



Final Report

Spotlight on Key Program Strategies
from the Better Buildings
Neighborhood Program
Final Evaluation Volume 6

American Recovery and Reinvestment
Act of 2009

June 2015

Prepared For:

U.S. Department of Energy
Office of Energy Efficiency and
Renewable Energy

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Funded By:



Prepared By:

Research Into Action, Inc.

Prepared For:

U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy



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This research project was initiated and directed by Jeff Dowd of the U.S. Department of Energy's (DOE) Office of Energy Efficiency & Renewable Energy (EERE). Project management and technical oversight was provided by Edward Vine, Staff Scientist, of Lawrence Berkeley National Laboratory (LBNL), and Yaw Agyeman, Project Manager at LBNL.

This evaluation report is one of a suite of six reports providing a final evaluation of DOE's Better Buildings Neighborhood Program (BBNP). This volume benefited from the review and recommendations of Ed Vine, Yaw Agyeman, Jeff Dowd, and Dale Hoffmeyer (from the BBNP program staff).

The research presented in this report builds from the research conducted for the larger suite of final evaluation reports.

For this volume, we interviewed 17 BBNP grantees. For the larger suite of final evaluation reports, we interviewed all 41 BBNP grant recipients as well as 6 subgrantees, and requested project documentation and other information from many of these contacts. The grantees and subgrantees had many people wanting them to explain their activities and their accomplishments during the past five years; although we were one of the many, they were overwhelmingly friendly and cooperative, usually talking with us for several hours to explain what they were doing and what their experiences had been. We anticipate future discussions will continue to illuminate the varied activities and accomplishments of BBNP, and we look forward to those discussions.

Regarding the suite of reports, our team of evaluators would like to thank Jeff and Ed for their support and guidance on this project. Also we would like to thank the staff of DOE's BBNP. Danielle Sass Byrnett led these staff, with key program support provided by Steve Dunn and Dale Hoffmeyer, as well as by account managers and numerous contractors. We thank Danielle and her staff and contractors for their openness and willingness to talk with us at length and answer numerous email questions. DOE staff, their contractors, and LBNL and National Renewable Energy Laboratory (NREL) staff related to BBNP were all extremely responsive to our team's requests for data and were very helpful during the planning and implementation of the evaluation activities. They understood program realities and continually worked to improve the program and its offerings. In addition, they were continually balancing the need for accuracy in reporting without trying to overburden the grantees that are oftentimes short-staffed and over-worked.

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GLOSSARY

Within the body of this report, there are several technical terms that require explanation, as their meanings are specific to energy efficiency activity.

ARRA	American Recovery and Reinvestment Act; provided funding for BBNP.
Audit	A process that obtains information on building (including home) features that affect energy use, identifies energy efficiency measures that appear to be appropriate for the building, and estimates potential annual energy savings; can be conducted on-line or by someone walking through the building. Audits culminate in an audit report describing the findings and opportunities. Also called “energy audit.”
BBNP program	Refers to both the federal Better Buildings Neighborhood grant program administered by DOE and to the local programs grant recipients administered in their target markets. To avoid confusion, the text refers to DOE for the federal program and to the grantees for the local programs.
Community-based organization (CBO)	CBOs are organizations that focus on issues affecting their local communities and offer services benefitting those communities.
Funding Opportunity Announcement (FOA)	Issued by DOE to inform the public of the opportunity to apply for BBNP grant funding and outline the application requirements.
Grant	BBNP funding provided by DOE. Grant funding requires recipients to make best efforts and adhere to fraud-prevention practices but, unlike contracts, does not require the recipient to deliver a specified outcome.
Grantee	A recipient of an ARRA-funded, DOE-administered BBNP grant.
Home Performance with ENERGY STAR (HPwES)	A public-private voluntary partnership program administered by DOE in conjunction with the U.S. Environmental Protection Agency (EPA) to promote whole home upgrades.
Loan loss reserve	Money set aside to reimburse a lender for losses made on loans.
Market effects	A change in the structure of a market or the behavior of participants in a market that is reflective of an increase in the adoption of energy efficient products, services, or practices and is causally related to market intervention(s) (Eto, Prael, and Schlegel, 1996).
MMBtu	Millions (MM = one thousand thousands) British thermal units of energy; used in this context to quantify energy savings.
Retrofit	See “upgrade.”
Subgrantee	An entity that received BBNP funding from a grantee to administer local BBNP programs.
Sweep	An outreach approach used by some grantees that attempts to reach virtually every building (including home) owner of the targeted type in the targeted neighborhood; an outreach worker that knocks on every door is engaging in a sweep.

Upgrade

Change to a building (including home) that reduces its annual energy consumption, typically by increasing its energy efficiency; the change can be to the building shell (insulation, air sealing) and/or to equipment or systems (HVAC, refrigeration, hot water, appliances, thermal solar, photovoltaic, etc.). Also termed “retrofit”

PREFACE

This evaluation report is one of a suite of six reports providing a final evaluation of the U.S. Department of Energy's (DOE) Better Buildings Neighborhood Program (BBNP). The evaluation was conducted under contract to Lawrence Berkeley National Laboratory (LBNL) as a procurement under LBNL Contract No. DE-AC02-05CH11231 with DOE.

The suite of evaluation reports comprises:

- › *Evaluation of the Better Buildings Neighborhood Program* (Final Synthesis Report, Volume 1)
- › *Savings and Economic Impacts of the Better Buildings Neighborhood Program* (Final Evaluation Volume 2)
- › *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3)
- › *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4)
- › *Market Effects of the Better Buildings Neighborhood Program* (Final Evaluation Volume 5)
- › *Spotlight on Key Program Strategies from the Better Buildings Neighborhood Program* (Final Evaluation Volume 6)

The evaluation commenced in late 2011 and concluded in mid-2015. The evaluation issued two preliminary reports:

- › *Preliminary Process and Market Evaluation: Better Buildings Neighborhood Program* (December 28, 2012; appendices in a separate volume) (Research Into Action and NMR Group, 2012a, 2012b)
- › *Preliminary Energy Savings Impact Evaluation: Better Buildings Neighborhood Program* (November 4, 2013) (Research Into Action, Evergreen Economics, Nexant, and NMR Group, 2013)

Four firms conducted the multi-faceted evaluation:

- › Research Into Action, Inc. led the teams and process evaluation research.
- › Evergreen Economics conducted the analysis of economic impacts, the billing regression analysis of program savings, and worked with Nexant to estimate program savings.
- › Nexant, Inc. led the impact evaluation, conducted project measurement and verification (M&V) activities, and estimated program savings and carbon emission reductions.
- › NMR Group, Inc. led the market effects assessment.

LBNL managed the evaluation; DOE supported it.

This document is *Spotlight on Key Program Strategies from the Better Buildings Neighborhood Program*. Research Into Action was the principal author and evaluator. The Research Into Action team was led by Jane S. Peters and Marjorie McRae, supported for this volume by Joe Van Clock, Ellen Rubinstein, Linda Dethman, Jennifer Loomis, Heidi Esbensen, Hale Forster, Doré Mangan, Nathaniel Albers, Meghan Bean, and Maria Everhart. Amber Stadler and Sara Titus provided production support.

EXECUTIVE SUMMARY

This report provides findings from an in-depth examination of selected program strategies implemented by the U.S. Department of Energy's (DOE) Better Buildings Neighborhood Program's (BBNP) grantees. The report seeks to provide a nuanced understanding of the factors contributing to the varying levels of success that BBNP grantees achieved by shining a spotlight on five key program strategies addressing:

- › Multiple pathways to participation
- › Contractor training
- › Targeted outreach
- › Engagement with community-based organizations
- › Encouragement of deep retrofits

Each spotlight study seeks to characterize the range of approaches that grantees took in implementing a specific strategy and to identify the conditions that led to the success – or lack thereof – of that strategy. These conditions may include aspects of the strategy's design, implementation, and integration with other program elements, as well as characteristics of the market in which the grantee operated that influenced the reactions of contractors and potential participants to the strategy. These spotlight studies seek to provide insights that will assist future program managers in effectively integrating the examined program strategies into programs seeking to achieve comprehensive retrofits in existing buildings, especially in the residential sector that was the target of the majority of grantees' activities.

This report is one of a suite of six reports providing a comprehensive impact, process, and market effects evaluation of the original grantee program period, spanning fourth quarter (Q4) 2010 through third quarter (Q3) 2013. A team of four energy efficiency evaluation consulting firms designed and conducted the evaluation – Research Into Action, Inc. (lead contractor), Evergreen Economics, Nexant, Inc., and NMR Group, Inc. – which was managed by Lawrence Berkeley National Laboratory (LBNL) and supported by DOE. Research Into Action authored this volume.

BBNP DESCRIPTION, GOALS, AND OBJECTIVES

DOE administered BBNP to support programs promoting whole building energy upgrades. BBNP distributed a total of \$508 million to support efforts in hundreds of communities served by 41 grantees. DOE awarded funding of \$1.4 million to \$40 million per grantee through the competitive portions of the Energy Efficiency and Conservation Block Grant (EECBG) Program (\$482 million from American Recovery and Reinvestment Act of 2009 [ARRA, the Recovery Act] funds) and the State Energy Program (SEP; \$26 million). DOE awarded grants between May and October 2010, intended to provide funding over a three-year period ending September 30, 2013. In 2013, DOE offered an extension to programs that included a BBNP-funded financing mechanism to operate through September 30, 2014 using BBNP funds exclusively for financing.

While the federal government has issued periodic funding opportunities for energy efficiency, none has been on the scale of BBNP.

State and local governments received the grants and worked with nonprofits, building energy efficiency experts, contractor trade associations, financial institutions, utilities, and other organizations to develop community-based programs, incentives, and financing options for comprehensive energy-saving upgrades. Each of the 41 grant-funded organizations, assisted by 24 subgrantees, targeted a unique combination of residential, multifamily, commercial, industrial, and agriculture sector buildings, depending on their objectives.

DOE designed BBNP to meet the three principal ARRA goals (Table ES-1), as well as seven objectives developed by DOE staff to guide the BBNP initiative (Table ES-2). Below, we identify which of the three types of evaluation (impact, process, or market effects) provide findings relevant to our assessment of goal and objective attainment. This report provides findings from the process evaluation, as do two companion reports: *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3), and *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4). The spotlight studies contribute to an understanding of the approaches grantees took to developing sustainable energy efficiency upgrade programs.

Table ES-1: ARRA Goals

GOALS	EVALUATION TYPE		
	Impact	Process	Market Effects
Create new jobs and save existing ones	✓	✓	✓
Spur economic activity and invest in long-term growth	✓	✓	✓
Provide accountability and transparency in spending BBNP funds	✓	✓	

Table ES-2: BBNP Objectives

OBJECTIVES	EVALUATION TYPE		
	Impact	Process	Market Effects
Develop sustainable energy efficiency upgrade programs		✓	✓
Upgrade more than 100,000 residential and commercial buildings to be more energy efficient	✓		
Save consumers \$65 million annually on their energy bills	✓		
Achieve 15% to 30% estimated energy savings from residential energy efficiency upgrades	✓		
Reduce the cost of energy efficiency program delivery by 20% or more		✓	
Create or retain 10,000 to 30,000 jobs	✓		
Leverage \$1 to \$3 billion in additional resources	✓		

METHODS

Each spotlight study draws on the experiences of multiple grantees. The evaluation team chose the grantees for each spotlight study based on the grantees' implementation of and experience with that program strategy. The grantees span the range of success as described by companion report *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3). Data collection involved review of the grantees' Final Technical Reports, third-party evaluations of grantee programs, and other documentation compiled by DOE and grantee staff. After review of secondary data, the evaluation team collected primary data through in-depth interviews with one or more program staff from each program area. Interviews typically lasted an hour and were conducted over the phone. Analysis was carried out using a qualitative data software program to facilitate comparison of grantee experiences.

KEY FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

MULTIPLE PATHWAYS TO PARTICIPATION

Key Findings

The selected grantees all offered two or more audit types, including a simple option (such as a checklist) and an in-depth option (using diagnostic equipment and energy modeling as warranted). About half of the selected grantees developed a single incentive structure that had sufficiently flexible eligibility requirements to allow for varying comprehensiveness levels. These programs used the program staff or its implementation contractors to recruit participants and maintain participant relationships. The remaining selected grantees established distinct participation paths for projects targeting different levels of comprehensiveness, each with an associated audit type, incentive structure, and upgrade eligibility requirements. These programs relied on trade ally contractors to market to and serve participants.

The selected grantees designed their prescriptive offerings to encourage participants to install multiple measures. By doing so, these grantees sought to ensure that, even though the associated audits were simplified and the rebates prescriptive, the typical BBNP upgrade project would be more comprehensive than the typical single-measure prescriptive project commonly conducted under residential incentive programs.

Our analysis comparing characteristics of the projects conducted by the selected grantees with those of other grantees found comparable average project energy savings, higher average project comprehensiveness, and lower average program costs per upgrade and per MMBtu saved.

Conclusions and Recommendations

Conclusion: Allowing flexibility in the types of audits and upgrades that homeowners could select ensured that homeowners with varied upgrade needs, time constraints, and financial limits could participate. Further, offering more simplified pathways without expensive energy modeling requirements broadened the program appeal among contractors. Greater contractor interest in a program results in a larger pool of contractors, a second factor statistically related to program success. Program designs that incorporated comprehensive audits *as well as* prescriptive approaches, and designed incentives accordingly, facilitated the participation of varied homeowners and contractors and enabled the program to acquire savings from a greater range of upgrades, improving overall program cost-effectiveness.

- › **Recommendation:** Program managers should consider options for incorporating prescriptive participation pathways into whole home retrofit programs, with each pathway designed to encourage participants to install more measures than they might otherwise install. There is value in maintaining an energy modeling-based pathway for more comprehensive projects for participants interested in the most comprehensive upgrades and for situations in which prescriptive measures may not be appropriate.

CONTRACTOR TRAINING

Key Findings

All of the selected grantees offered multiple training opportunities to contractors. The grantees delivered some of these trainings themselves and also engaged implementation contractors, a government agency, a national training vendor, and manufacturer representatives to deliver training. The training sessions and class offerings addressed topics relating to program requirements, business development, sales training, and building science. (These training topics are in addition to the grantees' requirements that a minimum of one person, employed by the contractor, have Building Performance Institute [BPI] certification and would facilitate upgrade project quality.) Grantees provided trainings in a variety of formats. All of the selected grantees provided classroom training (at the grantee offices) and each grantee also provided two additional attendance options including webinars, on-site trainings (at participant sites), and peer-to-peer networking. Some of these trainings were mandatory and other trainings were voluntary. All of the selected grantees reduced or eliminated financial barriers to participation by offering free training or training subsidies.

Program managers reported that many benefits resulted from the contractor training activities, including improved program processes, more comprehensive upgrades, improved quality control, more effective and efficient installation processes, more effective sales approaches, increased rates of conversion from audit to upgrade, enhanced audit quality, and increased revenues for contractor businesses. The selected grantees' experiences also demonstrate the importance of gathering evidence on the effects of training to ensure that the training is attaining its aims. Related to this, several of the grantees noted the importance of adding or revising training throughout the program cycle.

Conclusions and Recommendations

Conclusion: Although approaches varied somewhat across the four selected grantees, all training approaches shared these six attributes: (1) Training content addressing program, technical, and business needs – especially sales training; (2) expert and trusted trainers; (3) flexible access to training (classroom, web-based, on-site); (4) varied timing and duration of training; (5) robust financial support for attending training; and (6) voluntary training options (with enticements such as food and networking opportunities) that allowed contractors to attend trainings that were most important to them.

- › **Recommendation:** Design and offer contractor training conforming to the attributes identified in this spotlight study. Sales training appears to be particularly important for comprehensive upgrade programs.
- › **Recommendation:** Develop metrics – such as conversion rates, technology choices or measures included in projects, contractor teaming, and trends in number of contractor projects – to measure training impacts and identify needs for additional training.

- › **Recommendation:** Look for opportunities to combine training with other program needs – such as quality control activities and obtaining feedback from contractors on program design and implementation – to build mutual communication, understanding, and respect from home upgrade professionals.

TARGETED OUTREACH

Key Findings

Some targeted outreach methods were more successful than others. All but one of the selected grantees that had restricted program outreach to a small, defined geographic area subsequently changed this approach as they concluded it unnecessarily limited program participation. Grantees' geographic targeting efforts did not generate expected levels of uptake or reduce the prices of energy upgrade measures through economies of scale, except in cases where latent demand was geographically concentrated. The selected grantee that did not change its approach found it important to assess neighborhoods for their likely receptivity to the efficiency message and to engage in a concerted priming effort in the area before offering program services.

On the other hand, non-geographic targeting, through showcase homes, house parties, community-based organizations, and similar approaches, was met with success. These strategies allowed programs to target groups of potential participants based on their social connections, as the event sponsor would reach out to its social network. In addition, tailoring outreach messages and incentives to areas or populations with latent demand resulted in high participation rates. Further, grantees found it was easier for program managers to reach a large number of people through existing events rather than attempting to draw crowds to program-specific events.

Engaging credible messengers – such as respected local governmental personnel or homeowner association presidents – in program promotion influenced individuals in those messengers' social networks to undertake upgrades. The credible messenger is beneficial in all targeted outreach strategies the selected grantees engaged in

Conclusions and Recommendations

Conclusion: Restricting program outreach to a defined geographic area limited program participation.

- › **Recommendation:** If deploying the program using geographically targeted outreach, conduct market research first to select communities for their likely receptivity to the efficiency message and conduct early educational outreach in those areas to build awareness of energy efficiency benefits before making program offers.

Conclusion: Targeted outreach methods are most effective when the targeted group shares a social network or an energy efficiency improvement need. Two strengths of non-geographic targeted outreach are the ability to create a message that resonates with the specific population and the ability to use existing social networks to promote outreach through trusted messengers.

- › **Recommendation:** Consider using targeted outreach to recruit upgrade participants from among groups with shared social networks and energy efficiency needs.
- › **Recommendation:** Carefully design the message and select the messenger to resonate with the targeted group.

ENGAGEMENT WITH COMMUNITY-BASED ORGANIZATIONS

Key Findings

Community-based organizations (CBOs) worked with the selected grantees to both drive demand for homeowner upgrades and to stimulate the supply of efficiency contractors. Benefits of CBO collaboration include the access that CBOs provide to selected groups (that is, CBOs can be a channel for targeted outreach) and increased trust between the program and the CBO's constituents, which lends credibility to the program. CBOs also are familiar with their constituents and are well positioned to tailor messages and outreach strategies to overcome their constituents' particular barriers and meet their specific needs. Productive collaborations between the selected grantees and CBOs took many forms, but certain organizational characteristics facilitated effective collaboration on upgrade programs:

- › Stable and long-standing trusted CBOs were in a position to form a reliable relationship with program managers.
- › CBOs with developed human resources, an active volunteer network, and connections with contractors were able to convey appropriate information to more people.
- › CBOs whose mission aligned with energy efficiency more easily articulated upgrade benefits and had constituencies who already understood the importance of energy savings.

The selected grantees found that performance-based financial incentives for CBO recruitment did not stimulate a large number of upgrades. CBOs did not meet thresholds required for reimbursement due to limited capacity or unwillingness to dedicate the resources necessary to spur upgrades.

Conclusions and Recommendations

Conclusion: Grantees effectively employed a variety of strategies to engage CBOs in recruiting residential energy efficiency upgrades. Selected grantees were successful in coordinating with CBOs when the CBO's mission, capacity, and organizational strengths satisfied the program's needs. Successful grantee-CBO collaborations tended to involve motivated CBOs with sufficient resources to recruit retrofit participants from their constituencies using customized outreach approaches based on the CBO's guiding objectives and capabilities.

- › **Recommendation:** Tailor CBO recruitment to the program's needs. Carefully define the program's goals and seek CBOs that can most effectively help the program meet those goals. If the program goals emphasize maximizing savings, recruit established CBOs with energy efficiency experience and strong contractor connections to more quickly generate the needed leads. If program goals emphasize recruiting projects within specific hard-to-reach populations, recruit CBOs with direct access to and respect within those populations.
- › **Recommendation:** Temper expectations for CBO productivity and anticipate the need to provide CBOs support. The value that CBOs provide is based on their position of trust within specific communities. While CBOs can recruit participants in hard-to-reach populations, such outreach takes time and resources. CBO outreach alone is unlikely to generate sufficient volume to sustain a program.
- › **Recommendation:** Allow flexibility in CBOs' outreach approaches; allow program flexibility in CBO engagement. CBO outreach is most effective when CBOs tailor their outreach strategies based on their

organization's capacity and mission. Not all CBO collaborations or outreach activities will be successful. The effective use of CBOs requires program managers to track CBO sign-ups and application assistance, and then make adjustments as needed to recruit and retain only partners that help the program realize its goals.

ENCOURAGEMENT OF DEEP RETROFITS

Key Findings

Selected grantees used marketing techniques, tiered incentive structures, financing options, and contractor and participant support to motivate participants to complete deep retrofits. The marketing techniques selected grantees used to encourage greater energy savings included participant testimonials, marketing messages that highlighted the cost savings associated with energy improvements, and marketing messages that created a sense of urgency.

In addition, the selected grantees structured their incentives to encourage homeowners to install more upgrades and achieve greater energy savings. Grantees did this by using performance-based incentives (higher rebates for more energy savings) or by tying more generous incentives to the installation of more upgrades. Yet, the program managers also expressed concerns about the sustainability of these generous incentives due to their financial impact on the programs. Though the programs were dependent on generous incentives to spur homeowner pursuit of deep retrofits, program managers saw evidence of increasing awareness and interest in deep retrofits as the programs matured and the community became more aware of the program offerings and benefits. Further, all four of the selected grantees offered financing options to their participants, yet only two reported this to be influential in encouraging homeowners to pursue deeper retrofits. Grantees generally found financing was more beneficial as a marketing tool than as a funding tool because of reluctance to finance.

