the trusted messenger status of school organizations, such as the PTA, with their members to promote energy upgrades to homeowners in their school communities. The pilot also offered referral incentive payments. Twenty-seven school organizations participated over the two-year pilot period.

In San Diego, CCSE, through its Hero Alliance pilot, sought to leverage the presence and norms of the military community in San Diego. This aspect of the approach emphasized the military’s leadership on energy efficiency, as well as patriotism, to encourage homeowners within the military community to

take action. The pilot also used a four-stage process to build commitment progressively: signing a commitment form, completing a home energy use survey, having an energy assessment, and completing an upgrade.

3.4.2 FINDINGS

All three pilots fell far short of original retrofit goals, largely because EUC retrofits did not align well with the mission, interests, and capabilities of most of the community groups or their target audiences. Results show that the Energy Champions favored the priorities of their target audiences, which often did not include energy efficiency; schools organizations were focused on raising money for classrooms; and military organizations pursued military-specific interests (for instance, jobs for veterans). Representatives from all three pilots said the need for staff and marketing resources was greater than anticipated. Table 18 summarizes the CBSM pilot outcomes against performance targets.

Table 18: CBSM Pilot Outcomes

	LA County Energy Champions	StopWaste School Organizations	CCSE Military Community
Retrofit Target	900	1,186	420
Took Steps Toward Retrofits	176	78	340 Pledge Cards 171 Surveys 55 Assessments
Completed Retrofits	94	Unknown	12

In LA County, Sustainable Claremont was by far the most successful Energy Champion, submitting over 100 Homeowner Action Forms. It combined three key success factors:

- A champion that had a previous and strong sustainability commitment;
- A receptive community – in this case a retirement community of religious and charitable activists with strong environmental stewardship interests; and
- An avid home performance contractor for a partner.

On the other hand, the CBSM pilots that used military and school organizations to persuade their constituencies to participate in EUC were competing with the community's core missions and priorities, and, in addition, were unprepared to explain and market EUC effectively. School organizations were further hampered by the annual turnover in volunteer leadership.

Notably, CCSE carefully tracked its progress with the military community and in the process discovered what they believe was a more effective role for this pilot – providing concierge advisory services to homeowners who were encountering snags with EUC. They subsequently repurposed the pilot funds for this purpose.

3.4.3 CONCLUSIONS AND RECOMMENDATIONS

In most cases, the CBSM pilots could not create enough traction to motivate their constituencies to participate in EUC. Despite some strong efforts, energy efficiency's lack of alignment with community

priorities; the size, complexity, and cost of EUC projects; and the level of effort required to explain and sell the program, all contributed to these pilots being unable to meet their targets.

Recommendation: Successful CBSM approaches need to match trusted messenger interests, abilities, and resources with the priorities and capabilities of their constituencies.

Recommendation: Assess if candidates for CBSM approaches possess key indicators of success, including experienced and committed sponsors; receptive target audiences; and key partners, as was the case with Sustainable Claremont. Assessing these factors will likely require greater up-front research, particularly to define motivators and barriers to action.

Recommendation: With complex programs like EUC, consider using trained staff members or contractors to host energy-efficiency promotional activities at existing events and initiatives that are sponsored by community organizations.

3.5 Multifamily and Green Building Labeling Pilot Programs (Appendix E)

3.5.1 DESCRIPTION

The LA County and StopWaste multifamily pilots offered technical assistance to building owners to facilitate the installation of efficient equipment in multifamily buildings. LA County also provided incentives for energy assessments and equipment installations. The StopWaste program did not provide monetary incentives, but referred participants to the GBL pilot.

GBL pilot programs in both LA County and Alameda County offered technical assistance and rebates to property owners who completed energy upgrades and earned green building labels, such as GreenPoint Rated or LEED, for their properties. To increase awareness of green labeling, the pilots also conducted extensive marketing and outreach to homeowners and the real estate community. While the incentive component was the primary focus of the LA County pilot, Alameda County's pilot focused on educating real estate industry professionals about the value of green building labels. Table 19 summarizes the offerings of two pilots, by region.

