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Massachusetts Energy Efficiency Program Administrators

Community Based Program Design Effectiveness Study: Phase 1 Report –FINAL

October 2, 2017

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1. Executive Summary

This Phase 1 report presents findings from the Community Based Program (CBP) Design Effectiveness Study for the Massachusetts energy efficiency Program Administrators (PAs). This study had three overarching goals: (1) to identify and document the breadth of CBP designs and attributes nationally, (2) to explore the relative effectiveness of various community engagement strategies, and (3) to explore what factors help to explain why community engagement strategies are variably effective across contexts. Phase 1 addresses the first of these goals, comments on the second and third, and lays the groundwork for the development of a Phase 2 study to answer an additional question about the long-term effectiveness of CBPs.[1]

This study represents a comprehensive synthesis of 25 CBPs, which by our knowledge is the largest review of these programs to date and offers a comprehensive look at the entire program process, from origins to evaluation results. It also fills important gaps in the Massachusetts PAs' knowledge related to benefits that CBPs can offer that go beyond energy-reduction goals. This report brings together multiple interim documents to present a synopsis of all methods, findings, and recommendations.

1.1 Overview of Community Based Programs (CBPs)

Community-based energy efficiency programs are partnerships to enhance energy efficiency uptake among residential populations by delivering programs (e.g., outreach, education, incentives, technical support) in a way that is meaningful to the local community. Elements of CBPs have shown promise for ratepayer-funded energy efficiency PAs looking to overcome barriers to energy efficiency adoption that persist after decades of upstream or mass-marketed offerings. Uptake goals vary across programs but generally focus on increasing metrics related to participation and savings, like program awareness among the customer population, the total number of participants, participant diversity, measure mix, energy savings, and/or demand reduction.

To better meet those goals, PAs can develop CBPs either by involving community stakeholders in program planning or implementation, or by adjusting existing program marketing and delivery to capitalize on or accommodate the unique characteristics of a community. PAs have engaged with community stakeholders including municipal governments, regional advocacy groups, non-profits, and other community-based organizations (CBOs). Some CBP administrators have focused on reaching specific customer populations (e.g., by customer attributes, geography, current or expected system demand constraints, or others). Others have delivered offerings to the general customer population but drew on community-based social marketing approaches to personalize outreach. In working to help overcome the selected customers' barriers to energy efficiency, CBPs have leveraged a wide range of community attributes, like community pride or sense of place, locally-trusted organizers, geographic clustering, inter- and intra-community relationships, and others. In turn,

[1] This study was originally scoped out as a two-phase effort and evolved significantly over its course. Phase 1 was to be a brief literature review and series of CBP stakeholder interviews to refine hypotheses about the effectiveness of individual CBP tactics that could be tested in a multilevel modeling framework (i.e., is tactic A is more successful than tactic B, and why). Ultimately, Phase 1 completed a much more extensive and in-depth literature review and provided more detailed research on CBP tactic effectiveness vis a vis secondary literature and qualitative interviews than was originally envisioned. Because community engagement entails knowing the audience and adapting to it, a generalized community engagement strategy (e.g., local messenger; event tabling) will see variable effectiveness across contexts based on how well the administrator customized and adapted the generic approach to their specific context.

partner CBOs gain access to the PA's financial, technical, and institutional support that can help them better provide social and economic services to their constituents.

1.2 Study Motivation and Scope

The Massachusetts energy efficiency PAs[2] are among those who have tested ratepayer-funded CBPs. Despite potential benefits, Massachusetts PAs have observed that CBPs tend to be a comparatively costly way to achieve savings given the extensive collaboration and personalized implementation approaches central to their program design. Additionally, it has not always been clear whether there is a specific aspect of CBPs that drives savings, and if so, why. For example, where evaluations show that community programs "lifted" participation, energy savings, and/or demand reduction, results suggest varying conclusions about which program elements drove the result. The amount of local tailoring inherent to the CBP design has also posed an evaluation challenge, previously making it hard to understand why CBPs and community-centric tactics have found mixed success when viewed across multiple programs. Broadly, the highly-tailored nature of many CBPs implies that the tactical results of one individual program iteration may depend as much on context specifics as they do on inherent properties of a given tactic. In other words, it has been challenging to disentangle the effectiveness of design elements from community context.

The Massachusetts PAs now face decisions about whether to continue investing in CBPs, and if so, how to maximize program savings while minimizing costs. To reflect on the viability and value of the CBP design, the MA PAs commissioned a retrospective review of CBPs developed in Massachusetts and throughout the United States. In executing this review, our goals were to (1) document the breadth of CBP designs and attributes, (2) explore the relative effectiveness of various community engagement strategies and (3) explore what factors help to explain why community strategies have been variably effective across contexts.

CBP Definition for the Study

This report includes a variety of the types of communities and community groups engaged in CBPs. PAs may tailor their programs to customer communities defined in terms of municipality/geography, socioeconomics, culture, linguistics, or propensity to participate; or, even, the general population of all customers in their service area. CBPs are also diverse in their approaches to implementation. Across the board, PAs have leveraged both public and private money from a range of entities; collaborated with myriad state, regional, and municipal leaders from cultural, religious, environmental, and other types of groups; and have often—but not always—engaged local citizen volunteers. Additionally, some evolved organically or opportunistically, while others were developed to meet a state utilities regulatory commission mandate. Further, not all have been evaluated against formal metrics. To add structure to the synthesis while allowing an approach that can capture lessons from all corners of the practice, we developed a working definition of CBPs that was purposefully broad: "*A CBP is a clean energy partnership with stated goals that leverages community attributes or institutions to tailor delivery of energy efficiency or renewable energy services to a target community*."

Given our aim to provide the Massachusetts PAs with a review of programs relevant to CBPs in Massachusetts, we further focused on CBPs that have design elements pertinent to the Massachusetts context. This included: programs which actively involved an electric or gas utility energy efficiency PA; which were used to drive increased participation and/or savings in a PA program; which included a substantial residential component; and which were implemented within the last five to seven years (i.e., initiated no later than 2009). We reviewed

[2] Berkshire Gas, Columbia Gas, Cape Light Compact, Eversource, Liberty Utilities, National Grid, and Unitil.

many CBPs which did not meet all our criteria. Focusing on the most relevant programs means that results are transferrable to Massachusetts.

1.3 Research Approach

For the Phase 1 research, Opinion Dynamics used two qualitative research activities to assess CBP effectiveness: a review of secondary literature on CBPs, and interviews with CBP administrators and stakeholders. All research was completed between June 2016 and April 2017. We provide a brief synopsis of the research performed for each research objective below:

- **Document the breadth of CBP designs and attributes.** We designed the literature review to gain broad insights about CBP design, implementation, and outcomes. We developed a matrix of programs (Appendix A) and used it to record elements of each program's design, implementation, and outcomes that were reported in available program evaluation reports and other sources.

- **Explore the relative effectiveness of various community engagement strategies.** In reviewing the literature, we documented the broad methods that CBPs used to assess program effectiveness. We also reviewed reports to determine whether each program's core elements had been evaluated, and if so, what results had been found. We also conducted a series of in-depth interviews with CBP stakeholders to further explore community barriers to energy efficiency, CBP origins, and lessons-learned by the CBP administrators. In conversations, we asked interviewees to reflect on which engagement strategies were effective and which offered the biggest bang-for-the-buck. Overall, combined results of the literature review and interviews provide directional results about the value of various community outreach and engagement approaches.

- **Explore what factors help to explain why community strategies have been variably effective across contexts.** We brought together the literature review and in-depth interview results to determine what aspects of program theory could explain observed results about CBP design and element effectiveness (e.g., barriers, activities, outputs, short-term outcomes, and long-term outcomes).

1.4 Classifying CBP Designs and Successes

In compiling 25 CBPs, exploring the relative effectiveness of community-based tactics, and assessing their value to PAs and the community, we recognized the need for a classification system to organize the breadth of program designs, with attention to understanding how administrators conceptualize community-based elements relative to any existing mass-marketed energy efficiency programs. Unlike some standard energy efficiency offerings that administrators implement with relatively little variation from state to state,[3] CBPs vary widely across administrators in terms of implementation strategy.[4]

Table 7 presents a classification system that organizes programs based on 12 design elements. The classification system shows the range of operating contexts (e.g., resources and constraints) and program

[3] For example, upstream lighting programs, multifamily direct install, Home Performance with Energy Star, and other designs are planned, implemented, and evaluated in relatively similar fashion from state-to-state.

[4] An exception is made for programs which have evolved from prior iterations over time, e.g., programs that evolved from ARRA-funded trials may retain some elements as it evolves.

design choices administrators have made. Many programs' attributes fall somewhere in the middle of the range endpoints.

Administrators and evaluators can use this classification to determine which best-practices are sensitive to context and applicable to their CBP. When transferring findings across studies, we suggest that evaluators consider, at minimum, similarities and differences between their program and past programs in terms of program origins (mandates/regulatory environment), the mix of ratepayer and other funder resources used to support a program (e.g., federal, NGO, municipal), basic program structure (nature of utility-community partnership, measures, delivery) and program goals (savings, target participants, non-resource, other). Additionally, evaluators should consider whether the CBP is working with communities that have an intrinsically-high level of bandwidth and preparedness, or whether the program was designed to build capacity where there was none before.

Table 1. A Proposed Community Based Program Classification System

Program Element	Range	
Origins	Regulatory mandate	Voluntary
Administration	EE administrator only	Community only
Funders	Ratepayer only	Federal/state/municipal/private
Goals	Non-specific *(e.g., enhanced relationships, community capacity-building, participation "lift")*	Specific *(e.g., # new energy efficiency jobs, kWh/kW savings)*
Portfolio position	CBP is a cross-cutting marketing activity promoting existing programs	CBP is an original (new) stand-alone program
Design	Umbrella program offered to multiple communities with no customization	Program developed for and customized to one specific community
Customer type	Non-specific/general population	Specific customer segment(s)
Participation goal(s)	Customer-level measures *(e.g., home audit)*	Community-level measures *(% participation; municipal retrofits)*
Geographic scale	U.S. Census block	Utility territory
Program messenger	Administrator materials only	Community materials only
Non-resource/ non-energy benefits	Incidental to resource/energy goals, but not tracked or claimed	Part of formal goals (see above) and tracked
Longevity	Limited engagement (e.g., 1 program year)	Extended/multi-year partnership process

The processes of reviewing secondary literature on CBP effectiveness and listening to CBP stakeholders' views about program success also provided an opportunity to identify and classify the types of successes important for achieving energy savings with CBPs. Overall, the literature review and in-depth interview findings suggested that five criteria mark the CBP design's value and viability (Table 4).

Table 2. Community-Based Program Success Metrics Indicating Program Viability and Value

Indicator of Design Viability and Value	Description
Program savings goal achievement	Programs have historically tracked total achievements like customer participation, energy savings, and goal realization, but also should be set up to tie these achievements to program outputs/outcomes (e.g., participant tracking per event, mailers sent, or enrollment via CBP's specific website). (*Short-term metric*)
Customer reach, awareness, actions	Some CBPs tracked changes in participation, measure mix and savings per participant, or hard-to-reach population participation. Fewer evaluations examined changes in community engagement relative to a territory-wide program. (*Short-term metric*)
Process outcomes	CBPs tend to be innovative designs. For PAs that are just beginning to pilot their first CBPs, success metrics may also include process signals, such as evidence that the program worked as it was designed to do (e.g., proof of concept). Areas to explore would include the extent to which the PA and community based organizations worked well together, that tracking systems capture relevant information and met community needs (e.g., benchmarking), or that observed activities and outcomes are consistent with a community-based theory of change (*Short-, medium- or long- term metric*)
Community capacity/ structural change in the utility-community interface	While not explored/documented consistently across CBP evaluations, administrators reported higher-level benefits including: increased community capacity, administrator's improved understanding of customer needs, improved administrator-community relations, and spillover benefits like readiness to participate in future programs. (*Medium- or long- term metric*)
Program longevity	Program longevity or evolution to a fully-funded/full-scale program, expansion to additional towns, adding to or refining features of a basic design, etc. show that CBPs are valuable and may have a longer-term place in the administrator's portfolio. (*Long-term metric*)

1.5 Findings and Recommendations

We reviewed 25 CBPs tied to ten energy efficiency program administrators' existing ratepayer-funded offerings over the past ten years. Among these, we documented a diversity of goals, approaches, activities, and outcomes. We also encountered numerous additional programs that fell slightly outside of this scope but which provide context to the world of energy efficiency CBPs. Notably, there are many local programs throughout the United States and elsewhere which draw on community attributes, community-based social marketing, or other CBP design elements but which do not entail significant partnership with ratepayer-funded programs.[5] Reviews of those programs provide useful insight about how best to complete grassroots community campaigns, but we did not review them in detail given our focus on the utility-community nexus.

Key Findings

Objective: Document the breadth of CBP designs and attributes

1. **CBPs usually deploy a multi-touch approach to overcome barriers to energy efficiency, commonly drawing on community institutions and attributes to better connect with customers.** CBPs generally offer multi-touch outreach and use a holistic strategy to work around multiple barriers to energy efficiency. CBPs that

[5] See, for example, Klein and Coffey's (2016) review and classification of community renewable energy projects (link) and the U.S. DOE Better Buildings Residential Network's (2017) "Community Based Social Marketing Toolkit" (link).

we reviewed have, for example, worked on barriers related to cost, customer awareness, municipal capacity, customer trust, a lack of excitement or follow-through, and the general challenge of connecting with customer segments that have historically not participated in energy efficiency offerings. While "traditional" ratepayer-funded energy efficiency programs also address these barriers, CBPs tend to emphasize overcoming non-monetary barriers in particular. Moreover, the CBP framework often explicitly treats community institutions as trusted implementation partners. While a utility may be able to implement some of the community-based strategies without a community partner, results from the process evaluations that we reviewed suggest that the approaches are more likely to come "alive" in the eyes of the customer when community-based organizations are involved.

2. **The CBP design is not a one-size-fits-all program design, but relies on local customization to stakeholders' (e.g., utility and community) wants and needs**. The community-based design is a customizable approach to achieving program savings that allows administrators to better leverage local flavor in working through their constituents' unique barriers to energy efficiency. Some administrators, for example, may need strategies to bring basic efficiency offerings to customers who do not speak English, while others may have different needs, like building excitement in a rural community for a complex weatherization offering. CBP customization also extends more broadly to program structure. For one, some are set up to enhance existing energy efficiency programs, while others are set up as new and stand-alone programs. Additionally, administrators can choose to either work to boost capacity where communities are struggling, or to be more selective in choosing only the most capable community partners. By way of these examples, it should be clear that most administrators can use the community-based framework because it is so customizable, but each will need to make it their own by selecting different tactics. In selecting the best approach, a PA should consider their policy environment, community readiness to serve as an active partner in program delivery, and the primary (energy savings) and ancillary (goodwill, etc.) goals.

Objective: Explore the relative effectiveness of various community engagement strategies

3. **Grassroots local messengers were the most commonly praised customer-focused outreach strategy.** Many programs recruited local messengers to spread program information, including a mix of citizens and/or local organizations. Key messengers were past participants, important local figures like mayors, and trusted local non-profits like youth groups. In concept, using trusted messengers means that potential participants are more receptive to marketing compared to mass-market outreach. For example, uncertainty about the potential benefits of home upgrades may leave customers reluctant to invest the time and resources needed to participate in energy efficiency programs, despite advertisements proclaiming the benefits of participation. According to interviewed administrators, customers that heard about the benefits of participation first-hand from known and trusted compatriots seemed to be more receptive to it.

4. **Effective community engagement designs often layer technical and programmatic support for the community on top of customer outreach.** The kind of support provided ranges from basic energy efficiency trainings and marketing support to true technical support (e.g., program staff helping municipal officials set up and use U.S. EPA's Portfolio Manager). Regardless of the content or purpose of the communication, PAs found that direct and frequent communication with community based organizations can increase an organization's willingness and capacity to partner with the PA. This support enables the organization's effectiveness in serving as a link between the program and community constituents. In addition, administrators said that these structured, regular communications were an effective design tactic because they indirectly strengthen the community partner's interest in, and ability to, communicate with constituents about energy efficiency issues after the program has ended.

5. **CBPs are not often structured in a manner that facilitates the comparative evaluation of program design strategies and marketing tactics.** Evaluations studying CBP tactic effectiveness tend to rely on post-program participant surveys, process interviews with program administrators, and triangulation. As with other types of energy efficiency programs, evaluators commonly surveyed CBP participants post-participation to determine rates of marketing recall and factors motivating participation. Evaluators less-frequently completed experimental or quasi-experimental analyses to estimate marginal increases in program participation, or explored program attribution to determine what, specifically, about the CBP drove marginal increases in participation relative to other influences or compared to another program type. As a result, we found that the CBP evaluation literature offers sparse material for evaluating the relative effectiveness of program design strategies.

6. **As energy-reduction programs, CBPs have been evaluated in terms of their direct outputs (participation and savings). Notably, the programs also benefit community capacity, goodwill, and indirect energy savings.** CBP success can be classified in terms of five dimensions, including: (1) program savings goal achievement; (2) customer reach, awareness, and actions; (3) implementation process; (4) community capacity or a structural change in the utility-community interface, and (5) program longevity.[6] Despite the original intent of a CBP to reduce energy in the short term, administrators noted that community capacity and goodwill were some of the most notable benefits from their CBPs. While not explored/documented consistently across CBP evaluations, administrators reported higher-level benefits including: increased community capacity, the administrator's improved understanding of customer needs, improved administrator-community relations, and spillover or longer-term benefits like readiness to participate in future programs. Structural and long-term outcomes were generally discussed anecdotally rather than via a formal research design. This seems to be because few CBPs have tracked these outcomes in a way that enables evaluators to establish a link between program outputs, non-resource outcomes in the short term, and indirect savings in the long term.

7. **CBP benefits may ultimately depend on "the eye of the beholder."** In EM&V frameworks mandated by many regulatory commissions, the focus is on achieving a set energy savings target within budget, and doing so cost-effectively. CBPs inherently require added costs (e.g., customization) yet their added benefits either may be relatively small or may be hard to measure in the short term. Hard-to-measure benefits include enhanced community goodwill towards utilities and community capacity (with associated spillover savings), neighborhood ties, health benefits, environmental justice benefits, and others. Not all EM&V frameworks allow administrators to capture non-energy benefits. In contrast, from the community view, those hard-to-measure benefits may be the primary success metrics. In at least one case, regulatory frameworks count non-energy outcomes in equal measure to energy savings (i.e., Sustainable Jersey, and its capacity for community building). Many utilities, however, perceive that there are plenty of other, possibly less-costly, ways to build community relationships.

Objective: Explore what factors help to explain why community strategies have been variably effective across contexts

8. **It is often necessary to let CBPs evolve and grow so that the PA identifies the right mix of elements for their utility and community.** Interviewed administrators repeatedly noted that CBPs have been most successful when they took the time to find and leverage the right opportunities in a community. In terms of how to find these opportunities, administrators of longer-running CBPs counted on "learning by doing" and noted that finding the right approach took time and a commitment to sticking with a program while

[6] We discuss these metrics further in Section 2.2.3 below.

initial challenges were being worked out. CBPs, therefore, appear less-suitable for contexts that call for a rigid and prescriptive approach.

8.1.1. The process of identifying the right opportunities was especially important for CBPs that relied on enthusiastic and talented local messengers. Finding the right spokesperson entailed local networking to find the right local messenger(s); until the right person or entity was brought into the program, outreach and messaging could flounder. On multiple occasions and often unsolicited, successful administrators reinforced the need to use a *mix* of program strategies and marketing tactics, echoing common practice in multi-touch marketing campaigns that some utilities already use. Administrators' common refrain when asked to provide advice was that, in the end, "there is no silver bullet" for successful community-based outreach.

9. **Communities have multiple priorities, and energy efficiency is only one of them. Working to meet communities' broader needs has helped CBPs gain traction.** In addition to CBP savings and participation goals, participating communities also want to meet their own goals. CBP participation complements some of them—such as municipal emissions reductions or fair housing provisions—but may compete against others—like focusing on renewable energy installation targets, providing "flashier" upgrades like electric vehicle charging stations, or supporting non-energy upgrades like public library renovations. Community performance bonuses designed to incentivize CBP participation are more attractive to municipal leaders if provided in a way that allows recipients flexibility in spending the awards towards their own energy or non-energy goals.

10. **Community-based social marketing principles have had a role in shaping CBP marketing plans and marketing messages.** Situating CBP participation as an individual action that supports collective goals is founded in social science. This framing serves to simultaneously increase CBP savings, motivate municipal leader buy-in, and motivate potential participants from the standpoints of helping neighbors, gaining an environmentally friendly image, feeling good about helping the environment, and fulfilling a civic duty. The principle is to ensure potential participants see their decision to participate as one with direct consequences for their local community at large. For example, a community can advertise the CBP as for a way to fund library retrofits. This type of marketing can also work for larger-scale programs (e.g., counties or bigger regions) if PAs ensure regional messaging templates can be adapted locally, so that citizens can still identify with the program as a neighborhood effort.