Both providing homeowner support to understand the upgrade process and providing contractor support in the form of training reportedly contributed to deeper retrofits. The selected grantees reported contractors were integral to the achievement of deeper retrofits and were able to motivate homeowners to achieve greater energy savings by taking a holistic approach to home energy upgrades, possessing strong communication skills to explain costs and benefits, and recommending multiple measures for each upgrade.

Conclusions and Recommendations

Conclusion: Deep retrofit programs require a strong pool of qualified contractors who can perform quality upgrades and, with a strong knowledge of building science, help customers understand the benefits of home energy improvements. Often serving as the main point of contact with the participant, contractors must have the ability to install or subcontract a variety of energy-saving measures and to explain the benefits of potentially costly projects.

- › **Recommendation:** Deep retrofit programs should build on an existing contractor network and provide technical and sales support to contractors.

Conclusion: Upfront cost, reluctance to finance, and unfamiliarity with the deep retrofit concept were all barriers to households undertaking deep retrofits.

- › **Recommendation:** Deep retrofits can be a hard sell; provide clear, flexible program offerings and expect to conduct extensive outreach to generate awareness and understanding.

- › **Recommendation:** Collaborate with other program managers offering similar programs to help buy-down the cost of expensive deep retrofits. Coordinate marketing to alert participants to the availability of incentives from multiple sources.

- › **Recommendation:** Recognize that generating homeowner demand for deep retrofits and a supply of qualified contractors can take several years. Be patient. Periodically revisit previously targeted communities; homeowners who did not initially participate may have gained interest over the interim and early participants may want to pursue additional upgrades.

1. INTRODUCTION

1.1. OVERVIEW

This report provides findings from an in-depth examination of selected program strategies implemented by the U.S. Department of Energy's (DOE) Better Buildings Neighborhood Program's (BBNP) grantees. The report shines a spotlight on five key program strategies to provide a nuanced understanding of the factors contributing to the varying levels of success that BBNP grantees achieved (Appendix F summarizes our approach to assessing grantee success).

Each of the five spotlight studies draws on the experiences of a handful of grantees that made the examined program strategy an important element of their BBNP-funded programs. The spotlight studies address:¹

- › Multiple pathways to participation
- › Contractor training
- › Targeted outreach
- › Engagement with community-based organizations
- › Encouragement of deep retrofits

Each spotlight study seeks to characterize the range of approaches the selected grantees took in implementing a specific strategy, and to identify the conditions that led to the success – or lack thereof – of that strategy. These conditions may include aspects of the strategy's design, implementation, and integration with other program elements, as well as characteristics of the market in which the grantee operated that influenced the reactions of contractors and potential participants to the strategy. These spotlight studies seek to provide insights that will assist future program managers in effectively integrating the examined program strategies into programs seeking to achieve comprehensive retrofits in existing buildings, especially residential buildings, since they were the target of the majority of grantees' activities.

This report is one of a suite of six reports providing a comprehensive impact, process, and market effects evaluation of the original grantee program period, spanning fourth quarter (Q4) 2010 through third quarter (Q3) 2013. A team of four energy efficiency evaluation consulting firms designed and conducted the evaluation – Research Into Action, Inc. (lead contractor), Evergreen Economics, Nexant, Inc., and NMR Group, Inc. – which was managed by Lawrence Berkeley National Laboratory (LBNL) and supported by DOE. Research Into Action authored this volume.

¹ The five program strategies highlighted in this report support residential audit and retrofit programs through different core program activities as identified in the program logic model (see: *Process Evaluation of the Better Buildings Neighborhood Program* [Final Evaluation Volume 4]). *Multiple pathways to participation* is a customer engagement approach to conducting home energy assessments and upgrades. *Contractor training* is a core program activity in the logic model. *Targeted outreach and engagement with community-based organizations* are components of program marketing. *Encouragement of deep retrofits* is a desired long-term outcome. The five strategies are not mutually exclusive. For example, engagement with community-based organizations can be a channel for conducting targeted outreach.

1.2. BBNP DESCRIPTION, GOALS, AND OBJECTIVES

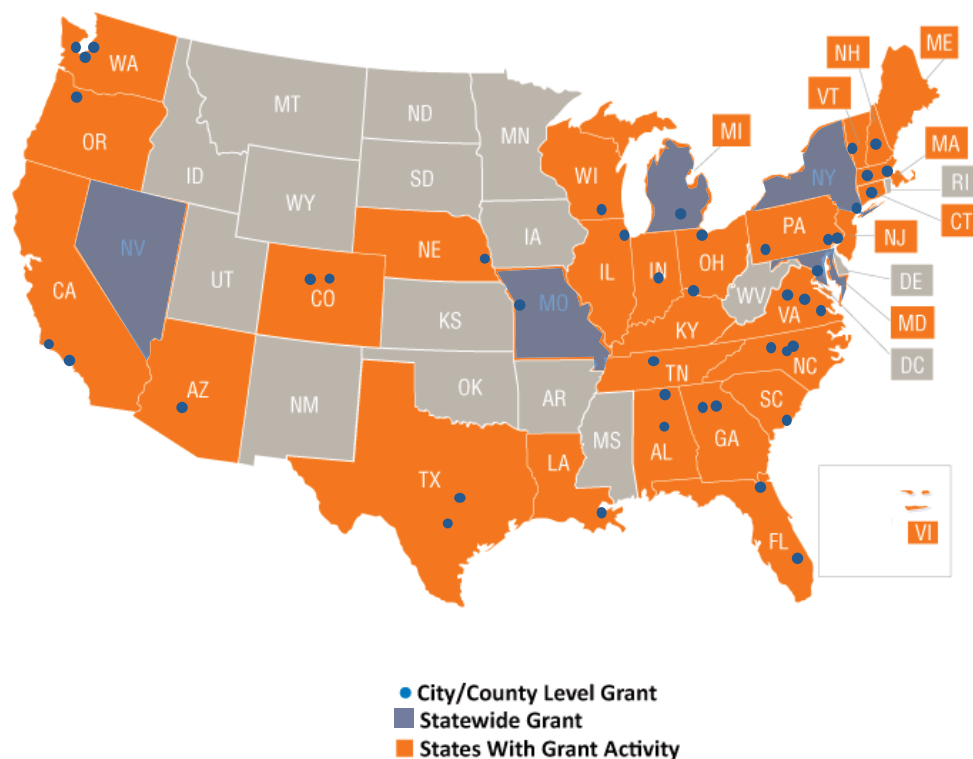
DOE administered BBNP to support programs promoting whole building energy upgrades. BBNP distributed a total of \$508 million to support efforts in hundreds of communities served by 41 grantees. DOE awarded funding of \$1.4 million to \$40 million per grantee through the competitive portions of the Energy Efficiency and Conservation Block Grant (EECBG) Program (\$482 million from American Recovery and Reinvestment Act of 2009 [ARRA, the Recovery Act] funds) and the State Energy Program (SEP; \$26 million). DOE awarded grants between May and October 2010, intended to provide funding over a three-year period ending September 30, 2013. In 2013, DOE offered an extension to programs that included a BBNP-funded financing mechanism to operate through September 30, 2014 using BBNP funds exclusively for financing.

While the federal government has issued periodic funding opportunities for energy efficiency, none has been on the scale of BBNP.

State and local governments received the grants and worked with nonprofits, building energy efficiency experts, contractor trade associations, financial institutions, utilities, and other organizations to develop community-based programs, incentives, and financing options for comprehensive energy saving upgrades. Each of the 41 grant-funded organizations, assisted by 24 subgrantees, targeted a unique combination of residential, multifamily, commercial, industrial, and agriculture sector buildings, depending on their objectives. The jurisdictions that recipients served varied widely, from a single medium-size city to an entire large state.

Figure 1-1 shows the states with BBNP activity and illustrates whether the grant recipient represented the state, or a city or county within the state.

Figure 1-1: BBNP Grantees by Location



DOE issued two competitive funding opportunity announcements for BBNP grants. The first, drawing on EECBG funding, was issued in October 2009. The second, drawing on SEP funding, was issued in April 2010. DOE awarded grants between May and October 2010, intended to provide funding over a three-year period ending September 30, 2013, a period that DOE subsequently extended by a year for programs that included a BBNP-funded financing mechanism to operate using BBNP funds exclusively for financing.

Each grant recipient proposed and implemented unique programs designed to address the energy efficiency needs, barriers, and opportunities within its jurisdiction. However, all of the recipients' programs were broadly designed around three common purposes: (1) to obtain high-quality upgrades resulting in significant energy improvements (upgrades also described as whole building or comprehensive), (2) to incorporate a viable strategy for program sustainability, which DOE defined as continuing beyond the grant period without additional federal funding, and (3) to fundamentally and permanently transform energy markets to make energy efficiency and renewable energy the options of first choice (DOE, 2009).

Through the EECBG Funding Opportunity Announcement (FOA), DOE sought "innovative, 'game-changing' whole building efficiency programs" (DOE, 2009). DOE recognized that innovation is a form of experimentation and is not without risk of failure. The BBNP program at that national level was looking to identify the most effective approaches; DOE was not expecting every local BBNP-funded program to be equally, or even moderately, effective.

DOE designed BBNP to meet the three principal ARRA goals (Table 1-1), as well as seven objectives developed by DOE staff to guide the BBNP initiative (Table 1-2). Below, we identify which of the three types of evaluation (impact, process, or market effects) provide findings relevant to our assessment of goal and objective attainment. This report provides findings from the process evaluation, as do two companion reports: *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3), and *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4). The spotlight studies contribute to an understanding of the approaches grantees took to developing sustainable energy efficiency upgrade programs.

Table 1-1: ARRA Goals

GOALS	EVALUATION TYPE		
	Impact	Process	Market Effects
Create new jobs and save existing ones	✓	✓	✓
Spur economic activity and invest in long-term growth	✓	✓	✓
Provide accountability and transparency in spending BBNP funds	✓	✓	

Table 1-2: BBNP Objectives

OBJECTIVES	EVALUATION TYPE		
	Impact	Process	Market Effects
Develop sustainable energy efficiency upgrade programs		✓	✓
Upgrade more than 100,000 residential and commercial buildings to be more energy efficient	✓		
Save consumers \$65 million annually on their energy bills	✓		
Achieve 15% to 30% estimated energy savings from residential energy efficiency upgrades	✓		
Reduce the cost of energy efficiency program delivery by 20% or more		✓	
Create or retain 10,000 to 30,000 jobs	✓		
Leverage \$1 to \$3 billion in additional resources	✓		

1.3. METHODOLOGY

1.3.1. SPOTLIGHT STUDY SELECTION

The evaluation team identified candidate topics for spotlight studies based on the BBNP goals and objectives and the process evaluation findings reported in the companion reports:

- › *Evaluation of the Better Buildings Neighborhood Program* (Final Synthesis Report, Volume 1) (provides a complete list of BBNP goals and objectives)
- › *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3)
- › *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4)

We selected the topics addressed in this volume in consultation with the BBNP evaluation manager and DOE BBNP program staff. DOE and other organizations have developed reports, case studies, and policy briefs that examine aspects of select BBNP programs. We reviewed these documents to refine the spotlight topics and to avoid duplication of existing BBNP evaluations.

Two of the five spotlight studies – multiple pathways and contractor training – provide insight into two BBNP program strategies that our team identified through quantitative analysis as statistically associated with grantee success (see Appendix F and companion report *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* [Final Evaluation Volume 3]). We note as well that the BBNP goals included “identify and spread the most effective approaches to completing building energy upgrades” and “increase technical capacity throughout the supply chain (for example, trained contractors)” (see companion report *Evaluation of the Better Buildings Neighborhood Program* [Final Synthesis Report, Volume 1]).

The BBNP goals also included “conduct high-quality retrofits resulting in significant efficiency improvements to a large proportion of buildings within targeted neighborhoods, technology corridors or communities” and “serve as pilot

building retrofit programs that demonstrate the benefits of gaining economies of scale and beginning to identify the most promising marketing and financing approaches.” The process evaluation (see *Process Evaluation of the Better Buildings Neighborhood Program* [Final Evaluation Volume 4]) found that identifying specific target groups enabled some grantees to reach potential participants efficiently with tailored, relevant outreach messages. The targeted outreach spotlight study explores some of the benefits and limitations grantees experienced conducting targeted outreach.

Also among the BBNP goals: “form new alliances (local government, financial institutions, contractor associations, community associations, etc.)”. The spotlight study on engagement with community-based organizations (CBOs) provides insights into strategies and tactics grantees employed to meet this goal. Industry research has identified the use of trusted messengers to deliver information about energy efficiency as an important element in motivating homeowners to make upgrades (Fuller et al., 2010). Partnerships with community organizations have the potential to provide programs with access to trusted community leaders who can reach out to their constituents. Many grantees pursued relationships with community organizations that could serve as trusted messengers to promote their offerings.

The final spotlight topic – deep retrofits – explores program approaches related to the BBNP goal “serve as examples of comprehensive ... energy efficiency approaches” and to DOE goals for the U.S. housing stock that typical homes will have average energy savings compared to current baseline of 20% by 2020, increasing to 40% by 2030 (Lee, 2014).

Table 1-3 summarizes the rationale for selection of each spotlight study topic.

Table 1-3: Rationale for Selection of Spotlight Study Topics

TOPIC	RATIONALE FOR SELECTION
Multiple pathways to participation	BBNP goal: Identify and spread the most effective approaches to completing building energy upgrade projects (LBNL, 2011). <ul style="list-style-type: none"> • Offering multiple pathways was significantly associated with membership in the most successful cluster of grantees.
Contractor training	BBNP goal: Increase technical capability throughout the supply chain (for example, trained contractors) (LBNL, 2011). <ul style="list-style-type: none"> • Lack of contractor training was significantly associated with membership in the least successful cluster of grantees, and each additional type of training a grantee offered significantly reduced their likelihood of membership in the least successful cluster.
Targeted outreach	BBNP goal: Conduct high-quality retrofits resulting in significant efficiency improvements to a large proportion of buildings within targeted neighborhoods, technology corridors or communities (DOE, 2009). BBNP goal: Serve as pilot building retrofit programs that demonstrate the benefits of gaining economies of scale and beginning to identify the most promising marketing and financing approaches (DOE, 2009) <ul style="list-style-type: none"> • To this end, many grantees developed program strategies targeting narrowly defined geographic areas or other distinct groups of potential participants.

Continued...

TOPIC	RATIONALE FOR SELECTION
Engagement with Community-Based Organizations	<p>BBNP goal: Form new alliances (local government, financial institutions, contractor associations, community associations, etc.) (LBNL, 2011).</p> <ul style="list-style-type: none"> Industry research has identified the use of trusted messengers to deliver information about energy efficiency as an important element in motivating homeowners to make upgrades; grantees used CBOs as trusted messengers. Grantees in the most successful cluster used community-based outreach strategies more frequently than other grantees.
Encouragement of deep retrofits	<p>BBNP goal: Serve as examples of comprehensive community-scale energy efficiency approaches) (DOE, 2009).</p> <ul style="list-style-type: none"> Through its Residential Buildings Integration effort, DOE has set goals of demonstrating large-scale reductions of energy use in typical homes by an average of 20% by 2020, 25% by 2025, and 40% by 2030. The experience of BBNP grantees may provide insights helpful in achieving these goals.

1.3.2. GRANTEE SELECTION

Each spotlight study draws on the experiences of four to seven grantees. The evaluation team developed initial lists of grantees for inclusion in each spotlight study with input from the BBNP evaluation manager and DOE BBNP program staff. These initial lists sought to include grantees that had incorporated one or more of the selected program strategies as an important element of their BBNP-funded programs. The evaluation team refined the list of grantees included in each spotlight study as research progressed and our understanding of both the grantees' programs and the focus and structure of each spotlight study became more clearly defined. The final list of selected grantees represents a range of programmatic success. Table 1-4 lists the grantees included in each spotlight study.

Table 1-4: Grantees Included in Spotlight Studies

STUDY	SELECTED GRANTEEES
Multiple pathways to participation	<ul style="list-style-type: none"> Austin, Texas Bainbridge Island, Washington Boulder County, Colorado Los Angeles County, California State of Maine
Contractor training	<ul style="list-style-type: none"> Bainbridge Island, Washington State of Maine Portland, Oregon Seattle, Washington

Continued...

STUDY	SELECTED GRANTEES
Targeted outreach	<ul style="list-style-type: none"> • Boulder County, Colorado • Chicago, Illinois • State of Maine • State of Michigan • Phoenix, Arizona • San Diego, California ^a
Engagement with community-based organizations	<ul style="list-style-type: none"> • Bainbridge Island, Washington • Los Angeles County, California • State of Maine • New Orleans, Louisiana ^b • State of New York (NYSERDA) • San Jose, California ^c • Seattle, Washington
Encouragement of deep retrofits	<ul style="list-style-type: none"> • Chicago, Illinois • State of Maine, • State of Michigan • Omaha, Nebraska

^a The San Diego program was funded through a portion of the BBNP grant awarded to Los Angeles County and dispersed to the California Center for Sustainable Energy for use in San Diego.

^b The New Orleans program was funded through a portion of the BBNP grant awarded to Southeast Energy Efficiency Alliance.

^c The City of San Jose program was funded through a portion of the BBNP grant awarded to Los Angeles County.

1.3.3. DATA SOURCES AND ANALYSIS

A range of data sources informed each spotlight study. The evaluation team began by reviewing relevant findings from interview and survey data collected in the course of the BBNP process evaluation, grantees' Final Technical Reports, evaluations grantees oversaw of their own programs, and spotlight studies and other documentation that DOE and its contractors prepared to highlight promising program approaches. The evaluation team then conducted in-depth interviews with program managers within grantee organizations to fill in any gaps and probe more deeply into the specific spotlight study topics. These interviews typically lasted approximately one hour for each topic covered, although this varied somewhat based on the depth of the background information available. For each grantee, the evaluation team compiled findings from all data sources and used qualitative analysis software to assist in synthesizing findings across grantees for each spotlight study.

1.4. STRUCTURE OF THIS REPORT

The remaining chapters of this report present the five spotlight studies:

- › Multiple pathways to participation
- › Contractor training
- › Targeted outreach
- › Engagement with community-based organizations
- › Encouragement of deep retrofits

The References section lists all of the data sources the evaluation team used for this report.

Appendix A through Appendix E provides additional detail, by study, on how each selected grantee incorporated the study strategy into its program.

Appendix F provides a summary of the methods the evaluation team used to assess relative grantee success.

2. SPOTLIGHT ON MULTIPLE PATHWAYS TO PARTICIPATION

The quantitative analysis described in the companion report *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3) found that offering multiple pathways to participation was a significant predictor of grantee inclusion in the cluster of most successful grantees. This spotlight study further explores this finding, examining strategies grantees used to integrate a variety of participation options into their program designs. In particular, some grantees developed participation options based on prescriptive energy savings estimates rather than project-specific energy modeling. While these options did not include as detailed and specific estimates of potential energy savings as the modeling-based approaches, they nonetheless sought to promote comprehensive energy upgrades.

This spotlight study draws on the experience of five BBNP grantees (the “selected grantees”) that offered multiple pathways designed to accommodate a wide range of upgrade projects:

- › Austin, Texas
- › Bainbridge Island, Washington
- › Boulder County, Colorado
- › State of Maine
- › Los Angeles County, California

The study describes the audit types grantees used to offer multiple pathways to upgrades, reviews the uptake of the audit types based on the grantees’ statements and reporting to DOE, and provides the grantees’ assessment of the factors that contributed to the success of their program offerings. The study ends with conclusions and recommendations based on the selected grantees’ experiences. Appendix A provides detail on each selected grantee’s program design related to multiple pathways to participation.

2.1. MULTIPLE PATHWAY APPROACHES

The selected grantees took two distinct approaches to providing multiple audit types, with each approach related to the way the grantees’ programs recruited and made their initial contact with participants.

Some grantee programs relied on trade ally contractors to recruit participants and serve as the participants’ primary contact with the program. These programs established distinct participation paths for projects targeting different levels of comprehensiveness. Each path had unique incentive structures and upgrade eligibility requirements.

Grantee programs for which the program staff or its implementation contractors were primarily responsible for recruiting participants and maintaining participant relationships took a more fluid approach. While these grantees offered multiple audit types, they typically had a single incentive structure with sufficiently flexible eligibility requirements to allow for varying comprehensiveness levels.

The following sections describe each of these approaches in greater detail.

2.1.1. *DEFINED PATHWAYS*

All three of the grantees that offered distinct pathways for participation offered at least two options: an “advanced” or “custom” path for larger and more comprehensive upgrades, and a mid-range path that required participants to install multiple measures, but did not require a comprehensive audit or energy modeling. Some grantees also offered prescriptive options for participants interested in single measures.

Upgrades using the advanced or custom path had to undergo energy modeling and meet minimum thresholds for predicted energy savings. In all three cases, incentives for this path were based on an upgrade’s predicted energy savings. Upgrades using this path typically qualified for larger incentives than upgrades using other paths. One program manager noted that these incentives were designed, in part, to offset the costs associated with the greater complexity of advanced tier projects.

For the mid-range participation path, two of the three grantees developed a “menu” of measures. These grantees assigned point values to each eligible measure and required participants to install a combination of measures whose point values summed to a minimum value. Each measure’s point value was based on its expected energy savings in a typical home, and the minimum values that participants were required to reach were equivalent to an expected 15% site energy savings. The third grantee required participants to complete a minimum amount of air sealing and insulation work and install at least one measure from a program-maintained list.