Table 19. Multifamily and GBL Pilot Summary

Pilot	Grant Partner	Audience	Offerings
Multifamily	LA County	•Multifamily building owners/representatives	•Technical Assistance •Energy Assessment Incentive •Installation incentive
	StopWaste (Alameda County)	•Multifamily building owners/representatives	•Technical Assistance
GBL	LA County	•Single family homeowners •Multifamily building owners •Industry professionals	•Technical Assistance •Incentives for GBL (primary focus) •Marketing and outreach
	StopWaste (Alameda County)	•Single family homeowners •Multifamily building owners •Industry professionals	•Technical Assistance •Incentives for GBL •Marketing and outreach •Educational workshops to the real estate industry (primary focus)

3.5.2 FINDINGS

Multifamily Pilots

Both LA County and StopWaste exceeded their retrofit performance targets, with LA County achieving 720 retrofitted units in 10 buildings, and StopWaste achieving 820 retrofitted units.

The primary motivators for being involved with the programs across all respondent groups were these: learning about energy-saving technologies applicable to specific buildings, saving money, and helping to fund energy-efficiency improvements in ongoing renovations or retrofits. In Alameda County, a desire to build green was another motive that participants frequently mentioned.

Nearly all of the participants we interviewed found the technical assistance provided by the pilots helpful. In both regions pilot incentives played an important role for participants. Respondents also reported positive overall experiences with the programs.

When the evaluation team asked participants to name barriers they faced in making energy-saving improvements to their properties, the most common responses were these:

- Difficulty in funding improvements
- Lack of incentives
- Inability to meet payback period and/or cost ratio requirements
- Uncertainty as to the actual savings that would be achieved
- Recent installations of efficient equipment or limited improvement options
- Split-incentive or not being able to make upgrades to individual units
- Lack of knowledge about which improvements would be cost-effective.

When we asked the multifamily participants that also participated in the GBL pilot about the value of green building labels, most reported having positive perceptions of the GreenPoint Rated label. The most common response of the participants was that green building labeling was valuable for signaling a building owner's commitment to being a green building.

Green Building Labeling Pilot

Homeowner Participation in LA County

LA County exceeded its retrofit target for the GBL pilot, achieving 567 green building labeled single-family houses and two multifamily buildings with a total of 174 units.

Approximately 90% of the single-family GBL projects completed in LA County were delivered through one EUC contractor, who bundled multiple incentives from various sources and generated retrofit leads through door-to-door outreach. This was a successful approach to completing retrofit projects, with most homeowners reporting positive experiences. However, because the contractor handled all the paperwork and did not emphasize the green building labeling component of the projects, several

homeowners were not aware of specific GBL rebates. In addition, not a single homeowner said the prospect of obtaining a green building label had affected their decision to complete a retrofit.

Multifamily Property Owner Views of Green Building Labels

The multifamily property owners we interviewed all managed affordable housing properties. They valued the GBL label because it signaled they were committed to sustainability and concerned about their tenants' physical and financial health. They also said their funders often required green building labels.

Recommendations of Respondents in Alameda County

The real estate professionals interviewed said awareness of green building labeling was higher in certain professions (building raters) than others (realtors, builders, home inspectors). They offered these recommendations to pilot staff for improving or maintaining the green labeling pilot:

- Continue to focus on education and outreach to raise awareness about green labels and their benefits
- Increase the value and availability of rebates for earning green labels
- Focus messaging about green labeling on benefits: improved comfort, energy savings, and durability
- Have a strong retrofit program and a list of contractors to complete work
- Make the green labeling process more transparent, streamlined, and accessible to homeowners
- Strive to make green labeling mandatory for certain projects
- Provide an easy set of talking points that professionals can use when speaking with clients

Three out of seven respondents we interviewed said they changed the way they do business as a result of their involvement with the GBL pilot.

3.5.3 CONCLUSIONS AND RECOMMENDATIONS

Multifamily Pilot

Personal contract may be crucial in reaching and persuading this target audience. Direct contact from program staff and word of mouth seemed to work especially well.

Recommendation: Make person-to-person contact and building word of mouth a priority in the marketing mix.

Participants able to leverage multiple funding sources were more able to complete energy upgrades.

Recommendation: Target projects where renovations are already being considered; these owners will make the most of technical assistance and incentives and are more likely to make more extensive retrofits than previously planned. Consider offering financing to building owners or referring them to financing opportunities.