11. **There is not much quantitative evidence that explains why community strategies have been variably effective across contexts. Having reviewed evaluations of 25+ programs, our view is that the strict measurement requirements set by many utility commissions miss the opportunity to measure long-term savings and non-energy benefits.** EM&V frameworks have not encouraged the type of program design or evaluation methods that adequately capture CBP benefits and enable an empirical study of tactic effectiveness. Common lore among program administrators is that community partnerships are not as cost-effective as top-down programs because they garner only marginally-more participation (e.g., 70 audits when an existing program would have achieved 65) yet need significantly more effort to implement. While this does result in lower cost-effectiveness for some programs, not all programs had been evaluated in ways that fully captured program benefits, thus tipping the balance. Speaking with administrators confirmed that few CBPs were designed or tracked in ways that would facilitate marginal savings analyses or a study of longer-term outcomes. A full accounting of program benefits would include both the short-term marginal gains in participation and savings during the program year, as well as longer-term or spillover savings produced indirectly via fostering positive community experiences with deeper and more tailored outreach, and non-resource benefits.

Considerations

Holistically, the CBP effectiveness study points to several overarching recommendations to help foster excitement and engagement from local partners and implement a successful CBP.

- Clear, community-focused communication is a central driver of CBP success (Findings 1, 3, 4 and 10). **Consider building CBPs that involve clear and consistent communication with local partners.** Local partners, especially municipalities, have a lot of issues competing for their time and resources. To help keep energy efficiency as a top issue, administrators can provide regular technical assistance and programmatic support. These discussions offer an easy "in" to keep lines of communication open with community leaders and make program participation more approachable and less daunting. Additionally, administrators can provide official structure to clarify expectations—such as developing a contract, partnership agreement, or a Memorandum of Understanding with community partners.

- While barriers to energy efficiency still exist, communities may have little bandwidth to participate in an energy efficiency program (Findings 2, 4, 7, 8 and 9). **Consider designing inclusive programs that offer communities support in reaching their own energy and non-energy goals.** This begins with a needs assessment to understand the local community's values and priorities. Once identified, the program can design or adapt implementation and incentives to align program offerings with community needs, thereby making the program more attractive. One option is to offer community performance bonuses structured in a way that motivates municipal, non-profit, and/or citizen buy-in. Another is to provide technical and other assistance to build local capacity. Finally, programs may also want to draw on community-based social marketing principles in communicating the program's value to the community, framing individual participation in context of to social, family, and civic environment.

- Findings 2, 4, 8, and 10 highlight the need for tailoring CBP engagement strategies and marketing messaging to the specific target population. **Because tailoring engagement and marketing to target populations can take some trial-and-error, consider being flexible with program design, participant engagement strategies, and marketing.** More important than any specific program design strategy or marketing tactic, CBPs are most successful when they find and leverage the right opportunities to connect with community members. Taking a learning-by-doing approach for each community does call for more boots-on-the-ground and requires upfront planning to right-size program administration and implementation (e.g., staffing up with AmeriCorps volunteers or a full-time staffer, setting up plans for growing the program slowly to avoid running into constraints).

- Still, once successful systems are identified, administrators may be able to deploy efficiencies of scale by standardizing some elements across programs (Findings 5 and 10). **Administrators can consider using an "umbrella" program design to standardize successful elements that will achieve cost savings and ease the transfer of knowledge across time and communities.** An umbrella design formalizes and standardizes aspects of the CBP development, implementation, and evaluation. Rather than reinventing the wheel for each community in a PA service area, standardizing common elements of CBPs and developing broad processes and workflows enables PAs to leverage their experiences across their service territory and over time to improve the process of creating and implementing a CBP. Umbrella designs should also include a central planning and tracking system to catalogue the use of different outreach tactics provided to different customers over the years, as this will better enable cross-cutting evaluation. Such a data collection and tracking approach should be fully set up before marketing and enrollments begin. This clarifies community expectations, allows for real-time course corrections starting at day one, and provides participant-level data for short-term evaluation as well as charting the CBP's evolution over time. Overall, according to implementers of both smaller regional efforts within the Northeast and large multi-county efforts in California, the umbrella design provides an optimal mix of formality and flexibility. To assist in this exercise, we have included a proposed CBP classification system in Section 4.1 below. Administrators and evaluators can use this classification to

determine which best-practices are sensitive to context and applicable to their CBP. When transferring findings across studies, we suggest that evaluators consider, at minimum, similarities and differences between their program and past programs in terms of program origins (mandates/regulatory environment), the mix of ratepayer and other funder resources used to support a program (e.g., federal, NGO, municipal),

- Together, Findings 5, 6, and 7 suggest that while CBPs tend to produce many non-energy benefits that participating organizations value, not all of the CBPs that we reviewed adequately tracked and reported on non-energy benefits. **Consider program implementation methods that provide data to rigorously capture non-energy and/or long-term outcomes,** such as spillover, longer-term savings, and benefits associated with structural changes in the way utilities and communities interact with respect to energy efficiency. Appropriately implementing and tracking activities can remedy some of the uncertainty about whether a CBP has truly contributed to increased savings relative to a mass-market program. The data can be used for real-time course corrections as well as evaluation. Standardized customer-, participant- and activity-specific tracking systems would be helpful for evaluating all variants of the CBP design, including stand-alone programs and those implemented as marketing add-ons. Additional process measurements to assess these benefits include but are not limited to tracking participant diversity, tracking participation rates among harder-to-reach segments, and comparing these and other metrics across participating and non-participating communities (e.g., awareness, engagement, participation, savings).

- Current evaluation methods do not fully capture non-energy or longer-term benefits (Findings 6 and 11), which may provide a skewed or incomplete picture of CBP tactic cost-effectiveness. **Fully answering questions of CBP viability and tactic effectiveness calls for evaluation methods that better facilitate attribution analysis, explore long-term outcomes, and attempt to better capture non-energy benefits.** Some of the remaining evaluation gaps are tied to the general challenges of measuring non-energy benefits, energy savings from behavioral changes, or benefits that take some time to accrue. Although non-resource benefits were some of the most-often-noted values of CBPs, not all regulatory commissions count these types of outcomes when tallying program benefits and costs. New evaluation methods (or regulatory-approved evaluation methods applied to different types of programs) may be needed to capture CBP value. Consider looking to evaluation techniques for programs that face similar measurement challenges as CBPs, including behavioral programs, codes and standards initiatives, and retrospective market transformation evaluations. Those types of offerings also have a multi-year pathway to energy savings, must tackle questions of behavioral persistence, and measurement challenges associated with attributing energy savings to a change in the structure/function of a marketplace. As a result, these programs go beyond participant surveys and annual savings analysis to also: develop indicators of long-term outcomes, formalize a logic model that shows how a training intervention leads to changes in energy use in the short-, medium- and long-term, collect systematic data to look for evidence of participant and non-participant spillover, track participant, non-participant, and market actor outcomes over multiple years, and other approaches. Where multiple lines of evidence are providing conflicting results, evaluators can triangulate savings estimates and attribution though reviewing the correspondence across a combination of evaluation techniques, such as stakeholder interviews, participant surveys, matched comparison groups and when possible experimental designs. These approaches are relatively untested for CBPs but may better represent the range and magnitude of CBP impacts

- Study results point to several areas of future research, including the long-term participation and energy-saving impacts of CBPs. The results also suggest there is a need for a formalized framework of CBP activities, outcomes, costs, and benefits that will establish a common terminology for CBP evaluations moving forward. **We suggest that the PAs consider additional studies that explore long-**

term savings from selected Massachusetts CBPs using a difference-in-differences research framework.

2. Phase 1 Synopsis

The remainder of this summary provides a synopsis of our research methods, discusses key findings about the value of community-based tactics in context of ratepayer-funded energy efficiency, and provides recommendations for additional research in Phase 2 of this study and elsewhere.

2.1 Methods

We used two methods in this study: a community-based program literature review and in-depth interviews with a sample of CBP stakeholders. We designed the literature review to gain broad insights about CBP design, implementation, and outcomes. Next, we completed in-depth interviews with ten selected CBP administrators to further explore community barriers to energy efficiency, CBP origins, and lessons-learned by the CBP administrators. All research was completed between June 2016 and April 2017.

2.1.1 Literature Review

We searched for CBPs by reviewing the energy efficiency program evaluation literature, including evaluation reports, program implementation plans, informal summary materials (e.g., fact sheets and websites), published literature, and white papers. We reviewed materials provided by the Massachusetts PAs and completed keyword-based web searches of conference proceedings, state public utility commissions, energy efficiency industry groups and others. The review identified 25 programs meeting our selection criteria. Given our initial focus on Massachusetts programs, the review included an emphasis on New England programs. Review methods tended to identify programs based in other regions that were larger and longer-running and less-often represented highly local and/or shorter-lived initiatives. After completing the literature search, we determined whether programs met the majority of our selection criteria, and catalogued those programs that met most or all of our selection criteria in an Excel database.[7] Appendix A presents the Excel database where we catalogued reported programs, including: administrator, origins, funding source(s), integration with ratepayer-funded energy efficiency portfolios, customer type, target outcome, program design and implementation, community partners, success relative to stated goals, and others. In addition, Appendix B provides a brief description of each CBP, which includes a list of key stakeholders, goals, and outcomes.

2.1.2 In-Depth Interviews

We conducted In-Depth Interviews (IDIs) to supplement the CBP literature review. These interviews were designed to not only provide additional perspective on the effectiveness of different CBP design elements identified through the literature, but also to inform our understanding of specific program elements found to be particularly impactful. Interviews confirmed program design elements reported in program documentation, elicited administrator-rated significance of participation barriers identified in the literature review, explored the rationale and context for the program, discussed the relative effectiveness of program activities, discussed the added-value of community-based elements relative to traditional residential offerings, and gathered input about lessons learned and suggestions for future research. All interviews were conducted between February 2017 and April 2017, and were audio taped and transcribed.

[7] We set aside several programs run by non-profits operating in the community-based energy efficiency space, but which generally fell outside of this review's definition. This includes programs from Wisconsin Energy Conservation Corporation (WECC), the California Center for Sustainable Energy (CCSE), OneChange, Action Research, and others.

Out of the 25 CBPs[8] included in literature review, we selected a purposive sample of 15 CBPs which represent a variety of program designs, participant engagement strategies, outcomes, and jurisdictions. In addition, we considered the availability of secondary resources such as EM&V reports and prioritized CBPs for which the availability of secondary resource was limited. We conducted IDIs with twelve representatives from the entities most knowledgeable about ten programs' historical decision-making, design, and evolution over time. Interviewees represented electric and gas utility PAs (6), ratepayer-funded non-utility PAs (2), and independent organizations who led CBPs (2). Geographically, these programs were in California (2), Connecticut (2), Massachusetts (4), and Vermont (2). All interviews were conducted between February 2017 and April 2017, and were audio taped and transcribed for qualitative data analysis in NVivo.

2.2 Results

2.2.1 Community Based Programs and their Main Features

The programs included in our study represent a wide range of program designs and tactics. They are, for example, provided in a variety of geographic locations, are serving several types of customers, and are focused on a diversity of goals. The programs also demonstrate that PAs and CBOs have collaborated in myriad ways—from true partnerships to more limited collaboration, in which either the PA or the CBO has a discrete role in limited aspects of the program. Figure 1 is on the next page and summarizes the 25 identified ratepayer-supported CBPs and their customer segments served, promoted end uses, and high-level design attributes. These programs were implemented in a range of geographies: 40% were implemented in Massachusetts (10) and the remaining 60% were implemented throughout the United States representing Connecticut (3), Washington (3), California (2), Oregon (2), Vermont (2), Kansas (1), New Jersey (1), and Rhode Island (1). Given the geographic concentration of reviewed programs in New England, we recommend taking policy, market, and energy usage attributes into account when interpreting this study's results.

In addition to their geographic dispersion, the 25 CBPs varied widely across administrators in terms of their origins, program design, and implementation strategies. Below, we discuss variations in origins, administration and funding, target customers, program design strategies, and community-based marketing approaches. Section 4, below, lists program attributes in detail, and Appendix A provides detailed descriptions of each.

Program Origins, Administration, and Funding

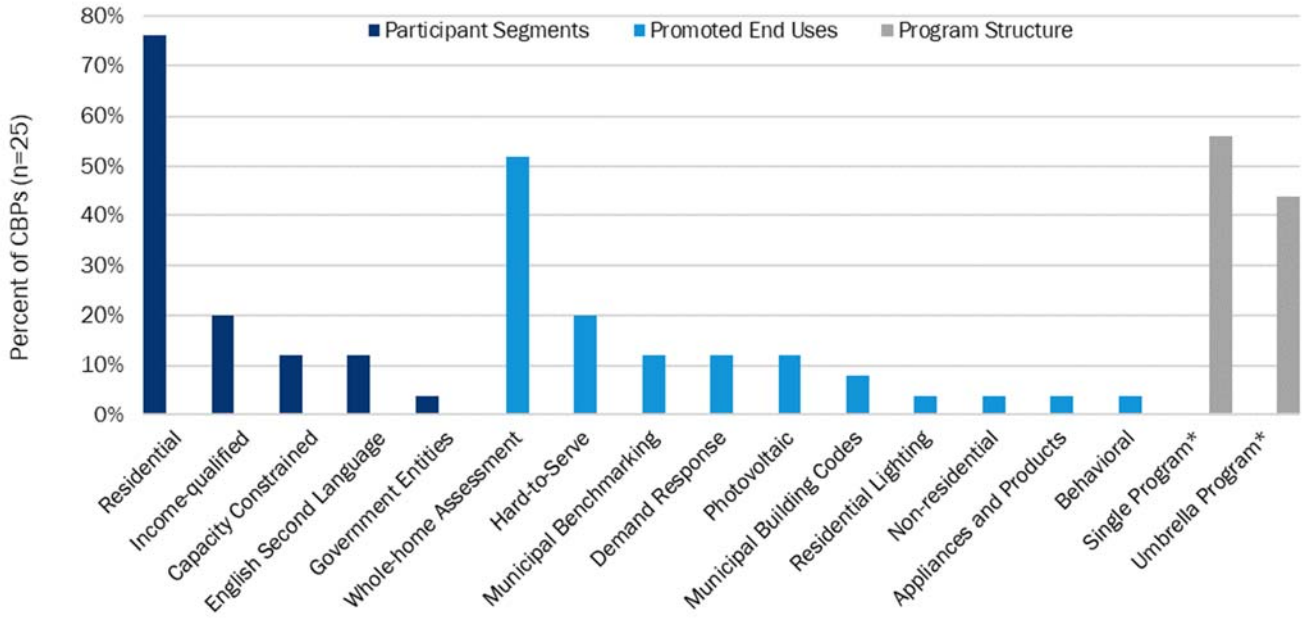
Although often evaluated in context of their energy savings or capacity to enhance marketing and outreach, CBPs originate in a broad variety of contexts. Programs have sprung from a need to meet a regulatory mandate, a stakeholder's desire to capitalize on one-time funding, a utility's interest in creating community goodwill, a community's interest in working with a utility, an interest in reaching hard-to-serve customers, and others.

For instance, the Oregon Legislature passed the Energy Efficiency and Sustainable Technology Act (EEAST) in 2009, which directed the Energy Trust of Oregon to initiate and evaluate pilots in investor-owned utility (IOU) service territories with the goal of providing easy-to-use energy efficiency financing for residential and businesses customers. The Clean Energy Works Portland (CEWP) pilot satisfied the EEAST Act requirements—although CEWP predated the passage of the Act, highlighting the often-intertwined nature of social and

[8] Although we identified 27 different CBPs originally, during the course of the study we made the determination it was appropriate to combine Efficiency Neighborhoods+ Initiative with the Cape Light Compact EN+ and combine the New Bedford CMI with New Bedford Energy Now!, and therefore report a final program count of n=25.

community movements and the creation of public policy. In terms of the special funding opportunities, a number of the CBPs grew out of one-time grant funding from the U.S. Department of Energy's Energy Efficiency and Conservation Block Grant (EECBG) as funded by the 2009 American Recovery and Reinvestment Act (ARRA).[9] For example, the Washington State legislature directed Washington State University to develop the Community Energy Efficiency Pilot (CEEP) with DOE EECBG funds as a way to identify and fund pilot projects that could provide "community-wide urban residential and commercial energy efficiency upgrades."

Figure 1. Participant, End Use, and Program Design Attributes of Included CBPs



Note: Unless where indicated with (*), programs were classified by multiple variables.

CBPs leveraged existing programs to various extents, ranging from not at all (e.g., developing an entirely new offering) to extensive (e.g., starting with an existing multifamily program and adding community-based approaches). The design choice seems tied to administrator goals. Unsurprisingly, those whose main goal was to boost participation in an existing program leveraged the existing program's structures (PG&E's Local Government Partnerships and others). Programs involving contests and competition (e.g., Kansas's Take Charge Challenge), or which community partners initiated (e.g. NWWVT's HEAT Squad), tended to create a more novel administrative and delivery structure.

In speaking with administrators, we found that not all CBPs are treated as stand-alone programs. Specifically, some administrators—particularly in Massachusetts—consider their CBPs as part of portfolio-wide marketing efforts. These CBPs-as-marketing-tactics still involve working closely with local stakeholders (mayors, nonprofits, citizens) but focus solely on customizing marketing efforts to channel local participation in existing

[9] The EECBG program was part of the 2009 American Recovery and Reinvestment Act, and provided funding for local governments, states, and territories to fund a range of energy efficiency and renewable energy projects. The DOE Better Buildings Neighborhood program was also used to distribute both EECBG and State Energy Program funds through a competitive selection process.

programs. In Massachusetts, at least, these marketing CBPs are not subject to formal program evaluation standards. Thus, the review uncovered a diversity of ways that CBPs are planned, implemented, and evaluated.

While all reviewed CBPs were built on an existing ratepayer-funded energy efficiency program by design of the review, utility PAs did not lead all of the efforts. The reviewed CBPs included utility-driven efforts in which the administrator developed the program framework with relatively little community input (44%), as well as more-collaborative efforts in which the administrator and community were both involved in planning (40%), or, less often, community-driven initiatives in which a CBO developed the framework and then sought utility partnership (16%). Further, while all reviewed CBPs leveraged some amount of ratepayer funding (100%),[10] it is largely due to the influx of federal capital following the great recession that such a breadth of program strategies, engagement tactics, and program evaluations are available to us to learn from today. Notably, 48% of programs received federal funding, such as from the U.S. DOE EECBG program. Additional program funding included local taxpayer funds (32%), private grant support (24%), or funding or in-kind resources from universities (12%).

Target Customer Populations

Traditionally, PAs have offered efficiency programs to all eligible customers, aiming to achieve participation territory-wide. Of the 25 CBPs we reviewed, many were delivered to the general population (72%), although others catered to the moderate-income sector (28%), high-potential savers (28%), non-native English speakers (20%), single-family or multi-family housing (16%), or renters (8%).[11] Some programs catering to specific groups delivered the offering to any customer living in a geographic region with a high density of target participants. For example, demand-reduction CBPs often focused on towns containing constrained circuits (NSTAR's Marshfield Energy Challenge) or neighborhoods defined specifically by circuit geography (National Grid Rhode Island's System Reliability Procurement Pilot). Geographic clustering can also minimize "search costs" associated with recruiting participants from hard-to-serve customer segments such as moderate-income households who do not meet low-income program eligibility criteria but may still have trouble accessing market-rate programs (Clark PUD's Community Energy Efficiency Program, Efficient Neighborhoods+) or non-English-speaking households (Boston's Community Mobilization Initiatives, or "CMIs"). Among the income-qualified CBPs, the approach of providing the same tailored design (e.g., waiving income history requirements) to all members of a community is thought to be effective because it avoids placing a stigma around income that could pose a barrier to participation. One administrator advised that CBPs add value because the program can highlight several programs for a community, but present them within a holistic framework that allows customers to self-select into the most appropriate offering for their needs. The administrator noted, "*We found that if you go into a community and you say, 'Who's limited income? Who's unemployed?'* [it doesn't work, because] … *customers don't want to be identified that way. They'd rather just note the suite of programs that exist, and self-identify or go through the processes that get them enrolled into what is best for them*." On the other hand, programs that promote comprehensive home upgrades like weatherization may target the program to customers able to meet a minimum savings threshold (e.g., Clean Energy Works Portland's pilot program was designed to achieve 10% savings per home, and screened customers based on energy use).

[10] Even programs which did not receive ratepayer funds directly leveraged existing PA incentives. We treated the use of ratepayer funding as a separate attribute than program origins (utility-driven, CBO-driven, and partnership); funding sources are a separate statistic than program origins.

[11] Totals do not sum to 100% because some administrators used some CBPs to reach multiple segments.