2.1.2. *FLEXIBLE INCENTIVE STRUCTURES*

The two grantees that did not define distinct participation pathways used program designs in which the program, rather than contractors, was primarily responsible for outreach and served as an initial contact for participants. These grantees sought to guide participants to the most appropriate audit type based on their understanding of the participant’s interests, gleaned from initial contact between the participant and the program’s energy advisors.

Both grantees with this design offered both an in-depth audit, which the grantees or their partners partially subsidized, and a walk-through audit, which the grantees offered for free or at a much lower cost to the participant. One grantee also offered telephone consultation to participants who came to the program with an upgrade project in mind.

The incentives that both grantees offered did not differ based on the type of audit a participant received. While both grantees structured their incentive offerings to encourage participants to install multiple measures (discussed further below), participants could qualify for incentives for a wide range of upgrades, ranging from single measures to comprehensive projects.

2.1.3. *ENCOURAGEMENT OF COMPREHENSIVENESS*

While the selected grantees allowed for a wide range in the scope of the upgrades they supported, their programs also were designed to encourage participants to make more efficiency improvements than they otherwise might have, and ultimately to address all efficiency opportunities in the participants’ homes. The selected grantees primarily addressed this goal through incentive structures designed to encourage additional measures and by following up with participants who had previously completed an upgrade.

Incentives to Encourage Comprehensiveness

By requiring participants to install multiple measures in order to qualify for incentives, the grantees with defined mid-range participation paths sought to encourage participants to make more comprehensive upgrades than would be typical in a standard equipment replacement or insulation project. One of the grantees that offered a more flexible incentive structure also offered participants a bonus incentive for installing multiple measures; over the course of the grant period, this grantee increased eligibility requirements for the bonus incentive from the installation of two measures to three measures.

Follow-up with Past Participants

In addition to designing incentives to encourage multiple measures, three of the selected grantees took steps to motivate past participants to undertake additional efficiency upgrades. These grantees identified participants who had completed less comprehensive projects, including single-measure upgrades, and re-contacted them to offer support and incentives for installation of additional measures. Two of these grantees noted that positive initial experiences with the program made some participants more receptive to additional efficiency upgrades. According to one program manager, “We know if they have a good customer service experience and build a trusted relationship with [one of the program’s energy advisors], they will come back.”

2.2. UPTAKE OF PATHS OFFERED

The selected grantees reported that participation options that allowed for prescriptive approaches had greater uptake than more comprehensive participation options that relied on energy modeling. Grantees reported that between 60% and 99% of program participants used prescriptive options during periods when both a prescriptive and a modeling-based option were available.

The data grantees reported to DOE do not specify the program path under which an upgrade occurred. As a result, this study cannot compare the outcomes of upgrades using pathways based on energy modeling to the outcomes of upgrades completed through prescriptive approaches. Nonetheless, a comparison of program-wide average metrics between the selected grantees and others suggests that, while the selected grantees provided upgrades at lower than average cost to the program, the upgrades themselves were comparable to other programs in their comprehensiveness, energy savings, and invoiced cost.

Table 2-1: Average Residential Upgrade Cost and Energy Savings Performance of Selected Grantees Relative to All Others

METRIC	SELECTED GRANTEES	OTHER GRANTEES
Program cost per upgrade	\$4,079	\$8,696
Program cost per MMBTU saved	\$185	\$452
MMBTU saved per upgrade	24.3	24.7
Percent of projects that were comprehensive*	34%	28%

* The companion report *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3; Appendix B, section 2.3) provides the methodology we used for defining comprehensiveness and percent of comprehensive projects. We consider an upgrade to be comprehensive if it included measures from at least five measure categories, of which at least four are core categories.

2.3. EFFECT OF MULTIPLE PATHWAYS ON PROGRAMS

The selected grantees were largely pleased with the effectiveness of their audit offerings. One program manager noted that their prescriptive approach was not appropriate for all participants, stating that a modeling-based approach may be more effective for homes that differ significantly from the assumptions on which the prescriptive path's savings estimates are based. Overall, however, the selected grantees cited few drawbacks to offering prescriptive options along with modeling-based approaches.

The selected grantees reported that offering multiple audit types helped to address the cost and complexity challenges that they perceived stemmed from in-depth audits and energy modeling approaches. Four of the five selected grantees described their less comprehensive alternatives as part of efforts to make participation easier for contractors, homeowners, or both.

2.3.1. FACILITATING CONTRACTOR PARTICIPATION

The selected grantees sought to facilitate contractor participation by providing participation options that did not require energy modeling and the in-depth audits necessary to gather inputs for energy models. One of the selected grantees stated that eliminating this step helped contractors develop a scope of work more quickly, which in turn allowed them to more effectively sell energy upgrades. According to this grantee, it is important for contractors to quickly determine eligibility and work scope so they can “make the sale at the kitchen table, on the first visit,” before an interested participant changes their mind about making an upgrade or selects a different contractor.

Beyond audit and energy modeling requirements, two grantees noted that it was important to keep program offerings simple and to clearly communicate them to contractors. One of these grantees described tension between the program's desire to adapt incentive requirements in response to program uptake and market conditions and the need to maintain consistency in program offerings to avoid confusion among contractors and participants. To ease its contractors' burden, this grantee ultimately offered to review contractors' proposed work scopes to identify all of the program and utility incentives for which each project could qualify.

In addition to facilitating sales of upgrade projects, another grantee suggested that providing an option that did not require in-depth audits and energy modeling helped the program appeal to a wider range of contractors. This grantee stated that more comprehensive upgrade paths required contractors to keep a Building Performance Institute (BPI) certified Building Analyst on their staff, purchase specialized equipment, and potentially offer audits for less than their full cost in order to attract participants. According to this grantee, contractors found these requirements “too onerous, limiting, or costly,” and many could “not make [upgrades] pencil out” under the more stringent requirements. This grantee reported that specialty contractors like HVAC, insulation, and window installers were particularly attracted to program offerings that did not require an in-depth audit.

Appealing to a wider range of contractors likely helped this grantee and others expand their pool of participating contractors, another factor the analysis described in *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3) found to be statistically associated with inclusion in the cluster of most successful grantees.

2.3.2. *FACILITATING PARTICIPATION FOR HOMEOWNERS*

The selected grantees noted that participation options that eliminated the need for in-depth audits and energy modeling facilitated the participation process for homeowners as well as contractors. One grantee stated this was a central goal of their program, saying, “The whole program...is designed to reduce the key barrier to energy efficiency, which is hassle.” To this end, this grantee reported it was important for the program to provide participation options that required less investment of time and money from participants who may not be prepared to undertake large retrofits. Elaborating on a similar point, another grantee stated that a program design that required an independent audit placed a burden on the participant, who had to coordinate and make time for visits from multiple contractors and assessors.

One program manager reported that their initial program design, which focused on large upgrade projects, had primarily attracted wealthier homeowners in larger homes. This grantee noted that upgrades able to meet the program’s qualification criteria typically cost at least \$8,000. This grantee sought to reach a wider range of participants by moving away from energy modeling as a program requirement in order to allow lower-cost projects into the program.

2.4. SUMMARY OF FINDINGS

The selected grantees all offered two or more audit types, including a simple option (such as a checklist) and an in-depth option (using diagnostic equipment and energy modeling as warranted). About half of the selected grantees developed a single incentive structure that had sufficiently flexible eligibility requirements to allow for varying comprehensiveness levels. These programs used the program staff or its implementation contractors to recruit participants and maintain participant relationships. The remaining selected grantees established distinct participation paths for projects targeting different levels of comprehensiveness, each with an associated audit type, incentive structure, and upgrade eligibility requirements. These programs relied on trade ally contractors to market to and serve participants.

The selected grantees designed their prescriptive offerings to encourage participants to install multiple measures. By doing so, these grantees sought to ensure that, even though the associated audits were simplified and the rebates prescriptive, the typical BBNP upgrade project would be more comprehensive than the typical single-measure prescriptive project commonly conducted under residential incentive programs.

Our analysis comparing characteristics of the projects conducted by the selected grantees with those of other grantees found comparable average project energy savings, higher average project comprehensiveness, and lower average program costs per upgrade and per MMBtu saved.

2.5. CONCLUSIONS AND RECOMMENDATIONS

The evaluation team offers the following conclusion and recommendation for future program managers considering how to structure their audit offerings.

Conclusion: Allowing flexibility in the types of audits and upgrades that homeowners could select ensured that homeowners with varied upgrade needs, time constraints, and financial limits could participate. Further, offering more simplified pathways without expensive energy modeling requirements broadened the program appeal among contractors. Greater contractor interest in a program results in a larger pool of contractors, a second factor statistically related to program success. Program designs that incorporated comprehensive audits *as well as* prescriptive approaches, and designed incentives accordingly, facilitated the participation of varied homeowners and contractors and enabled the program to acquire savings from a greater range of upgrades, improving overall program cost-effectiveness.

- › **Recommendation:** Program managers should consider options for incorporating prescriptive participation pathways into whole home retrofit programs, with each pathway designed to encourage participants to install more measures than they might otherwise install. There is value in maintaining an energy modeling-based pathway for more comprehensive projects for participants interested in the most comprehensive upgrades and for situations in which prescriptive measures may not be appropriate.

3. SPOTLIGHT ON CONTRACTOR TRAINING

The quantitative analysis described in the companion report *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3) showed that robust contractor training contributed to grantee success. Not offering contractor training was significantly associated with membership in the least successful cluster of grantees, and each additional type of training that a grantee offered significantly reduced their likelihood of membership in the least successful cluster. In addition, a goal of the BBNP program was to “increase technical capability throughout the supply chain (for example, trained contractors).”

To gain insights about the role of contractor training in program success, this spotlight study examines the experience of four BBNP grantees (the “selected grantees”) that offered training:

- › Bainbridge Island, Washington
- › State of Maine
- › Portland, Oregon
- › Seattle, Washington

The study describes each program’s training offerings and the effects of training observed by each grantee. The study ends with conclusions and recommendations based on the selected grantees’ experiences. Appendix B provides detail on each selected grantee’s program design related to contractor training.

3.1. TRAINING APPROACHES

All four selected grantees offered these types of training to contractors who enrolled in their trade ally networks:

- › Business development, marketing, and/or sales training to help contractors best position their companies to promote energy upgrades to homeowners
- › Technical training that covered topics such as new technologies and how to install efficiency measures in buildings
- › Program training that covered administrative and management requirements

In addition to these grantee-sponsored trainings, the selected grantees required contractors to have at least one person on staff that completed BPI certification and specified the role of certified staff required for BBNP projects. This study discusses grantee-sponsored training other than BPI, although many technical trainings offered to contractors also were applicable to further certifications through BPI and similar credential providers. The next section describes training delivery and topics covered in the grantee trainings.

3.1.1. TRAINING DELIVERY

The programs of the four selected grantees delivered training using various channels, learning venues, frequencies/durations, and mandatory and voluntary requirements, as summarized in Table 3-1.

All four grantees provided program training through their program staff. However, the grantees applied different resources for business, sales, and technical training expertise. In one case, business and sales training sessions were delivered by the state’s small business development agency. Another grantee used local vendors to provide business and cultural competency training. The third grantee hired a national training vendor, and the fourth provided

funding for contractors to attend sales training at a local university. Similarly, the grantees used different types of organizations to offer technical training: the first grantee hired local energy efficiency experts to deliver technical trainings; the second relied on free expertise from manufacturer representatives and other efficiency professionals; the third used the same national training vendor that it used for the business and sales training; and the fourth provided tuition reimbursement for contractors attending relevant courses at a local community college.

All selected grantees provided classroom training – that is, training held at the grantee program offices (or nearby locations). All grantees augmented the classroom training with additional training venues – webinars (two grantees), and on-site technical training held at project sites (two grantees).

The selected grantees developed webinar trainings primarily to accommodate contractors located far from the grantee offices. One of the two grantees offering training webinars required contractors within easy driving distance to attend in person, unless doing so would pose a hardship due to other obligations.

One of the three grantees with on-site training offered this service on an as-needed basis. The grantee offered a hotline that contractors could call for immediate assistance; if needed, the grantee sent a building specialist to the project site to assist with technical upgrades or to answer such questions as eligibility of certain measure applications for program incentives.

For the other grantees that we categorized as offering on-site training, the training was an elaboration of their quality control processes. One grantee began this training element very late in the program and so could offer little information on its implementation or effectiveness. For the other grantee, the program manager met the contractor at the project site during each phase of a project to assure quality. The grantee built on these interactions to provide additional training as needed to ensure the contractor's subsequent work met the program's quality standards and to increase their technical knowledge and understanding of best practices.

In addition to these training activities, three grantees facilitated peer-to-peer networking and training exchanges. These grantees reported that their monthly sessions gave attendees an opportunity both to network with colleagues and to develop relationships with specialists outside of their area of expertise. Two of these grantees explicitly noted the role that free food played in attracting contractors to these events.

One grantee used its monthly contractor meetings as the venue for all of its training sessions. Staff invited different professionals each month, including some of their own trade allies, to cover topics across all focus areas. Program staff found this to be an effective approach to training, and reported, "Training itself has been well received from day one. It is our job to develop important and meaningful training and bring in good experts."

Grantees reported that they elicited feedback about their programs from contractors through the training activities that facilitate discussion, such as the webinars.

All four grantees covered training costs for their participating contractors. Three grantees covered all costs for attendees as part of their participation in the program; the fourth grantee provided financial support for training through a tuition reimbursement.

Table 3-1: Contractor Training Attributes Summary

GRANTEE	TRAINING FOCUS	VOLUNTARY OR MANDATORY (V and M)	TRAINING VENUE				SOURCES OF TRAINING	FREQUENCY AND DURATION
			Classroom	Webinars	On-site	Peer Exchange		
Grantee 1	Business Development	V	X				Small business govt. agency	
	Sales	V	X				Small business govt. agency	
	Technical	V	X		X		Building and science contractor expert; energy efficiency consulting group	
	Program	M	X		X	X	Program staff	Monthly then quarterly
Grantee 2	Business Development	V	X	X		X	Local vendors	2-hour monthly
	Sales	M	X				The ACT Group	Once or Twice a year
	Technical	V	X	X	X	X	Efficiency professionals Manufacturer representatives	2-hour monthly
	Program	V	X	X		X	Program staff	2-hour monthly
Grantee 3	Business Development	V	X	X			National training vendor	2-day training
	Sales	V	X	X			National training vendor	2-day training
	Technical	V	X				National training vendor	2-day training
	Program	V		X			Program staff	Monthly
Grantee 4	Business Development							
	Sales	V	X				University	Once, others available
	Technical	V	X		X		Community college	As desired
	Program	V	X			X	Program staff	Monthly

Grantees had varied training requirements. For two grantees, attendance at all trainings was entirely voluntary. Two other grantees had some required training and also offered some voluntary training: one of these grantees required attendance for program-specific training, and one also required contractors to attend sales training. Grantees generally reported large percentages of trade allies attended voluntary training: two of the four estimated three-quarters of their trade allies attended voluntary monthly training sessions.

3.1.2. TRAINING TOPICS

As Table 3-1 above illustrates, all selected grantees provided training to familiarize contractors with program requirements. In addition, they all offered business development and technical building science training, as illustrated in Table 3-2.

Table 3-2: Summary of Business Development and Building Science Training Topics

GRANTEE	BUSINESS/SALES DEVELOPMENT TOPICS	BUILDING SCIENCE TOPICS
Grantee 1	Small business development, sales strategies	Lead safety, BPI continuing certification topics
Grantee 2	Communication and sales strategies, customer service, cultural competency, business accounting, profit/loss assessment, business coaching	Window installation, Nest (a smart thermostat)
Grantee 3	Tailoring energy efficiency message to homeowner interests, building rapport with customers sales strategies	Heat pumps, financing availability
Grantee 4	Tailoring energy efficiency message to homeowner interests, building rapport with customers, sales strategies	Gas leak detection, air leakage, dense-pack wall insulation, lead safety, topics for maintenance of BPI certification

The business development training offered by the selected grantees had one or both of the following purposes: to help firms – especially small ones – develop effective business processes and procedures to support company growth and efficiency, and to help contractors identify home upgrade benefits from the homeowner’s point of view, and emphasize those benefits in the sales process.

Two of the selected grantees offered business development training from the outset, one of which included sales training as well. The other three grantees began offering sales training after observing their contractors struggle during the first year of the program to bring in upgrade projects. One of these latter grantees reported that their required sales training focused on effective “communication strategies” and “cultural competency” when working with customers. This grantee also provided business development training such as business accounting, profit and loss assessments, business coaching, offering new services, and peer mentoring.

One grantee offered a two-day curriculum that combined sales training and business development with building science. This training focused on the entire customer relationship, from prospecting for customers, to selling whole home upgrades, to developing satisfied customers that clients can use as references for new clients. The training encouraged contractors to ask homeowners to rate their motivations for a home upgrade, allowing the contractor to focus on the customer’s interests in the upgrade. The training also reminded contractors to build rapport through courtesy, such as offering to remove their shoes before entering and finding complimentary things to say about the home.

The technical training that selected grantees offered to their contractors often satisfied BPI requirements for maintaining certification or earning credits toward certification. Topics included air leakage, heat pumps, best practices for window installation, and new technologies such as smart thermostats.

3.2. EFFECT OF CONTRACTOR TRAINING ON PROGRAMS

All selected grantees reported their trainings were key to their programs' success. In addition to providing helpful information to contractors, most grantees reported that training:

- › Helped improve program processes (all four)
- › Contributed to more, or more comprehensive, upgrades (three)
- › Helped improve contractors' businesses (three)

Each of these topics is discussed below in detail.

3.2.1. PROGRAM PROCESS IMPROVEMENTS

All four selected grantees talked about the importance of adjusting or adding training to the program throughout the BBNP grant period. They reported training led to:

- › Improved quality control and the reduction or elimination of systemic installation errors
- › More effective and efficient installation processes
- › More effective sales approaches

Two grantees mentioned that training helped establish relationships among contractors from different trade backgrounds. One grantee conducted what the program manager described as a "speed dating event" for contractors to facilitate their establishing relationships with complementary firms and subcontractors. The program manager said the speed dating and its other training activities contributed the formation of a network of tradespeople able to sell whole home upgrades – a network that did not exist before. A second grantee echoed these thoughts, explaining that prior to training, contractors saw each other only as competitors and not as potential partners. With continuous training and networking opportunities throughout the grant period, grantees saw attendance increased and contractors started to work with each other as partners in selling whole home upgrades.

The three grantees with on-site training thought being on-site was an essential extension of classroom-based training. One of these two grantees noted, "It is good to have trainings and certifications, but if you are not in the field with them as their business is developing and maturing, it is hard to get that quality learning going on." Another grantee said their contractor coaching hotline, combined with on-site one-on-one training visits, was instrumental to the success of their program. The third grantee instituted on-site training toward the end of the program, recognizing that it could provide on-the-job guidance while simultaneously helping contractors remedy quality issues and thereby pass program quality assurance checks. These approaches allowed contractors to speak or work directly with a knowledgeable person who could solve specific upgrade questions or problems. The program manager believed these approaches reduced contractor frustrations and dropouts, and helped contractors to establish relationships across trades.

3.2.2. UPGRADE IMPROVEMENTS

Three selected grantees described evidence that their trainings resulted in upgrades that would not have occurred and measures that would not have been installed in the absence of the training.

- › One grantee said that the conversion rate from project lead to upgrade completion improved from 10% pre-sales training to 60% post-sales training.
- › One grantee reported that preliminary analysis showed conversions were happening faster after contractors completed sales training. This grantee added that after contractors received technical training on smart thermostats, they began to include these thermostats in project proposals.
- › One grantee compared the quality of audits completed in the first six months of the grant, prior to training being fully implemented, to audits done when training was more established. Initial results suggested audit quality improved as contractors received more training and gained program experience.

3.2.3. BUSINESS IMPROVEMENTS

According to three selected grantees, contractors reported tangible benefits to their business as a result of program training, as follows:

- › Two grantees said the training helped their contractors' businesses become more "streamlined and profitable" and helped their staff to become better salespeople.
- › The third grantee noted that one of his contractors was so impressed with the free sales training he received that he paid for other staff in his company to take the same training. Furthermore, when this grantee surveyed Chief Executive Officers (CEOs) of participating contractors, more than one-half of the CEOs reported increased revenues after the training and said workers who took the training had received raises.

3.3. SUMMARY OF FINDINGS

All of the selected grantees offered multiple training opportunities to contractors. The grantees delivered some of these trainings themselves and also engaged implementation contractors, a government agency, a national training vendor, and manufacturer representatives to deliver training. The training sessions and class offerings addressed topics relating to program requirements, business development, sales training, and building science. (These training topics are in addition to the grantees' requirements that a minimum of one person, employed by the contractor, have BPI certification and would facilitate upgrade project quality.) Grantees provided trainings in a variety of formats. All of the selected grantees provided classroom training (at the grantee offices) and each grantee also provided two additional attendance options including webinars, on-site trainings (at participant sites), and peer-to-peer networking. Some of these trainings were mandatory and other trainings were voluntary. All of the selected grantees reduced or eliminated financial barriers to participation by offering free training or training subsidies.

Program managers reported that many benefits resulted from the contractor training activities, including improved program processes, more comprehensive upgrades, improved quality control, more effective and efficient installation processes, more effective sales approaches, increased rates of conversion from audit to upgrade, enhanced audit quality, and increased revenues for contractor businesses. The selected grantees' experiences also demonstrate the

importance of gathering evidence on the effects of training to ensure that the training is attaining its aims. Related to this, several of the grantees noted the importance of adding or revising training throughout the program cycle.

3.4. CONCLUSIONS AND RECOMMENDATIONS

The evaluation team offers the following conclusion and recommendations for future program managers to support contractors through training.