Face-to-face technical assistance helped participants define the scope of work, especially at the beginning of projects.

Recommendation: Bring personalized technical assistance about energy efficiency and green building components into project planning as early as possible.

Green Building Labeling Pilot

Green labels did not directly motivate single-family homeowners to make energy efficiency and green building upgrades. Financial logic, comfort, and a desire to upgrade older equipment motivated homeowners to make energy upgrades. Customer education helped customers perceive the benefits of an energy upgrade.

Recommendation: Continue to educate customers about the benefits of energy upgrades and connect green labels to the benefits of energy upgrades, particularly increased health, comfort, and cost savings.

The turnkey approach of one contractor was effective among single-family homeowners in LA County.

Bundling multiple incentives, educating customers on energy-efficient upgrades, and taking care of all paperwork enabled this contractor to sell 90% of upgrade jobs and green labels.

Recommendation: Recruit and train new contractors to the turnkey approach. Continue to link green labeling programs to related retrofit programs, such as EUC.

Owners of different types of multifamily buildings valued green building labels for benefits related to the type of property. Low-income building owners thought the labels showed the building's commitment to residents' physical and financial health. Owners of buildings rented at market rate found marketing value in green building labeling.

Recommendation: Use different marketing messages to target different types of multifamily properties.

Most of the real estate industry stakeholders involved with the Alameda pilot said they benefited from pilot involvement. Three of the seven stakeholder respondents reported they have changed the way they do business as a result of their involvement.

Real estate professionals view the costs associated with achieving a green label, the lack of awareness or perceived value for green labels, and difficulty in promoting energy efficiency or green upgrades as the biggest barriers for their industry to promote green labeling. Stakeholders recommended increasing awareness/education, incentives, and focusing on increased comfort and energy savings.

Recommendation: Continue to educate home and building owners and real estate professionals about the benefits of energy efficiency, green upgrades, and green building labeling. Having the real estate community view green labeling as valuable will be important for greater acceptance of green labels

3.6 On-Water Bill, Home Improvement Retail Partnership, and SF Environment's Pilot Programs (Appendix F)

This section describes results from the remaining pilots. The following pilots are included: the CCSE, StopWaste, and SF Environment HIRP pilots; RCPA's OWB pilot; and all of the remaining SF Environment pilots (except WNA): CBSM, GBL, and Multifamily.

3.6.1 DESCRIPTION

Home Improvement Retail Partnership

HIRP is the only pilot approach covered in this appendix that was tested in multiple areas. All three HIRP pilots intended to leverage retailers' existing retailer marketing channels to promote energy upgrades to store customers. In San Diego, CCSE partnered with Best Buy to deliver energy assessment services through its Geek Squad. In Alameda County, StopWaste partnered with Lowe's, which was offering its own home energy assessment pilot. SF Environment partnered with a local hardware store.

The HIRP pilots were marketing efforts designed to generate interest in EUC. They used in-store marketing channels and other outreach channels to promote EUC and the retail partnership. For example, StopWaste staff attended local farmers markets and handed out CFLs and low-flow showerheads, donated by Lowe's, to EUC booth visitors. StopWaste spent the majority of their pilot's budget on paid media (television, print, online, movie theaters, mass transit) to expand the reach of Lowe's marketing for its energy assessment services.

CCSE used their Energy Roadshow Trailer, an interactive exhibit, at community events to provide information about EUC and the Geek Squad assessment service. CCSE distributed approximately 500 brochures promoting the HIRP pilot's Geek Squad home energy assessments.

The SF Environment pilot placed promotional articles in the store's newsletter; messages on receipts to drive customers to the pilot's website; and tear-away tags, or "shelf-talkers," near efficiency products such as caulk or furnace filters.

3.6.1 FINDINGS

The HIRP grant partners experienced numerous challenges. In San Diego, marketing efforts primarily reached customers who had bought home theater equipment and were having it installed. Interviewees believed this was not a good opportunity for marketing energy efficiency because people were more interested in using their new equipment than in turning their attention to efficiency. In addition, the Geek Squad members did not receive any financial incentives for making what was likely a difficult pitch on these home visits.