The CBPs we reviewed are split in terms of their program service area: 30% focus on a single municipality, 22% operate at the entire service area, and 30% are available state-wide. Remaining programs are run at the level of a county, a multi-town region, or for specific neighborhoods within a town. Most programs still entail local implementation at a municipal scale or smaller (89%). Across all programs analyzed, slightly more than half (56%) are independent, single programs focused on a specific community, and just less than one-half (44%) are umbrella programs, where a programmatic infrastructure is provided at a higher level and can be applied with different levels of tailoring to different populations for local implementation. Massachusetts programs differ greatly from non-Massachusetts programs in this last respect, with 70% of the Massachusetts programs we reviewed relying on a single program design (compared to 47% of non-Massachusetts programs) and only 30% are umbrella programs (compared to 53% of non-Massachusetts programs).

Program Design and Marketing Tactics

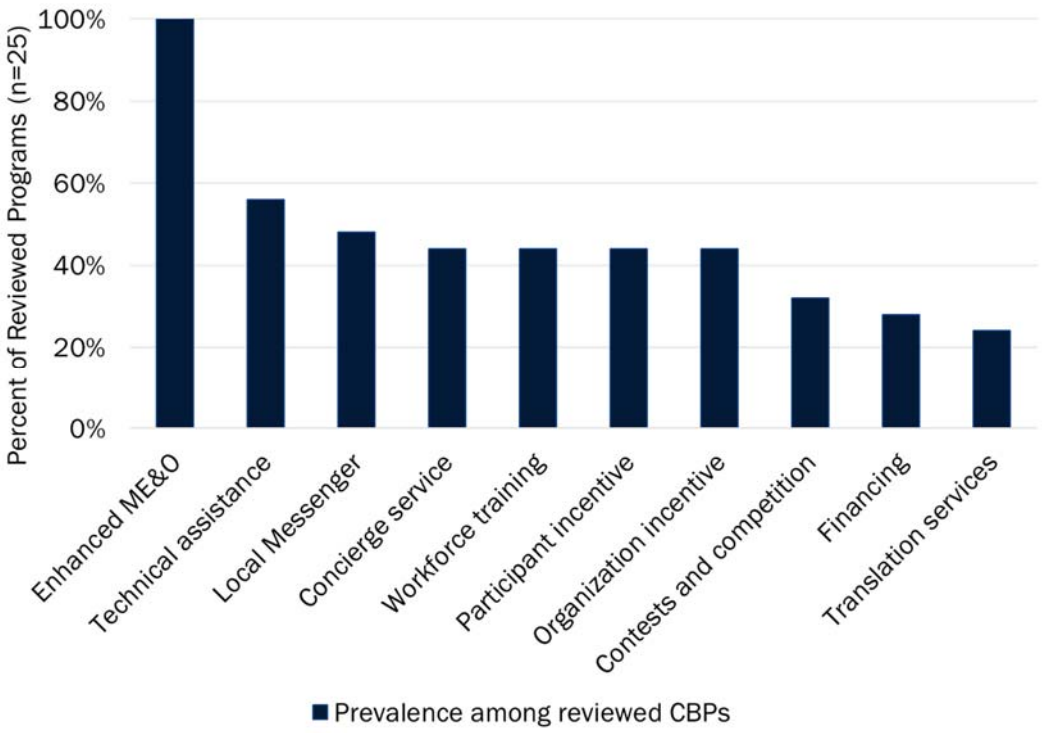
CBPs intend to add value over traditional ratepayer-funded energy efficiency programs by using community expertise and attributes to help overcome key barriers to customer participation in energy efficiency programs. Compared to programs in which either a utility or the community works in isolation, community partnerships enable both the PA and the community to offer more comprehensive customer services than would otherwise be possible (Carmalt Justus & Schulte, 2010). Based on the literature review, we identified seven key barriers and ten main program tactics deployed by CBPs. The key barriers are: lack of awareness, underdeveloped markets for clean energy services, lack of customer trust in the utility, lack of excitement about energy efficiency programs, issues with complex program design, high cost of energy efficiency upgrades and difficulty in locating hard to serve customers. The tactics are: enhanced marketing, education and outreach (ME&O),[12] technical assistance for community partners to support outreach and implementation, concierge service for customers to support enrollment and participation, trainings and workforce development for contractors, participant incentives, community incentives, local messengers to incite local spirit, contests and competition, financing, and translation services. Reviewed CBPs used a mean of four of these ten community tactics (range: 1 to 9).

Literature Review

All reviewed programs used some form of community-enhanced marketing and outreach, but select the tactics to match the perceived barriers to program participation. Aside from enhanced marketing, no individual tactic is present in more than 60% of all programs, evidencing the varied program contexts of each CBP (Figure 2). For example, enhanced participant incentives tend to be used by programs focused on serving medium-oncome customers (e.g. Project Energy Savings (Clark PUD) or Efficient Neighborhoods+) or are promoting expensive measures (e.g. Solarize), while concierge service tends to be used by programs focused on small businesses (e.g. EE2020) or promoting time-intensive participation processes like home energy assessments (e.g. Renew Boston or CEWP). In addition, inter-town contests can only be leveraged in programs available to multiple towns at one time (e.g., KS Take Charge Challenge, CT N2N, NWWVT HEAT Squad).

[12] Enhanced marketing, for purposes of this review, means marketing that leverages local geography (e.g., sending marketing materials to customers in demand-constrained areas), community institutions (e.g., using municipal government letterhead or partnering with a local non-profit, placing messages inside water bills; tabling at town events), and/or local community interactions (e.g., local messengers).

Figure 2. Customer and Community Engagement Tactics Used by CBPs



Additionally, as shown in Figure 3, evaluations report on a particular tactic's effectiveness in about 20% to 80% of programs where the tactic is being used. Financing, workforce training, and enhanced marketing are the most-frequently evaluated tactics. In situations where tactics have been evaluated, evaluators and administrators have found most tactics to be variably successful (
Figure 4). Workforce trainings, additional participant incentives, local messengers, enhanced marketing, technical assistance for communities, and motivational contests were effective community engagement tactics. Tactics less-frequently found to be effective included financing, concierge services, incentives for CBOs, and translation.

Figure 3. Customer and Community Engagements Tactics Evaluated

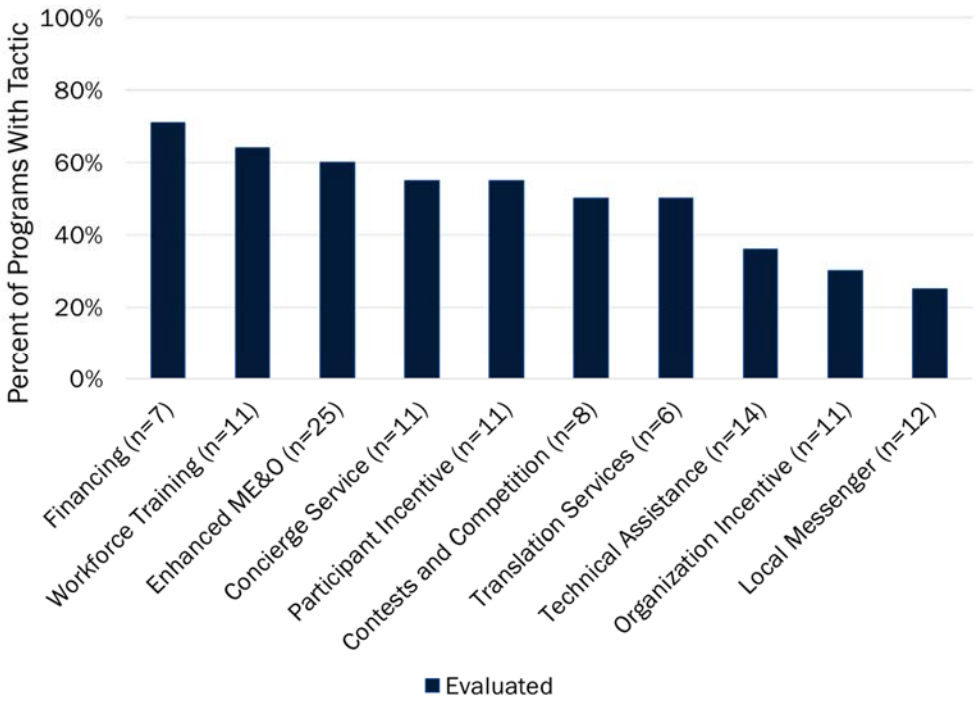
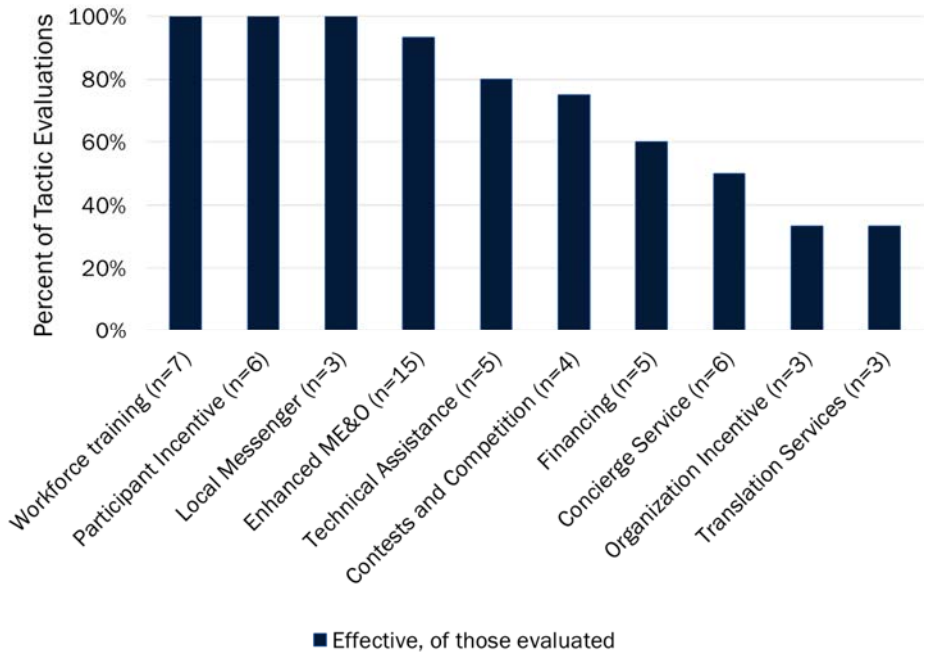


Figure 4. Customer and Community Engagements Tactics Found to be Successful



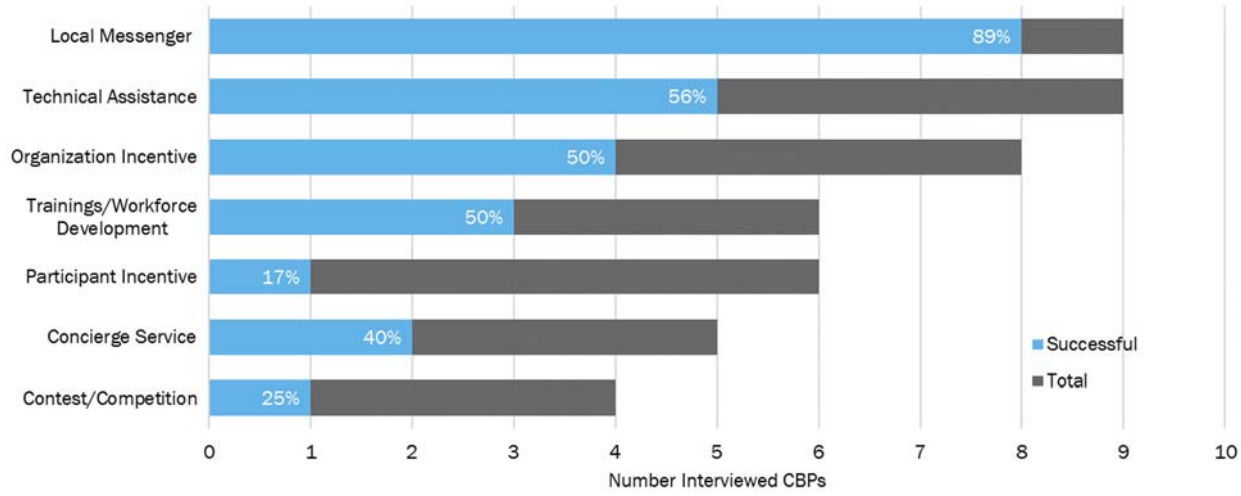
Note: This is the share of programs using a strategy and that formally evaluated the strategy's effectiveness, in the sense of using an EM&V report to present evidence that the strategy was effective, ineffective, or had uncertain effectiveness.

In-Depth Interviews

The in-depth interviews revealed similar findings. Among our pool of interviewees, local messengers emerged as the key program marketing tactic (9 of 10). Local messengers could be either individuals (often previous participants or important local figures such as mayors) or organizations who act as a trusted source of information for spreading information on program participation. Uncertainty about the potential benefits of home upgrades may leave customers reluctant to invest the time and resources needed to participate in energy efficiency programs, despite advertisements proclaiming the benefits of participation. According to respondents, customers that hear about the benefits of participation first-hand from known and trusted compatriots may be more receptive to information about the benefits of home upgrades, thereby readjusting their internal cost-benefit calculations and forming stronger expectations about the net value of participation. As one respondent notes: *"I think it's less about the tactics and more about how you do it because what you're really looking for is who is that trusted advisor in the community and getting them [to], you know, tell the story and to encourage their friends and neighbors to do it. [That] is what's powerful."*

Besides local messengers, respondents reported that the most successful CBP strategies have been technical and programmatic assistance, organizational incentives, and workforce development. Most commonly, respondents discussed the importance of providing technical and programmatic support to local partners (5 of 9). The kind of support ranges from true technical support (e.g., setting up and using EPA Portfolio Manager), to basic energy efficiency trainings and marketing support. Regardless of the content or purpose of the communication, program representatives stated that direct and frequent communication with community partners helps to increase the community partner's willingness and capacity to engage with both the program specifically, as well as indirectly helping to increase the community partner's interest in communicating with their constituents about energy efficiency issues more generally. One respondent highlighted that many competing interests vie for local officials' limited time and resources, while another explained why choosing to engage with a PA may be costlier or more time consuming for a community partner than alternative undertakings would be. Exemplifying these accounts, one respondent stated: *"[T]owns have a variety of things that are important to them, and energy efficiency is not the most exciting topic. So you need to engage early and often. You need to stay on top of that relationship."*

Figure 5. Program Strategy Prevalence Among Respondents' CBPs and Respondent-Rated Relative Success



Similarities and Differences Between Literature Review and In-Depth Interviews

Literature review and in-depth interview findings are moderately well-aligned in terms of their implications about tactic effectiveness (Table 3). The literature review and in-depth interviews both indicate the most successful tactic a CBP can use is a local messenger. In addition, results of both research activities indicate a general agreement that concierge services and organizational incentives have been moderately successful. Literature review and administrator interviews begin to diverge with respect to the effectiveness of technical assistance; although there is some directional agreement, the literature review offered stronger evidence of effectiveness (80%, or 4 of 5 programs in which the tactic was evaluated) than the in-depth interviews (56%, or 5 of 9 programs which used the tactic). Technical assistance was the second highest-rated tactic by interview respondents from the in-depth interviews. The literature review and in-depth interviews differ more noticeably in their conclusions regarding the effectiveness of increased customer incentives, workforce development, and contests and competitions. While these three tactics were found to be quite effective in the literature, respondents report they are much less impactful. Overall, the comparison exercise provides directional findings that local messengers tend to be consistently effective, that concierge services and organizational incentives are generally thought to be moderately successful, and that there is mixed evidence on other tactics (technical assistance, increased customer incentives, workforce development, and contests and competitions).

Readers should avoid placing too much weight on the similarities and discrepancies across the two lines of research, given the small number of observations in each method. Additionally, the in-depth interviews were developed and conducted as a means to further investigate and refine the general themes surrounding CBP lessons-learned, rather than to gain a representative comparison of stakeholders' views to the secondary literature. For example, we completed just six in-depth interviews with respondents that used increased participant incentives and only four with CBPs representatives that used contests or competitions. Additionally, we also prioritized interviewing stakeholders of CBPs for which we lacked sufficient third-party evaluations, therefore systematically emphasizing different CBPs than are covered in the effectiveness literature (e.g.,

Figure 4).

Table 3. Tactic Effectiveness as Reported in the Literature Review and In-Depth Interviews

Tactic	Literature Review			In-Depth Interviews
	Prevalence among reviewed CBPs	Programs in which tactic was evaluated[a]	... and found effective	
Local Messenger	13	23%	100%	89%
Technical Assistance	15	33%	80%	56%
Trainings/ Workforce Development	12	58%	100%	50%
Participant Incentive	12	50%	100%	17%
Concierge Service	11	55%	50%	40%
Organization Incentive	11	27%	33%	50%
Contests and Competition	8	50%	75%	25%
Enhanced ME&O	25	60%	93%	Not asked
Financing	7	71%	60%	Not asked
Translation Services	7	43%	33%	Not asked

2.2.2 How Does the Community-Based Design Benefit Program Administrators?

Program representatives discussed a variety of benefits of CBPs, which generally included co-branding, developing relationships, leveraging resources, and increasing program reach. Respondents most frequently cited benefits coming from community co-branding (8 of 10), in which PA- or utility-branded marketing materials are modified to also include local government or local organization branding. Administrators reported that co-branded materials and outreach strategies help position the program as vetted by trusted local institutions (e.g., the mayor's office) and relevant to the customer's daily life, but also backed by the technical and financial know-how of the customer's utility. Almost as common as co-branding, respondents cited benefits associated building relationships with customers and community partners (7 of 10). In addition to supporting the CBP's program goals, key stakeholder relationships established during the CBP have, in some cases, provided a kick-off point to future new or innovative energy efficiency offerings. More than one-half of respondents (7 of 10) discussed leveraging a local partner's funding (e.g., ARRA funds or other funds) or volunteers (for in-person outreach and mail stuffers). Six of ten respondents discussed the ways in which CBPs increased their program's reach. Often PAs believe the CBP, through outreach and implementation strategies that are designed to focus on the community, brought customers into the program that otherwise would not have participated.

Perhaps surprisingly given that CBPs promote products and services that save energy or reduce demand, only a few respondents specifically mentioned increased program savings as a main CBP benefit. Only three of ten respondents explicitly mentioned having seen increased savings or participation, relative to a counterfactual, because of their CBPs. Note that, during interviews, administrators did not always focus on methods used to make this type of assessment but instead tended to speak in terms of general program "lift."

2.2.3 How Effective has the Community-Based Design Been?

Overall, the literature review and in-depth interview findings suggest that five criteria mark the CBP design's value and viability (Table 4).

Table 4. Community-Based Program Success Metrics Indicating Program Viability and Value

Indicator of Design Viability and Value	Description
Program savings goal achievement	Programs have historically tracked total achievements like customer participation, energy savings, and goal realization, but also should be set up to tie these achievements to program outputs/outcomes (e.g., participant tracking per event, mailers sent, or enrollment via CBP's specific website). (*Short-term metric*)
Customer reach, awareness, actions	Some CBPs tracked changes in participation, measure mix and savings per participant, or hard-to-reach population participation. Fewer evaluations examined changes in community engagement relative to a territory-wide program. (*Short-term metric*)
Process outcomes	CBPs tend to be innovative designs. For PAs that are just beginning to pilot their first CBPs, success metrics may also include process signals, such as evidence that the program worked as it was designed to do (e.g., proof of concept). Areas to explore would include the extent to which the PA and community based organizations worked well together, that tracking systems capture relevant information and met community needs (e.g., benchmarking), or that observed activities and outcomes are consistent with a community-based theory of change (*Short-, medium- or long- term metric*)
Community capacity/ structural change in the utility-community interface	While not explored/documented consistently across CBP evaluations, administrators reported higher-level benefits including: increased community capacity, administrator's improved understanding of customer needs, improved administrator-community relations, and spillover benefits like readiness to participate in future programs. (*Medium- or long- term metric*)
Program longevity	Program longevity or evolution to a fully-funded/full-scale program, expansion to additional towns, adding to or refining features of a basic design, etc. show that CBPs are valuable and may have a longer-term place in the administrator's portfolio. (*Long-term metric*)

Interviewed administrators expressed concerns about how to measure the more intangible among the benefits in Table 4, expressing some consternation that the biggest CBP benefits – community capacity and goodwill—are even harder to measure than incremental changes in participation or savings. CBPs may boost local goodwill, trust, and other outcomes secondary to energy saving/demand reduction goals, but few CBPs have tracked these outcomes in a way that establishes a link between program outputs and non-resource outcomes. Rather, evaluation methods for these longer-term structural changes are under-developed, and we found that results are generally discussed anecdotally rather than via a formal research design. As one administrator noted, the utility has "*a sense of goodwill that's been created with participation or partnering with these communities, but I don't know if there is any type of measuring stick for that [type of outcome].*"

Respondents recalled that they have faced measurement challenges within the traditional evaluation framework because the framework focuses on a specific, and typically relatively short, timeframe. Some of the evaluation gap appears tied to the general challenges of measuring non-energy benefits, energy savings from behavioral changes, or benefits that take some time to accrue. Namely, CBP evaluation has been a challenge in the absence of data needed to tie indirect impacts to program activity, issues developing the right baseline in a complex market, and timing issues (benefits that accrue years after costs). Another part of the

challenge appears tied to capturing behavioral or institutional spillover.[13] Finally, others struggled to attribute savings to community activities because programs were run as experimental designs.