Conclusion: Although approaches varied somewhat across the four selected grantees, all training approaches shared these six attributes: (1) Training content addressing program, technical, and business needs – especially sales training; (2) expert and trusted trainers; (3) flexible access to training (classroom, web-based, on-site); (4) varied timing and duration of training; (5) robust financial support for attending training; and (6) voluntary training options (with enticements such as food and networking opportunities) that allowed contractors to attend trainings that were most important to them.

- › **Recommendation:** Design and offer contractor training conforming to the attributes identified in this spotlight study. Sales training appears to be particularly important for comprehensive upgrade programs.
- › **Recommendation:** Develop metrics such as conversion rates, technology choices or measures included in projects, contractor teaming, and trends in number of contractor projects to measure training impacts and identify needs for additional training.
- › **Recommendation:** Look for opportunities to combine training with other program needs—such as quality control activities and obtaining feedback from contractors on program design and implementation—to build mutual communication, understanding, and respect from home upgrade professionals.

4. SPOTLIGHT ON TARGETED OUTREACH

The analysis described in the companion report *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4) found that identifying specific target groups enabled some grantees to reach potential participants efficiently with tailored, relevant outreach messages. A community-based outreach strategy (specifically, participating in community events and/or making presentations to community groups) was used by grantees in the most successful cluster (92%) more than grantees in the average and least successful clusters (63%). (See Appendix F for a discussion of the derivation of grantee clusters based on success.) Yet, despite the potential benefits of targeted outreach, the Volume 4 findings suggested that targeting very narrow geographic areas was an ineffective strategy for driving demand.

Findings from this spotlight study indicate targeting a subset of the population in ways other than narrow geographic targeting was more fruitful. This spotlight study explores the benefits and drawbacks that grantees encountered in targeting outreach efforts to focus on a defined sub-set of the population.

This spotlight study draws on the experience of six BBNP grantees (the “selected grantees”) that have noteworthy experiences with targeted outreach.

- › Boulder County, Colorado
- › Chicago, Illinois
- › Phoenix, Arizona
- › Seattle, Washington
- › State of Maine
- › State of Michigan

This study describes each program’s targeted outreach approaches and the grantees’ assessments of the effectiveness of these approaches in recruiting program participants. The study ends with conclusions and recommendations based on the selected grantees’ experiences. Appendix C provides detail on each selected grantee’s program design related to targeted outreach.

4.1. TARGETED OUTREACH APPROACHES

A goal of the BBNP program was to “conduct high-quality retrofits resulting in significant efficiency improvements to a large proportion of buildings within targeted neighborhoods, technology corridors, or communities.” In response, most of the selected grantees attempted strategies targeting narrow geographic areas. Grantees envisioned multiple benefits to targeting their outreach to specific neighborhoods. Some grantees expected neighborhood coordination would allow for aggregate purchase of equipment and materials, lowering the cost of each project. Others selected neighborhoods where they anticipated multiple homes would benefit from similar efficiency measures so that contractors could take advantage of economies of scale in installing upgrades.

Most of the grantees also tried to reach targeted customers using social networks. For example, some grantees disseminated program information through regional employers. Others identified groups perceived to have a substantial unmet demand for home energy improvement services and targeted the program messaging to them.

Collaborating with community-based organizations was another way grantees took advantage of social networks and credible messengers to target outreach; this strategy is discussed in detail in Chapter Five.

Table 4-1 lists the targeted outreach strategies taken by the selected grantees. Further explanation of these approaches is provided below.

Table 4-1: Grantees and Outreach Strategies

STRATEGY	GRANTEE 1	GRANTEE 2	GRANTEE 3	GRANTEE 4	GRANTEE 5	GRANTEE 6	GRANTEE 7
Used in Geographic Targeting							
Outreach initially limited to specific neighborhoods	X		X	X	X		
Door-to-door canvassing	X	X*	X	X	X	X	
Used in Non-Geographic Targeting							
Showcase homes and house parties				X		X	X
Outreach through employers	X			X			
Outreach to groups with latent demand		X			X		
Used in Geographic and Non-Geographic Targeting							
Delivery by targeted group's trusted messengers	X	X	X	X	X	X	X
Outreach at targeted groups' non-program events			X	X	X	X	X

* This strategy was not formally part of the program's design, although one contractor employed the strategy in its program-related outreach.

4.1.1. GEOGRAPHIC TARGETING STRATEGIES

Neighborhood Selection

The four grantees that initially limited outreach to targeted geographic areas selected the targeted areas for different reasons. One grantee selected a geographic target that provided access to the “most diverse areas.” Another selected a section of the city’s downtown area due to its mix of housing stock and the grantee’s interest in transforming the area into the “energy efficient part of town.” A third grantee selected neighborhoods with similar housing stock, which program staff believed would lead to concentrations of similar upgrades and thereby realize economy of scale benefits. The fourth grantee selected neighborhoods based on a combination of characteristics including: the presence of collaboration partners like utilities, foundations, neighborhood associations, and community agencies; a maximum of 20% of homeowners eligible for low-income assistance; high rates of home ownership; and at least one-third of homes being eligible for loans and financing assistance.

Despite this upfront work, market characteristics frustrated grantees’ efforts to drive program participation in the areas they had targeted. Three of the selected grantees’ target areas included ethnically-diverse neighborhoods. Each grantee that targeted diverse groups found it difficult to attract participants. Some grantees reported that residents’ lack of trust for outsiders appeared to be a factor inhibiting homeowners’ interest in the program. Other grantees realized they needed to address language barriers. Two of the selected grantees facing language barriers identified a staff member or contractor who spoke the homeowner’s language and was deemed sufficiently familiar with the homeowners’ culture to visit candidate homes. The program representative assisted homeowners with the income qualification and application documents required to access the programs for which they were eligible.

Targeted outreach efforts for home upgrades also were frustrated when the target area included homeowners without sufficient equity in their homes. During the 2010-2013 program period, the housing market was weak due to an economic downturn. Four of the selected grantees reported it difficult to persuade “underwater” homeowners (that is, those who owed more on their mortgages than their properties were worth) that they should take out a loan or invest thousands of dollars in home energy upgrades. As one program manager stated, “I couldn’t ask people to spend equity they didn’t have.” Grantees also reported it difficult to make a convincing case for home performance upgrades in areas with high numbers of homes that were foreclosed on or abandoned. However, program managers reported that as home prices began rebounding, the lack of homeowner equity and home foreclosures became less of an issue.

Two of the selected grantees identified specific factors that that thought would render a neighborhood – and homeowners within the neighborhood – likely to be receptive to energy upgrades. These factors go beyond housing stock to consider whether the neighborhood fosters ideals about sustainability and energy efficiency. Using these factors, the grantees created tools to assess the likeliness of homeowner and neighborhood participation. These factors included:

- › A large number of annual heating and cooling days
- › A low loan-to-value ratio of the home
- › Older home
- › Presence of a swimming pool
- › Proximity to a photovoltaic system

- › Previous energy efficient actions in the neighborhood
- › Awareness of sustainability issues
- › Presence of trusted, local leaders engaged in environmental work

Grantees found that the presence of photovoltaic systems had a mixed effect on community attitudes toward energy efficiency. Communities with solar projects were identified as sustainably-oriented. However, grantees also found it harder to make the case for energy efficiency retrofits to homeowners who had already lowered their power bills by installing solar systems. Grantees concluded that the degree to which a neighborhood valued sustainability was a better indicator of its likely program receptivity than were the characteristics of its housing stock.

Program managers stressed the importance of keeping close track of neighborhood response and maintaining flexibility in the program's outreach approach. They stated it was critical to act once they recognized a neighborhood was not receptive to the program: they reallocated resources away from non-responsive neighborhoods and put them to use in neighborhoods that were more receptive. One grantee reported they realized they would "have to make changes to make this work," which led them to expand their program's targeted areas.

Outreach in Geographically-Targeted Areas

Grantees struggled with persuading homeowners to undertake large home upgrade projects within the program's limited timeframe because many potential participants were unfamiliar with energy efficiency products and services. Grantees reported that energy efficiency was not on people's minds and homeowners needed time to consider upgrades in the context of their other priorities before agreeing to participate. These factors rendered it difficult for the program to achieve the volume of upgrades in the targeted areas necessary to take advantage of economies of scale and to generate social pressure for upgrades.

Through experience, the selected grantees' found that early engagement to build awareness of energy upgrades in a targeted neighborhood effectively primed later efforts to promote upgrades. Grantees reported that local leaders completing early audits and upgrades and then discussing their experience in printed outreach materials proved to be a particularly effective early-engagement strategy. Another grantee reported it was difficult for homeowners "to go from not even thinking about energy efficiency to spending \$10,000 [on their home] in a manner of eight weeks." This grantee learned that in order to be effective, staff needed to seed the energy efficiency concept through initial education efforts and later return to the area with an upgrade offer. Between the visits, homeowners had time to think about energy efficiency, decide whether to prioritize energy efficiency improvements in the context of other household expenditures and, where appropriate, budget for the upgrade.

Many grantees used door-to-door outreach to build awareness of the program in the targeted area. While one grantee found door-to-door canvassing an effective means of reaching individuals that would not have been reached via traditional marketing means, most found it to be a labor-intensive effort that did not yield consistent results. One grantee explained that door-to-door outreach was not effective for the program because most residents were not at home during the day when program staff canvassed targeted neighborhoods. Due to the limited numbers of participants recruited through canvassing, program managers said that going forward they intended to use neighborhood canvassing only as a means of supplementing other marketing tactics.

4.1.2. NON-GEOGRAPHIC TARGETING STRATEGIES

In addition to targeting a specific geographic area, some selected grantees targeted defined populations by leveraging a targeted group's social networks. Three selected grantees did this through showcase homes and house parties, two grantees conducted outreach through regional employers, and two grantees targeted groups of homeowners they believed had an unmet demand for energy improvement services.

Showcase Home Events and House Parties

Multiple grantees held events at homes that had undergone energy efficiency retrofits. These showcase events were open to neighbors as well as to the general public. In advance of the events, program staff placed signs around the home alerting visitors to the installed upgrades. During the events, owners of the showcased homes and their contractors were present to explain the retrofits and their benefits. The events enabled contractors to meet multiple prospective clients in a short period of time (thereby reducing their marketing costs) and event attendees to "see if they would like to work with" any of the contractors. One grantee reported it was critical to have program outreach staff at the parties to convey program details and validate the expertise of the contractor. Grantees found that enabling visitors to see and feel efficiency upgrades first-hand was effective in educating attendees and in influencing them to undertake upgrades of their own. Feedback from attendees at one showcase home event revealed that attendees viewed the owners of showcase homes as a more credible source of information than program staff or contractors, though they cautioned that these events are labor- and resource-intensive. Grantees reported that showcase home events were more successful when the homeowners were outgoing, communicative, and active in their communities.

House parties involved interested individuals inviting neighbors and friends to their homes to listen to presentations by program staff and homeowner participants. Staff provided an overview of the program, while the homeowner participant provided a candid description of her experience with the upgrade process, including associated costs, inconveniences, and the ultimate benefits that she realized as a result of the upgrade. Grantees regarded the homeowner presentation as a vital component of the house party because the program participant served as an influential, credible messenger for their neighbors and friends. Several grantees found providing an incentive to the host and keeping house parties to a maximum of two hours helped to attract house party hosts.

Program staff ensured at least one participating contractor attended each house party to answer attendees' technical questions. As with the showcase home events, house parties provided potential program participants an opportunity to meet eligible upgrade contractors and contractors the opportunity to market their services and potentially grow their clientele. Grantees reported that contractor attendance at a house party or showcase event offered potential participants a chance to meet a contractor with whom someone they knew had a positive experience, thereby building potential participants' trust in contractors. According to one program manager, "The real magic about that is that it overcomes hurdles associated with the lone sheep syndrome where people are afraid to call contractors because they think they'll get taken advantage of if they don't know the contractor." Another grantee suggested that emphasizing attendee education—not upgrade sales—as the event goal helps to create a comfortable, pressure-free environment for the attendees.

However, program managers reported challenges in deciding how to involve contractors in home showcase and house party events without actually endorsing the contractors. Two grantees resolved this issue by inviting different contractors to attend events on a rotating basis.

To assess the effectiveness of both of these outreach activities, grantees required contractors to track the number of home upgrades they completed as a result of their attendance at showcase home events and house parties. Grantees found that the payoff for showcase events and house parties was far from immediate: in some cases, the upgrades resulting from these events occurred as much as 18 months after the initial contact. According to one program manager, “It takes time for people to go from, ‘Oh, let me stop by this tour on a Saturday because I saw a sign’ to ‘Let me figure out how I’m going to put \$12,000 together and deal with a home improvement project that’s going to inconvenience me for two and a half weeks.’”

Targeting through Employers

Two of the selected grantees targeted outreach efforts to homeowners via the homeowners’ employer. The first grantee focused on the military community in its area. However, contrary to expectations, staff soon learned that few service members owned the homes they were living in. The transience of the active military population meant home buying was seldom an attractive option.

To adapt, staff turned the program’s focus to the local defense contractors that employed large numbers of (more geographically stable) veterans. Program staff planned to give presentations and conduct workshops promoting the program to the defense contractors. However, developing a trusted partnership with defense contractors was more difficult than program staff anticipated, and they were able to conduct only two workshops. Further, staff found it challenging to have the program’s energy efficiency message stand out among the many other messages competing for the targeted population’s attention. The other messages were related to important issues such as homelessness, mental illness, and job transitions. A program manager stated, “It was hard to make a case that our message should be the one that should be heard.”

The second grantee collaborated with a state university in its program area. This grantee wanted to conduct community-based outreach, hoping to thereby skirt the engagement barriers it had encountered with door-to-door outreach. Program staff offered 10 to 15 prominent university figures—such as the university president and the provost—a free home audit in return for authorization to use the individual’s testimonial in program outreach materials. The grantee received feedback showing that these endorsements lent credibility to the program and assured potential participants that the program could be taken seriously. A program manager reported, “These early adopters engaged their colleagues in conversation and spread the word about the Better Buildings program, which helped us reach many more people.”

Working with the university to market its program enabled the grantee to use the university’s communication infrastructure, including the university’s internal marketing, email system, and faculty mailboxes. As a result, the grantee’s targeted outreach was relatively inexpensive: program staff reported their per-participant marketing and communication costs were one-quarter to one-third of the per-participant cost of door-to-door canvassing. The grantee also was very pleased with the results of its outreach through the university, as nearly 10% of the university’s employees participated in the program.

Targeting Populations with Latent Demand

Through their identification of populations with pent-up demand for home energy efficiency services, two grantees succeeded in recruiting large proportions of their respective targeted populations to participate in the program. One of these grantees recognized that a relatively large proportion of residences in the area – 16% – used oil to heat their homes. The grantee also recognized that, due to prohibitions against fuel switching, these homes had not been

eligible to participate in the regional utilities' efficiency programs since the mid-1980s. Therefore, program staff targeted and developed rebates explicitly for the underserved oil-heated home market. The grantee reported that this targeted outreach effort greatly stimulated program participation.

Another grantee, with assistance from a CBO, identified latent demand for home insulation upgrades in remote, rural communities. Contractors had historically neglected homes in these areas because it had not been economically-feasible for them to travel so far to upgrade a single-family residence. With the CBO's assistance, the grantee was able to bundle a sufficient number of interested homeowners in a given region together to make the group of upgrades worthwhile to insulation contractors. Due to the substantial unmet need and the rarity of the service in their area, 90% of the targeted year-round residents reportedly completed home upgrades.

4.2. EFFECT OF TARGETED OUTREACH ON PROGRAMS

Grantees wishing to target specific populations realized that traditional mass marketing techniques would not necessarily be an efficient or cost-effective way to reach their intended audience. For most grantees, mass media markets typically extended well beyond the specific neighborhoods or populations many grantees sought to reach.

As a result, grantees discovered how and when they could employ mass media effectively, and when they needed to use other outreach techniques. They found that other factors, such as the message content, the use of trusted messengers, and their presence at specific types of events affected their ability to reach their intended audiences and recruit program participants. More detailed discussions of these factors are provided below.

4.2.1. MASS MARKETING

Recognizing that mass media, such as radio or television ads, would reach ineligible participants outside of their targeted program areas, some grantees opted to use alternative and sometimes innovative approaches to reach their targeted audience. Grantees that did use mass marketing found those campaigns helpful in increasing awareness of the program, stimulating discussions about energy efficiency, and driving traffic to their websites.

However, grantees reported that the increase in program awareness resulting from mass media advertising led to few, if any, additional home energy audits, program loans, or energy efficiency upgrades. Because mass media campaigns were very costly but did not noticeably increase program participation, the grantees that used mass marketing turned to a more personalized and community-based marketing strategy, like showcase homes, which were more effective at driving participation.

4.2.2. MESSAGING CONTENT

The grantees all recognized that different messages resonate with different audiences. Four of the six selected grantees conducted research prior to crafting their marketing material to better understand the messages that would be most salient to the targeted group. For instance, when they identified groups that would have been nonresponsive or perhaps even put off by an environmental message, grantees reported they consciously chose messages about comfort and safety instead. One grantee discovered that when contacting older homeowners concerned about their children's inheritance, messages about improving their most valuable asset, their home, resonated well.

The six grantees found that utilizing city branding lent legitimacy to their campaigns. For example, one grantee reported that a direct mail campaign branded with the city logo achieved such a high response rate that contractors had difficulty meeting the resulting demand for their services. Another grantee, referencing feedback program staff

received, said contractors would have liked the city's branding on program materials or to have city representatives available to explain the program components. The contractors believed that the program's closer affiliation with the city would have aided them in persuading more homeowners to make upgrades. A third grantee found city branding, and its implicit program backing, especially helpful in slow economic times. There, the program's use of city branding helped potential participants overcome skepticism that the program would make good on its promises, thereby reducing homeowners' perceptions about the program's risk. While the grantees appreciated the value of including city branding on program materials, they acknowledged cities sometimes limited the use of their branding out of concern for retaining their reputation as a trusted resource.

4.2.3. TRUSTED MESSENGERS

A consistent theme across all grantees was the importance of using credible messengers and trusted local resources in targeted marketing efforts. Credible messengers included early adopters who participated in the program's early stages, as well as well-respected local governmental officials, leaders in community organizations, and well-respected community members. Some programs branded these individuals as "energy champions" or "energy saving super heroes."

Grantees stressed that the credibility of messengers emanated from their positions within their social networks. As a result, grantees valued tapping into existing networks and building relationships with individuals who were already influential in the targeted network. One program said, "You can't impose a network on a community; you have to use people who are already integrated in the community." Another grantee noted that it was harder for strangers to convince a homeowner to participate in the program than for trusted acquaintances to do so because home performance was a relatively new concept and not on many people's minds. According to this grantee, "You need the trusted person to make it happen quicker and get people thinking about it." Yet, identifying appropriate messengers was not always easy for the grantees. One program manager reported, "You have to find that local trusted messenger. It's more about the trusted messenger than anything else [and sometimes] you find those over time."

Some programs offered free home energy audits or upgrades to trusted messengers in exchange for the messengers' approval to use their testimonials in program marketing materials. Grantees received feedback that endorsements from credible and well-respected individuals within the targeted sector lent credibility and assured others in the group that the program could be taken seriously. In one case, the president of a neighborhood association acted as a spokesperson. The program's manager reported that this individual's neighbors were receptive to his advice and the program had high uptake rates in that area. Grantees reported this strategy also helped potential program participants develop trust in the program, even before program staff or contractors had entered the homeowner's residence.

Using credible messengers was important independent of the outreach activity. One grantee reported that it worked well to have a church pastor recommend the program to his congregation each Sunday. When giving presentations to community groups or putting on house parties, grantees found it helpful to have an earlier program participant in attendance to endorse the program. One grantee reported that endorsements and word-of-mouth outreach through satisfied participants skyrocketed signups. Another grantee experienced a similar phenomenon, elaborating that word-of-mouth referrals was important for the program as well as for contractors. This grantee wished she had used credible messengers spreading word-of-mouth endorsements earlier in her program.

4.2.4. LEVERAGE EXISTING EVENTS

When targeting a defined group, the selected grantees found conducting outreach at the targeted group's existing events more effective, and less resource intensive, than creating and organizing their own events. With experience, the grantees learned to prioritize their outreach efforts to recurring events and to events organized by existing networks. Such events had established participants. Grantees also learned that events where attendees have a home-improvement mindset, such as home and garden fairs, homeowner association meetings, hardware stores, and health and safety fairs, were effective venues for marketing the program.

4.3. SUMMARY OF FINDINGS

Some targeted outreach methods were more successful than others. All but one of the selected grantees that had restricted program outreach to a small, defined geographic area subsequently changed this approach as they concluded it unnecessarily limited program participation. Grantees' geographic targeting efforts did not generate expected levels of uptake nor reduce the prices of energy upgrade measures through economies of scale, except in cases where latent demand was geographically concentrated. The selected grantee that did not change its approach found it important to assess neighborhoods for their likely receptivity to the efficiency message as well as to engage in a concerted priming effort in the area before offering program services.

On the other hand, non-geographic targeting, through showcase homes, house parties, community-based organizations, and similar approaches, was met with success. These strategies allowed programs to target groups of potential participants based on their social connections, as the event sponsor would reach out to its social network. In addition, tailoring outreach messages and incentives to areas or populations with latent demand resulted in high participation rates. Further, grantees found it was easier for program managers to reach a large number of people through existing events rather than attempting to draw crowds to program-specific events.

Engaging credible messengers, such as respected local governmental personnel or homeowner association presidents, in program promotion influenced individuals in those messengers' social networks to undertake upgrades. The credible messenger is beneficial in all targeted outreach strategies the selected grantees engaged in.

4.4. CONCLUSIONS AND RECOMMENDATIONS

The evaluation team offers the following conclusions and recommendations for future programs considering using targeted outreach strategies.