In the StopWaste pilot in Alameda, the majority of the pilot budget was spent on paid media that reached a broad, general public. However, in-depth retrofits are likely to appeal to a small, select group of already interested consumers. Interviews noted that Lowe's do-it-yourself type customer may not be receptive to hearing about in-depth home performance services. StopWaste staff also said they were unable to successfully develop clear messages about the connection between the Lowe's assessment services and EUC.

With both Lowe's and Best Buy, pilot staff had to coordinate with both local and corporate offices, which increased the complexity and duration of the planning phase and shortened the deployment phase. Lowe's corporate then decided to end their pilot.

In addition, both CCSE and StopWaste found that retail store employees were not as strongly motivated – and many were not qualified – to promote the energy assessments as they were to promote the retailer’s other products and services. CCSE noted Best Buy’s staff performance ratings and reward system provided a disincentive for conducting assessments because the assessment service did not count toward Geek Squad’s performance goals. Best Buy eventually altered the performance metrics to include home assessments.

All retailers were unwilling to share tracking data with pilot staff. Despite a handshake agreement with SF Environment and an early discussion about the pilot’s data needs, the local hardware store’s management did not provide information that the pilot could use to determine if there was any impact on sales from the shelf talkers. Table 20 illustrates the lack of data available for the San Diego and Alameda HIRP pilots.

Table 20. HIRP Pilot Planned and Actual Uptake and Duration

Target	San Diego		Alameda	
	Planned	Actual	Planned	Actual
Number of Assessments	1000	2	Not Available	<i>Not Available</i>
Number of Retrofits	750	<i>Not Tracked</i>	600	<i>Not Available</i>
Program Launch	Q2, 2011	Q2, 2011	December 2010	February 2011
Program End	Q1, 2013	Q4, 2011	March 2011	March 2011
Program Duration	21 months	9 months	4 months	2 months

The HIRP pilots realized limited benefits. The evaluation team and grant partners found no evidence the HIRP approaches resulted in any energy upgrades. A key reason for this is that the energy assessments promoted through Lowe’s and Best Buy did not qualify for EUC; homeowners interested in pursuing EUC would have to obtain another energy assessment from a EUC-qualified contractor.

Lowe’s explained that its assessment service was not designed to be compliant with EUC because the process would be too complex and might not be profitable. The short timeframe of the project also meant that Lowe’s was not able to determine which assessments could be attributed to its own pilot and which to the StopWaste HIRP pilot. Lowe’s staff reported they did not detect a noticeable change in uptake after the start of the HIRP pilot, and the number of assessments completed during the HIRP pilot was low. Despite handing out 500 brochures, the CCSE HIRP pilot only delivered two home energy assessments. The Best Buy hotline supporting the energy assessment service received no calls. SF Environment reported the pilot website received few hits.

On Water Bill

RCPA used the BBNP grant funds to design and set up a financially self-sustaining pilot program within Sonoma County offering financing for energy and water saving measures with no up-front participant costs. Participants agree to repay the costs of the measures over time via a surcharge (meter-based tariff) on their water bills. The program design, based on the Pay-As-You-Save (PAYS) financing model,

required that the surcharge to be no more than 75% of the estimated bill savings, with no debt obligation for the customer, no credit checks, no liens, and the following assurances:

- Participants will only pay the surcharge while they are customers at the location where the measures were installed.
- The agreement protects participants from typical risks associated with independent contracting for measures.
- Failed measures will be repaired or the payment obligation ends.

The PAYS program designers believed these guarantees would make the program offering desirable to customers, resulting in high program participation.

The pilot team successfully recruited one regional water district, The Town of Windsor, to offer a PAYS program, out of nine eligible utilities in Sonoma County. Another water utility also expressed interest but dropped out because of staff resource constraints and because the utility did not think PAYS offered sufficient benefits over its existing conservation programs.

The Town of Windsor agreed to implement the pilot in July 2011. Windsor Efficiency PAYS launched in October 2012, offering customers a choice of packages based on customer eligibility and interest (Table 21). Customers had to install a Basic package to qualify for co-pay and landscaping measures.