Still, there is some direct and indirect evidence that CBPs can boost savings where traditional programs fall short. Just over half (52%) of CBPs indicated some type of marginal savings or participation analysis occurred (13 of 25), although this includes both simple historical participation analyses as well as more robust, quasi-experimental estimation methods. If suitable comparison groups (and data) existed, some evaluations completed matched comparisons between participating and non-participating towns to estimate the share of savings attributable to the overall CBP intervention (7 of 25). Good examples included Efficient Neighborhoods+, Rhode Island SRP, WMS, and CEWP/CEWO.[14]

Where completed, evaluation methods studying tactic effectiveness tended to rely on post-program participant surveys (e.g., marketing recall or motivations to participate in the program), process interviews with program administrators, and triangulation.[15] Many evaluations surveyed program participants (12 of 25) to determine marketing recall rates, which was occasionally supplemented with general population surveys to indicate program attribution (4 of 25). Other evaluations conducted in-depth interviews with program staff or other market actors to inform process recommendations (8 of 25). In addition, almost one-quarter of programs conducted other kinds of analysis, such as a depth of savings analysis or an investigation of conversion rates over time (7 of 25). Finally, some evaluations triangulated multiple sources of information to draw conclusions about probable drivers of program success.[16]

Altogether, these comments suggest that the main benefits of CBPs are not measured and credited to these endeavors. Some administrators noted that CBPs do not often appear cost-effective within a regulatory framework focused only on savings, as with the one who noted that, "*…if your goal is numbers [of participants or savings]—I don't think community based outreach is the way to go. If your goal is building a long-term relationship with less-measurable outcomes then I think that there is a case to be made about how it can really benefit the community*." Tracking participation rates and customer awareness over time —and in addition, CBO or partner satisfaction over time— would enable CBPs to demonstrate these benefits more

[13] For example, one administrator noted that participating community had hired a sustainability coordinator based on their experiences with the CBP. This outcome is indirect to the CBP's energy-saving goals, but accrued over the longer-term and may produce spillover savings.

[14] All three evaluations show a positive net impact due to CBP intervention. For example, the 2014 Rhode Island SRP study estimated an incremental participation rate of 53% based on a comparison of participation in the target population to that of nearby communities and prior program years. This incremental participation rate was one component of the overall "take rate," which also includes a marketing attribution rate determined through participant recall surveys. This results in an estimated incremental peak load reduction of 32.9 kW. In addition, the Efficient Neighborhoods+ evaluation estimated that program resulted in incremental savings of 68,787 kWh and 7,835 therms, representing an increase of 39% and 55%, respectively, over what the standard Home Energy Services program would have otherwise produced.

[15] The NWWVT Heat Squad evaluation asked participants to rate the influence of different factors on their decision to participate, including Energy Advisors. The Marshfield Energy challenge evaluation asked participants to indicate how they learned about the program; results showed that participants more frequently learned about the program from friends and family compared to non-participants who were aware of the program, suggesting trusted messengers boosted conversion rates.

[16] The Efficient Neighborhoods+ evaluation could not determine what share of the initiative's success was due to increased marketing versus enhanced incentives. Still, participant survey results showed that cost was a major barrier to making energy efficiency improvements, and cross-community comparisons showed that towns offering increased incentives had a higher assessment-to-project conversion rate. Together, the evaluators suggested that the enhanced incentives may have made a difference.

rigorously. More broadly speaking, to adequately represent the true value of CBPs as a program, it may be that evaluators can consider applying evaluation methods used to address other programs, such as market effects studies, codes and standards efforts, or social marketing.

2.3 Findings

Our review captured 25 CBPs, among which we documented a great diversity of goals, approaches, activities, and outcomes. Synthesizing the literature review and in-depth interviews supports several original hypotheses about CBPs, highlights new understanding about why results have been variable, and illuminates areas for future research. Key findings and areas for future work are discussed in the following paragraphs.

What is the breadth of CBP designs and attributes?

- **CBPs usually deploy a multi-touch approach to overcome barriers to energy efficiency, commonly drawing on community institutions and attributes to better connect with customers.** CBPs generally offer multi-touch outreach and use a holistic strategy to work around multiple barriers to energy efficiency. CBPs that we reviewed have, for example, worked on barriers related to cost, customer awareness, municipal capacity, customer trust, a lack of excitement or follow-through, and the general challenge of connecting with customer segments that have historically not participated in energy efficiency offerings. While "traditional" ratepayer-funded energy efficiency programs also address these barriers, CBPs tend to emphasize overcoming non-monetary barriers in particular. Moreover, the CBP framework often explicitly treats community institutions as trusted implementation partners. While a utility may be able to implement some of the community-based strategies without a community partner, results from the process evaluations that we reviewed suggest that the approaches are more likely to come "alive" in the eyes of the customer when community-based organizations are involved.

- **The CBP design is not a one-size-fits-all program design, but relies on local customization to stakeholders' (e.g., utility and community) wants and needs.** The community-based design is a customizable approach to achieving program savings that allows administrators to better leverage local flavor in working through their constituents' unique barriers to energy efficiency. Some administrators, for example, may need strategies to bring basic efficiency offerings to customers who do not speak English, while others may have different needs, like building excitement in a rural community for a complex weatherization offering. CBP customization also extends more broadly to program structure. For one, some are set up to enhance existing energy efficiency programs, while others are set up as new and stand-alone programs. Additionally, administrators can choose to either work to boost capacity where communities are struggling, or to be more selective in choosing only the most capable community partners. By way of these examples, it should be clear that most administrators can use the community-based framework because it is so customizable, but each will need to make it their own by selecting different tactics. In selecting the best approach, a PA should consider their policy environment, community readiness to serve as an active partner in program delivery, and the primary (energy savings) and ancillary (goodwill, etc.) goals.

What community engagement strategies have been relatively most effective?

- **Grassroots local messengers were the most commonly praised customer-focused outreach strategy.** Many programs recruited local messengers to spread program information, including a mix of citizens and/or local organizations. Key messengers were past participants, important local figures like mayors, and trusted local non-profits like youth groups. In concept, using trusted messengers means that potential participants are more receptive to marketing compared to mass-market outreach. For

example, uncertainty about the potential benefits of home upgrades may leave customers reluctant to invest the time and resources needed to participate in energy efficiency programs, despite advertisements proclaiming the benefits of participation. According to interviewed administrators, customers that heard about the benefits of participation first-hand from known and trusted compatriots seemed to be more receptive to it.

- **Effective community engagement designs often layer technical and programmatic support for the community on top of customer outreach.** The kind of support provided ranges from basic energy efficiency trainings and marketing support to true technical support (e.g., program staff helping municipal officials set up and use U.S. EPA's Portfolio Manager). Regardless of the content or purpose of the communication, PAs found that direct and frequent communication with community based organizations can increase an organization's willingness and capacity to partner with the PA. This support enables the organization's effectiveness in serving as a link between the program and community constituents. In addition, administrators said that these structured, regular communications were an effective design tactic because they indirectly strengthen the community partner's interest in, and ability to, communicate with constituents about energy efficiency issues after the program has ended.

- **CBPs are not often structured in a manner that facilitates the comparative evaluation of program design strategies and marketing tactics.** Evaluations studying CBP tactic effectiveness tend to rely on post-program participant surveys, process interviews with program administrators, and triangulation. As with other types of energy efficiency programs, evaluators commonly surveyed CBP participants post-participation to determine rates of marketing recall and factors motivating participation. Evaluators less-frequently completed experimental or quasi-experimental analyses to estimate marginal increases in program participation, or explored program attribution to determine what, specifically, about the CBP drove marginal increases in participation relative to other influences or compared to another program type. As a result, we found that the CBP evaluation literature offers sparse material for evaluating the relative effectiveness of program design strategies.

- **As energy-reduction programs, CBPs have been evaluated in terms of their direct outputs (participation and savings). Notably, the programs also benefit community capacity, goodwill, and indirect energy savings.** CBP success can be classified in terms of five dimensions, including: (1) program savings goal achievement; (2) customer reach, awareness, and actions; (3) implementation process; (4) community capacity or a structural change in the utility-community interface, and (5) program longevity. Despite the original intent of a CBP to reduce energy in the short term, administrators noted that community capacity and goodwill were some of the most notable benefits from their CBPs. While not explored/documented consistently across CBP evaluations, administrators reported higher-level benefits including: increased community capacity, the administrator's improved understanding of customer needs, improved administrator-community relations, and spillover or longer-term benefits like readiness to participate in future programs. Structural and long-term outcomes were generally discussed anecdotally rather than via a formal research design. This seems to be because few CBPs have tracked these outcomes in a way that enables evaluators to establish a link between program outputs, non-resource outcomes in the short term, and indirect savings in the long term.

- **CBP benefits may ultimately depend on "the eye of the beholder."** In EM&V frameworks mandated by many regulatory commissions, the focus is on achieving a set energy savings target within budget, and doing so cost-effectively. CBPs inherently require added costs (e.g., customization) yet their added benefits either may be relatively small or may be hard to measure in the short term. Hard-to-measure benefits include enhanced community goodwill towards utilities and community capacity (with associated spillover savings), neighborhood ties, health benefits, environmental justice benefits, and

others. Not all EM&V frameworks allow administrators to capture non-energy benefits. In contrast, from the community view, those hard-to-measure benefits may be the primary success metrics. In at least one case, regulatory frameworks count non-energy outcomes in equal measure to energy savings (i.e., Sustainable Jersey, and its capacity for community building). Many utilities, however, perceive that there are plenty of other, possibly less-costly, ways to build community relationships.

What explains why community strategies have been variably effective across contexts?

- **It is often necessary to let CBPs evolve and grow so that the PA identifies the right mix of elements for their utility and community.** Interviewed administrators repeatedly noted that CBPs have been most successful when they took the time to find and leverage the right opportunities in a community. In terms of how to find these opportunities, administrators of longer-running CBPs counted on "learning by doing" and noted that finding the right approach took time and a commitment to sticking with a program while initial challenges were being worked out. CBPs, therefore, appear less-suitable for contexts that call for a rigid and prescriptive approach.

  The process of identifying the right opportunities was especially important for CBPs that relied on enthusiastic and talented local messengers. Finding the right spokesperson entailed local networking to find the right local messenger(s); until the right person or entity was brought into the program, outreach and messaging could flounder. On multiple occasions and often unsolicited, successful administrators reinforced the need to use a *mix* of program strategies and marketing tactics, echoing common practice in multi-touch marketing campaigns that some utilities already use. Administrators' common refrain when asked to provide advice was that, in the end, "there is no silver bullet" for successful community-based outreach.

- **Communities have multiple priorities, and energy efficiency is only one of them. Working to meet communities' broader needs has helped CBPs gain traction.** In addition to CBP savings and participation goals, participating communities also want to meet their own goals. CBP participation complements some of them—such as municipal emissions reductions or fair housing provisions—but may compete against others—like focusing on renewable energy installation targets, providing "flashier" upgrades like electric vehicle charging stations, or supporting noon-energy upgrades like public library renovations. Community performance bonuses designed to incentivize CBP participation are more attractive to municipal leaders if provided in a way that allows recipients flexibility in spending the awards towards their own energy or non-energy goals.

- **Community-based social marketing principles have had a role in shaping CBP marketing plans and marketing messages.** Situating CBP participation as an individual action that supports collective goals is founded in social science. This framing serves to simultaneously increase CBP savings, motivate municipal leader buy-in, and motivate potential participants from the standpoints of helping neighbors, gaining an environmentally friendly image, feeling good about helping the environment, and fulfilling a civic duty. The principle is to ensure potential participants see their decision to participate as one with direct consequences for their local community at large. For example, a community can advertise the CBP as for a way to fund library retrofits. This type of marketing can also work for larger-scale programs (e.g., counties or bigger regions) if PAs ensure regional messaging templates can be adapted locally, so that citizens can still identify with the program as a neighborhood effort.

- **There is not much quantitative evidence that explains why community strategies have been variably effective across contexts. Having reviewed evaluations of 25+ programs, our view is that the strict measurement requirements set by many utility commissions miss the opportunity to measure long-term savings and non-energy benefits.** EM&V frameworks have not encouraged the type of program

design or evaluation methods that adequately capture CBP benefits and enable an empirical study of tactic effectiveness. Common lore among program administrators is that community partnerships are not as cost-effective as top-down programs because they garner only marginally-more participation (e.g., 70 audits when an existing program would have achieved 65) yet need significantly more effort to implement. While this does result in lower cost-effectiveness for some programs, not all programs had been evaluated in ways that fully captured program benefits, thus tipping the balance. Speaking with administrators confirmed that few CBPs were designed or tracked in ways that would facilitate marginal savings analyses or a study of longer-term outcomes. A full accounting of program benefits would include both the short-term marginal gains in participation and savings during the program year, as well as longer-term or spillover savings produced indirectly via fostering positive community experiences with deeper and more tailored outreach, and non-resource benefits.

2.4 Recommendations

Holistically, the CBP effectiveness study points to several overarching recommendations to help foster excitement and engagement from local partners and implement a successful CBP. Because each research objective refined of our understanding of how CBPs around the country have been designed and implemented, we provide recommendations based on the complete body of work, reflecting how the research evolved over the course of this project.

- **Build CBPs that involve consistent communication with local partners.** Local partners, especially municipalities, have a lot of issues competing for their time and resources. To help keep energy efficiency as a top issue, administrators can provide regular technical assistance and programmatic support. These discussions offer an easy "in" to keep lines of communication open with community leaders and make program participation more approachable and less daunting. Additionally, administrators can provide official structure to clarify expectations—such as developing a contract, partnership agreement, or a Memorandum of Understanding with community partners.

- **Design inclusive programs that offer communities support in reaching their own energy and non-energy goals**. This begins with a needs assessment to understand the local community's values and priorities. Once identified, the program can design or adapt implementation and incentives to align program offerings with community needs, thereby making the program more attractive. One option is to offer community performance bonuses structured in a way that motivates municipal, non-profit, and/or citizen buy-in. Another is to provide technical and other assistance to build local capacity. Finally, programs may also want to draw on community-based social marketing principles in communicating the program's value to the community, framing individual participation in context of to social, family, and civic environment.

- **Be flexible with program design, participant engagement strategies, and marketing…** More important than any specific program design strategy or marketing tactic, CBPs are most successful when they find and leverage the right opportunities to connect with community members. Taking a learning-by-doing approach for each community does call for more boots-on-the-ground and requires upfront planning to right-size program administration and implementation (e.g., staffing up with AmeriCorps volunteers or a full-time staffer, setting up plans for growing the program slowly to avoid running into constraints).

- **… but standardize what you can.** An umbrella program design formalizes and standardizes aspects of the CBP development, implementation, and evaluation. Rather than reinventing the wheel for each community in a PA service area, standardizing common elements of CBPs and developing broad processes and workflows enables PAs to leverage their experiences across their service territory and

over time to improve the process of creating and implementing a CBP. Umbrella designs should also include a central planning and tracking system to catalogue the use of different outreach tactics provided to different customers over the years, as this will better enable cross-cutting evaluation. Such a data collection and tracking approach should be fully set up before marketing and enrollments begin. This clarifies community expectations, allows for real-time course corrections starting at day one, provides participant-level data for short-term evaluation as well as charting the CBP's evolution over time. Overall, according to implementers of both smaller regional efforts within the Northeast and large multi-county efforts in California, the umbrella design provides an optimal mix of formality and flexibility.

- **Consider program implementation methods that provide data to rigorously capture non-energy and/or long-term outcomes,** such as spillover, longer-term savings, and benefits associated with structural changes in the way utilities and communities interact with respect to energy efficiency. Appropriately implementing and tracking activities can remedy some of the uncertainty about whether a CBP has truly contributed to increased savings relative to a mass-market program. The data can be used for real-time course corrections as well as evaluation. Standardized customer-, participant- and activity-specific tracking systems would be helpful for evaluating all variants of the CBP design, including stand-alone programs and those implemented as marketing add-ons. Additional process measurements to assess these benefits include but are not limited to tracking participant diversity, tracking participation rates among harder-to-reach segments, and comparing these and other metrics across participating and non-participating communities (e.g., awareness, engagement, participation, savings).

- **Fully answering questions of CBP viability and tactic effectiveness calls for evaluation methods that better facilitate attribution analysis**, explore long-term outcomes, and attempt to better capture non-energy benefits. Some of the remaining evaluation gaps are tied to the general challenges of measuring non-energy benefits, energy savings from behavioral changes, or benefits that take some time to accrue. Although non-resource benefits were some of the most-often-noted values of CBPs, not all regulatory commissions count these types of outcomes when tallying program benefits and costs. New evaluation methods (or regulatory-approved evaluation methods applied to different types of programs) may be needed to capture CBP value. Initial suggestions for capturing the longer-term or harder-to-measure outcomes include those used in behavioral programs, codes and standards initiatives, and retrospective market transformation evaluations. Those types of offerings face similar measurement challenges as CBPs, due to their multi-year pathway to energy savings, questions of persistence, and measurement challenges.

3. Detailed Program Administrator Feedback

3.1 Introduction

This section summarizes results of stakeholder and expert in-depth interviews that Opinion Dynamics completed to supplement a literature review of community-based energy efficiency programs (CBPs). These interviews were designed to not only provide additional perspective on the effectiveness of different CBP design elements identified through the literature, but also to inform our understanding of specific program elements found to be particularly impactful. Semi-structured in-depth interviews included the following:

- Confirmed program design elements identified in the literature search (e.g., stakeholder roles and goals, program activities),
- Elicited administrator-rated significance of participation barriers identified in the literature review,
- Explored the rationale and context for developing each program, as this type of context was not always apparent from the evaluation literature,
- Discussed the relative effectiveness of program activities and discussed the broader added-value of community-based elements relative to traditional residential offerings, and
- Gathered input about lessons learned over multiple years of program implementation as and suggestions for future research.

Because interviewees may have potentially needed some time to refresh on the program (i.e., if it ended some years ago) we scheduled calls in advance and provided an abbreviated list of discussion topics to respondents prior to each call. All interviews were conducted between February 2017 and April 2017, and were audio taped and transcribed for qualitative data analysis in NVivo.

Out of the 25 CBPs included in Phase 1 literature review, we selected a purposive sample of 15 CBPs which represent a variety of program designs, participant engagement strategies, outcomes, and jurisdictions. In addition, we considered the availability of secondary resources such as EM&V reports and prioritized CBPs for which the availability of secondary resource was limited. This sample was further divided into a list of ten primary CBPs to contact and a list of five alternative CBPs. After exhausting the primary sample, we had not yet achieved our target of ten interviews, so we substituted alternative CBPs until we reached ten completed interviews.[17] We conducted in-depth interviews with twelve representatives from the entities most knowledgeable about these ten programs' historical decision-making, design, and evolution over time. Interviewees covered four states (MA, CA, VT, CT), and represented electric and gas utility program administrators (PAs) (6 of 10), ratepayer-funded non-utility PAs (2 of 10), and independent organizations who led CBPs (2 of 10). Table 5 provides interview dispositions and resulting response rate, calculated as the number of completed interviews out of the sample frame.

[17] Since we completed enough interviews from the primary sample we did not need to attempt to interview all five CBPs from the list of alternatives.

Table 5. CBP Administrator Interview Dispositions and Response Rate

Participation	Value
Total Population	27
Sample Frame	15
Completed	10
No Response	2
Never Available	2
Not Contacted	1
Response Rate	67%

3.2 Findings

This section presents interview results organized by several themes: the benefits of CBPs to administrators, respondents' main challenges in implementing CBPs, best practices for CBPs based on respondents' multiple years of program experience, respondents' perceptions about the significance of barriers to energy efficiency that the literature suggests residential customers continue to face, and results of discussions about how to best measure benefits of CBPs.