Conclusion: Restricting program outreach to a defined geographic area limited program participation.

- › **Recommendation:** If deploying the program using geographically targeted outreach, conduct market research first to select communities for their likely receptivity to the efficiency message and conduct early educational outreach in those areas to build awareness of energy efficiency benefits before making program offers.

Conclusion: Targeted outreach methods are most effective when the targeted group shares a social network or an energy efficiency improvement need. Two strengths of non-geographic targeted outreach are the ability to create a message that resonates with the specific population and the ability to use existing social networks to promote outreach through trusted messengers.

- › **Recommendation:** Consider using targeted outreach to recruit upgrade participants from among groups with shared social networks and energy efficiency needs.
- › **Recommendation:** Carefully design the message and select the messenger to resonate with the targeted group.

5. SPOTLIGHT ON ENGAGEMENT WITH COMMUNITY-BASED ORGANIZATIONS

A goal of the BBNP program was to form new alliances with community organizations. One of the strategies many grantees used to recruit participants—primarily residential participants—was collaboration with community-based organizations (CBOs) to conduct outreach for the programs. CBOs are organizations that focus on issues affecting their local communities and offer services benefitting those communities. Results from past energy efficiency programs and community-based social marketing (CBSM) research has shown that CBOs can both provide access to targeted communities and serve as trusted messengers, increasing the credibility of a program's message. Leveraging the influence that CBOs have in their constituent networks can drive program participation and assist with program execution. CBOs can be well-positioned to tailor program execution to the needs and characteristics of their constituents because of their familiarity and integration with the community.

Many BBNP grantees developed partnerships with CBOs with these advantages in mind. This spotlight study examines selected grantees' efforts to develop partnerships with existing CBOs and the role that CBOs played in the grantees' residential upgrade delivery. It does not address grantees that used CBOs as principal program implementers.²

This spotlight study draws on the experiences of seven BBNP grantees (the "selected grantees") that collaborated with CBOs to achieve program goals:

- › Bainbridge Island, Washington
- › LA County, California
- › State of Maine
- › New Orleans, Louisiana
- › State of New York (New York State Energy Research and Development Authority)
- › San Jose, California
- › Seattle, Washington

This spotlight study describes the activities CBOs engaged in as they collaborated with the selected grantees to drive demand for whole-house upgrades and stimulate the supply of energy efficiency contractors. It reviews the grantees' assessment of drivers of successful CBO collaboration. The spotlight study ends with conclusions and recommendations based on the examined grantees' experience. Appendix D provides additional detail on each selected grantee's program design related to CBOs.

² Some BBNP grantees assigned CBOs to implement and run the BBNP program. This case study does not examine the benefits and drawbacks of CBOs as principal program implementers, but instead examines the dynamics that program managers experienced as they engaged CBOs in outreach.

5.1. CBO ENGAGEMENT APPROACHES

Each selected grantee collaborated with as few as 10 and as many as 94 CBOs, with five of the seven grantees working with 20 or fewer organizations. The missions of the collaborating CBOs varied widely and included those focusing on affordable housing, social and human services, workforce development, environment and sustainability, faith communities, ethnic communities, neighborhood associations, and youth groups. Six of the seven selected grantees approached CBOs to request their assistance in executing the programs; the seventh grantee was approached by CBOs in its region that wanted to participate.

The grantees explained that they collaborated with CBOs to leverage existing community resources, reduce program marketing costs, and facilitate the targeting of specific neighborhoods or groups. As illustrated in Table 5-1, all of the grantees worked with CBOs to drive its members or constituents to the residential upgrade program; four of the grantees also worked with CBOs trying to drive non-members to the program. Additionally, four of the seven grantees also worked with CBOs to stimulate contractor supply.

Table 5-1: Selected Grantees' CBO Approaches

APPROACH	GRANTEE						
	1	2	3	4	5	6	7
CBO Outreach Activities							
CBOs Drove Demand	X	X	X	X	X	X	X
CBOs Conducted Outreach to Own Members	X	X	X	X	X	X	X
CBOs Conducted Outreach to Non-Members	X	X	X	X			
CBOs Stimulated Supply	X	X	X		X		
CBO Incentives							
CBOs Were Paid for Outreach	X						
CBOs Were Eligible for Performance-based Incentives	X	X		X		X	

Three selected grantees created formal contracts with explicit goals for their CBOs; the others had less formal relationships. Four of the selected grantees experimented with providing performance-based incentives to CBOs to encourage them to sign up participants. For three of these, the performance-based incentive was the only compensation they provided to their CBOs. The fourth grantee provided the incentive in addition to other payment.

The following subsections elaborate on the CBOs' approaches to driving residential demand to the program and to increasing the program's supply of upgrade contractors available to program participants.

5.1.1. *CBOs DRIVING DEMAND*

Grantees indicated that partnering with CBOs facilitated homeowner participation in two ways:

- › The CBOs provided education and outreach to increase awareness of the grantees' program offerings.
- › Some CBOs helped explain program options to interested homeowners and helped participants complete program paperwork.

Sometimes, the CBO outreach focused only on the group's constituents, as was commonly the case with ethnic and faith communities. Other grantees used CBOs for general outreach to all potential participants in the program area, for example, through door-to-door canvassing. Most CBOs used existing communication channels to conduct outreach to their constituents. These channels included distributing program information through mailing lists, and recruiting participants at events through flyers and staffed tables. The goal of event recruitment was to generate leads or obtain completed applications that CBOs could deliver to grantee staff. Generally, grantee staff would then call interested homeowners to set up audits, though at least one CBO followed up with these leads directly. Some CBOs reportedly generated 30 or 40 signups at a single event.

CBOs also mitigated language barriers in non-English speaking populations: they recruited participants and helped contacts complete English-language paperwork. For some selected grantees, CBOs provided case management throughout the upgrade process to help homeowners understand the program details and options and to assist them in completing required program forms.

Another way CBOs drove participation was by bundling projects: organizing their constituents and delivering multiple homeowner leads to participating contractors. For example, one CBO recognized unmet need among its geographically remote constituent homeowners and contacted them about BBNP program offerings. In these remote communities, word spread quickly among neighbors, and many people wanted to participate when they learned of the opportunity. Once enough homeowners in a remote community had signed up, the CBO invited contractors to the community. With a full week's worth of work scheduled, traveling to the remote community became economically viable for the contractors.

5.1.2. *CBOs STIMULATING SUPPLY*

Although CBOs devoted most of their resources to driving demand, CBOs also helped to simulate contractor supply for whole-house upgrades by recruiting and facilitating the training of new energy-upgrade contractors.

Some CBOs contributed to workforce development by connecting people in their networks with job training opportunities. For one selected grantee, a CBO was instrumental in developing a formal agreement for contractor wages and in facilitating contractor trainings. Implementing the wage contract involved extensive monitoring to ensure that each contractor was paid what he or she deserved. For another grantee, CBOs engaged in outreach to residential contractors to encourage certification. This grantee's program managers noted that the CBOs most productive in this endeavor were those with prior experience in workforce development and contractor trainings.

Another selected grantee partnered with a CBO to facilitate green jobs training for disadvantaged youth. Youth joining the CBO program received both life- and job-skills training. This grantee's BBNP program funded scholarships that enabled youth interested in energy efficiency to complete their training and receive formal energy-upgrade

certifications. Those youth completing the training were paired with contractors, for whom they worked as apprentices. Roughly seven youth were trained and four obtained jobs as a result of this CBO-led effort.

5.2. EFFECT OF CBO ENGAGEMENT ON PROGRAMS

This section summarizes the selected grantees' assessments of how collaboration with CBOs affected the program.

5.2.1. CBO CHARACTERISTICS INFLUENCING COLLABORATION EFFECTIVENESS

The grantees reported that each CBO they worked with had a unique set of strengths and weaknesses. The selected grantees identified three factors that rendered a CBO a good energy efficiency program partner: the organization's resources and stability, the extent of the organization's social network, and the organization's focus. Effective CBOs were able to serve as the programs' effective liaisons with the community, relaying pertinent program information to the homeowner.

CBO Resources and Organization Characteristics

Grantees stressed that to be effective, CBOs must have the resources necessary to accomplish their tasks, as well as a willingness to undertake assigned activities. Sufficient resources and sufficient time were critical because it was a considerable effort to organize events, educate members, follow-up, and encourage homeowners to participate. Groups that were well organized and had existing outreach and fundraising capacity were more effective than those lacking those characteristics.

Grantees also specified that CBOs with large numbers of employees, members, or volunteers were able to communicate the energy efficiency message to greater numbers of people. Elaborating on this, one grantee found that organizations with full-time staff were able to build and sustain momentum more easily than groups without full-time staff. Other grantees said that if a CBO's volunteer network is active and excited about the program, the CBO is an asset to the program, and a collaboration is worthwhile.

The selected grantees also reported it advantageous to partner with long-established CBOs. Program managers relied on the strong relationships they developed with stable organizations. Groups with high staff turnover were less equipped to help the grantees: some grantees reported establishing partnerships with CBOs that faltered after their key CBO contact left the organization.

CBO Mission Alignment

Selected grantees provided a great deal of feedback about how CBOs' missions affected the success of their program outreach efforts. Grantees reported that effective CBOs might have a variety of missions, such as affordable housing, energy efficiency, or a faith mission. Grantees recognized that mission alignment between the CBO and the BBNP program was not sufficient to ensure a productive collaboration. For instance, one grantee began partnering with a community sustainability organization, but the organization was a small nonprofit without much staff or manpower. Though the CBO's mission aligned with the grantee's program mission, the CBO lacked sufficient resources to adequately promote the program.

Where inadequate resources were not an issue, alignment of the CBO and upgrade program missions often did facilitate participant sign-ups. For one grantee, affordable housing and home repair CBOs proved the most helpful in driving program participation. Another program manager reported working with CBOs with climate and energy

efficiency missions was critical to their program's success. The manager explained that if the program had reduced its efforts to collaborate with environmental CBOs, "the buzz would go away and the interest would drop off." These CBOs were able to promote the BBNP program at the same time that they were presenting information about their own organizations. This same grantee recommended that future program managers "make sure any association with a climate and energy efficiency mission is aware of your program; network well with these organizations." Similarly, some grantees enjoyed strong partnerships with sustainability-driven organizations because they found these CBOs' constituents were already interested in and readily understood the value of energy efficiency retrofits. Such CBOs, therefore, faced fewer barriers than other CBOs in recruiting participants.

Two grantees noted that CBOs with strong connections and good relationships with local contractors benefitted the program: the CBOs facilitated contractor-homeowner connections, and the contractors then assisted homeowners in following through and completing upgrades. These grantees reported this facilitation worked well regardless of whether the CBO's mission was aligned with the grantee's mission, or whether the CBO counted building scientists among their own staff.

Although the selected grantees reported that they formed effective partnerships with a wide variety of organizations, they noted that collaboration was hindered when a CBO's priorities competed with the program's mission. For example, several grantees noted that K-12 school organizations were often more focused on improving classroom conditions than on encouraging home retrofits and were not effective collaboration partners.

Potential Benefits of Mission Alignment

Grantees indicated that mission alignment may affect CBOs' time to deliver outreach. CBOs that have missions closely aligned with the program may be able to more quickly generate interest than CBOs that would not otherwise promote energy efficiency retrofits, because of the former's technical familiarity and existing connections with key stakeholders.

Grantees also reported that networking with organizations whose mission closely aligned with those of the efficiency program contributed to the long-term sustainability of the energy efficiency retrofit market. The strong relationships formed between the selected grantees and the CBOs were a foundation upon which future work took place. As grantee programs ended, CBOs continued to support grantees program's goals and mention the benefits of energy efficiency upgrades in their events and outreach materials. If the proper relationship is established and the essential resources are present, the CBO may be able to continue efforts and make the program a long-lasting one.

5.2.2. PROGRAM INFORMATION FROM TRUSTED MESSENGERS

The grantees formed trusted relationships between the program and the CBOs, where the CBOs served as liaisons between program staff and program participants. The grantees reported that the CBOs' influence within their constituencies was a key to their effectiveness: the CBOs' dissemination of program information gave their members confidence in the BBNP program, generated rapport, and facilitated program execution.

One grantee found using local groups was critical to executing the program and stated, "You have to be local for anyone to listen to you." Demonstrating that they were rooted in the community by collaborating with local groups, as well as by maintaining a phone number with a local area code, increased the number of phone calls grantees received from interested homeowners.

Grantees reported that although finding the right organization was not easy, particularly if the grantee was considered an “outsider” to the community, it was worth the effort to find an insider to communicate the message. The key to collaboration with CBOs – and therefore the key to leveraging their influence to recruit program participants – is, in the words of one program manager, “all about building relationships.”

Selected grantees that sought to target a specific community stressed the importance of engaging with groups with deep roots in the community. In insular communities that might be distrustful of outsiders, working with existing, trusted organizations facilitated communication and access to potential participants. In these situations, CBOs sometimes identified influential members of the community who could communicate the program’s value. Employing these key contacts helped build inroads into the community and lent legitimacy to the program.

All grantees emphasized the importance of staying flexible and being willing to “move on” if their relationship with a particular CBO did not prove fruitful. Grantees said it was important to understand the limits of CBOs, and to recognize what the CBOs could provide, as well as the assistance they would need. One program manager reported, “One thing that made it successful was our willingness at a team level to stop doing things that didn’t work.” This grantee’s flexibility allowed program staff to make needed modifications based on the lessons they had learned and then continue operating the program.

5.2.3. TAILORED MESSAGES

Grantees emphasized that flexibility is critical to successfully engaging CBOs. Approaches and messages that work well with one community organization may not resonate with another. For this reason, grantees reported that allowing the CBOs to tailor their messages to their constituents’ needs was beneficial. For example, sustainability CBOs used messaging about meeting climate goals, while parental organizations used messaging about how healthier indoor home environments helped children to be healthier.

5.2.4. OUTREACH STRATEGIES

Selected grantees generally described the CBOs’ outreach strategies as effective. They reported that generating awareness and driving demand worked well when conducted at events where people already go and feel comfortable. The selected grantees found they could reach larger numbers of people by conducting outreach at CBO-hosted events rather than by holding, and trying to generate attendance at, their own events. As one program manager explained, “You’re leveraging existing events in the community and meeting the customers where they go; that is key.”

Grantees reported that CBO-initiated outreach was particularly effective in isolated communities and in communities with language barriers. One program manager explained that collaborating with a community organizer who was fluent in the local Spanish dialect not only generated rapport, but also facilitated the completion of paperwork. The necessary program forms were printed only in English, so “having the community members there to translate and explain the questions helped to get the forms filled out.” In such situations, CBOs were able to reduce comprehension barriers to participation in the upgrade program. A failed attempt at using a CBO also illustrates this point; one grantee stated that because program staff had difficulty forming a reliable and trusted relationship with a CBO in their Vietnamese community, the program was not able to drive participation for that demographic group.

Employing CBOs to bundle projects together was a particularly effective strategy for rural grantees with remote communities. Bundling projects provided a way for contractors to build market share and to generate additional

business in a new area. Contractors reportedly appreciated when a CBO arranged for a group of homeowners to undergo energy upgrades at around the same time, because these arrangements alleviated the contractors' need to spend money on marketing and following leads. In one case, after an initial round of assessments, the community set up a bulk purchase of spray foam insulation. This required putting the spray foam truck on a barge, and landing the barge on the beach. The program manager commented on the power of community organizing, stating, "No homeowner on their own, no matter how desperately they needed it, could afford to get that spray truck to the island." The limited availability of this service drove participation: 90% of year-round residents in the community completed a spray foam installation to lower their heating costs. Without the CBO, the homeowners and contractors would have experienced significant difficulty arranging for these upgrades.

5.2.5. CBO-NEEDED SUPPORT

Grantees discovered that almost all CBOs required substantial support to effectively recruit upgrade participants. Several grantees faced the considerable challenge of working with CBOs that lacked expertise in energy efficiency and had difficulty articulating and explaining program offerings to homeowners. Without sufficient technical knowledge, these CBOs struggled with explaining the program details – such as the program's multiple participation pathways, requirements, eligible measures, expected savings, rebate structures, and financial assistance – to homeowners. They also therefore struggled with motivating homeowners to participate and with answering homeowners' questions. One program manager explained, "The hard part was educating [the CBO] about the products they had to provide." Due to this difficulty, this grantee supported the CBO by having a contractor available to answer homeowner questions about energy-saving measures and their associated savings potential.

Some grantees found it beneficial to partner with CBOs that were well integrated into the community and had adequate staff resources and established volunteers networks, even if these CBOs were not focused on environmental or sustainability goals. Under these circumstances, grantees recommended that program managers acknowledge at the outset that the partnership will require resources for education and capacity building and allocate program resources accordingly.

Beyond technical capacity, grantee staff frequently provided additional support in tracking leads, creating marketing materials, and assisting with other elements of program promotion. Engaged CBOs were often in contact with the program manager, and some grantees had full-time staff members to assist CBOs. Accurately tracking CBO recruitment was a challenge and often required considerable staff time.

5.2.6. CBO COMPENSATION

Only one grantee provided contracted payments to its partner CBOs. Most grantees reported that they did not have the budget or the time to complete the contractual arrangements that such payments would require.

The four grantees that offered a performance incentive to CBOs reported mixed results. Grantees said that they offered performance incentives (usually a fixed amount of money for exceeding a minimum number of sign-ups) because they believed the CBOs would be motivated by the incentive to promote the program, and because the CBOs' constituents would be motivated to take action because an organization they value would benefit from their participation.

While a performance incentive did induce large numbers of CBOs to sign up to promote the program, relatively few organizations enlisted enough program participants to earn the incentive. For example, nearly 100 organizations

signed up with one grantee that offered rebates for CBOs-generated leads. However, a year after the program's launch, only 20 organizations had recruited one or more homeowner that had begun upgrades. Another grantee had a similar experience. The grantee offered money to CBOs that achieved a minimum number of homeowner upgrades. The program manager reported that, in spite of the area having a number of active CBOs, only three organizations followed through and received an incentive. These findings suggest that the prospect of receiving a performance incentive was not sufficient to motivate – or perhaps to enable – many CBOs to realize homeowner participation targets.

The one grantee that offered contractual compensation to its partner CBOs also offered an additional performance incentive. This grantee's performance incentive succeeded in encouraging CBOs to monitor their performance and try new outreach strategies. However, the grantee reported that the prospect of earning a performance incentive may have caused some organizations to target their efforts in higher-income communities, which were more likely to pursue energy upgrades, rather than focusing on their own constituencies.

5.2.7. COST-EFFECTIVENESS OF CBO ENGAGEMENT

Grantees reported mixed feedback about the cost-effectiveness of CBO outreach relative to other strategies for driving demand. Two grantees reported that when CBOs have sufficient resources and can use their staff or volunteers to conduct outreach through the group's existing mechanisms, the collaboration was cost-effective from the grantee's perspective. However, other grantees reported that when the CBOs conducted outreach activities outside of their normal tactics, such as holding community "challenges" to drive participation, the CBOs needed substantial guidance, support and – ultimately – resources from the grantee. Though these outreach efforts did yield some sign-ups, the grantee program managers did not view partnerships with CBOs in these situations as cost-effective.

5.3. SUMMARY OF FINDINGS

Community-based organizations (CBOs) worked with the selected grantees to both drive demand for homeowner upgrades and to stimulate the supply of efficiency contractors. Benefits of CBO collaboration include the access that CBOs provide to selected groups (that is, CBOs can be a channel for targeted outreach) and increased trust between the program and the CBO's constituents, which lends credibility to the program. CBOs also are familiar with their constituents and are well positioned to tailor messages and outreach strategies to overcome their constituents' particular barriers and meet their specific needs. Productive collaborations between the selected grantees and CBOs took many forms, but certain organizational characteristics facilitated effective collaboration on upgrade programs:

- › Stable and long-standing trusted CBOs were in a position to form a reliable relationship with program managers.
- › CBOs with developed human resources, an active volunteer network, and connections with contractors were able to convey appropriate information to more people.
- › CBOs whose mission aligned with energy efficiency more easily articulated upgrade benefits and had constituencies who already understood the importance of energy savings.

The selected grantees found that performance-based financial incentives for CBO recruitment did not stimulate a large number of upgrades. CBOs did not meet thresholds required for reimbursement due to limited capacity or unwillingness to dedicate the resources necessary to spur upgrades.

5.4. CONCLUSIONS AND RECOMMENDATIONS

The evaluation team offers the following conclusion and recommendations for future program managers considering engaging CBOs.

Conclusion: Grantees effectively employed a variety of strategies to engage CBOs in recruiting residential energy efficiency upgrades. Selected grantees were successful in coordinating with CBOs when the CBO's mission, capacity, and organizational strengths satisfied the program's needs. Successful grantee-CBO collaborations tended to involve motivated CBOs with sufficient resources to recruit retrofit participants from their constituencies using customized outreach approaches based on the CBO's guiding objectives and capabilities.

- › **Recommendation:** Tailor CBO recruitment to the program's needs. Carefully define the program's goals, and seek CBOs that can most effectively help the program meet those goals. If the program goals emphasize maximizing savings, recruit established CBOs with energy efficiency experience and strong contractor connections to more quickly generate the needed leads. If program goals emphasize recruiting projects within specific hard-to-reach populations, recruit CBOs with direct access to and respect within those populations.
- › **Recommendation:** Temper expectations for CBO productivity and anticipate the need to provide CBOs support. The value that CBOs provide is based on their position of trust within specific communities. While CBOs can recruit participants in hard-to-reach populations, such outreach takes time and resources. CBO outreach alone is unlikely to generate sufficient volume to sustain a program.
- › **Recommendation:** Allow flexibility in CBOs' outreach approaches; allow program flexibility in CBO engagement. CBO outreach is most effective when CBOs tailor their outreach strategies based on their organization's capacity and mission. Not all CBO collaborations, and not all outreach activities, will be successful. The effective use of CBOs requires program managers to track CBO sign-ups and application assistance, and then make adjustments as needed to recruit and retain only partners that help the program realize its goals.