Table 21: Windsor Efficiency PAYS-Eligible Measures

Package	Measures Included
Basic	Low-flow toilet Low-flow showerhead Faucet aerator
Co-pay	Compact fluorescent lamps (CFLs) Refrigerator Clothes washing machine Premium clothes washing machine <i>Chilipepper</i> hot water recirculating pump
Basic landscaping	Replace well-maintained turf grass with native plants needing less irrigation
Enhanced landscaping	Additional or larger plants

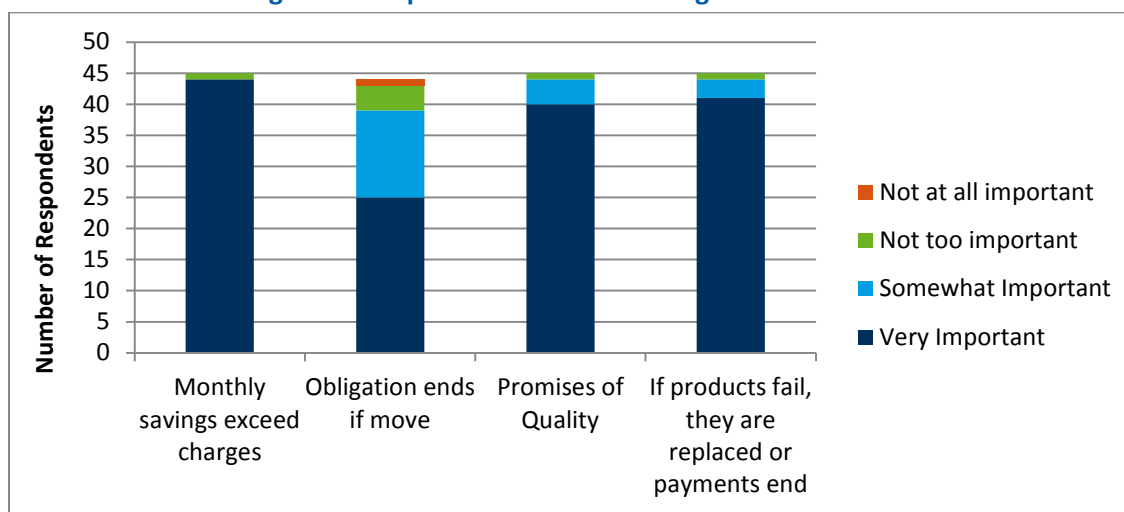
The pilot team overcame numerous challenges to set-up and launch the pilot, including recruiting an interested water utility with sufficient staff resources, and working with the water utility to convince the municipality to approve a rate change, modify billing units, secure a source of funds, and manage contractor turnover. A water utility staff member noted the PAYS pilot required a significant commitment of staff resources and hoped the time commitment would decrease over time.

At the time of the evaluation, the pilot was in operation for less than a year and most customers had not received their first bill with the surcharge item. As of April 2013, 45 single-family customers (owners and renters) had completed at least the Basic component of the program. Two multifamily properties also

participated, installing Basic measures in every unit. The 17 single-family customers we surveyed gave overall high satisfaction ratings for the program.

Customers most commonly cited saving money and water as important factors in their decisions to participate, though nine of the 17 said they would be willing to participate even without immediate bill savings. Figure 11 shows how customers rated the importance of each of the program’s assurances. These data were collected as part of the contractor’s initial visit to each residence. The only guarantee that customers did not overwhelmingly indicate as “very important” was the ability to transfer the PAYS surcharge obligation to a future occupant.

Figure 11. Importance of Various Program Guarantees



The evaluation team also interviewed the multifamily property owner, who expressed satisfaction with the pilot and heard positive feedback from tenants.

Due to difficulties obtaining data about declined projects from the OWB contractors, we were unable to determine the offer acceptance rate. The Town has approximately 8,000 single-family utility accounts and its goal was to serve 2,500 of those residential customers in the first year. While the pilot was not on track to meet its single-family targets, it had quickly surpassed its goal for the multifamily sector.

SF Environment

SF Environment designed it five pilots to be integrated. For example, the HIRP pilot, discussed above, directed hardware store customers to community meetings offered under the CBSM pilot. However, some pilots were not fully implemented (WNA pilot) or were abandoned (HIRP). Most pilots did not have or track participants. Thus, our process evaluation methods were limited to staff interviews, check-in calls, and review of materials.