Participant Barriers

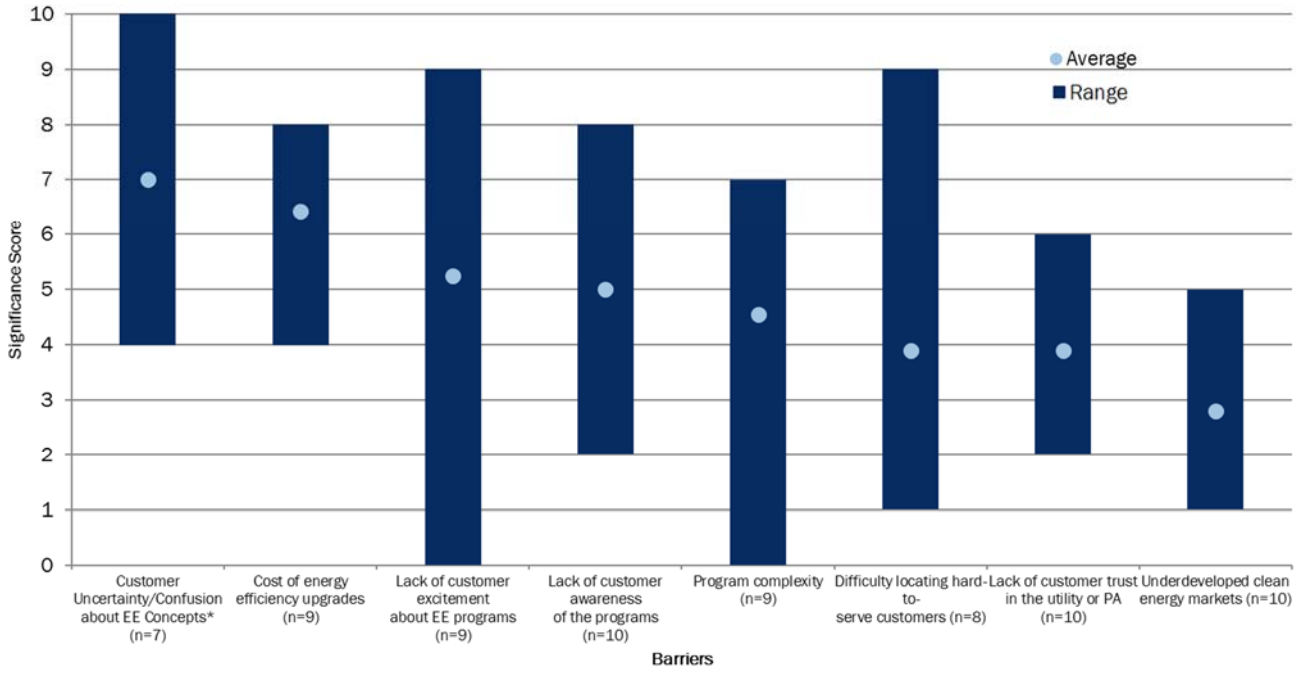
During the interviews, we asked a structured series of questions about residential customers' barriers to energy efficiency. These questions were designed to ground-truth the significance of eight barriers (see Figure 6) discussed in the CBP evaluation literature more broadly; i.e., in the review, we found that some groups have felt CBPs can overcome specific barriers to energy efficiency (MIT Energy Efficiency Practicum). Thus, we asked respondents to rate each potential barrier on a scale from zero to ten, where zero represents "not at all a barrier" and ten represents "a significant barrier" to participation in energy efficiency programs in their jurisdiction.

Responses from the CBP-administrators suggest that the most-significant barriers to residential energy efficiency program participation are: customer uncertainty about the benefits of energy efficiency, customer cost of efficiency upgrades, and lack of customer excitement about energy efficiency programs. Figure 6 below provides the minimum, maximum, and average response for each barrier. The highest-rated barrier, "Customer uncertainty and confusion surrounding energy efficiency and the potential benefits it can provide," was often recoded from open-ended responses. One respondent articulated the heart of the issue:

> "I think the fundamental understanding of energy efficiency and how it relates to one's situation [...]. I think that's still a pretty big barrier. Every time I meet with a new mayor, like if you have a change of guard in a town with the elected officials, you have to sit down and have them go through [understanding energy efficiency basics] again, and have them understand that again."

The relatively narrow range of ratings provided for customer cost barriers suggests that the relative cost of efficient (versus inefficient) products remains a consistent barrier across many jurisdictions in the northeast and western United States. On the other hand, although lack of customer excitement about energy efficiency was, on average, perceived as a moderate barrier (mean: 5.25), the wide range of ratings (min: 0, max: 9) suggests heterogeneity across jurisdictions. Further, and somewhat surprisingly given respondents' emphasis about the benefits of co-branding and the importance of local messengers, respondents said that customers' lack of customer trust in the PA is a relatively insignificant barrier compared to other options.

Figure 6. Program Administrator-Rated Significance of Participant Barriers to Energy Efficiency



* Recoded from open-ended 'other' responses.

Benefits of CBPs

Program representatives discussed a variety of benefits of CBPs, which generally included co-branding, developing relationships, leveraging resources, and increasing program reach. This section discusses each benefit in turn.

Respondents most frequently cited benefits coming from community co-branding (8 of 10), in which PA- or utility-branded marketing materials are modified to also include local government or local organization branding. Administrators reported that co-branded materials and outreach strategies help position the program as vetted by trusted local institutions (e.g., the mayor's office) and relevant to the customer's daily life, but also backed by the technical and financial know-how of the customer's utility. Respondents discussed several methods to co-brand materials, including using both PA and local insignia on program marketing (e.g., websites or flyers could present the city or county insignia), sending mailers on town or county letterhead, or enclosing energy efficiency PA marketing materials inside other types of utility bills (e.g., water or sewer). According to respondents, co-branding has been effective in establishing the CBP as a PA-community partnership, and allows all organizations involved to leverage the trust and buy-in customers have in each partner. One respondent stated:

> "So I think it's helpful for a customer to see that … its utility is working with the city government or working with … a trusted organization to deliver a service. [I]t helps the customer specifically think of the program administrator in a different way than they maybe have in the past."

Almost as common as co-branding, respondents cited benefits associated building relationships with customers and community partners (7 of 10). In addition to supporting the CBP's program goals, key stakeholder relationships established during the CBP have, in some cases, provided a kick-off point to future new or innovative energy efficiency offerings. Positive relationships established with local leaders and

heightened awareness about the PA's energy efficiency offerings among community members provides longer-term benefits akin to program spillover. While only four respondents discussed the broader benefits of relationship building, because this style of broad-based community engagement is often not contained to the world of energy efficiency it is clear it has the potential for improving general customer satisfaction outside of energy efficiency programs.

More than one-half of respondents (7 of 10) discussed leveraging a local partner's funding (e.g., ARRA funds or other funds) or volunteers (for in-person outreach and mail stuffers). As one respondent articulated:

> "I think even from the utility perspective there was just the same desire of figuring out how to leverage each other's relationships and funding in order to further the goals of [the program]."

Six of ten respondents discussed the ways in which CBPs increased their program's reach. Often PAs believe the CBP, through outreach and implementation strategies that are designed to focus on the community, brought customers into the program that otherwise would not have participated. As we identified in the literature review, in some cases, administrators have used community outreach to reach a specific hard-to-reach demographic segment within the population, customers living in specific geographic areas, and/or the general population of customers. One respondent who implements a CBP designed to boost participation among the general population discussed how community outreach benefits their program relative to a top-down marketing approach:

> "I think it adds a layer of credibility when you partner with somebody local. It increases the boots on the ground, the energy gospel in the community. … The [implementation] team won't be able to get out there, the program administrators can't get out there. So [community messaging is] sort of an extension of us, of the programs, but it's also with a familiar face that people understand and relate to, and are interested in supporting."

Perhaps surprisingly given that CBPs promote products and services that save energy or reduce demand, only a few respondents specifically mentioned increased program savings as a main CBP benefit. Only three of ten respondents explicitly mentioned having seen increased savings or participation, relative to a counterfactual, because of their CBPs. Note that, during interviews, administrators did not always focus on methods used to make this type of assessment but instead tended to speak in terms of general program "lift." One respondent even directly stated that they do *not* see savings as a main benefit of CBPs. As this administrator put it:

> "If your goal is numbers, I don't think community based outreach is the way to go. If your goal is building a long-term relationship with less-measurable outcomes then I think that there is a case to be made about how it can really benefit the community."

Still, there is some indirect evidence that CBPs can boost savings where traditional programs fall short. Instead of discussing savings benefits directly, most respondents discussed program savings more tangentially. Respondents, for example, commented on participation-related benefits that underpin program savings, such as community tactics that help to increase program reach (e.g., connecting with types of customers who otherwise might not participate). While increased or broader participation taps into savings from a new customer segment, respondents often couched increased participation not in terms of deeper program savings, but in terms of awareness, equitability, customer satisfaction, and non-energy benefits. Some respondents also implied that CBPs increase savings primarily over the long term, e.g., co-branding with community partners provides a means to increase savings down the line by building customer satisfaction and community openness to PA energy efficiency offerings. Interestingly, after having discussed CBP evaluation methods with respondents later in interviews, the lack of discussions about CBP-attributable savings may — at least in part — stem from administrators' and evaluators' difficulties in measuring CBP outcomes relative to

traditional programs. Based on measurement challenges in the traditional EM&V framework mandated by many regulatory bodies, it is still unclear if participation and savings are significant benefits of implementing a CBP.

Challenges of CBPs

We also asked respondents to discuss the major challenges they face, or faced, implementing a CBP. We discussed both specific hurdles PAs faced (and how they overcame these hurdles) as well as challenges associated with CBPs in general. Where applicable, we also asked respondents to comment on challenges relative to a traditional program delivery model. Much of these discussions served as the basis for our examination of best practices, which we describe below.

Most frequently, program representatives (7 of 10) said that community partners' unwillingness or inability to engage with the CBP was the most significant implementation challenge.[18] These challenges were placed into context of the envisaged CBP implementation strategy; e.g., local representatives' lack of pre-existing energy efficiency knowledge may hamper programs that employ a local governance structure; communities without technical staff to complete municipal benchmarking struggle to meet program checkpoints if the program was originally designed without much technical support. As a result, administrators have had to invest more time and resources to implement their CBP, relative to both a more traditional program and marketing delivery model, and to their initial expectations about what it would take to run a successful CBP. When considered as a cost that produces questionable energy savings benefits (see above), some administrators noted that this lack of technical expertise added administrator investment has been difficult to justify from a cost-effectiveness standpoint.

In contrast, some CBP administrators have embraced these challenges as an investment in building future energy efficiency capacity. As a counter-point to the perceived cost burden of working with communities, some CBPs are designed specifically to work with lower-capacity communities and have built program structures to explicitly help to increase local capacity to serve as energy efficiency and renewables leaders. A BayREN administrator noted that community capacity building is a main justification for their program and that while they "…have a lot of small counties in the Bay area that were unable to participate in energy efficiency prior to BayREN due to bandwidth or budget and not having the expertise in energy efficiency and through BayREN, we've really been able to mentor those counties."

While the level and nature of PA involvement depends on the specifics of the program and the community partner, the consensus among administrators is this style of engagement is more cost-intensive than traditional marketing or program implementation. Respondents indicated the one-on-one communications with community partners, providing ad-hoc support, and providing technical assistance can be very time and resource intensive. In describing the nature of administrator time commitments, one respondent noted that their program needed a dedicated staff person to effectively implement the program's envisioned level of community support:

[18] As a counter-point to the perceived cost burden of working with communities, some CBPs are designed specifically to work with lower-capacity communities and have built program structures to explicitly help to increase local capacity to serve as energy efficiency and renewables leaders. A BayREN administrator noted that community capacity building is a main justification for their program and that while they "…have a lot of small counties in the Bay area that were unable to participate in energy efficiency prior to BayREN due to bandwidth or budget and not having the expertise in energy efficiency and through BayREN, we've really been able to mentor those counties."

> "It is very time consuming to put a program like this in place, because you are working with different [community partners] and there's a lot of requests that come through in questions, … and having that dedicated resource also … helps because you have to go and explain the program to some of the [community partners]."

Interviews also revealed that, as with residential energy efficiency program designs that use trade allies or contractors, part of the increased costs of CBPs come from a two-layer outreach approach that not only entails grassroots outreach to customers, but also entails enhanced support to train community implementation partners on the localized outreach approaches. In some cases, this approach was developed over time (e.g., learning-by-doing), while in others, the two-layer approach was intentional. Respondents described these activities as follows:

> "It's like we're trying to motivate two different levels of folks here. We're trying to motivate the individuals to take action and we're trying to motivate the communities to get their individuals in their communities to take action, right, so how do you engage community groups, volunteers, what do you provide?"

> "[This individual was] the concierge for the homeowners but honestly like three-quarters of their time was really spent with contractors, helping them do a good job by their customers, running their business within our program."

> "The towns were great at doing the outreach, they were great at signing the pledge. If you followed up with them on benchmarking, their eyes glazed over. … So we developed a technical assistance program [for the towns]."

Either directly or indirectly, many respondents who had used the two-layer approach mentioned that training volunteers and implementation contractors on energy efficiency and sales and marketing, respectively, had been particularly time consuming and thus costly. An administrator, whose program involved training the community leaders who would be delivering community member outreach, noted that the training-the-trainer approach was very cost intensive. Reflecting on the relative costs and benefits of this customized outreach strategy, they noted:

> "I think it [the trainings] made the difference in the—in the outreach that was being done. Whoever is providing the outreach has to have the knowledge about what they're talking about. But once again, did the benefit outweigh the cost? I'm not sure, but if you were going to use non-profit organizations for community based or outreach, you have to train them [because they may not have the content knowledge ahead of time]."

Best Practices of CBPs

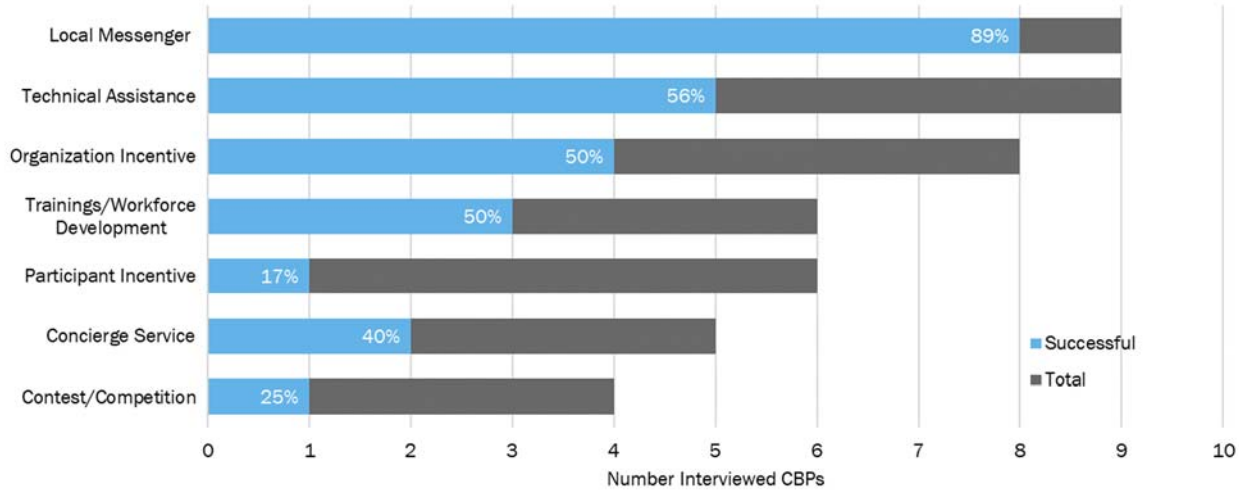
During our conversations with administrators, we uncovered best practices for the design, implementation, and evaluation of CBPs. While some programs followed a formal course in testing new strategies over time, others reported that their best practice recommendations grew out of a more organic evolution over time reflecting a learn-by-doing mindset. This section describes results about best practices.

Program Design Strategies

We specifically inquired about successful and unsuccessful program strategies in each interview, although due to time constraints we were not able to systematically cover each strategy that each CBP employed. In addition, discussing specific challenges encountered while implementing a CBP (and learning about PA's

subsequent reactions to these challenges), naturally produced insights regarding successful and not-so-successful CBP strategies. Comparing anecdotes across interviews produced findings about the relative effectiveness of the most-common strategies. Figure 5 above shows the number of interviewed administrators who employed each program strategy in their CBP, and demonstrates the percent of respondents who found the strategy was successful.

Figure 7. Program Strategy Prevalence Among Respondents' CBPs and Respondent-Rated Relative Success



Leaving aside marketing tactics (which are discussed below), respondents reported that the most successful CBP strategies have been technical and programmatic assistance, organizational incentives, and workforce development. Most commonly, respondents discussed the importance of providing technical and programmatic support to local partners (5 of 9). The kind of support ranges from true technical support (e.g., setting up and using EPA Portfolio Manager), to basic energy efficiency trainings and marketing support. Regardless of the content or purpose of the communication, program representatives stated that direct and frequent communication with community partners helps to increase the community partner's willingness and capacity to engage with both the program specifically, as well as indirectly helping to increase the community partner's interest in communicating with their constituents about energy efficiency issues more generally. One respondent highlighted that many competing interests vie for local officials' limited time and resources, while another explained why choosing to engage with a PA may be costlier or more time consuming for a community partner than alternative undertakings would be. Exemplifying these accounts, respondents stated:

> "[T]owns have a variety of things that are important to them, and energy efficiency is not the most exciting topic. So you need to engage early and often. You need to stay on top of that relationship."

> "Some of the towns really don't have much experience in the marketing side, so it's a big educational kind of session too of just showing them what they need to do and getting them up to speed. So just being able to kind of provide that one on one attention to the towns … [is] what you need to … have an effective program."

Four respondents believe providing an incentive or prize to community partners is an effective strategy, representing half of the programs which did so (4 of 8).[19] Often the prize money was tied to non-energy related community projects, such as library renovations. Respondents indicate this approach was effective because it helps reframe the personal decision to participate in an energy efficiency program as part of a community effort to help improve the town. As one respondent stated:

> "[The prize money] went to the town hall or the town library or something that you know the town members use and they felt good about, 'I'm doing this to support my town,' so a sense of community where I think that really got people engaged."

Half of the program representatives who relied on training contractors indicated it was one of the most successful strategies in their CBP (3 of 6). Notably, PG&E's Local Government Partnerships employ contractor-driven outreach to effectively serve communities throughout their large service area, and this local marketing and implementation approach constitutes the basis for their small business program. More generally, CBPs offering contractor training employed a range of different contractor workforce development strategies, with program representatives who employed this strategy more often finding that they needed to provide contractors sales training, as opposed to technical training. Thus, important precursors to successful energy efficiency programs of any kind, and in particular those which put community marketing in the hands of contractors, are to (1) provide contractors proper training, sales, and project management support, and (2) provide an incentive structure that aligns contractors' goals with the program's. A CBP which builds on an existing ratepayer-funded energy efficiency delivery apparatus needs solid foundation to be successful. In service areas—or parts of service areas—that have yet to benefit from the reach of trade ally-based programs, CBPs may be a good way to start building that network. As one respondent highlighted:

> "[T]he contractor network [is] the linchpin to all of this … in my mind [an ineffective contractor market is] the biggest barrier that's out there."

In addition, respondents stressed that perhaps more importantly than any specific CBP strategy, it was vital to be flexible, especially in the early stages of CBP implementation. All ten respondents indicated their CBPs underwent changes during implementation, and the majority (6 of 10) discussed updating program design and tactics on an ongoing basis to match the needs of each community. PAs felt this flexibility was key to running a successful CBP for two reasons. The first is that administrators must be open to adapting a program based on what they learn from experience. Respondents cited the importance of collecting data and other feedback in a timely fashion to inform strategic decision making on a monthly (or more frequent) basis. As one respondent noted:

> "You got to do the community asset mapping and you've got to do the campaign planning and you've got to manage it and you've got to adjust on the fly based on what's working and what's not working."

In programs that we classified as "umbrella programs,"[20] program administrators catalyzed the local tailoring of programs by leveraging best practices gained over time from multiple program incarnations. Four administrators–two of which administer umbrella-style programs-- sourced local best-practices from their community partners during check-in calls with community partners. Over time, some administrators started conducting these calls as a single group call with a cohort of communities, instead of conducting multiple

[19] One respondent indicated this was an ineffective strategy and a poor motivator of community participation

[20] We define "umbrella programs" as ones which developed a core program infrastructure and applied it with relatively little programmatic tailoring across multiple communities.

individual calls. According to the respondents, the group method allows for a faster dissemination of new ideas and best practices while reducing the necessity of one-on-one interactions between PA and any single community group, saving administrative time and resources. This idea helped contribute to some respondents' belief that economies of scale help lower the marginal cost of CBP engagement as their umbrella programs expanded (3 of 5). One respondent characterized this dynamic as:

> "So I think that it is just important that there is continuous communication and guidance perhaps from the lead [implementer] about different efforts to not lose either the local or the regional flavor. And I think a lot of it is live and learn. We thought that, like for example, radio buys across the region would be effective and they would go outside of [our area, but], it didn't work well. But we didn't necessarily know that … until we did it. So some of it is live and learn, but I think that reconciling the community or regional program was local and limitation and is key and that should be done through meetings and checking in and that type of thing."

Program Marketing Tactics

Among our pool of interviewees, local messengers emerged as the key program marketing tactic (9 of 10). Local messengers could be either individuals (often previous participants or important local figures such as mayors) or organizations who act as a trusted source of information for spreading information on program participation. Uncertainty about the potential benefits of home upgrades (see below) may leave customers reluctant to invest the time and resources needed to participate in energy efficiency programs, despite advertisements proclaiming the benefits of participation. According to respondents, customers that hear about the benefits of participation first-hand from known and trusted compatriots may be more receptive to information about the benefits of home upgrades, thereby readjusting their internal cost-benefit calculations and forming stronger expectations about the net value of participation. As one respondent notes:

> "I think it's less about the tactics and more about how you do it because what you're really looking for is who is that trusted advisor in the community and getting them [to], you know, tell the story and to encourage their friends and neighbors to do it. [That] is what's powerful."