6. SPOTLIGHT ON ENCOURAGEMENT OF DEEP RETROFITS

Through its Residential Buildings Integration effort, DOE set goals of demonstrating large-scale reductions of energy use in typical homes by an average of 20% by 2020, 25% by 2025, and 40% by 2030 (Lee, 2014). While one of the goals of BBNP-funded programs was to reach an average of 15% or greater savings, some grantees strove to exceed this goal by offering participants the opportunity for more comprehensive upgrades. This spotlight study reviews program approaches that motivated participants to conduct deep retrofits with savings of at least 20% of site energy use to provide insight into how to achieve large-scale reductions of home energy use. Also it examines the effect on the energy upgrade market of programs that encouraged deep retrofits.

This spotlight study draws on the experience of four grantees that achieved an overall average energy savings of 20% or greater:

- › Chicago, Illinois
- › State of Maine
- › State of Michigan
- › Omaha, Nebraska

The sections below include descriptions of the program strategies the selected grantees used to encourage participants to undertake deep energy-saving retrofits of their homes. This chapter also describes the longer term effects of programs that pursued deep retrofits. The spotlight study ends with conclusions and recommendations based on the selected grantees' experience. Appendix E provides additional detail on each selected grantee's program design relating to deep energy savings.

6.1. DEEP RETROFIT APPROACHES

The grantees' definition of a deep retrofit was one that achieved at least 20% (two grantees), 25% (for one grantee), or 30% (one grantee) savings. Selected grantees used marketing techniques, tiered incentive structures, financing options, and contractor and participant support to motivate participants to complete deep retrofits. While the ultimate goal of all grantees was the same—to achieve substantial savings at each participant's home—the structure, execution and success of these strategies varied by grantee. The following sections describe each of the grantees' approaches to deep retrofits in greater detail.

6.1.1. *MARKETING*

The selected grantees tailored their marketing approaches and language to encourage program participants to install measures that would result in deeper energy savings. While selected grantees found a variety of marketing channels—such as attendance at local events, radio spots, posters, and trade association referrals--were effective in recruiting participants, the most common marketing techniques used to encourage greater energy savings included participant testimonials, marketing messages that highlighted the cost savings associated with energy improvements, and marketing messages that created a sense of urgency.

Three of the four selected grantees used messages incorporating past participant testimonials. They provided videos, which were publicly accessible through program websites, that featured satisfied participants describing the cost savings and improved comfort that resulted from their home's energy-saving retrofits. In neighborhoods where a representative participant lived, the testimonials helped create a culture of interest in energy efficiency in the local community.

Selected grantees also developed marketing messages specifically crafted to encourage deep retrofits. One grantee used a communications consultant to help design a marketing campaign that would resonate with potential participants with very different worldviews. The campaign emphasized the cost savings associated with upgrades as a 'smart choice' for families would appeal to a broad array of people: it prodded homeowners to make the smart choice of engaging in upgrades that would achieve substantial energy savings and therefore, result in substantial energy bill reductions. Early in its program, another grantee established a sense of urgency in its campaigns by creating a six-month window of opportunity when homeowners were eligible for increased incentives if they completed an audit and submitted a rebate reservation request within the timeframe. The grantee reported that, because it was used in the early stages of implementation, this strategy succeeded in increasing the number of homeowners undertaking audits and quickly deciding to pursue retrofits. The grantee cautioned, however, that using this strategy could be detrimental to a more mature program, where sustaining program growth and certainty are critical.

6.1.2. *TIERED INCENTIVE STRUCTURES*

The selected grantees took different approaches to structuring incentives intended to encourage deep retrofits. One grantee used a prescriptive approach, two used performance-based approaches, and one used a hybrid prescriptive- and performance-based approach.

One grantee using a prescriptive incentive structure encouraged greater savings by offering a bonus incentive to participants installing multiple measures. The grantee found that its bonus incentive was not very effective in moving participants beyond the program's 'base package' offering. To address this issue, program staff revised the incentive structure: the new structure provided incentives only for upgrades that went beyond a specified base package by implementing additional efficiency upgrades. The program manager found the revised approach more effective and explained: "We encouraged the most upgrades when we offered a small [incentive for the] base package and large incentives [for more extensive] upgrade work."

One of the grantees using a performance-based structure provided a small monetary incentive (\$100) for each 1% of baseline usage that the project expected to save, up to a total of 50% of the total upgrade cost. A program manager stated that the program's approach was highly effective in motivating participants to achieve greater savings. The second grantee offered a 'deep retrofit' incentive for each project that was expected to reduce the participant's energy usage by at least 30% using any combination of program-approved efficiency measures. While participants were eligible to receive up to \$15,000 in incentives, the average incentive was approximately \$4,200. Although staff reported that the "deep retrofit" incentive successfully persuaded greater numbers homeowners to pursue deep retrofits, staff also noted that the deep retrofit offering was not sustainable because of its high cost to the program.

The fourth grantee used a combination of prescriptive and performance-based incentives to promote deep retrofits. To qualify for program incentives, a project had to include either program-eligible air sealing, insulation, or heating equipment, or have a comprehensive modeled scope of work. For some measures, program rules required that one

or more complementary energy efficiency measures also be installed to ensure greater savings than the first measure alone would achieve. For example, if the project included the installation of insulation, the program also required that the home be air-sealed in order to qualify for an incentive. However, for single measures that were expected to achieve substantial savings on their own, the program did not require the installation of any complementary equipment. For single measures, homeowners received incentives in accordance with the program's prescriptive measure list. Homeowners undertaking projects with a comprehensive modeled scope of work received larger incentives for greater level of savings (that is, performance-based incentives).

Two grantees partnered with their local utilities to provide additional marketing support and additional incentives. The grantees reasoned that by combining the program and utility incentives, homeowners' out-of-pocket expenditures were reduced, and homeowners were more likely to afford – and, therefore, more likely to undertake – deeper retrofits.

6.1.3. FINANCING OPTIONS

All four of the selected grantees offered optional financing to assist homeowners with implementing upgrades, though the structure and success of these financing options varied. Two of the selected grantees suggested that offering financing options may be more useful as a marketing tool that peaks homeowners' interest in the program than as an offering that actually influences homeowners' decision to pursue an energy upgrade.

The loan offerings in several programs depended on the measures that a participant completed, or on the project's expected energy savings (as a percentage of baseline usage). Program staff representing these grantees believed that the financing structure was effective in encouraging participants to pursue deep retrofits.

One grantee experimented with loan rates, initially offering 0% APR with a 10-year term, and later offering 0% interest with a 24-year term and higher interest rates with varying terms. Close to half of all audit participants chose to pursue upgrades with the 0%, 10-year loan; the percentage of audits participants pursuing upgrades dropped considerably as the loan terms became less attractive. The grantee concluded that the availability of financing and the specific terms of the loan offering had a notable effect on homeowners' likelihood to conduct deep retrofits.

Two of the selected grantees, collaborating with local credit unions to offer financing, did not find that the availability of loans necessarily led to deeper home retrofits. Both saw very little uptake in loans. When speculating about why the availability of financing did not seem to be effective at convincing homeowners to conduct deep retrofits, both mentioned the economy as a barrier. At the time of the programs' operation, the economy was just emerging out of a recession, and many homeowners were experiencing unstable financial situations. Homeowners, therefore, wanted to avoid incurring any additional debt. One grantee also mentioned that the restrictive nature of its loan was not conducive to increasing homeowner interest in deep retrofits. Specifically, this grantee's loan offering had a \$500 cap. The grantee found that the cap was too low – the loan did not cover much more than what the homeowners could cover themselves, rendering such a loan unnecessary.

6.1.4. PARTICIPANT AND CONTRACTOR SUPPORT

One selected grantee used multiple approaches to encourage participants to pursue deep retrofits. This grantee developed informational videos to describe what to expect during the energy audit and upgrade processes, and provided 'navigators' to help guide participants through the program. The program manager reported that participants appreciated having a navigator because the navigator answered participants' questions, knew what was going on,

understood the benefits of the upgrades, and encouraged participants to complete the upgrades. The grantee attributed much of the program's success to these forms of "hand-holding" and problem resolution. In addition, at least two of the selected grantees set up call centers with personnel trained to answer general program questions as well as questions about the incentive structure, timelines, contractor selection, measure logistics, and auditor questions. The call centers served as problem resolution arenas for issues that arose with auditors, contractors and customers.

The selected grantees supported contractors through contractor engagement, direct incentives, and/or contractor training. Several grantees supported contractors by involving them early in the program and embarking on two-way conversations to get contractors engaged and involved in the program.³ One grantee provided incentives to contractors for conducting audits, and provided bonus incentives to contractors for each homeowner that pursued a deep energy retrofit, even if the upgrade work was performed by another company. All of the grantees stressed the importance of contractor training, and offered opportunities for contractors to learn more about the program, building science, and how to sell energy retrofits. They recognized that knowledgeable contractors with strong communication skills were better equipped to sell deep retrofits to homeowners. Contractors with in-depth knowledge about energy-using equipment and energy efficiency could more confidently and convincingly convey that information in a straightforward manner to homeowners. Furthermore, in one grantee's area, trained contractors also were more comfortable coordinating upgrade projects with other contractors in different trades.

6.2. EFFECT OF DEEP RETROFIT EMPHASIS ON PROGRAMS

Grantees also provided broader feedback about the program and market factors affecting the success of deep retrofit initiatives. These are described below.

6.2.1. CONTRACTOR CONTRIBUTIONS

The grantees concurred that contractors played a critical role in driving deep retrofits. Program managers highlighted three main characteristics of contractor activities that contributed to increases in deep retrofits: taking a holistic (comprehensive or whole home) approach to home energy upgrades, possessing strong communication skills, and recommending multiple measures for each upgrade.

Contractor understanding of a holistic approach to home upgrades proved important to promoting deeper savings. Contractors who took a holistic approach provided homeowners with more upgrade recommendations. One grantee mentioned that when contractors conducted holistic audits of a home's performance, the homeowner was much more likely to accept the upgrade recommendations that achieved deep energy savings. Another grantee observed that the more upgrades that contractors recommended, the more upgrades participants implemented, which in turn resulted in greater savings. The grantees observed a mix in contractors' understanding of the whole-house concept and a mix in contractors' ability to present the whole-house approach to potential participants. Of the contractors who effectively sold deep retrofits to homeowners, some brought a holistic perspective to the program from their prior experiences, whereas others gained a holistic perspective through program-sponsored training.

³ See Chapter 3 *Spotlight on Contractor Training* for further details.

The ability to communicate these concepts effectively with participants was key in encouraging deep retrofits. Selected grantees mentioned that the language that contractors used and their experience in communicating these concepts were important for encouraging deep retrofits. Leaving the technical discussion out of the conversation, and explaining upgrades in a straightforward, simple fashion was much more effective than focusing on the technical aspects of a project. Additionally, because deeper retrofits generally required multiple measures and greater homeowner investment, the process could require multiple steps and the participation process was often more complicated. Thus, very clear communication between contractors and potential participants was key. Two of the selected grantees described the importance of providing clarity about the program process and managing participant expectations up front. One program manager explained, “We were much more successful with encouraging deeper energy efficiency improvements, or upgrades, when we were very explicit about this two-step process with homeowners in initial conversations.” Such early discussions alleviated the homeowners’ feeling that they were receiving a sales pitch from the contractor.

Contractor training and experience influenced their ability to understand, communicate, and sell the concept of deep retrofits to potential participants. One of the selected grantees stressed the importance of ensuring contractors have the experience required to implement the program. Another grantee discussed the importance of accessing an existing market of contractors and, as needed, providing additional training, rather than starting from scratch.

6.2.2. BUILDING CAPACITY

The selected grantees learned that successfully generating deep retrofits required time to develop both a supply of contractors capable of conducting deep retrofits and homeowner demand for deep retrofits. The grantees reported seeing important changes in the market toward the end of the grant period: all four said they observed an increase in the size of the qualified workforce and in contractors reconnecting with previous clients to provide energy upgrade services. One program manager noted that he had seen a dramatic increase in the marketplace and that energy retrofit-related jobs had increased fourfold in the last three years.

The grantees also observed an increase in the demand for deep retrofits, which they largely attributed to increased homeowner awareness of energy efficiency and the program. Two grantees had repeat participants in their programs who wanted to implement additional measures after realizing the benefits of their initial upgrades. One grantee noted that the program experienced greater success when it returned to a community it had targeted and educated a year earlier. Another grantee reported similar results, explaining that many people were pursuing deep retrofits later in the program, and that the program had seen many return participants.

6.3. SUMMARY OF FINDINGS

Selected grantees used marketing techniques, tiered incentive structures, financing options, and contractor and participant support to motivate participants to complete deep retrofits. The marketing techniques selected grantees used to encourage greater energy savings included participant testimonials, marketing messages that highlighted the cost savings associated with energy improvements, and marketing messages that created a sense of urgency.

In addition, the selected grantees structured their incentives to encourage homeowners to install more upgrades and achieve greater energy savings. Grantees did this by using performance-based incentives (higher rebates for more energy savings) or by tying more generous incentives to the installation of more upgrades. Yet, the program managers also expressed concerns about the sustainability of these generous incentives due to their financial impact on the programs. Though the programs were dependent on generous incentives to spur homeowner pursuit of deep

retrofits, program managers saw evidence of increasing awareness and interest in deep retrofits as the programs matured and the community became more aware of the program offerings and benefits. Further, all four of the selected grantees offered financing options to their participants, yet only two reported this to be influential in encouraging homeowners to pursue deeper retrofits. Grantees generally found financing was more beneficial as a marketing tool than as a funding tool because of reluctance to finance.

Providing homeowner support to understand the upgrade process and providing contractor support in the form of training both reportedly contributed to deeper retrofits. The selected grantees reported contractors were integral to the achievement of deeper retrofits and were able to motivate homeowners to achieve greater energy savings by taking a holistic approach to home energy upgrades, possessing strong communication skills to explain costs and benefits, and recommending multiple measures for each upgrade.

6.4. CONCLUSIONS AND RECOMMENDATIONS

The evaluation team offers the following conclusions and recommendations for incorporating deep retrofits in future programs.

Conclusion: Deep retrofit programs require a strong pool of qualified contractors who can perform quality upgrades and, with a strong knowledge of building science, help customers understand the benefits of home energy improvements. Often serving as the main point of contact with the participant, contractors must have the ability to install or subcontract a variety of energy-saving measures and to explain the benefits of potentially costly projects.

- › **Recommendation:** Deep retrofit programs should build on an existing contractor network and provide technical and sales support to contractors.

Conclusion: Upfront cost, reluctance to finance, and unfamiliarity with the deep retrofit concept were all barriers to households undertaking deep retrofits.

- › **Recommendation:** Deep retrofits can be a hard sell: provide clear, flexible program offerings and expect to conduct extensive outreach to generate awareness and understanding.
- › **Recommendation:** Collaborate with other program managers offering similar programs to help buy-down the cost of expensive deep retrofits. Coordinate marketing to alert participants to the availability of incentives from multiple sources.
- › **Recommendation:** Recognize that generating homeowner demand for deep retrofits and a supply of qualified contractors can take several years. Be patient. Periodically revisit previously targeted communities: homeowners who did not initially participate may have gained interest over the interim and early participants may want to pursue additional upgrades.

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APPENDIX A. DESCRIPTIONS OF GRANTEE APPROACHES TO MULTIPLE PATHWAYS TO PARTICIPATION

A.1. AUSTIN, TEXAS

Austin launched a “mid-tier” offering in October 2012 based on Austin Energy’s existing Home Performance with ENERGY STAR® (HPwES) program. The mid-tier program assigned a point value to each eligible measure, and specified a minimum total point value that would ensure that the combination of measures installed in each participating home would reduce the home’s annual energy consumption by at least 15%. The point system enabled contractors to meet or exceed the program’s 15% energy savings target without having to conduct home energy modeling. Unlike Austin’s earlier HPwES offerings that required participants to choose between receiving rebates or loans, homeowners using the mid-tier path were eligible to receive both rebates and low-interest loans.⁴ As a result, this offering became known as the “rebate plus loan” option. After a few months of operation, the interest rate on mid-tier loans was reduced from an initial 3.99% to 1.99% to increase participation. The mid-tier option was the most heavily subscribed of Austin’s Better Buildings Neighborhood Program (BBNP) offerings.

Austin launched an advanced tier option shortly after the program’s mid-tier launch. It encouraged 20% or greater energy savings by offering performance-based, rather than prescriptive, rebates. The advanced tier offering required a third-party technician to conduct on-site diagnostic testing at participating homes, use the diagnostic testing results to model the home’s energy use, and create an energy-reduction plan. The advanced tier offering also appointed an energy advocate to each homeowner to guide them through the longer and more complicated participation process. Homeowners chose their own contractors and energy advocates. Of Austin’s program offerings, the advanced tier option had the lowest uptake. Program staff attributed low participation in the advanced tier offering to complications associated with coordinating many people (for example, contractors, third-party technicians, energy advocates) involved in its processes. Furthermore, contractors reportedly preferred the simplicity of the “rebate plus loan” path.

During the final summer of the BBNP-funded program, Austin Energy initiated an HVAC system performance check-up offering as another point-of-entry for prospective upgrade participants. The program provided an incentive to offset the cost of HVAC check-ups. At the time of this evaluation, data were not available on the success of this offering.

A.2. BAINBRIDGE ISLAND, WASHINGTON

The RePower Bainbridge program grew out of a grassroots community effort to address a grid capacity challenge and potentially avoid construction of a new electrical substation and a set of new power lines that the local utility, Puget Sound Energy, deemed necessary to meet the island’s growing demand for electricity. Conservation Services Group (CSG), in partnership with local government agencies, local utilities, and local credit unions, implemented the program to sufficiently decrease the island’s electricity use in order to obviate the need for new electrical infrastructure.

⁴ The City of Austin used part of its BBNP grant to set up a loan loss reserve fund, thereby enabling the mid-tier BBNP offering to provide both rebates and low-cost loans to program participants.

Interested homeowners could enter the program through one of two pathways—either by obtaining a free home audit from a RePower Energy Advisor, or by obtaining a thorough Energy Performance Score (EPS)⁵ home energy audit for a fee. CSG staff conducted the free audits. At the conclusion of a free audit, the Energy Advisor provided the homeowner: a customized list of the three highest priority recommended energy upgrades; information about the home's seasonal and base-load usage as well as non-energy benefits of home upgrades; no-, low-, and high-cost upgrade options; rebate information; and recommendations for skilled, local home performance contractors.

The audits, which used diagnostic equipment, were conducted by Building Performance Institute (BPI) certified trade allies. At the conclusion of an EPS audit, the participant received: a detailed energy use report for their home; EPS energy and carbon scores; energy upgrade recommendations; and a comparison of the home's currently annual energy costs to its estimated annual energy costs after implementing the recommended upgrades. Though some participants who received the free home audit later paid for an in-depth audit (that is, an audit using diagnostic equipment and energy modeling as warranted), most participants who received a free audit did not subsequently seek such an audit.

It was incumbent on the homeowner to contact contractors to obtain bids and schedule the upgrade work. The program maintained a help desk to assist homeowners with technical and project scope issues. Program staff trained contractors in building science and program options, enabling them to provide guidance to homeowners throughout the process. Program staff created a comprehensive rebate grid, which they used to help customers understand and calculate the incentives available for their projects. This information, in turn, helped contractors and their client homeowners develop scopes of for the upgrade work.

Contractors integrated applicable utility rebates into their customer bids. However, participants received rebates directly from the RePower program so it was incumbent on the homeowner to submit the program rebate paperwork to RePower Bainbridge staff once the upgrade work was completed. Participating homeowners were eligible for different rebates based on the number and type of measures they implemented. The program initially offered a \$400 RePower Reward to participants implementing two or more measures, and later shifted to a special Whole Home Energy Upgrade Bonus rebate for homeowners who installed three or more qualifying measures in one energy-upgrade project.

A.3. BOULDER COUNTY, COLORADO

Boulder County designed its energy efficiency program, EnergySmart, with a primary objective of making the upgrade process easy for participants. As part of this effort, energy advisors, employed by a program implementation contractor, played a key role in Boulder's residential program. Participants entered the program by contacting an energy advisor, who would direct them to the most appropriate course of action.

Boulder County developed a range of service options to support homeowners with varying interests and needs. These service options included a free phone consultation with an energy advisor, a walk-through assessment with an energy advisor offered at a cost of \$30 to the participant, and an in-depth audit conducted by a trade ally contractor offered at a cost of \$135 to the participant. The energy advisor was present during the in-depth audit to explain the

⁵ EPS is an energy performance rating tool that scores new and existing homes for both their energy and their carbon impacts. The tool was developed by the Earth Advantage Institute.

process to the customer and discuss upgrade options. Energy advisors also would follow-up with participants to encourage them to take action.

While participants qualified for the same incentives regardless of the service option they used, they were required to use a pre-qualified contractor in order to be eligible for the program's incentives. Initially, Boulder County offered prescriptive, measure-based incentives, and program staff reported offering high incentives early in the program in order to generate demand. Later, Boulder County reduced its incentive levels and shifted toward a performance-based approach in an effort to encourage more comprehensive upgrades. Program staff noted that incentives had become less important in driving demand for upgrades as the program's energy advisors developed relationships with participants and the program came to be seen as a trusted source of information in the community.

Boulder County staff reported that the walk-through audits, phone advising, and SmartRegs inspections⁶ were the most popular service options, and that phone advising in particular was more popular than expected. According to Boulder County staff, an estimated 20% of participants opted for in-depth audits.