In addition, SF Environment’s GBL and Multifamily efforts were not evaluable pilots. The GBL pilot funded research efforts, with StopWaste, an academic study on the valuation of green building labels

and assistance to the San Francisco Assessor Recorder's office. For the Multifamily pilot, SF Environment staff analyzed energy savings from 17,000 households using approaches from other programs.

The CBSM pilot, started under the EECBG and SEP grants, provided bonus incentives for EUC retrofits as well as referral incentives. Bonus incentives enabled SF Environment to obtain the project level data needed for DOE reporting. Pilot staff said that they chose \$1,000 for the rebate value because they believed contractors, who complete the program application forms, would not provide the required data for less. Staff reported more upgrades were completed when the rebate value increased from \$1,000 to \$2,000.

SF Environment staff described outreach and marketing for CBSM as a "carefully conceived segmented, choreographed, layered and personal outreach approach to targeted community market segments."²⁵ They used BBNP grant funds for advertising space in local newspapers and bus shelters; held a door knocking (5,600 doors knocked) and open house campaign (20 open houses in 10 neighborhoods); and used social media, accessing a network of 7,000 Twitter followers, 2,000 Facebook friends, and 3,500 newsletter recipients. Using private grant funding, they developed Energy Savvy, a web tool that enabled homeowners to estimate potential savings, led homeowners to a list of contractors, and enabled the city to track activity. Energy Savvy was maintained by BBNP funding.

SF Environment staff reported that it experienced great success with its marketing in targeted neighborhoods. They reported that:

- Conversations with people in the neighborhood seemed to be the most effective way to generate leads for the pilot
- Use of door hangers alone produced almost no calls; however, when combined with a door-knocking campaign, staff generated numerous leads for the bonus incentive program.
- Open houses were important to the strategy.
- Local-level advertising, particularly the use of local newspapers, led to greater participation than broader media advertising.

Because of the integrated nature of the pilots, many performance metrics—such as total number of retrofits—were reported to LA County and DOE at the aggregate sector level and not at the specific pilot level, as shown in Table 22. SF Environment also aggregated their performance targets.

Table 22. Energy-Efficiency Retrofits Reported*

Sector	Internal Performance Target	Reported Retrofits
Single-Family	375	356
Multifamily	765	1,057

*Source: SF Environment Q2 2013 Dashboard

²⁵ Final Executive Summary – San Francisco Bay Area Better Buildings Program. Page 3. 2013.

SF Environment also did not clearly differentiate their activities by grant; in some cases, one funding source was used to support activities and when those funds ran out a new funding source was used. As with the other grant partners, SF Environment drew down their funds in order of expiration.

3.6.2 CONCLUSIONS AND RECOMMENDATIONS

Home Improvement Retail Partnership

The retailer partnership models used for these pilots did not produce consumer attention or upgrade activity. Small alterations to the assumptions and design are not likely to result in greater success at driving customers to EUC-type retrofits.

Recommendation: These three HIRP pilot models should not be replicated. New program designs will need to rely on better delineation of partner goals, assumptions, and metrics; better consumer intelligence and target marketing; better market alignment; and more persistent delivery.

Despite strong coordination, pilot administrators and retailers had very different expectations about partnership goals, data tracking, and time frames. Pilot sponsors wanted to drive EUC retrofits while retailers wanted to expand their businesses and sell more home performance services and products. The San Diego and Alameda retailers stepped away when they did not see quick benefits. In San Francisco, the retail partner did not provide any data the pilot staff could use to determine impacts.

Recommendation: Both program administrators and retailers need to clearly state their goals and determine what metrics will be used to track progress towards those goals, within a given time frame and using given resources. Retailers need to find a business case for driving their customers to EUC and need to agree to sharing key information about pilot performance.

On Water Bill

The program's attractiveness to utilities varied according to their specific portfolio needs and resource availability. Staffing, financial, and IT/billing system resources – along with perceptions about the need to manage water resources – were key factors in utility interest.

Recommendation: When recruiting water utilities to implement an OWB PAYS program, as BayREN will do for the 2013-2014 cycle, the program sponsor should use these factors to assess utility suitability and interest. The solutions developed to address Windsor's start-up challenges, as well as lessons learned from the pilot, should be used in developing other OWB financing efforts.