Over half of respondents cited tabling and events as successful marketing strategies (6 of 10). Respondents believe the strengths of tabling and events as marketing tactics lie in the one-to-many communication strategy, and interacting with potential participants face-to-face. Further, as one respondent discussed (see below), since participation in an energy efficiency program may involve a substantial investment on the customer's part, it is beneficial to discuss the program benefits and participation process face-to-face. Several respondents did note, however, that leveraging existing events is key to event-based marketing success. Leveraging existing events allows the implementer to capitalize on the larger crowds drawn to a community event compared to lower attendance at a standalone energy efficiency event. One respondent noted that while tabling is good for raising awareness because it allows administrators to reach many people at once, it may not pay off in terms of inducing deeper savings. Illustrating sentiments about community event marketing, respondents said:

> "I found that if you have events that are already going on in a town, going on within the community, and you piggyback on them and get involved with that, that you will have better success at reaching a larger population within a community [compared to a CBP-only event]."

> "I [think] it's just personal facetime, one on one, people talking to each other. That's how you get people to move forward with [whole-home retrofit projects]. We're not talking about trying to encourage people to buy an LED; we're trying to say go spend $7 grand… [and] you're trying to convince them."

Echoing statements about the value of CBP co-branding, half of respondents (5 of 10) have found mail from an important town figure or organization to be a particularly effective marketing tactic (such as a letter from a mayor encouraging participation, materials printed on a county letterhead, or outreach delivered by a respected community organization like a church or youth group). Similarly, many (4 of 10) respondents believe bill stuffers are among the most cost-effective marketing strategies, delivering the biggest "bang for the buck" in terms of increased participation per dollar spent. In addition to utility bills, several respondents suggest including bill stuffers in tax or water bills, since, as one respondent put it, "[t]hey get to the decision maker."

Respondents also frequently noted (5 of 10) that, like the level of tailoring needed across towns to adjust specific engagement tactics, it is important for a CBP to adjust marketing messages to each community. Locally tailored messaging is a key component of the "umbrella programs" included in our interviews (4 of 5). Especially for "umbrella programs" where the program may attempt to cover a whole service territory or state by working with a rotating group of towns over time, PAs highlighted that adapting community specific marketing messages helped the program re-position itself as a community-specific offering at each new town. As one respondent highlighted:

> "We're centralizing how we're implementing programs, and taking advantage of economies of scale across large regions, but we're still making these programs fell like they're part of the community and that they were designed by the community."

In terms of how to cost-effectively implement local tailoring, several respondents offered suggestions. These included suggestions about marketing plans and budgets:

> "Some things are just more effective on the local level. [But since our program's marketing is designed with a regional message] we will order the same swag, that that will come out of the regional marketing budget or we will have a template for collateral or for case studies that is the same, but then is tailored locally."

> "So our goal for community outreach is not just to say, 'we're going to just come out there with one program, energy efficiency is great for you,' but we will dive into what the specifics are and target our message based on who are audience is. So if we go to a community and we know it's a distressed community, and funding is not necessarily available, then we will present the programs that suit their needs."

Not all respondents offered comments about *un*successful marketing tactics, but of those who did, all mentioned that person-to-person canvassing (5 of 5) like door-to-door knocking was a particularly costly strategy. As a result, these respondents felt that the canvassing did not generate as much savings as hoped, and in some cases noted that they did not plan to employ it in the future. Typical of that broader sentiment, one respondent noted:

> "Yep, that's a tricky one actually because there is no silver bullet and it takes all the different avenues. But I know some that don't work and I would never do again, door to door I would never do…"

Community Partner Capacity

A central theme about CBP effectiveness that arose from our interviews relates to the importance of institutional capacity of local partners. The ability and willingness of local partners to consistently work with PA staff, follow program guidelines, and commit time or resources to the CBP was raised by respondents during discussions of CBP costs, CBP benefits, and CBP best practices. As discussed above, the inability or

unwillingness of community partners to consistently engage with PAs is a common challenge to implementing a CBP.

Through discussions with respondents, two sometimes-overlapping strategies emerged as potential solutions to this issue. The first is strategically targeting the program towards entities which have signaled the ability and willingness to engage with the PA, which appears to require less effort on the administrator to bring communities up to speed (6 of 10). The second strategy is tailoring the partner participation process to better match the abilities and expected level of engagement from local partners by increasing the administrative or technical burden shouldered by the PA (3 of 10).[21] Respondents tended to settle on these strategies based on their own experiences implementing their respective CBPs.

In response to the limited capacity of local partners, administrators recalled learning from experience and starting to target their offerings towards entities which had credibly signaled an ability and willingness to participate. As one respondent stated:

> "We're much, much more realistic in how we even have initial conversations. And we are very comfortable in a pleasant polite way walking away from folks and saying, 'that's ok, it's not a good fit'."

Illustrating the alternative response of changing program implementation to meet community needs, one administrator had initiated a CBP but soon realized the technical burden the program placed on their community partners was too high. This administrator noted:

> "The first time we started this type of program we realized even though we were [providing program support and direction], it still was too much work on [the community partner]. So, we built out our technical team even further."

Respondents also offered ideas about what types of community entities make for successful PA-community partnerships. Although interviewed administrators did often work with local trade allies, non-profits, and motivated individual citizens, almost all (8 of 10) program representatives we interviewed collaborated with municipalities or regional governmental organizations as a part of their CBP. Interpreting administrators' experiences, administrators seem to have found that governments offer greater organizational infrastructure and bureaucratic experience than community organizations do. Collaborating with government entities allows the program access to local energy efficiency staff (if available), local government financial staff, community organizers, and a variety of existing relationships and personnel. In addition, municipalities have a dedicated interest in all their citizens, which can be important when implementing a broad, inclusive CBP across a jurisdiction.

Best Practice Recommendations

Overall, PAs provide several overarching recommendations to help foster excitement and engagement from local partners and implement a successful CBP:

- Consistent communication with local partners is very important. Local partners, especially municipalities, have a lot of issues competing for their time and resources, and it is important to both

[21] Literature review results suggest that this strategy of building up administrator resources to continue to invest in communities with lower initial self-sufficiency may be an explicit focus of some CBPs, such as those with sustainability capacity-building goals or an interest in supporting underserved communities

keep energy efficiency on the forefront of their discussions and assist in making program participation more approachable and less daunting. In addition to technical assistance and programmatic support, contracts, partnership agreements, or Memorandum of Understanding provide an added incentive for active participation.

- Design inclusive programs that offer communities support in reaching their own energy and non-energy goals. In addition to savings and participation goals, communities are also likely to care about meeting their own carbon reduction goals, renewable energy installation targets, or municipal upgrades that are "flashier" than energy efficiency, like installing electric vehicle charging stations. Providing performance-based financial support to communities serves to simultaneously increase CBP savings, motivate municipal buy-in, and reframe individual community members' decision to participate from a personal choice to a sense of duty to support a group effort that benefits the whole community.

- Be flexible with program design, participant engagement strategies, and marketing. While respondents did provide insight on specific program design and marketing strategy successes, they also repeatedly noted that CBPs are most successful when they find and leverage the right community-specific opportunity, be it an influential local messenger, a marketing message that particularly resonates with constituents, or an engagement strategy well-suited for the community, or, perhaps most likely, all three. Respondents of longer-running CBPs also noted that finding the right approach for a given town or region can take time and a commitment to sticking with a program while initial challenges are being worked out. On multiple occasions, often unsolicited, respondents shared the same advice regarding program strategies and marketing tactics: in the end, "there is no silver bullet."

Measuring Benefits

When discussing the energy benefits derived from implementing CBPs, most respondents indicated they track total participation or savings metrics, such as the total number of installations or projects in each community (6 of 10). Notably, four out of ten respondents discussed the difficulties in properly estimating energy savings and then attributing them to the specific interventions of their CBP. Among respondents who did attempt to measure incremental savings, they typically used a straightforward comparison to historic participation or savings, extrapolating historical metrics to develop a counterfactual. In line with this approach, some administrators noted that they track CBP outcomes as if the CBP is a marketing tactic, not a program. The marketing evaluation mindset reflects sentiments that there is no "silver bullet," acknowledging that it may take multiple nudges to inspire participation, and that, for example, it takes multiple efforts to bring a customer from awareness to participation. Complicating the matter, not all CBPs noted that they had set up program-tracking databases in a way that would facilitate attributing a specific customer's participation to specific marketing or outreach materials.[22] One respondent explained the inherent difficulties in estimating attribution as:

> "[W]e're looking at participation for [the] overall town…so it's really hard to… say that…out of these 100 participants, this percent was [due to] this community program."

[22] Exceptions include programs that set up specific phone numbers for customers to call based on community marketing or detailed databases of customer interactions and participant management.

These simpler program-tracking and impact estimation approaches have been the industry standard for marketing campaigns, but contrast with the more robust quasi-experimental estimation methods that some CBPs have started to build into program design and evaluation (per the literature review).

In addition, almost all respondents mentioned the non-energy benefits their CBPs produce (9 of 10), most of which are discussed above. When asked how to measure the value added of the community-based program design relative to traditional program design, PAs mentioned "customer satisfaction" or "credibility" and provided little insight as to how these benefits are tracked or quantified. Some respondents noted the importance of tracking non-energy metrics or conducting process evaluations, for regulatory purposes or to provide ongoing program design support. One respondent noted:

> "With each initiative that our local partners are working in, I mean climate planning is a big one, but there's a lot of others, like promoting reach codes, doing water-energy nexus type work. All those have deliverables, and we track timelines."

Three respondents also explicitly discuss the reality of how, and whether to, quantify energy or non-energy benefits in a regulated environment. As a part of a regulated industry, ratepayer-funded energy efficiency programs are commonly bound by cost-effectiveness regulations which prescribe specific methods and models by which a PA's portfolio of programs is to be evaluated. According to some administrators, the existing EM&V frameworks do not provide an easy way to capture non-energy benefits. One respondent said:

> "[N]on-resource benefits [are] where we feel that [the CBP] provide[s] a lot of value, but because of the utilities commission and how things are measured, that's lost, so that's a very hot topic."

Additionally, some administrators expressed concerns that CBPs can produce structural changes that take more than one year to develop, or can produce benefits that only indirectly provide energy savings, both of which are typically challenging to assess with a traditional evaluation framework examining a specific, and typically relatively short, timeframe.[23] More unique benefits of CBPs may not be adequately represented in traditional evaluations. Suggesting that, as a result, CBPs may not appear cost-effective within a regulatory framework focused only on savings, one administrator noted that:

> "I think that your direct measurable benefits are very difficult to see. … here in Massachusetts we work in very large numbers sometimes when it comes to number of customers served and number of units of energy saved and I don't think it's really easy to quantify how a direct investment in dollars relates to [CBP] outcomes. And we have to measure outcomes because we do need to justify the expenses in our regulated industry"

Although non-resource benefits (e.g., local sustainability capacity, image benefits for an administrator) were some of the most-often-noted values of CBPs, not all regulatory commissions count these types of outcomes when tallying program benefits and costs. Further, administrator responses suggest that CBPs' most-touted benefits are also the hardest-to-measure benefits given the current program-tracking and evaluation practices.

[23] For example, one administrator noted that a participating community had hired a sustainability coordinator based on their experiences with the CBP. This outcome is indirect to the CBP's energy-saving goals, but accrued over the longer-term and may produce spillover savings.

4. Selected Highlights from the Literature Review

Based on our review we included 25 CBPs operating in 10 states (Table 4). Below the table we provide a classification system that we developed for an IEPEC paper based on this work, as well as highlights of the literature review discussing common barriers to energy efficiency that CBPs have addressed through community outreach.

Table 6. Participant, End Use, and Program Design Attributes of Included CBPs

State	Program Name (Program Administrator)[a]	Program Attributes		
		Participants[b]	End Use[c]	Design[d]
CA	Local Government Partnerships (4 CA IOUs)	R	CS, HTS, NR	U
CA	Regional Energy Network Programs (2 CA RENs)	R, G, IQ, ESL	WH, HTS	U
CT	CT Clean Energy Communities (Eversource)	R	CS,M	U
CT	Neighbor 2 Neighbor Energy Challenge (CT N2N; CT Green Bank)	R	WH, PV	O
CT	Solarize CT (CT Green Bank)	R	PV	U
KS	Take Charge Challenge (4 KS utilities)	R	General	U
MA	Renew Boston Residential (Eversource, National Grid)	R	General	O
MA	Boston Community Mobilization Initiatives (NSTAR, National Grid)	IQ, ESL	HTS, WH	U
MA	Efficient Neighborhoods+ (4 MA PAs)	IQ	HTS, WH	O
MA	Energy Efficiency 2020 (Serrafix; 4 MA PAs)	R, C&I	NR	O
MA	Fall River Energy contest (4 MA PAs)	R	WH	O
MA	Marshfield Energy Challenge (NSTAR)	CC	DR	O
MA	Community Initiatives (National Grid)	R	WH, L, A	U
MA	New Bedford Community Mobilization Initiative/ New Bedford Energy Now (NSTAR)	IQ, ESL, R	HTS, WH	O
MA	Community Energy Challenge (NSTAR)	R	WH	U
MA	Western Mass Saves Challenge (WMECo)	R	PV, X	O
VT	Vermont Home Energy Challenge (Efficiency VT)	R	WH, M	U
VT	NeighborWorks® H.E.A.T. Squad (NWWVT)	R	WH, M	O
NJ	Sustainable Jersey (NJ BPU; College of New Jersey)	R	General	U
OR	Clean Energy Works Oregon (CEWO)/ Enhabit (ETO, Enhabit)	R	WH	O
OR	Clean Energy Works Portland (CEWP) (ETO, local utilities)	R	WH	O
RI	System Reliability Procurement Pilot: EnergyWise (National Grid)	CC	DR	O
WA	Project Energy Savings (Clark PUD)	IQ	HTS, WH	O
WA	Energy Efficient Communities (PSE)	R	General	U
WA	RePower (Bainbridge, Bremerton, Kitsap) (PSE)	CC	DR	O

a: For brevity, the main electric and/or gas utilities and non-utility program administrators are listed. Many programs involve additional entities including community-based organizations (CBOs), non-ratepayer funders, and/or regulatory bodies.

b: Participants—R: residential general population. CC: customers in capacity constrained areas. ESL: customers speaking English as a second language. G: government entities. IQ: income-qualified residential.

c: End uses—General: promotes all available residential programs. A: appliances and products. M: municipal benchmarking or upgrades. DR: demand response. HTS: hard-to-serve customer segments including income-qualified, multifamily and others. L: residential lighting. CS: municipal building codes and standards. NR: non-residential. PV: solar photovoltaic. WH: whole-home assessments/upgrades/performance/weatherization. X: behavioral change.

d: Design— O: one-off program limited to specific communities. U: umbrella design offered with customization by community.

4.1 CBP Design Classification System

In compiling 25 CBPs, exploring the relative effectiveness of community-based tactics, and assessing their value to PAs and the community, we recognized the need for a classification system to organize the breadth of program designs, with attention to understanding how administrators conceptualize community-based elements relative to any existing mass-marketed energy efficiency programs. Unlike some standard energy efficiency offerings that administrators implement with relatively little variation from state to state,[24] CBPs vary widely across administrators in terms of implementation strategy.[25]

Table 7, on the next page, presents a classification system that organizes programs based on 12 design elements. The classification system shows the range of operating contexts (e.g., resources and constraints) and program design choices administrators have made. Many programs' attributes fall somewhere in the middle of the range endpoints.

Administrators and evaluators can use this classification to determine which best-practices are sensitive to context and applicable to their CBP. When transferring findings across studies, we suggest that evaluators consider, at minimum, similarities and differences between their program and past programs in terms of program origins (mandates/regulatory environment), the mix of ratepayer and other funder resources used to support a program (e.g., federal, NGO, municipal), basic program structure (nature of utility-community partnership, measures, delivery; i.e., program ties and design) and program goals (savings, target participants, non-resource, other). Additionally, evaluators should consider whether the CBP is working with communities that have an intrinsically-high level of bandwidth and preparedness, or whether the program was designed to build capacity where there was none before.

[24] For example, upstream lighting programs, multifamily direct install, Home Performance with Energy Star, and other designs are planned, implemented, and evaluated in relatively similar fashion from state-to-state.

[25] An exception is made for programs which have evolved from prior iterations over time, e.g., programs that evolved from ARRA-funded trials may retain some elements as it evolves.

Table 7. A Proposed Community Based Program Classification System

Program Element	Range	
Origins	Regulatory mandate	Voluntary
Administration	EE administrator only	Community only
Funders	Ratepayer only	Federal/state/municipal/private
Goals	Non-specific (*e.g., enhanced relationships, community capacity-building, participation "lift"*)	Specific (*e.g., # new energy efficiency jobs, kWh/kW savings*)
Portfolio position	CBP is a cross-cutting marketing activity promoting existing programs	CBP is an original (new) stand-alone program
Design	Umbrella program offered to multiple communities with no customization	Program developed for and customized to one specific community
Customer type	Non-specific/general population	Specific customer segment(s)
Participation goal(s)	Customer-level measures *(e.g., home audit)*	Community-level measures *(% participation; municipal retrofits)*
Geographic scale	U.S. Census block	Utility territory
Program messenger	Administrator materials only	Community materials only
Non-resource/ non-energy benefits	Incidental to resource/energy goals, but not tracked or claimed	Part of formal goals (see above) and tracked
Longevity	Limited engagement (e.g., 1 program year)	Extended/multi-year partnership process

4.2 Using CBPs to Overcome Barriers to Energy Efficiency

CBPs add value over traditional programs by using community expertise to help overcome key barriers to customer participation in energy efficiency programs. Compared to programs in which either a utility or the community works in isolation, community partnerships enable both the PA and the community to offer more comprehensive customer services then would otherwise be possible (Carmalt Justus & Schulte, 2010).

A tactic is successful if it helps to overcome the specific problem it was deployed to address. Since a tactic is chosen to address a context-specific problem, it was difficult to compare the relative change in program outcomes garnered from using one tactic versus another. Moreover, few of the evaluation reports we reviewed commented on the relative effectiveness of all the tactics used in the CBP (as would be common in any program evaluation, evaluators focused on the most pressing issues for the program year). As part of the literature review, we built on work by the MIT Community Energy Efficiency Practicum (2009) to develop a matrix of barriers and solutions (Table 8). The matrix shows the most common barriers that the reviewed CBPs were trying to address and lists the solutions CBPs most frequently used to overcome each barrier. Below the table, we describe the barriers and solutions in more detail, providing examples about what seems to have worked well about particular tactics.

Table 8. Barriers to Energy Efficiency Uptake and CBP Solutions

Barrier to Overcome	Solutions
Lack of Awareness	■ Enhanced Marketing and Outreach ■ Local Messengers
Undeveloped Markets for Clean Energy Services or the Green Industry	■ Training and Workforce Development ■ Technical Assistance to Community Partners
Lack of Customer Trust in Utility	■ Local Messengers
Lack of Excitement about Energy Efficiency Programs	■ Contests and Competitions ■ Enhanced Marketing and Outreach ■ Incentives for Collaborating Organizations ■ Local Messengers
Issues with Complex Program Designs *Lack of Customer Commitment, Low Contractor Conversion Rates (from Lead to Sale)*	■ Concierge Service ■ Contests and Competitions ■ Incentives for Collaborating Organizations ■ Local Messengers ■ Technical Assistance to Community Partners
Costs of Energy Efficiency Upgrades	■ Financing ■ Modified Participant Incentive Structure
Difficulty Locating Hard to Serve Customers	■ Community Targeting ■ Technical Assistance to Community Partners

Lack of Awareness

Despite program administrators' efforts, some customers may not be aware that energy efficiency programs exist, may not be aware of the potential benefits programs offer, and may not understand how to take advantage of the programs. Some customer segments are hard to reach due to language barriers. Moreover, among participants who are aware of programs, some may not have a clear understanding about program costs and benefits, and thus potential participants need to invest time into learning about the PA's programs. CBPs attempting to overcome barriers tied to awareness employ a higher volume of marketing campaigns, add marketing tactics not generally employed on a larger scale, and vary the outreach approaches to better meet the informational needs and preferences of their customers.

Example Solutions

Enhanced Marketing and Outreach. All the programs we reviewed included increased marketing and outreach as a strategy to increase participation, yet the strategies employed were diverse and in response to different perceived barriers. Tactics ranged from media blitzes in specific communities without active collaborating organizations (PSE Energy Efficient Communities) to community led outreach (CT N2N) to utility-community partnerships (Sustainable Jersey, CT Clean Energy Communities). While highly personalized marketing (e.g., door-to-door canvassing) and program implementation (e.g., concierge services) are typical CBP strategies, they do tend to be relatively expensive to implement because they are labor intensive (Energy Trust of Oregon, 2014; Opinion Dynamics Corporation, 2013a, 2015b). Moreover, there is mixed evidence that such approaches effectively "lift" participation or increase savings relative to less labor-intensive strategies (Energy Trust of Oregon, 2010, 2014; Jones & Vine, 2015; Opinion Dynamics Corporation, 2010, 2014a).