A.4. LOS ANGELES COUNTY, CALIFORNIA

Los Angeles (LA) County initially designed its BBNP-funded programs to drive participants to the Energy Upgrade California (EUC) program, offered by all of California's investor-owned utilities. EUC offered two paths to home upgrades: a Basic Path and an Advanced Path. The Basic Path offered participants a utility incentive of \$1,000 for installation of a set package of measures.⁷ The Advanced Path required an audit with energy modeling and offered graduated incentives ranging from \$1,250 to \$4,000 based on the expected energy savings resulting from an upgrade. As part of program, LA County provided an additional \$500 incentive to all completed projects.

The investor-owned utilities initially anticipated that the bulk of energy upgrades would use the Basic Path, but relatively few ultimately did so. As a result, LA County designed a Flex Path offering as an alternative participation path for homeowners interested in making home energy upgrades but not able to commit the time and resources necessary for the Advanced Path. Under the Flex Path, LA County assigned point values to 19 measures across six categories including insulation and air sealing, HVAC, and water heating. The point values ranged from 5 to 95 points per measure and were based on the estimated energy savings that measure would achieve in a typical home. Homeowners could qualify for a \$1,500 rebate by installing at least two measures totaling at least 100 points, which was expected to equate to site energy savings of 15%. Participants completing larger upgrades could submit multiple applications for incentives as long as each application listed unique measures.

The Flex Path eliminated the need for energy modeling and allowed both contractors and homeowners more flexibility to determine which measures to install than were allowed in the Basic Path. LA County's Flex Path offering launched in January 2012 and was suspended when it became fully subscribed in November 2012.

⁶ The City of Boulder SmartRegs ordinance, adopted in September 2010, requires all rental housing to meet a basic energy efficiency standard by 2019. Rental housing represents about half of this City's housing stock. EnergySmart provided an easy, voluntary way to achieve the SmartRegs requirements. As a result, many of EnergySmart's residential participants were property owners working to comply with SmartRegs. SmartRegs inspections were available only within Boulder city limits; they were not available elsewhere in Boulder County.

⁷ Basic path measures included: air and duct sealing, attic insulation, hot water pipe wrap, and a carbon monoxide detector.

A.5. STATE OF MAINE

Maine's BBNP program, implemented by Efficiency Maine, offered two paths for participants. The comprehensive project path included two tiers of incentives, based on the modeled energy savings an upgrade was expected to achieve. Participants in the comprehensive path were eligible for an incentive of \$1,000 for upgrades expected to achieve at least 20% site energy savings or \$1,500 for upgrades expected to achieve at least 40% site energy savings. In both cases, incentives could not exceed one-third of the total project cost.

Efficiency Maine also developed a less comprehensive, prescriptive "menu" project path to allow homeowners to take a phased approach toward energy efficiency in their homes. The menu path provides incentives for a variety of upgrade measures from air sealing to insulation and best in class heating systems. Efficiency Maine can finance projects with no upfront cost as long as the scope of work includes an energy audit and a minimum of six hours of air sealing, plus at least one additional measure from a list of additional prescriptive improvements. Participants qualified for an incentive of \$400 toward the cost of the audit and air sealing and could earn additional incentives for the other measures they installed up to a cap of \$1,500. Efficiency Maine staff reported that a large majority of participants used the more prescriptive upgrade path.

APPENDIX B. DESCRIPTIONS OF GRANTEE APPROACHES TO CONTRACTOR TRAINING

B.1. BAINBRIDGE ISLAND, WASHINGTON

Recognizing that qualified and trained contractors were vitally important to RePower Bainbridge's success, the program required participating contractors have Occupational Safety and Health Administration (OSHA) certification and lead safety certifications as prerequisites to their participation. The program also required participating contractors to be BPI certified. For contractors who wanted to participate but were not already BPI certified, RePower Bainbridge provided free training sessions to help them attain certification.

Initially, the program's training offerings focused on the program's requirements to ensure that contractors met the program's quality assurance standards. Topics included energy and safety assessment and diagnostic skills (for example, blower door training and in-field combustion safety), sales skills, business skills, and customer service. As RePower Bainbridge evolved, program staff recognized the need for contractors to obtain additional training. The program then began to host informal monthly contractor brown bag sessions as well as more formal quarterly program update meetings. Brown bag topics included air leakage control and combustion appliance zone testing refreshers, among others. In addition to ensuring that contractors had up-to-date program information and enhanced technical knowledge, these meetings facilitated communication among contractors and staff as well as networking among contractors.

Training sessions, often conducted at a local community college, were coordinated with the local utility to cost-share and to ensure that the sessions were full. The program also partnered with another community college to certify RePower contractors as future BPI faculty there. In so doing, the program ensured that the BPI training resources would remain at the college after RePower Bainbridge's grant period had concluded.

Midway into the grant period, RePower Bainbridge's trade ally manager and quality control specialist began conducting on-site training at participants' homes as well. Their reasons were twofold: first, on-site training led to closer relationships between contractors and the program; second, on-site training enabled program staff to conduct quality control inspections and use the inspections as learning opportunities for the contractor.

B.2. STATE OF MAINE

The Maine Better Buildings program provided technical training to contractors from the outset. Although early interest in the Maine Better Buildings program was high—the program was contacted over 10,000 times through its call center and website, initial homeowner interest did not result in as many upgrades as staff had expected: 72 upgrades were completed during the first six months. To gain insight into why contractor visits and energy audits were not resulting in more upgrades, program staff began accompanying contractors on their visits to prospective customers. Staff found contractors were providing a lot of technical and building-science oriented information to customers, but not providing the layperson translation of this information that would encourage homeowners to become more engaged with the program.

After extensive research into training options that would result in more homeowner interest in retrofits, program staff decided to offer a tailored version of Dale Carnegie Training to its contractors. The 2-day training combined sales

strategies with building science so contractors could learn how to combine energy efficiency messaging with techniques to sell whole-house energy upgrades. More than 100 energy professionals participated in the training during the grant period, and preliminary analysis showed that the program's audit-to-retrofit conversion rate went from 10% before the sales training was offered, to 60% after sales training. Contractors were skeptical about the training before they attended; after the training, contractors reportedly found the training valuable in beneficially changing the way they interacted with customers. Some contractors reported sending their staff to the training even after the grant period had ended.

In addition to the Dale Carnegie Training, the Maine Better Buildings program also offered monthly webinars during which staff would provide program update information to contractors, and contractors would provide feedback to program staff.

B.3. PORTLAND, OREGON

Contractors were offered program-sponsored sales training, taught by an organization with HVAC technical expertise, as a benefit of participating in the Clean Energy Works Oregon (CEWO) trade ally network. The training focused on contractors' communication with customers, emphasizing that contractors should avoid high-pressure sales pitches. After the initial sales training, CEWO offered refresher sales trainings for participating contractors. CEWO's initial analysis of participation data suggested that the number of upgrades increased as a result of the training.

CEWO offered free two-hour trainings once a month, accompanied by breakfast. Training session topics varied monthly and were often selected based on contractor suggestions. Topics ranged from program changes, to building science, specific energy efficient measures or practices (for example, best practices in window installation, smart [NEST] thermostat), business development, or customer service. Staff enlisted experts to conduct the trainings, sometimes selecting manufacturer representatives who provided free training as a means of promoting their products. Program staff permitted registration of non-allied contractors for these trainings in person or via *GoToMeeting*. The program adopted a train-the-trainer approach, relying on trained contractors to disseminate the information they had learned to their staff and subcontractors.

The technical trainings led to continuing education credits that contractors were able to apply toward BPI certification. Though the program required local contractors to attend trainings in person, the program accommodated remotely located contractors by allowing them to attend trainings via webinar. Between 10 and 40 contractors attended each training session. In addition to conveying important content to the attendees, the trainings provided peer-to-peer networking opportunities that contributed to the formation of a regional whole-house-upgrade trade ally network.

B.4. SEATTLE, WASHINGTON

Seattle's Community Power Works (CPW) program provided contractors with multiple trainings, paths to BPI certification, peer-to-peer, and networking opportunities, and a well-staffed hotline for communication and assistance throughout the grant period.

Training began with a session for participating contractors focused on program logistics. This training informed contractors of the program's intent, specifications and rebate structures, and expectations, and provided them with

small business development (sales) assistance. Subsequent trainings covered basic safety, quality oversight, and use of their mandatory reporting database, which the program used to track projects and workforce development.

CPW required participating contractors to meet minimum qualifications of the Community High Road Agreement (HRA), a national model workforce development agreement spearheaded by the City of Seattle's Office of Sustainability & Environment. The HRA specified the program's minimum construction quality standards, wage standards, and training requirements, and established social equity goals for employees and employers. The inclusion of the HRA in CPW's program helped ensure that the program created living-wage jobs with benefits in historically underserved communities, setting trainees on a long-term sustainable career path. Additionally, by specifying that at least one person on each jobsite be BPI-certified, the HRA ensured that program contractors would perform safe, high quality upgrades. CPW provided a stipend of one thousand dollars per company to reimburse contractors for pertinent training, including BPI training. The program also funded up to 10 hours of business development consulting services for any interested contractor.

CPW also arranged technical trainings throughout the grant period. The program implementation contractor conducted many of these trainings, and the trainings focused on practical aspects of contractor work, such as issues associated with the installation of heat pumps and other retrofit measures. CPW also offered sales trainings through the Washington Small Business Development Center to assist contractors, especially smaller ones, in reaching eligible customers and realizing their sales targets. CPW periodically held general program trainings for new contractors as well as biannual general program trainings to announce and explain significant program updates and changes. To help contractors continually improve their performance, program staff provided feedback to contractors—based on survey data that the program collected—on quality assurance, customer satisfaction, and compliance with program and HRA requirements.

CPW provided additional training and support by encouraging peer-to-peer interaction through monthly contractor breakfasts. At these peer-to-peer meetings, contractors participated in conversations about the program's development; listened to presentations about program results; and partook of opportunities to become involved with other participating contractors.

Finally, CPW established a hotline for both contractors and customers that served multiple purposes. Contractors and customers could call the hotline to obtain program information. In addition, hotline staff facilitated conversations between contractors and customers when misunderstandings or disputes arose.

APPENDIX C. DESCRIPTIONS OF GRANTEE APPROACHES TO TARGETED OUTREACH

C.1. BOULDER COUNTY, COLORADO

The objective of Boulder County's EnergySmart program was to establish new social norms around energy efficiency. EnergySmart consultants implemented outreach tactics based on community-based social marketing (CBSM) principles, including activating known social group mechanisms to change behavior or purchases. In their outreach efforts, EnergySmart used admired figures as spokespeople, and emphasized the social desirability and common benefits of adopting targeted behaviors. EnergySmart worked through trusted community leaders and engaged community organizations to encourage participation in the program. Numerous key partners contributed to the program design including the county public health department, agencies in Boulder and a neighboring city, local utilities, and many others.

EnergySmart staff prioritized having a presence at events organized by pre-existing social networks, as these events would have a recurring or established base of attendees who already planned to attend. In addition, EnergySmart staff focused on places and times when people were thinking about home improvements. EnergySmart worked through trusted sources to conduct marketing in a variety of ways:

- › Presentations to more than 250 local clubs and community organizations, including neighborhood groups, homeowner associations, sports teams, religious groups, and other networks.
- › Presence at more than 170 local festivals, fairs, and farmers' markets. Examples include the Home and Garden Fair, peach festival, health or safety fairs, and hardware stores.
- › Promoted the program's benefits to local government agencies such as economic development planning committees, key local government consultants, and sustainability advisory boards.
- › Conducted a Home Energy Makeover contest that selected five homeowners to be given free energy improvements donated by contractors. The contractors who donated their services benefitted from the program's marketing and the exposure from their involvement.
- › Developed and implemented an energy-saving curriculum for public school teachers and students in the county.

Program staff reported completing energy advising or audits in over 10,900 homes, and that nearly 75% of owner-occupied households that enrolled made one or more improvements to increase the energy efficiency of their homes through the EnergySmart program.⁸

⁸ Improvements include the direct installation of low-cost measures (compact fluorescent lamp (CFL) lights, showerhead and faucet aerators, and water heat pipe insulators) as well as larger upgrades (attic insulation with air sealing, HVAC improvements, and boiler, furnace, or water heater replacements).

C.2. CHICAGO, ILLINOIS

The BBNP grantee in Chicago, Energy Impact Illinois (EI2), adopted targeted outreach strategies after experiencing limited uptake from mass media campaigns. EI2 initially sought to generate public awareness with a multi-media campaign that used “Two Energy Bills”—big utility Bill and little utility Bill, who personified the benefits of energy efficiency. In addition to winning an award, this mass media campaign reportedly generated 26 million earned media impressions and raised website traffic. The campaign provided a recognizable brand identity for the program, though it did not generate widespread participation in the first year of the upgrade program.

To more effectively generate upgrades in the second year of the program, EI2 launched a face-to-face, grassroots targeted marketing approach based on a house party model. Under this model, EI2 hired twenty field organizers to recruit house party hosts, who would invite friends to their home for a program-supported party. House party hosts received a free energy audit during the party to educate the group. House parties were kept low-pressure and lasted two hours. Through this strategy, EI2 sought to leverage the homeowner’s social network and use the homeowner as a credible messenger to influence attendees. Program staff reported that using this strategy to target homeowners’ social networks successfully drove program participation. In addition, the incorporation of the “Two Energy Bills” brand, themes, and messaging provided an added legitimacy for the work in the field. EI2 reported that 2,542 (82%) of the roughly 3,100 guests that attended 652 house parties completed an energy audit, and about 1,042 (33%) of the guests completed upgrades.

C.3. STATE OF MAINE

Efficiency Maine is a statewide non-profit that implemented the state’s BBNP program. Efficiency Maine sought to characterize themselves as an unbiased source of information, rebates, and knowledgeable contractors in order to deliver energy upgrades in 168 different communities through BBNP. Efficiency Maine’s most successful targeted outreach strategy involved focusing on geographically-remote areas with latent demand for home upgrades; air sealing and insulation in particular. With homeowner outreach carried out by a local community-based organization (CBO), Efficiency Maine organized targeted homeowners on ten islands to complete bulk purchases of weatherization services. These bulk purchases provided contractors with a full week’s worth of work, which the CBO scheduled for them. This made it economically-feasible for the contractors to travel to the remote islands that Efficiency Maine targeted. For example, to deliver a bulk purchase of spray foam to one island, Efficiency Maine and trade ally contractors had to put the spray foam truck on a barge and ship it to the island. Efficiency Maine staff reported that homeowners talked to their neighbors about the limited-time program opportunity, and word spread quickly in the small communities. Because of the substantial unmet need in the targeted area, 90% of year-round residents made program-supported upgrades using spray foam.

C.4. STATE OF MICHIGAN

Michigan’s BetterBuildings for Michigan program implemented a geographic targeted outreach strategy by conducting “neighborhood sweeps” via door-to-door canvassing in 27 target areas. Michigan selected neighborhoods with attributes thought to increase the likelihood of homeowner upgrades for sweeps. These attributes included strong neighborhood associations and other local groups that could be responsible for local marketing and outreach. These leveraging partners included municipalities, community action agencies, churches, employers, school districts, nonprofit organizations, and utilities. Sweep neighborhoods, initially comprised of 420 homes per canvassing effort, had a high percentage of home ownership and of homes built before 1970; a low percentage of low-income

households (20% or fewer); and a notable proportion of homeowners likely to be eligible for program-related financing (at least 33%). After selecting a neighborhood for a sweep, program staff conducted a communication “blitz” approach that included regional marketing, trusted partners reaching out to their own constituents, prepared and engaged contractors, and short-term financial promotions.

Overall, Michigan’s neighborhood-level targeting activities did not result in as much participation as program managers had hoped. In response, BetterBuildings for Michigan eventually expanded sweep areas to follow natural geographic boundaries, include a larger number of homes, and encompass an additional 26 municipalities in the southeast part of the state. On those occasions when the program conducted a second sweep in an area where a sweep had occurred several months prior, they had notably more participation. Staff reported homeowners needed more time to make a large home upgrade decision than the six to eight weeks that the sweeps initially allowed, spurring the program to extend the length of neighborhood sweeps up to a full year.

In response to the challenges that the program experienced in door-to-door outreach, Michigan also tried a non-geographic targeting strategy. BetterBuildings for Michigan partnered with a state university to conduct targeted outreach to its employees. This strategy involved recruiting high-profile staff at Grand Valley State University (GVSU) in Grand Rapids to promote upgrades: the President’s and Provost’s offices wrote personal letters to staff to encourage consideration of home energy efficiency. The President and Provost received free energy assessments and invested in energy efficiency improvements in their homes. As a result of their experience, they provided testimonials and were featured in case studies, which reportedly influenced others to take the program seriously. Michigan’s program also was allowed to use the university’s internal communication channels like email and intercampus (paper) mail. Marketing and communications costs per participant were reportedly one-third to one-fourth the costs of the neighborhood sweeps. Seventeen percent of the targeted employees completed home energy assessments. Participation was more comprehensive than in geographic sweeps as well; 60% of participating GVSU homeowners undertook deeper upgrades compared to 44% in other communities in the state.

C.5. PHOENIX, ARIZONA

Energize Phoenix (EPHX) initiated its program in a limited geographic area centered on the city’s recently-installed light rail transportation system. This area contained a mix of businesses, single-family homes, and multifamily homes. Program staff thought that businesses and homeowners choosing to live near the light rail corridor would be more sustainably-minded and would be more eager to participate in the EPHX program, making this an ideal area to target. The goal was to develop and brand this corridor as the energy efficient area of the city, and to have the energy efficiency culture eventually spill over the corridor’s boundaries and flow into the rest of the city.

The program generally avoided the use of mass media like TV and radio advertising because program staff did not want to reach people outside the area who would be ineligible for the program. Program staff marketed the program through door-to-door outreach, door hangars, inserts in utility bills, print advertisements in neighborhood association newsletters, outdoor advertisements at each of the light rail stops in the targeted area, presentations by city and partner staff to homeowner groups, and a neighborhood recruitment event. Some community groups and non-profit groups assisted with outreach by talking with their members. The program also provided contractors with collateral templates; the contractors customized the templates and used them to advertise themselves as program-approved contractors. Contractor marketing was an important component of the program’s outreach and generated a substantial amount of participation. All marketing was conducted in both English and Spanish.

The program encountered difficulty with the door-to-door outreach strategy because people were often not home when program staff visited. Another challenge was the prevalence of abandoned and foreclosed homes in the target area. Owners of these homes were not in a position to complete upgrades. Because the program was not meeting its residential goals after the first year, EPHX expanded the boundaries of its targeted area, allowing more residents to participate. Ultimately, EPHX achieved 2,014 residential home and multifamily unit upgrades by the end of the program's third year.

C.6. SAN DIEGO, CALIFORNIA

San Diego's BBNP program was implemented by the non-profit California Center for Sustainable Energy (CCSE; now known as the Center for Sustainable Energy or CSE). CCSE pursued three approaches to targeting:

1. A geographic, whole-neighborhood organizing approach that would facilitate group purchases of energy upgrades.
2. A non-geographic, outreach strategy to target members of the military community, including both active service members and veterans.
3. Tours of demonstration homes showcasing upgrades.

CCSE initially targeted a defined neighborhood, with the goal of generating enough interest in energy efficiency upgrades within that neighborhood that contractors would offer volume discounts to participants. The neighborhood was located in the City of Chula Vista, which offered its own rebates for home energy upgrades and worked with CCSE on the pilot program. CCSE found it more difficult than anticipated to generate demand for energy upgrades within the targeted neighborhood. However, one element of CCSE's marketing campaign in the targeted neighborhood – demonstration home open houses – received a strong response: approximately 25% of demonstration home visitors later obtained a home audit. As a result, CCSE expanded its targeted area to ultimately include the entire San Diego region and shifted its program focus to demonstration homes. Demonstration homes targeted the social network of the homeowner host and facilitated connections between contractors and potential participants.

The demonstration homes occurred in city-owned showcase homes as well as private homes that had received energy upgrades. Visitors to an open house would receive a presentation on energy upgrade options from program staff, followed by a tour of the demonstration home, highlighting the energy efficiency improvements it had received, led by a contractor (usually the contractor that performed the work). In private homes, the homeowner also was present during the open house to act as a credible messenger, explaining the benefits of the upgrades to visitors. Program staff reported that more outgoing homeowners were a "great asset" and CCSE tried to recruit them as demonstration home hosts. At these events, participants could ask questions of participating contractors and could sign up for audits. Between the launch date of January 28 and April 21, 2012, about 25% of the home tour participants signed up for a \$50 energy audit with a contractor.

In addition to its geographic targeting efforts, CCSE sought to generate demand for energy upgrades among the San Diego region's large military and veteran community. Staff attended events seeking to promote upgrades to members of the military community, but found this approach challenging. On-base events attracted large concentrations of members of the military community, but many were active duty service members who move frequently and are

unlikely to own their homes. Off-base events attracted larger proportions of homeowners, but lower concentrations of members of the military community.

CCSE also sought to reach members of the military community through defense contractors, which employ large numbers of veterans. However, this approach proved challenging as well. Program staff reported that it was difficult to make reliable connections and develop relationships with the defense contractors, hindering their ability to drive participation for this group. Program staff also noted that veterans groups receive solicitations from large numbers of interests and may be focused on more pressing issues facing their membership, like mental health and homelessness issues, rather than energy efficiency.

C.7. SEATTLE, WASHINGTON

Seattle's Community Power Works (CPW) program utilized targeted outreach in two phases. The first phase involved geographically and demographically targeted outreach focused on the historically marginalized areas of central and southeast Seattle. CPW team members contacted homeowners in the target areas through direct mailings and door-to-door outreach. However, the CPW team reported difficulty convincing homeowners to undergo whole-home retrofits due to the high costs of retrofits and the target population's reluctance to take on debt, including the program's low-interest loans. As a result of slow uptake in the programs first year, and to better position the program to meet its goals, the CPW team expanded the program in year two to include all single-family homes within Seattle's city limits.