Customers found the pilot model appealing. The pilot offered single-family and multifamily customers a convenient way to save both money and water, which resonated with an environmentally conscious population in Windsor.

Recommendation: Improve tracking practices to identify customers who decline the offer. Consider adopting these suggestions from customers:

- Offer additional measures to encourage more comprehensive projects.
- Include more detail on the website about the process and eligibility for landscaping measures.
- Emphasize that portable measures (such as washing machines) will be tethered to the property.

The Windsor Efficiency PAYS program encountered many barriers. Some other key obstacles identified by the OWB team included:

- Finding eligible measures due to the Town's relatively new housing stock and mild weather
- Multiple legal reviews from the Town's lawyers slowed the process
- Recruiting a capital provider – the first RFP received no viable responses and the second resulted in only one response
- Rate and billing changes – the Council had to approve the rate change; the utility had to be able to bill in single gallon increments; and updating the billing system required significant resources
- Recruiting and managing trade allies – the first lead contractor dropped out and the replacement lead contractor did not meet the program team's marketing expectations

Recommendation: Given the resources required to set up the PAYS program, BayREN should determine the program scale necessary to achieve cost-effectiveness under the CPUC's guidelines when considering expansion of the pilot.

Recommendation: When recruiting program contractors, ensure all requirements are addressed in the scope of work (including marketing) is clear and offer to share start-up costs if needed.

SF Environment

The connection between the retrofit goals and many of the pilot activities was weak. For example, quantifying savings for multifamily retrofits already completed does not have any effect on the building owners' original decisions to complete those retrofits, nor will it impact future retrofit decisions unless further development of program activities or materials occurs.

Recommendation: Develop and use program theories when designing programs. Based on the expected outcomes, develop appropriate program performance metrics that are measureable.

The layering of funding sources, which was intentional, made attribution of retrofits challenging. The multifamily retrofit projects that SF Environment reported to the U.S. Department of Energy were for those that received BBNP- funded post-installation analysis. Efforts leading up to the actual retrofits, however, came from SF Environment's other programs, and retrofits should be allocated these to other programs.

Recommendation: The Association of Bay Area Governments, as the lead for BayREN, should develop protocols for and require consistent retrofit accounting for resource programs.

In the case of the multifamily pilot, the evaluation team believes the retrofits were not attributable to any BBNP grant funded efforts and should not be allocated to the BBNP grant.

Recommendation: Protocols for allocating savings or retrofits should ensure double counting does not occur. For non-resource programs,²⁶ program administrators should define a few meaningful performance metrics that are easy and inexpensive to track.

It is not possible to determine how the CBSM bonus incentive and referral incentives affected EUC uptake. The reported increase in participation during the period when the bonus incentive doubled suggests it motivated homeowners.

Recommendation: Future efforts should conduct surveys with CBSM participants to determine how the bonus incentive influenced decision.

²⁶ Non-resource programs are those that work towards the goal of increasing energy-efficiency through approaches that do not directly lead to the installation of energy-efficiency equipment or measures. Examples include marketing and outreach or education and training.

4. Crosscutting Insights

This section describes the evaluation team's overarching conclusions and recommendations.

The evaluation team drew the following conclusions and recommendations from the cross-cutting findings.

Retrofit California provided a valuable learning experience for the grant partners.

The grant partners tried out many different approaches to encourage market uptake of energy upgrades, learning much about designing, implementing, and evaluating programs. They learned about program design gaps, about mechanisms that worked or did not work, about modifying and improving pilots based upon new intelligence, and about the need, sometimes, to abandon pilots. They developed infrastructure, such as databases and contractor relationships, to support efficiency upgrades. Grant partners also found more success as they pared back the number of pilot programs, which allowed them to concentrate their attention and resources. This experience was especially valuable to the grant partners who will go on to administer energy efficiency programs through the RENs.

Recommendation: For ongoing REN operations, it will be good to focus efforts on a manageable number of programs that have been developed based on lessons learned, evaluation results, and careful research.

Recommendation: Avoid replicating approaches that did not work, such as HIRP of the majority of the WNAs. Focus on making successful pilots, such as LA County's Flex Path and RCPA's OWB, sustainable over the longer term.