- Case Studies: EN+ is one of several programs that employed door-to-door-outreach. EN+ found that participants had learned about the program through a variety of the channels used in the program, but that in-person outreach (door-to-door), phone calls, and word of mouth marketing from trusted sources

were effective outreach strategies. Overall, the EN+ evaluation found that a multi-touch campaign could be an effective way of helping customers along the journey to participation. In other examples, RePower and PSE Efficient Communities marketed their programs at community events and presentations, such as homeowners' association meetings, business groups, and local economic development association meetings.

Undeveloped Markets for Clean Energy Services or the Green Industry

While participants frequently cite out-of-pocket expense as barrier to participating in energy upgrade programs (Arbor Consulting Partners, 2011; Goodman Research Group, 2012; Opinion Dynamics Corporation, 2010, 2014a), evidence suggests that overcoming non-financial barriers is an equally or more impactful strategy (MIT Community Energy Efficiency Practicum, 2009; Opinion Dynamics Corporation, 2010). For example, a PA may feel that weatherization program participation lags among non-English speaking households because few qualified contractors speak non-English languages (e.g., Massachusetts CMIs), or because community partners do not yet have the capacity to implement a program as designed. A well-trained contractor market that includes members of the target community contributes to expected savings, reduces the potential for mistrust between contractors and participants, and may benefit market transformation goals. In addition, it is common for a CBP to incorporate broader social goals related to the creation of good-paying green jobs, especially since job creation and retention was a priority of the American Recovery and Reinvestment Act.

Example Solutions

Training and Workforce Development. The type and extent of trainings varies across CBPs. Examples included structured contracts and use of certifications in the CEWP program to volunteer trainings within the Vermont Home Energy Challenge. Some CBPs, such as those that focus on driving community-level engagement, provide training to community-based organizations; we discuss these types of trainings under "Technical Assistance to Community Partners."

- Case Studies: Most of the Massachusetts PAs' experience with training and workforce development comes from the Massachusetts Community Mobilization Initiatives. These initiatives—held in four cities--placed a substantial focus on addressing workforce development barriers by providing contractor training in the native language of local ethnic groups (Arbor Consulting Partners, 2011; P.O.W.E.R Project, 2011b). The programs were deemed particularly valuable at the time of the programs, which ran during an economic downturn. Another example of training programs includes those that provide early-career opportunities in energy efficiency. Outreach for the Connecticut Neighbor-to-Neighbor Energy Challenge was performed by AmeriCorps recent college graduates and focused on professional development and providing work experience (Donnelly, 2014).

Technical Assistance to Community Partners. Technical assistance included municipal or individual benchmarking, data collection assistance, and ongoing support of municipal/organizational staff. Among programs that provide technical assistance to community organizations or contractors, evaluations have found that the assistance is an asset (ACEEE, 2011; Conservation Services Group, 2014; Jones & Vine, 2015). There is some overlap in programs that provide technical assistance and those which provide rewards to collaborating organizations; some of these programs treat the technical support as part of their outreach and implementation strategy (NSTAR, 2012; PG&E, 2013; Sustainable Jersey, 2015; The Connecticut Light and Power Company, The United Illuminating Company, The Yankee Gas Services Company, Connecticut Natural Gas Corporation, & Southern Connecticut Gas Company, 2015; Town, n.d.).

- Case Studies: Several programs providing technical assistance include the Sustainable Jersey, CT Clean Energy Communities, and the California Local Government Partnership programs. These programs

leverage the ability of a local municipality or collaborating organization to galvanize community support for energy related issues. Community-based program outreach is conducted through participating municipalities and non-profits, with organizational and programmatic support from the PA. In turn, the PA offered the participating municipalities and non-profits programmatic and technical support in the form of technical assistance implementing their program roles, grants to complete additional clean energy activities, and public recognition for meeting tailored energy-related goals.

Lack of Customer Trust in Utility

Some customers do not believe that utility-sponsored programs can benefit them, or that utility-sponsored programs are not for people like themselves. Other customers may associate utilities with attitudes of distrust and frustration given negative perceptions associated with high energy costs or other experiences. Leveraging the positive image and existing connections of community partners like advocacy groups (Arbor Consulting Partners, 2011), municipal government (Conservation Services Group, 2014), and universities (Washington State University Energy Program, 2013) has been shown to reduce participation barriers related to trust for the sponsoring entity. In this tactic, a CBP may differ from the PA's core offering primarily by delivering the same marketing message through "trusted messengers."

Example Solutions

Local Messengers. This tactic leverages entities with established positive relationships in the community and deploys the groups or individuals to be the face of the program. For example, the Massachusetts CMIs leveraged community advocacy groups already well-known and trusted in the target community. By using the advocacy groups as the "customer facing" contact point, the program was better able to deliver its message as well as answer customer concerns along the way. Local messengers should be able to speak the language of target customers, be it in their native language (e.g., in-language support provided in the Massachusetts CMIs) as well as in a place-based vernacular suitable to the general population. This latter option was emphasized during focus groups conducted for Washington's Community Energy Efficiency Program, where evaluators found that "people want to see people like themselves as spokespersons," (Washington State University Energy Program, 2013). Using elected officials as program figureheads can also boost residents' sense of trust in a program.

- Case Studies: The Solarize Connecticut program, like many Solarize programs across the country, relies heavily on local solar ambassadors to recruit participants. Now in its sixth phase, the Solarize Connecticut campaign combines limited-time discounted solar photovoltaic (PV) installations with aggressive grassroots marketing and outreach. Implemented by the Connecticut Green Bank, the program selects municipalities from a pool of applicants who in turn enter into a contract with a single PV installer to provide group discounts on PV, with per-customer discounts based on the total number of planned installations in the community. The program recruits community members to sign on as local program ambassadors who take responsibility for a community-wide outreach campaign. By reducing the marketing and outreach costs of PV contractors, providing targeted messaging delivered by trusted local solar ambassadors, decreasing the cost of solar installations, and emphasizing the limited-time nature of the campaigns, Solarize draws on several behavioral economics principles.

Lack of Excitement about Energy Efficiency Programs

For certain customers, energy efficiency may not rank highly on the customer's list of priorities. In cases where utilities and communities find there is room to bolster interest and participation beyond a program's routine marketing and outreach efforts, CBPs have attempted to generate excitement about participation through

more targeted marketing messaging, the addition of local messengers, and running community competitions to foster excitement about, and engagement with, energy efficiency programs and issues (Jones & Vine, 2015).

Strategies designed to boost customer interest may try to boost customer benefits associated with program participation, especially those beyond energy savings (e.g., comfort, pro-environmental sentiments, community pride, and others). In the Rhode Island SRP and Marshfield Energy Challenge programs, for example, messaging tactics focused on the community and social benefits of participation, appealing to customers' sense of altruism and town pride.

Community-based organizations are a particularly strong asset for addressing this barrier, as local organizations' creative tactics and leadership roles have proven integral to generating interest and participation at the community level (Lawrence Berkeley National Lab, 2010a; PG&E, 2013; Sustainable Jersey, 2015; The Connecticut Light and Power Company et al., 2015). Because of the large role that community partners shoulder in terms of boosting local engagement and excitement, some PAs recognized that community leaders themselves may appreciate incentives or support in delivering the program, including technical assistance if being asked to shoulder a large implementation burden (e.g., as would be the case for contests, competition, and local data-sharing).

Example Solutions

Contests and Competition. Competitions boost interest through the power of leading by example and behavioral approaches (social norms, goal setting, collaboration, and feedback). Energy efficiency competitions are usually conducted within towns, or across towns, and some make use of online leaderboards, web-portals, or dashboards. About one-third of the programs we reviewed employed contests or competitions to increase participation, although the tactic is more common outside Massachusetts. These programs also provided incentives or awards to partner CBOs. Three of the programs offering incentives for CBOs tied the rewards to a community's relative success (Western Mass Save Challenge, KS Take Charge Challenge, and VT Home Energy Challenge). For example, CT Clean Energy Communities provides "Bright Ideas Grants" to towns based on a point system that encourages municipal and community energy efficiency. Overall, programs that tested competitions and social norms approaches found that customer satisfaction from achieving a goal tended to drive CBP participation to a greater extent than the financial incentives available for energy efficiency upgrades (e.g., Jones & Vine, 2015; Lawrence Berkeley National Lab, 2010a).

- Case Studies: The Kansas Take Charge Challenge relied on both local messengers within towns (green teams of about 50 people per town were involved) and on friendly competition between towns. Program leaders provided a prize to the top two towns per challenge, and provided a $25,000 EECBG to each town from the Kansas Energy Office. This approach was more successful than expected, which led to a continuation and expansion of the program for another year.

Incentives for Collaborating Organizations. About one-third of programs provided an incentive or reward to a collaborating organization or municipality. In all the programs we reviewed, at least a portion of the financial support provided to local governments or community organizations was contingent upon achievement of savings or participation goals.

Issues with Complex Program Designs

Even after overcoming barriers related to customer awareness and interest, some programs may be facing a lack of customer follow-through, particularly in multi-step weatherization programs. Relatively low conversion rates from awareness to lead generation to audit to participation can evidence one of several barriers to program participation, such as low commitment among customers, poor screening by program staff or

implementers, and the general challenge that contractors face in converting leads to completed projects in a complex program design. A lack of customer commitment can arise from several factors, including the non-monetary costs of participation, like the "hassle cost" of navigating complex and unfamiliar processes. Thus, strategies to address low commitment usually entail concierge assistance to guide a participant through the many steps, providing positive encouragement and serving as a technical resource.

Example Solutions

Concierge Service. Administrators provided concierge services, participant energy advisors, or similar assistance approaches in just over one-third (41%) of programs. Concierges and energy advisors typically act as a primary point of contact or technical advisor for customers, and are available to customers throughout the participation process. Some programs use implementation contractors for concierges, whereas others use community organization staff and volunteers. Some programs have found that the concierge is critical to success. For example, the NeighborWorks H.E.A.T. Squad program was a one-county pilot that provided a successful concierge service to customers completing home energy audits and Home Performance with ENERGY STAR upgrades. When the program was expanded by another organization to a statewide offering (the Vermont Home Energy Challenge), the new implementers removed the concierge service. After the expanded program failed to realize increased savings over its' smaller predecessor, evaluators believed that the deep level of customer service had been critical to the small program's success in helping customers navigate the complicated whole-home retrofit process (Gamble, 2014; Jones & Vine, 2015).

- Case Studies: The EE2020 programs, four Massachusetts CMIs, CEWP/CEWO and Connecticut Neighbor 2 Neighbor Challenge provided some form of participant concierge service. Like the Vermont program examples above, the CMIs found that good customer service was critical to providing a positive customer experience with the concierge offering. In the Clean Energy Works Portland (CEWP) program, employees of the implementation contractor CSG served as advisors, whereas community organization staff filled this role for the Neighbor to Neighbor Challenge in Connecticut and in the Chinatown and Chelsea CMIs (ACEEE, 2011; Donnelly, 2014; Opinion Dynamics Corporation, 2012).

Costs of Energy Efficiency Upgrades

Several CBPs identified the upfront cost of efficiency upgrades as a barrier in their planning documents. Even with rebates and discounts at the point of sale, lower- or middle-income customers may not be able to afford energy efficient upgrades through existing PA programs.

Example Solutions

Modified Participant Incentive Structure; Financing. Programs which provided an increased participant incentive relative to the existing utility-led program generally targeted the incentive towards medium-income participants, either through participant or community screening, or as a bonus for achieving deeper savings, such as installing multiple or specific measures. For example, the EN+ program evaluation found that, "costs are a major barrier to making energy efficiency improvements [but that] the EN+ communities had a higher assessment to project conversion rate than the comparison communities suggesting the enhanced incentives may have made a difference." (Opinion Dynamics Corporation, 2014a). Moreover, some programs provided new financing options to help overcome additional barriers. Many of the programs offering increased incentives or financing leveraged EECBG funds to provide these additional cost-offsets to medium-income participants. Note, that using EECBG funds is not an option for current or future CBPs as the EECBG program has ended.

- Case Studies: Clean Energy Works Oregon/Enhabit provided On-Bill Financing. RePower Kitsap County used EECBG grant funding to develop a $350,000 revolving loan program that PAs established in partnership with the local credit union (Kitsap Credit Union). The loan program provides special financing terms for energy efficiency projects. Note, this approach may not be as successful in all areas; at least in the context of Massachusetts and Connecticut, the existing ratepayer funded program offered financing already, although on-bill repayment is not an option. This caution highlights the importance of context when comparing CBP strategies across the country.

Difficulty Locating Hard to Serve Customers

Simply having a customer target in mind may not be enough to ensure CBP success. For those programs focusing on bringing energy efficiency opportunities to HTR/HTS customers, delivery challenges center on the difficulty in developing a cost-effective way to locate customers, encourage participation, and provide the targeted services. Additionally, techniques to screen individual customers for CBP eligibility may add new barriers to participation, due to stigma of participating in an income-qualified program, or the added burden of time spent completing application materials. The EN+ Core program purposefully avoided using income eligibility screening for this reason, and the Massachusetts CMIs identified historic discrimination and undocumented status as barriers to encouraging HTR/HTS customers to participate in utility-sponsored programs that involved home visits.

Example Solutions

Community Targeting. Targeting approaches decrease search costs of finding, educating, and supporting eligible participants, and help manage expectations about probable savings from a program. In the "barriers/solutions" framework, some programs offer the program to only those communities that are facing particularly steep barriers to energy efficiency program participation. Several CBPs that successfully increased program savings used community-level screenings to identify areas where they would be marketing largely to eligible residents (Energy Trust of Oregon, 2014; Opinion Dynamics Corporation, 2014a) while others recommended using the strategy in the future (Arbor Consulting Partners, 2011; Opinion Dynamics Corporation, 2012, 2013a). Commonly, CBPs select communities using community organizations' local knowledge, or more aggregate demographic analysis with Census Data or proprietary datasets.

- Case Studies: In Massachusetts, the Efficient Neighborhoods+ initiative selected "microtargeted" communities (by the census block group) based on relatively low rates of prior participation, but high proportions of residents meeting program eligibility criteria like average income; then, the program did not screen participants during their application phase (Opinion Dynamics Corporation, 2014a). In contrast, the CLC EN+ screened individual participants rather than communities because all communities in the service area had widely-varying incomes. However, evaluators felt more evidence was needed to determine whether community-level targeting could be cost-effective at full scale (Opinion Dynamics Corporation, 2014a).

Appendix A. Attachments

Community-Based Program Definition Memo

CBP Definition Memo FINAL 2017-0

Program Matrix

Matrix of Programs_FINAL.xlsx

Full Literature Review Report

MA PA XC_CBP Literature Review FII

Appendix B. Full Descriptions of Reviewed Programs

Table 9. Overview of Each Identified Community Based Program

Program Description
Local Government Partnerships (CA) ■ Years implemented: 2008-ongoing ■ Key Stakeholders: Local Government Partnerships (LGPs) are partnerships between one or more of the four California Investor-Owned Utilities (IOUs) and local governments (LGs) to promote energy efficiency. LGPs are designed to support local governments in strategic planning to set and work towards long-range energy goals for their communities. For example, PG&E runs its LGPs through the Energy Watch umbrella program (e.g., Fresno Energy Watch, Valley Innovative Energy Watch). ■ Goals: Savings are projected per LGP. ■ Program Description: LGPs are available to local governments or organizations within an IOU's service territory. There are five categories of funded activities: (1) adopting reach codes, (2) supporting energy code compliance enforcement, (3) leading by example by reducing energy use in local government facilities, (4) supporting innovative programs, and (5) building expertise within local governments and communities. Activities may include Energy or Climate Action Plans (EAPs or CAPs), benchmarking of public or community buildings, advancement of energy efficiency reach codes for buildings, and trainings to increase awareness of and support for building code compliance and greenhouse gas (GHG) reduction efforts. ■ Outcomes: Based on an evaluation of all IOUs' strategic planning activities from 2010-2014, evaluators found that, "The IOUs are providing technical assistance aligned with mitigating the barriers encountered for completing Strategic Plan Projects. However, some LGP Implementers indicated that they were not able to procure the specific type of support that they sought for their projects. LGP Implementers are highly satisfied with the IOU administration overall and they felt that the level of communication was very good. They were less satisfied, however, with the Strategic Plan Project funding processes (specifically the transparency of the effort) and the IOUs' ability to help with capacity building. LGP Implementers also mentioned problems and delays with data transfer." As of this report, LGPs are an ongoing program offering. ■ References: (Opinion Dynamics Corporation and Itron, 2016; PG&E, 2013, 2016)
Regional Energy Networks (CA) ■ Years implemented: 2012 - Ongoing ■ Key Stakeholders: Bay Area Regional Energy Network (BayRen) stakeholders include PG&E, Association of Bay Area Governments and County governments. Southern California Regional Energy Network (SoCalRen) stakeholders include SCE/SCG, LA County, private consulting firms, UCLA, and municipal governments. ■ Goals: Savings are projected per partnership (savings from PG&E incentive programs broadly). ■ Program Description: The California RENs are directly legislatively-enabled program administrators who operate energy efficiency programs with ratepayer funds independently from California IOUs. For example, BayREN implements its own programs and partners with PG&E on others, and BayRen focuses on local marketing, outreach, education, and grassroots program implementation. Due to the unique structure of the RENs, compared to other CBPs, we provide additional detail on the RENs in an appendix following this table. ■ Outcomes: Overall, evaluators are finding that the RENs demonstrate value in addition to the IOUs and are effective in their work, although process analysis suggested that the RENs can focus on more-consistently collecting, tracking, and analyzing data. ■ References: (BayREN, 2014; Itron, 2016; Meis, 2012; Opinion Dynamics Corporation, 2016; SoCalREN, 2014)
Clean Energy Communities (CT) ■ Years implemented: 2012-ongoing ■ Key Stakeholders: Eversource, Southern Connecticut Gas, Connecticut Natural Gas, CT Department of Energy and Environment Protection, Connecticut Green Bank, Connecticut Energy Efficiency Fund. Partners also include the municipal leadership in each of 141 participating towns (e.g., mayor, first selectman, or town manager), boards of education and local energy committees.