Also in year two, the program began focusing on oil-heated homes, which staff saw as an underserved target market because utilities in Washington State were not allowed to promote fuel switching. CPW was based out of the Office of Sustainability & Environment and did not face the fuel switching restrictions of utility programs. Oil-heated homes comprise a relatively large share of all Seattle single-family buildings (16%), yet had not been eligible for many utility rebate programs since the 1980s. Like the residents in the central and southeast Seattle neighborhoods, owners of oil-heated homes were contacted through door-to-door outreach and direct mailings. CPW developed and offered rebates for oil-heated homes that were comparable to the utility rebates for electric- and gas-heated homes. CPW also provided a rebate to mitigate the high cost of decommissioning underground oil tanks. CPW's second phase of targeted marketing was very successful: six months after the oil-heated home mailing, 50% of homes engaging in the upgrade process were oil-heated and, of those, almost 75% switched from oil to higher-efficiency heating or high efficiency electric heat pumps.

APPENDIX D. DESCRIPTIONS OF GRANTEE APPROACHES TO ENGAGEMENT WITH COMMUNITY-BASED ORGANIZATIONS

D.1. BAINBRIDGE ISLAND, WASHINGTON

RePower Bainbridge engaged CBOs, which are reportedly prolific on Bainbridge Island, Washington, to conduct outreach and drive homeowner participation. Usually, the grantee approached CBOs and asked their staff to advocate for the BBNP program, but a few CBOs learned of the program and approached program staff to form a collaboration. CBOs driving demand for the RePower Bainbridge program included the school system, non-profit environmental organizations, and the faith community organizations.

The CBOs conducted outreach for the program primarily through their mailing lists, and by speaking and handing out flyers at group events. The CBOs encouraged interested households to provide their name and contact information at these events, then passed the information on to RePower staff, and staff would then contact the homeowners to schedule an assessment. Program staff found this to be a cost-effective method of outreach because the CBOs used their own members and resources to conduct outreach and generate leads for the program without needing much oversight or assistance from RePower.

RePower Bainbridge also set up a performance-based financial incentive for CBOs that achieved a minimum of 20 member retrofits. RePower developed a contract and dedicated a halftime staff person to oversee this program element. Only three CBOs realized enough member retrofits to earn the incentive. After the grant period had ended, RePower staff reported that, although well-received in the community, this time- and labor-intensive outreach method did not yield enough participation to justify the investment.

D.2. LOS ANGELES COUNTY, CALIFORNIA

The LA County program engaged 103 CBOs through its Energy Champions program, which encouraged CBOs to promote upgrades to their constituents. The participating organizations had a variety of focus areas including minorities or immigrants, youth, community development, housing, education, art, faith, and the environment. The CBOs received a referral incentive for each homeowner who completed an upgrade through the program: \$500 for each homeowner who completed an Advanced Path project and \$100 for each homeowner who completed a project in the Basic or Flex Paths.

Grantee staff provided technical and marketing support to the community organizations to help them promote the energy upgrades to their constituents. To mitigate language barriers, the grantee supplied bilingual trainers to educate CBOs that served non-English speaking communities on program offerings, equipping the CBOs with program information so they could pass the information on to potential participants in their native language. The CBOs conducted outreach by having their members come to events where the CBO would present information on the upgrade program offerings. However, grantee staff found that the organizations required more support than they anticipated. Since the program was complex with many offerings, requirements, and levels of assistance, it was a challenge for the CBOs to properly explain the program and effectively answer questions. The Energy Champions program had a revised goal of 700 homeowner upgrade projects, but achieved 176 in the year and a half the program was carried out; 19 of the 103 CBOs recruited at least one homeowner upgrade.

D.3. STATE OF MAINE

Efficiency Maine, the statewide independent administrator of efficiency programs that executed Maine's BBNP program, was approached by CBOs who wanted their members to utilize program products and services. Program staff agreed to present program information to any CBO that set up a meeting of its constituents and could confirm at least ten of its members would attend the meeting. The goal of the meetings was to encourage the CBO's constituents to make a bulk purchase of specific energy efficiency services or energy-saving equipment. Bulk purchases might include, for example, audits, air sealing, basement insulation with spray foam, mini-split heat pumps, and other energy efficiency measures. Efficiency Maine took this approach in order to transform local energy markets by achieving high program participation.

For example, one CBO set up bulk purchases of services for geographically-remote islands and peninsulas where there was substantial unmet demand for insulation. In one instance, the CBO coordinated homeowners and arranged for a spray-foam truck to be shipped to the island. Due to the unmet need and the rarity of the service in this area, 90% of year-round residents reportedly installed insulation. The CBO's coordination allowed the program to provide services in areas too remote for contractors to normally visit, allowed homeowners to receive upgrade services at a discount rate, and provided jobs for contractors.

D.4. NEW ORLEANS, LOUISIANA

New Orleans' NOLA Wise program collaborated with CBOs to drive demand and to stimulate the supply of efficiency contractors. To drive demand, the program partnered with one CBO to conduct general outreach to potential program participants. The program also collaborated with several Neighborhood Associations to host homeowner showcase events. Homeowner showcases were held in the home of a satisfied program participant and signage was placed throughout the house highlighting the efficiency upgrades and the associated energy savings. The contractor who completed the work explained the upgrades and networked with potential participants in a relaxed home setting. Data showed an uptick in Home Performance Evaluation requests in neighborhoods where these events were conducted.

New Orleans also engaged CBOs to increase the supply of efficiency contractors in the area. For example, NOLA Wise contracted with Louisiana Green Corps, which offers disadvantaged youths life and career skills training. The Louisiana Green Corps recruited fourteen youths for the program and trained seven on energy retrofits. These trained youths were placed with contractors as an apprentice to learn skills in the field. Four of these youths obtained energy retrofit jobs as a result of the NOLA Wise-Louisiana Green Corps collaboration.

D.5. STATE OF NEW YORK

The New York BBNP program competitively selected and contracted 18 CBOs to conduct outreach for New York State Energy Research and Development Authority's (NYSERDA) Home Performance with ENERGY STAR® (HPwES) program.⁹ The CBOs had missions relating to economic development, housing services, family services, minorities or immigrants, faith groups, or certain New York neighborhoods. Each CBO targeted a specific region in the state and each CBO was required to attend a two-day on-site training on the program and monthly training

⁹ In addition to its several sub-grantees, NYSERDA incorporated its funding into existing energy efficiency programs. This case study focuses on one of these existing energy efficiency programs.

webinars. The CBOs were compensated financially for their involvement in the HPwES program, with 25% of their contracts paid based on progress towards performance goals (these goals were based on upgrade completions and tailored to each organization). NYSERDA developed an activity tracking system to evaluate the number of upgrades the CBOs recruited relative to their goals. The CBOs recruited upgrade participants to HPwES by conducting door-to-door outreach, producing and distributing marketing materials, and holding events and workshops to explain program offerings. CBOs also assisted homeowners with paperwork and with contractor communication once the homeowner had become active in the program.

In addition to driving demand, CBOs in New York State worked to stimulate the supply of available efficiency contractors. CBOs did this by connecting individuals in their network with green jobs training and job placement, as well as by encouraging existing contractors to obtain certifications and accreditations. CBOs reached out to their networks of existing contractors, collaborated with the Department of Labor Career Center, and provided bilingual training. CBOs successfully recruited some contractors, but encountered several challenges, including finding qualified instructors, convincing employed contractors to take time off from their jobs to undergo training, and scheduling trainings at times that would attract sufficient numbers of attendees. Some CBOs also conducted aggregation pilots, working directly with contractors to bundle projects to reduce costs. The CBO outreach program has continued beyond BBNP: in 2013, NYSERDA renewed their CBO collaboration efforts for an additional two years.

D.6. SAN JOSE, CALIFORNIA

Engagement with CBOs in San Jose was focused on driving demand for whole-house upgrades in low- and moderate-income neighborhoods. The San Jose BBNP program worked with a variety of CBOs, including faith-based organizations, youth-based organizations, neighborhood associations, and other advocacy groups. The San Jose program worked with a large, long-standing church that lent an off-site building to the grantee to set up a field-office. This reportedly worked well because people in the community knew where to find the grantee staff. Grantee staff also gave a presentation to the church congregation approximately every six months. CBOs recruited participants into existing energy efficiency programs that offered free or low-cost upgrades.

San Jose found conducting door-to-door outreach with existing and trusted CBOs to be an effective neighborhood outreach strategy. For example, the CBOs assigned native speakers in specific Spanish dialects to neighborhoods where those dialects were common. The CBO representatives conducted door-to-door canvassing, built rapport, and assisted homeowners as they completed paperwork because the forms were in English only. As a result of this collaboration, the program had completed upgrades in 244 homes and had another 125 in progress by its third year of operation.

D.7. SEATTLE, WASHINGTON

Seattle's Community Power Works (CPW) program involved CBOs in a few ways. First, CBOs contributed to workforce development. One CBO representing contractors was integral to completing the High Road Agreement, a contract to ensure quality and wage standards for participating contractors as well as to ensure that historically-underrepresented groups had access to the program's occupational openings. CBOs also strengthened the pool of available energy efficiency contractors by conducting contractor trainings.

Second, CBOs conducted outreach and coordination for the Seattle program to drive homeowner demand for upgrades. Seattle worked with 46 CBOs to educate and increase awareness of the program. These CBOs had a “green” or sustainability focus, which provided a natural opportunity to promote CPW as they were already promoting a similar message to their constituents. These CBOs conducted outreach through their existing communication channels, which included door-to-door outreach and marketing at the group’s existing events. Implementation of this strategy, coupled with other program outreach, resulted in 3,029 completed residential upgrades by the end of the program’s third year.

Third, Seattle’s program experimented with performance-based incentives for non-profit CBOs, anticipating that the CBOs would view the incentive as a fundraising opportunity. CPW intended the funds to be derived from splitting a rebate between the CBO and the recruited homeowner; CPW also would reward CBOs a \$50 bonus for signing up a specified number of homeowners. Although some CBOs participated in this program, these CBOs either did not generate any sign-ups or did not keep track of them. As a result, CPW never delivered a performance-based financial award to a CBO.

APPENDIX E. DESCRIPTIONS OF GRANTEE APPROACHES TO ENCOURAGING DEEP RETROFITS

E.1. CHICAGO, ILLINOIS

The Rockford Residential Rebate Program (RRRP) was one of three programs developed by Energy Impact Illinois, an alliance of government agencies, nonprofits, and regional utilities awarded a BBNP grant to assist communities in the Chicago metropolitan region become more energy efficient. Rockford is the third largest city in the Chicago metropolitan region (and the third largest city in the state). RRRP was run as a pilot that initially offered direct rebates of up to \$2,000 to Rockford homeowners who had home energy audits and then made upgrades to their homes that would reduce their homes' energy usage by at least 15%.

During the first six months of the program's operation, RRRP attracted fewer participants than staff had anticipated. Given the slow start, RRRP was redesigned to offer larger rebates to stimulate greater participation. Although program staff was uncertain whether deeper retrofits could be achieved in the region, the program redesign also focused on encouraging participants to pursue retrofits that would result in savings of at least 30%. The revised program offered tiered rebates, based on each project's expected savings, of up to \$15,000 per participant.

Despite the region's pre-program lack of demand for home energy upgrades (as reported by program staff) and the program's slow start, the increased incentive had a dramatic effect on the program's results. The RRRP realized almost double the number of retrofits it had targeted. In addition to surpassing its retrofit target, the pilot resulted in increased community knowledge about the benefits and associated savings of energy efficiency. As a result of RRRP, the two local contractors working on the program expanded their businesses to keep pace with the growing demand for home retrofits: one of the contractors reported hiring 15 additional staff and planned to hire 14 more staff in the following year. Program staff attributed the pilot program's successes largely to increased incentives and to the active promotion of RRRP by the participating contractors.

E.2. STATE OF MAINE

The Efficiency Maine program, implemented by the Efficiency Maine, established different pathways through which participating homeowners could achieve deep retrofits. The comprehensive project path included two tiers of incentives, based on the modeled energy savings an upgrade was expected to achieve. Participants in the comprehensive path were eligible for an incentive of \$1,000 for upgrades expected to achieve at least 20% site energy savings or \$1,500 for upgrades expected to achieve at least 40% site energy savings. In both cases, incentives could not exceed one-third of the total project cost.

The program also offered a prescriptive path through which homeowners could receive an incentive for implementing a single energy-saving measure such as air sealing. Though roughly 60% of participants initially pursued this path, a large number of participants later returned to the program to complete additional upgrade work, thereby ultimately realizing deeper retrofits.

To motivate homeowners early in the program, the initial program design included tight deadlines for completing a home assessment and reserving an upgrade rebate. Homeowners who met the deadlines were eligible for a \$3,000 rebate for a 50% improvement in the efficiency of their homes.

Homeowners whose projects were expected to reduce energy use by at least 20% also were eligible for a loan. The Trust established a 15-year property assessed clean energy (PACE) loan with a fixed interest rate of 4.99% APR which was transferable upon sale of property to new owner. More than 180 of Maine's 500 municipalities, comprising 79% of the state's population, passed ordinances in support of PACE loans. Participating homeowners took out loans averaging \$12,700 to cover the cost of their deep retrofits that, in some cases, were expected to exceed 45% energy savings. The reduction in many homeowners' energy bills resulting from their deep retrofit projects enabled them to pay off the loans they had taken out for the retrofit work before the end of the loan term.

E.3. STATE OF MICHIGAN

With the goal of determining the strategies that would most successfully elicit deep energy-saving upgrades, the BetterBuildings for Michigan program was designed to test different marketing approaches, seasonal responses, co-payment and incentive amounts, and loans offerings, to engage and recruit participants. The program rolled out as a series of 58 targeted interventions ("sweeps") in specific geographic regions over specific periods of time, each with its own unique combination of program offerings.

BetterBuildings for Michigan began with a relatively extensive base package that provided home energy audits and energy efficiency measures like direct installs, air sealing and insulation (which varied by sweep). Contractors then presented homeowners with recommendations for additional energy upgrades. Though the program succeeded in encouraging participation—43% of eligible participants in the first set of five sweeps received the base package—only 4% of those that completed the base package chose to purchase the additional energy upgrades the contractor recommended. This program structure achieved 8% to 12% energy savings on average, but did not facilitate deeper upgrades. To encourage participants to implement measures resulting in more substantial savings, BetterBuildings for Michigan staff revised the program by making it a two-step process and explicitly explaining the two steps to homeowners at the outset. In step one, participating homes underwent an energy assessment and received energy-saving upgrade recommendations based on the audit. In step two, participants implemented some or all of the recommended measures.

BetterBuildings for Michigan experimented with different marketing messages and marketing channels. Some messaging focused on saving energy and money, sometimes using technical language such as, "reduced leakage;" some messages focused on improving home comfort and the health of the home's occupants; and others focused on the program's free offerings. Marketing channels included paid media, social media, yard signs, program brochures, canvassing, and word-of-mouth recommendations.

The program varied the co-payments that it required from homeowners who received audits: co-pays for low-income participants were generally \$25 and \$50 to \$100 for other participants. Also it varied the incentives offered for individual measures and for measure combinations that achieved the deeper savings. BetterBuildings for Michigan additionally offered different interest rates on loans, different loan terms, and different loan-incentive combinations to determine the most attractive offerings to prospective participants. The program's built-in flexibility and learn-as-you-go approach enabled program staff to identify and offer financial packages most likely to result in extensive energy upgrades and to discontinue offerings that were not proving effective. BetterBuildings for Michigan also found that returning to neighborhoods that had been targeted earlier in the grant period resulted in increased numbers of deep retrofit participants.

Staff concluded that not one, but many factors influence homeowner decisions to pursue deep retrofits. Fully explaining the program steps at the outset of participation, providing adequate financial incentives and loans,

neighborhood and local government support, targeted marketing to likely responsive populations, contractors with strong communication skills, and in-person exposure to program staff, all contributed to homeowner pursuit of deep energy-saving home improvements.

E.4. OMAHA, NEBRASKA

Under the auspices of their BBNP grant, the cities of Omaha and Lincoln, Nebraska worked collaboratively to encourage residents in both cities to make energy- and money-saving improvements to their homes. From the beginning, Nebraska's reEnergize program set a goal of achieving average savings of 30% per residential participant. The program first launched in Omaha; it launched in Lincoln about one year later. Both cities initially targeted neighborhoods with primarily pre-1950 era homes, since staff expected older homes would present more energy-saving opportunities.

Program staff identified two program components that they believed led to the program's achievement of deep energy-saving retrofits. The first was reducing homeowners' up-front out-of-pocket expenses. With the intention of encouraging extensive retrofit projects, Omaha's reEnergize program required participants to pay the first \$3,500, with the program covering any upgrade costs in excess of \$3,500. However, program staff found that homeowners were unwilling to invest this sum of money in home upgrades. Staff attributed the limited program uptake to the fact that the energy efficiency market and culture were not well developed in the region. Feedback from program participants and from other program stakeholders indicated the need to offer incentives for all upgrade projects, not just those in excess of \$3,500.

Staff revised the program and created two participation paths. The first path allowed homeowners to choose energy-saving measures that resulted in at least 15% savings, and awarded them a \$100 incentive for each one percent of savings that they were able to achieve. Homeowners were eligible to receive incentives of up to 50% of their total project cost. Though this approach did allow for "shallower" 15% savings upgrades, the incentives were effective in driving participants to more comprehensive upgrades that resulted in greater savings. The second path enabled qualifying low-income participants to pay \$100 and receive up to \$3,000 toward additional upgrades as long as the project achieved at least 15% savings. Due to the incentive cap, this path did not always result in projects with deep energy savings, though it did facilitate the participation of low-income residents and led to the replacement of many inefficient furnaces with more efficient equipment.

The second strategy the program employed to encourage deeper retrofits was the use of "energy navigators" to guide homeowners through the participation process. Program participation began with interested homeowners signing up for reEnergize and selecting an energy auditor on the program's website. Homeowners who were unable to sign up online could instead contact the navigator's hotline to request assistance. Likewise, a navigator would contact each homeowner who had not selected an auditor during the online sign-up process to discuss the program's next steps. Energy navigators were tasked with ensuring that energy audits were conducted in a timely manner, answering homeowner questions within 24 hours of receiving them, assisting homeowners in selecting an upgrade contractor, and assisting homeowners in setting up quality assurance checks.

Program staff stated that the program's energy navigators were a primary reason the program was able to recruit and retain participants and achieve deep retrofits. By possessing in-depth knowledge and understanding of the program processes, the navigators provided step-by-step assistance, served as a critical liaison between the homeowner and the contractor, and thereby simplified participation from the homeowner perspective.

APPENDIX F. ASSESSING GRANTEE SUCCESS

A primary goal of our evaluation was to identify factors that drove or inhibited success among grantees' and subgrantees' residential upgrade programs. As we report in *Drivers of Success in the Better Buildings Neighborhood Program – Statistical Process Evaluation* (Final Evaluation Volume 3), using both data that grantees reported to DOE in partial fulfillment of their grant requirements and data collected by our team, we conducted a series of statistical analyses to develop a quantitative definition of grantee success that corresponds to BBNP's multiple program objectives and to identify program features and characteristics that predict success.

Due to the greater availability of data for residential programs compared with multifamily and commercial programs, the Volume 3 success analysis focused exclusively on residential programs. Further, if a grant recipient had subgrantees that ran separate and distinct programs in mutually exclusive regions, we collected and analyzed data from each individual subgrantee to capture the full diversity of program models, outcomes, and market characteristics. A total of 54 grantees and subgrantees with residential programs were included in these analyses.

First, we defined a broad range of potential measurements of program success based on theory and industry knowledge. From this list, we identified 12 quantitative performance metrics for which there were adequate data. We then conducted latent profile analysis (LPA) to cluster programs into groups that exhibited similar performance on the 12 performance metrics. LPA is an exploratory analytical technique, and our analyses sought to identify groups, or clusters, of grantees that differed meaningfully in their performance on 12 metrics of program success.

The LPA yielded three groups, and their average group values on the 12 performance metrics were consistent with an interpretation of a most successful cluster ($n = 12$), an average cluster ($n = 35$), and a least successful cluster ($n = 7$). The most successful cluster generally performed best on each of the metrics, the least successful cluster generally performed worst on the metrics, and the average cluster demonstrated mid-range values on the performance metrics. Thus, the LPA revealed clusters of grantees that were more or less successful relative to one another. Figure F-1, a copy of Figure 3-1 in Volume 3, demonstrates these tiered levels of grantee success by displaying the average cluster means for each of the 12 performance metrics.

Next, we identified grantee and program characteristics that may predict program success and compiled the corresponding data. This dataset also included exogenous variables that we deemed as critical control variables, such as weather metrics, average energy price, median income, and other variables that may affect energy use, savings, and participation rates. We used bivariate logistic regression models to explore whether any of the proposed predictor variables predicted membership in either the least successful cluster or the most successful cluster, respectively. We report the bivariate findings in companion volume *Process Evaluation of the Better Buildings Neighborhood Program* (Final Evaluation Volume 4). Next, we ran multivariate regression models for each dependent variable (membership in the least successful cluster versus other and membership in the most successful cluster versus other) using the independent variables identified as meaningful predictors in the aforementioned bivariate models. We report the multivariate findings in Volume 3. Findings relevant to the spotlight on key program strategies will be discussed throughout this volume. For additional information on the methods used to identify the grantee success clusters, see Volume 3.

Figure F-1: Performance Metric Cluster Means (n = 54)