The pilots would have benefitted from formal program theories and logic models.

A program theory and logic model tells the story of why a program expects to succeed given its design. It carefully lays out a program's assumptions, its external environment, and its inputs, outputs (activities and participation), and intended outcomes over the short, medium and long term. Thinking through the logic of their programs would have helped the grant partners understand how their planned pilot activities would result (or not result) in the intended outcomes. Despite requests from the evaluation team to complete logic models, the rush to design and launch programs, and their subsequent and significant redesigns, side-lined this step. Investment in theory and logic models would have helped the grant partners avoid design faults and failure due to faulty logic (e.g., the HIRP and several WNA pilots).

Recommendation: In the future, do not skip this important part of program planning, especially when multiple programs are layered to achieve retrofits or the programs are complex. Map out program theories to identify potential weaknesses in proposed program logic and adjust designs to minimize the risks of program failure.

The presence or lack of infrastructure strongly affected the time needed to launch pilot programs.

SMUD, the only experienced grantee, was able to quickly launch its pilot through leveraging prior program experience and existing procedures for handling recurring challenges (e.g., the retrofit of

historic buildings). In contrast, the RCPA's OWB pilot took more than a year to design and launch because much of the infrastructure – such as billing system customization and project scheduling solutions – needed to be developed.

Recommendation: When developing new programs, take into account existing infrastructure, such as the presence of a trained workforce, building codes and policies, and infrastructure that still needs to be developed. Reflect these conditions in the program's timeline.

Customer knowledge of the benefits of improved home performance affects how likely they are to take action.

The market was not ready to demand or supply high volumes of whole-house retrofits during the grant period. Customers had to be educated about this new approach to energy upgrades and motivated to take action. Market infrastructure, such as having an adequate stable of qualified and able contractors, needed to be built.

Recommendation: During the 2013-2014 program cycle, efforts to educate customers about the value of whole-house energy upgrades should be continued. Energy and non-energy benefits should be stressed, as well as working with qualified contractors to reach and motivate interested homeowners.

Linking pilot success to programs run by other entities created numerous challenges.

First, when the grant partners²⁷ decided to drive participation to IOU administered programs, they took on many risks—including the risk that the programs would change, be delayed, or perform poorly--without any real ability to mitigate those risks. Without the ability to influence those programs, the grant partners ultimately came up with their own solutions to enable their pilots to work independently (e.g., LA HVAC sponsored its own QI training session to make up for SCE's fewer than anticipated offerings). Second, because the grant partners did not have access to IOU program tracking data, the tracking and accounting of retrofits were not consistent from pilot to pilot. Third, from an evaluation perspective, there were no clearly defined and agreed-upon protocols to assign attribution to completed retrofits.

Recommendation: The RENs and IOUs need to coordinate their efforts in the 2013-2014 program cycle to ensure coverage and reduce redundancy. Consider creating a master list of programs and identify for each program the target market, activities, and the administrator, as well as how each program interacts with other efforts in the region.

Recommendation: The RENs should develop their own specific program performance metrics that are separate from those of the IOU-administered programs.

Recommendation: The RENs and IOUs should agree upon an approach for tracking, reporting, and attributing accomplishments through their joint efforts. Consider ways to track needed information throughout the retrofit process, such as how customers heard about the program, if the RENs provided marketing support, or whether the customer used a special REN financing program.

²⁷ Except SMUD

Recommendation: The IOUs and RENs should determine if the RENs need access to customer information to run successful programs, and if so, they need to develop secure and effective protocols for data access and transfer.

Mechanisms to ensure effective coordination and policing of pilots were insufficient.

Overall, the pilots had few design elements in common, and DOE did not require the pilots to be coordinated or to share the same design elements. As a result, each pilot was unique and worked in isolation to affect its slice of the market. Many of these efforts were not large enough in scale to move the market very far (e.g., LA HVAC and all the multifamily pilots). In addition, initial grant management mechanisms did not allow the LA County to judge or enforce the productive use of grant funds.

Recommendation: The CPUC, IOUs, and RENs should work in concert to have the greatest impact on the whole-house retrofit market. A formal mechanism for coordination among the various entities should be established, along with adequate funding for this purpose. A joint approach to should be drafted and adopted.