Program Description
■ Goals: Each town sets own goal; but at minimum, commits to a nonbinding pledge to reduce energy consumption in municipal buildings (by 20% in 2018) and voluntarily purchase renewable energy for municipal buildings (20% of building use by 2018). ■ Program Description: Utilities engaged with municipal leaders, environmental groups, businesses, and other community groups to assist municipalities in setting and achieving energy efficiency and clean energy goals. Municipal governments commit to a nonbinding pledge to reduce energy consumption in municipal buildings (by 20% in 2018) and voluntarily purchase renewable energy for municipal buildings (20% of building use by 2018). By achieving pledge goals or substituting energy-saving or renewable energy actions, town earns points that can be exchanged for grant money for energy efficiency ("Bright Ideas Grants" of $5k to $15k) or clean energy systems. Examples of towns' substitute actions are streamlining renewable energy system permitting, opting in to C-PACE financing program, conducting targeted outreach campaigns promoting existing incentive programs like Solarize Connecticut, and others. ■ Level of Partnership: Communities create a municipal action plan, starting with benchmarking. Eversource and United Illuminating provide free technical assistance and periodic training/guidance. Towns can use an online dashboard to track progress. ■ Outcomes: Since 2012, enrolled 141 towns. Per sponsors, outcomes also include "…the distribution of multiple Bright Idea Grant rewards to municipalities, a streamlined online participation tracking database, and multiple examples of successful community-wide events and marketing campaigns that have engaged businesses, residents, and municipalities in energy programs. Due to the Clean Energy Communities program's outreach, participation in Energy Efficiency Fund programs, such as HES and SBEA has increased. The Companies will continue to promote the Clean Energy Communities program to the remaining unsigned towns and cities throughout 2016-2018" (p. 417). Plans of the 2016-2018 program include targeting "sub-communities within existing Clean Energy Communities (commercial entities, the business community, houses of worship, non-profits, small businesses, and universities)." The program will also introduce community success tiers (Bronze, Silver, Gold, Sustainable Energy Community). Although evaluators failed to find a consistent statistical relationship between program outreach and HES participation, the program was effective at leveraging community engagement and program participants praised the utility-provided technical assistance. ■ References: (NMR Group, 2016; The Connecticut Light and Power Company et al., 2015) ■ Program website: http://www.energizect.com/
Neighbor 2 Neighbor Energy Challenge (CT) ■ Years implemented: 2010-2012 ■ Key Stakeholders: N2N (consortium of 14 communities and program partners), Eversource, CT EE fund administrator (CEEF), and CT Green Bank. ■ Funding: 2010 DOE BetterBuildings Neighborhood Program grant ($4.2 million) ■ Goals: Engage 10 percent of households in each community and reduce participants' energy usage by 20 percent ■ Program Description: A community challenge among 14 small towns led by a N2N to increase uptake in the Connecticut Home Energy Solutions (CT HES), Home Performance with Energy Star (HPwES) and PV programs through community engagement and marketing, local partner incentives, and participant concierge services. A subset of CT HES-program contractors responded to an RFQ and agreed to commit to additional levels of marketing, customer service, and data requirements. Towns competed for points to select rewards from a catalog of energy efficient prizes. Local organizations, called community partners, received $25 per completed CT HES visit, and prizes for community groups within communities (tested two iterations, one in which the top three community groups in each community won a prize but the overall winner won the grand prize, and another where community groups received a set dollar amount for each upgrade.) ■ Outcomes: Evaluation report found that "The inherent challenges in the HES assessment program during the program period, such as that contractors and customers were not incented to complete upgrades, caused N2N to shift marketing and outreach resources from driving demand to the HES assessment programs and instead acquiring customers straight to upgrades." Per DOE information, "A related state organization, the Clean Energy Finance and Investment Authority, has created four new residential financing products and will incorporate the community-based social marketing approaches learned through N2N staff to promote these offerings to homeowners. A new nonprofit organization, Empower Efficiency, will advise other nonprofits, state and municipal organizations, and utility companies on how to market residential efficiency programs to customers based on the

Program Description
lessons learned through N2N. The Clean Water Fund, a working partner of N2N, is using lessons learned through N2N to pilot a solar outreach campaign with another organization." ■ References: (Donnelly, 2014; Livingston, Home, & Donnelly, 2012)
Solarize CT (CT) ■ Years implemented: May 2012 – Ongoing (in phases) ■ Key Stakeholders: CT Green Bank, SmartPower, Municipalities ■ Connecticut Description: Beginning in May 2012 the CT Green Bank in conjunction with a non-profit marketing firm SmartPower began implementation of a Solarize-style solar program in four CT towns. The Solarize model employs four different strategies: 1) community led outreach and marketing, 2) community energy leaders 3) group discounts on solar installations through use of competitively contracted single installer and 4) limited time frame. In each phase of Solarize CT, the CT Green Bank and SmartPower recruit and select participating communities, who then select a single PV installer through a competitive bidding process. Then, solar ambassadors lead grassroots efforts to recruit community members to install PV through community-based outreach methods. Participants benefit from a single source aggregation of available incentives as well as a group discount based on the number of contracts signed. Each phase last from 12 to 20 weeks. ■ Outcomes: Evaluators estimate the program induced 27 additional solar installations on average per municipality through round 4, representing approximately a 100 percent increase over the counterfactual. In addition, evaluators found evidence that while the group discount was effective, it is likely that other elements of the Solarize program were more important in driving installations. ■ References: (Gillingham, Bollinger, & Staver, 2015; Hausman & Condee, 2014; Soundview et al., 2016)
New Bedford Community Mobilization Initiative (MA) ■ Years implemented: 2010-2011 ■ Key Stakeholders: Utility (NSTAR), community non-profit (Marion Institute), City of New Bedford, implementer (CSG), and other community labor / environmental groups collaborated. ■ Goals: Weatherize 50 homes, 4 multifamily projects, and 25 small business projects via increased participation in the Mass Save Home Energy Services (MA HES) and Small Business Direct Install (SBDI) programs. Advance green job creation. ■ Program Description: City-led effort in coordination with the Marion Institute's Green Jobs/Green Economy initiative with support from NSTAR. NSTAR and CSG, in addition to delivering the existing MA HES and SBDI programs provided program and installation training, respectively. ■ Outcomes: Completed 288 assessments, weatherized 18 homes, completed weatherization or lighting installations in 3 multifamily buildings, and completed 25 lighting upgrades to small businesses. Transitioned and expanded into New Bedford Energy Now!, which is discussed in a separate entry below. ■ References: (Arbor Consulting Partners, 2011; Opinion Dynamics Corporation, 2012; P.O.W.E.R Project, 2011a)
Lynn Community Mobilization Initiative (MA) ■ Years implemented: 2011 ■ Key Stakeholders: 2 utilities (NSTAR, National Grid), non-profit (Green Justice Coalition), City of Lynn, implementer (CSG), and community groups. ■ Goals: Weatherize 50 homes, 4 multifamily projects ■ Program Description: Partnership to increase participation in the Mass Save Home Energy Services (MA HES) program and create local energy efficiency jobs. ■ Outcomes: The Lynn CMI completed 40 assessments and no weatherization projects in 2011. ■ References: (Opinion Dynamics Corporation, 2011, 2012)
Chelsea Community Mobilization Initiative (MA) ■ Years implemented: 2011 ■ Key Stakeholders: 2 utilities (NSTAR, National Grid), non-profit (Green Justice Coalition), City of Chelsea implementer (CSG), and community groups. ■ Goals: Weatherize 50 homes, 4 multifamily projects ■ Program Description: Partnership to increase participation in the Mass Save Home Energy Services (MA HES) program and create local energy efficiency jobs. Outreach led by the Chelsea Collaborative.

Program Description
■ Outcomes: The Chelsea CMI completed 88 assessments, 8 weatherization projects, 12 multifamily assessments, and 8 multifamily electric projects in 2011. ■ References: (Arbor Consulting Partners, 2011; Opinion Dynamics Corporation, 2012)
Chinatown Community Mobilization Initiative (MA) ■ Years implemented: 2011 ■ Key Stakeholders: 2 utilities (NSTAR, National Grid), non-profit (Green Justice Coalition), City of Boston, implementer (NSL) and community groups. ■ Goals: Weatherize 50 homes, 4 multifamily projects ■ Program Description: Partnership to increase participation in the Mass Save Home Energy Services (MA HES) program and create local energy efficiency jobs. Outreach led by the Chinese Progressive Association. ■ Outcomes: A total of 51 weatherization jobs were sourced through the CPA and the program served four multifamily buildings. ■ References: (Arbor Consulting Partners, 2011; Opinion Dynamics Corporation, 2012)
Cape Light Compact's Efficient Neighborhoods+® (EN+) Initiative (MA) ■ Years implemented: 2013-2014 ■ Key Stakeholders: Massachusetts Program Administrators ■ Goals and Results: Generally, to "lift" participation in the Mass Save Home Energy Services (MA HES) whole-home program in the CLC service area, relative to baseline. The initiative conducted 251 energy assessments and completed 105 projects among EN+ eligible customers. ■ Program Description: Like the statewide EN+ below, this was an enhanced version of the MA HES program targeted towards "hard to reach" customers. Unlike the statewide EN+, CLC's model targeted and offered increased incentives to HES-eligible customers with incomes between 61% and 100% of the state median income. The program required income verification to be eligible for increased incentives, which was warranted in CLC's service territory where there is often a large disparity in income levels with some households having much higher incomes than others. ■ Key Findings: The evaluation found a general lift in HES participation, conversion rates, kWh and therm savings during the EN+ period relative to achievements within a similar time during the previous two years. For EN+ Core, CLC EN+, and Fall River Energy Contest -- Despite a variety of marketing and outreach efforts, awareness and knowledge can impede participation. Sources of program awareness varied but overall results suggest that in-person outreach (door-to-door), phone calls, and word of mouth marketing from trusted sources are effective outreach strategies, and that an overall multi-touch campaign could be an effective way of helping customers along the journey to participation. ■ Outcomes: Evaluators found the initiative completed 251 energy assessment and saved 247,675 kWh over this period. Due to the design in the initiative, it could not be determined how much of these savings represent incremental savings. ■ References: (Opinion Dynamics Corporation, 2014a)
EE2020 (Powering Pittsfield; Northampton Leading the Way) (MA) ■ Years implemented: 2011-2013 ■ Key Stakeholders: Utility (National Grid, WMECo, Berkshire, Columbia Gas), vendor (Center for EcoTechnology), municipality (Pittsfield/Northampton), and municipalities' consultant (Serrafix). Serrafix led the initiative. ■ Goals: Residential goals unknown ■ Program Description: The "EE2020" initiative included programs in two Western Massachusetts towns: Powering Pittsfield and Northampton Leading the Way. The EE2020 initiative "[set] out to test whether mayors and city leaders could play meaningful roles in encouraging businesses and residents to take advantage of existing efficiency programs." The program tested interventions including "concierge service," providing PACE financing, municipal financing options, peer-to-peer learning networks for municipal leaders and other stakeholders, and data targeting with property assessor's data to identify promising households and landlords. Delivery leveraged existing relationships with community leaders and business networks. Developed recommendations for future municipalities, indicating that "leading by example" – retrofitting town buildings and then encouraging residents to do the same- could help boost participation.

Program Description
■ Outcomes: Evaluators found that both initiatives achieved about one-third of their respective savings goals and no increase in achieving deeper savings projects. Neither initiative achieved their respective set of goals or deeper savings. The initiative highlighted the importance of CBP planning, goal-setting, community selection, stakeholder engagement, and the efficacy of the existing utility-administered program a CBP is intended to build on. Process outcomes included ■ References: (Opinion Dynamics Corporation, 2013a; Serrafix, 2009)
Efficient Neighborhoods+® (EN+) Initiative (MA) ■ Years implemented: 2013-2014 (Second round July 7th to December 31st of 2014) ■ Key Stakeholders: Massachusetts Program Administrators, local governments, implementation vendors and community organizations ■ Goals: Neither EN+ Core nor CLC's EN+ initiative set specific goals. PAs were looking to see if the initiatives increased participation in MA HES program among the target communities (and more specifically among target customer segments). In total, the EN+ Core program targeted 12,000 residential customers. ■ Program Description: A statewide program that targeted customers with household incomes between 61% and 100% of the state median living in single-family or 2-4 unit homes. The initiative also targeted rental properties. PAs delivered the program with "microtargeting" a selection of neighborhoods within communities (by the census block group) with high concentrations of potential participants. Offered increased incentives to all HES-eligible community members in the microtargeted areas, and PAs increased the local marketing presence (sometimes including the use of community-based marketing) using a mix of tactics that was customized by towns. ■ Outcomes: Increased participation in and savings from the HES program relative to a control group. Specifically, a difference-in-differences statistical model found that the CBP achieved savings beyond that of the baseline energy efficiency programs, and process evaluations found that the overall awareness level in the EN+ communities was higher than in the comparison communities that did not participate in the program. Customer surveys found that the biggest remaining barrier to participation was the cost of energy efficiency improvements, along with a lack of time, age of their home, and availability of efficient products. A second round of the initiative was expanded to additional towns the following year. ■ References: (Opinion Dynamics Corporation, 2014a)
Fall River Energy Contest (MA) ■ Years implemented: 2013 ■ Key Stakeholders: Massachusetts Program Administrators, community groups and schools ■ Goals: 202 participants, 27,452 therms and 59,255 kWh through the MA HES program. ■ Program Description: Program was part of the Massachusetts EN+ initiative but distinct from the "core" and CLC elements. Competition between different neighborhoods of Fall River to accrue the most savings through existing MA HES and Low-Income programs, to win a $5,000 prize. ■ Marketing and Outreach: Program did not modify incentive structures and instead relied heavily on community-based marketing and outreach (e.g., school events, community fair). Total marketing comprised approximately 24% of the contest costs, which is a larger share than the baseline MA HES program spends on marketing (5%). ■ Outcomes: The initiative surpassed its participation and electric savings goals and did not meet its gas savings goal. Specifically, the program completed 212 energy assessments and completed 33 projects resulting in over 175 MWH and 14,000 therms in energy savings. In addition, 62 Low Income program eligible customers were identified and channeled into a related Low-Income program. A difference-in-difference analysis found that 3% of energy assessments and 33% of completed projects can be attributed to the initiative, beyond the standard MA HES program. ■ References: (Opinion Dynamics Corporation, 2014a)
Marshfield Energy Challenge (MA) ■ Years Implemented: 2008- 2009 ■ Key Stakeholders: Co-sponsored by NSTAR and Massachusetts Technology Collaborative (now the Mass Clean Energy Center). Local stakeholders included the Marshfield Energy Committee (municipal committee appointed by board of selectmen) and local ambassadors to sell the program and solicit community feedback. ■ Goals: This program is somewhat unique among other programs described in this review, as the program's goals pertain to managing capacity constraints via energy efficiency, demand reduction, and solar PV installations.

Program Description
Participation goals were 1,200 residential participants, 10 businesses; demand savings of 2MW (375 kW from residential); PV installations on 30 homes and 500 direct-load control thermostats ■ Program Description: A one-town program designed, "...to create community awareness and local commitment to making Marshfield a greener, more energy efficient town" (Lawrence Berkeley National Lab, 2010b). The program was designed to achieve peak load reductions using a suite of techniques including energy efficiency, load response and renewable energy (solar PV). The program offered free energy assessments (provided low-cost measures), incentives for energy- efficient appliances and air sealing, and smart thermostats capable of demand response. The program was open to all residents in the town, but marketing focused on residents on a congested circuit. Messaging about energy efficiency promoted property value benefits because Marshfield is an affluent town. ■ Outcomes: Most program participants were customers living on the congested circuit, consistent with objectives. About 90% of homeowners who received energy assessments (n=1,300) installed at least one energy efficient measure. A comparison of measure installation with a neighboring town in 2006 and 2009 (pre- and post-program) suggest the program had a significant effect on the number of energy efficiency installations in Marshfield. ■ References: (Lawrence Berkeley National Lab, 2010b; Opinion Dynamics Corporation, 2010)
National Grid Community Initiative (MA) ■ Years implemented: 2014-Ongoing ■ Key Stakeholders: National Grid contracted with local governments and community organizations to deliver marketing and outreach with the goal of increasing participation in the MA HES and Lighting and Products programs ■ Goals: tiered goals set for each municipality and agreed to in a contract ■ Program Description: NGRID partners with local municipalities and community organizations, sign contracts outlining tiered incentive structure based on savings and other key performance indicators (audits/number of measures) to increase participation in MA HES and Lighting and Products programs. NGRID provides basic initial training, monthly calls, and other support, while community provides marketing material. ■ Outcomes: In 2014, all participating town met their assessment goals, four out of five met air sealing goals, and four out of five met insulation installation goals. National Grid awarded over $115,600 to participating communities in 2014. 2015 four out of five participating town met their assessment, air sealing, and insulation goals. ■ References: (Grid, 2012, 2015; National Grid, 2012, 2014)
New Bedford Energy Now! (MA) ■ Years implemented: 2011-ongoing ■ Key Stakeholders: Municipality (New Bedford), implementation contractor (Next Step Living), non-profits (Marion Institute, POWER group) and community groups (youth groups, churches, etc.). The program runs as part of the city's Energy Department. ■ Goals: Weatherize 5,000 residential or commercial units by 2015 ■ Program Description: A scaled-up, 5-year version of the "New Bedford CMI." The program is an umbrella program including New Bedford Challenge Now, New Bedford Efficiency Now, and New Bedford Solar Now. ■ Outcomes: From Fall 2011 through Summer 2012 the program completed 214 audits and 55 weatherization projects. ■ References: (P.O.W.E.R Project, 2011a)
NSTAR Community Outreach Grant (MA) ■ Years implemented: 2010-2013 ■ Key Stakeholders: NSTAR, local governments, and community organizations ■ Goals: tiered goals set for each municipality/organization ■ Program Description: NSTAR partners with local municipalities and community organizations, sign contracts outlining tiered incentive structure based on savings and other key performance indicators (audits/number of measures) to increase participation in HES. Local partners then develop and implement marketing and outreach campaigns earn rewards based on actual savings.

Program Description
■ Outcomes: From Fall 2010 through the end of 2013, a total of 4,520 audits, 700 air sealing projects, and 1,014 insulation projects were completed through the program. ■ References: (NSTAR, 2010, 2012)
Western Mass Saves Challenge (MA) ■ Years implemented: 2011 ■ Key Stakeholders: Utility (WMECo), outreach contractor (SmartPower), web portal contractor (Efficiency 2.0) ■ Goals: Engage 5,000 customers, provide online reports to 25,000 customers designed to drive online engagement. Per town savings targets of 3%; ■ Program Description: This was an opt-in program that used a mix of behavioral strategies and community-based outreach. WMECo partnered with non-profit to deliver community-based marketing and web portal savings tracking. Towns were competing for 1kW PV (solar panels) and individuals were ranked on scoreboards and competed for individual rewards (e.g., discounts at online retailers). ■ Marketing and Outreach: Multi-channel marketing including online marketing, press, direct mail, targeted emails, "advanced web experience" including online community pages and leader boards, local community teams, social diffusion, and trusted messengers ("refer a friend"), contests and prizes. ■ Outcomes: Several of the novel marketing channels were successful. Overall, the utility (WMECo) felt that the online channel was cost-effective and scalable. For one, the trusted messenger outreach channel ("refer a friend") recruited 20% of online customers. WMECo also reported that the number of reward points offered was the largest factor in converting customers from direct mail to engagement. Evaluators found the program saved between 2% and 3% of electricity usage per household, and that "highly engaged" participants saved between 5.5% and 5.7% of their baseline energy use. ■ References: (Jones & Vine, 2015; Opinion Dynamics Corporation, 2013b; Western Massachusetts Electric Co., 2011)
Renew Boston (MA) ■ Years implemented: 2009-ongoing ■ Key Stakeholders: 2 utilities (Eversource, National Grid), City of Boston Mayor's Office, existing EE Programs (Mass Save), non-profit (Mass Energy Consumers Alliance, ABCD Boston), contractors (Next Step Living) ■ Goals: General "lift" to boost energy efficiency and alternative energy for residents and businesses in the City of Boston. Specific targets to weatherize 15,000 households/year through 2017; Involve 150,000 households by 2020, 430M kWh/4.5M therm savings by 2012; create energy efficiency services and jobs ■ Funding: City of Boston's EECBG, Foundations (Barr Foundation, Chorus Foundation, The Boston Foundation), Utilities ■ Program Description: City led initiative to increase participation in the existing Mass Save programs through strong partnerships with utilities and community. Leveraged EECBG funds to provide increased incentives in 2010 through 2012 to medium-income participants. Program planning and implantation fully integrated between City of Boston and Mass Save ■ Outcomes: Two phases: Pilot/ "1.0" ($200k from City served 169 residences); "2.0" ($2m from EECBG served 1,750 residences; $500k from City served an additional 510 residences; $1m served 700 small businesses; $1.1m served 6 low-income multifamily buildings). The program contractor firm (Next Step Living) reports that EECBG program funding was key to its growth from 25 employees in 2009 to over 400 employees in 2013. ■ References: (City of Boston, 2013; Goodman Research Group, 2012; Opinion Dynamics Corporation, 2012)
Take Charge Challenge (KS) ■ Years implemented: 2009-2012 ■ Key Stakeholders: Sponsored by a regional non-profit, the Climate and Energy Project (CEP), and co-funded with utilities (KCP&L, Midwest Energy, Inc, Wester Energy, and Kansas Power Pool). CEP and utilities worked together to pick participating towns (mix of urban/rural, small/large). At kickoff, program staff met with local leaders to recruit ~50-person teams in each town. The teams met about once a month during the competition. Town leadership teams (e.g., from Chamber of Commerce, schools, retailers) promoted program and "played up" the competition; town teams were purposefully used as the "face" of the program instead of CEP. ■ Funding: Pilot funding totaled $170k, plus in-kind time and resources from participating towns

Program Description
■ Goals: Save energy though conservation and retrofits (both utility sponsored and otherwise). Towns were evaluated based on relative kWh savings, savings from prescriptive measures, and persistence via behavioral change, weatherization program participation, and utility-sponsored rebate programs and home assessments. ■ Program Description: Coordinated by Climate and Energy Project, towns would participate in the statewide home upgrade program (Efficiency Kansas, developed by the Kansas Energy Office with ARRA funds) and compete against other towns in terms of most energy savings and the most installed measures. Pilot was an energy use reduction competition between towns, designed to "prove that energy efficiency can lead to significant energy use reductions in every part of Kansas and under any utility structure (investor-owned, municipal-owned, or co-op)." ■ Marketing and Community Engagement Notes: Messaging focused on energy savings, cost savings, and competition (i.e., community spirit). Included town dashboard to track savings, which was visible to public, but felt word-of-mouth/ peer-to-peer communications were critical. CEP offered financial prizes for the two winning towns, but felt that the competitive/spirited aspects "really drove" the program's success, and that using Leadership teams as "credible messengers [to deliver] credible messages" was key to success. In its first year, the competition ran between 6 towns. In the second year, 16 towns competed. Key elements of the program include the use of competition and community leader buy-in. ■ Outcomes: Estimated 10% of participating towns attended one or more events. The winning town reduced electric usage by 5.5% relative to its control town. The program resulted in 112 assessments and 300 households signed up to participate in WAP (Lawrence Berkeley National Lab, 2010a). ■ References: (Lawrence Berkeley National Lab, 2010a)
Vermont Home Energy Challenge (VT) ■ Years implemented: 2013 ■ Key Stakeholders: A partnership between the VT Program Administrator (Efficiency Vermont) and local organizations (Vermont Energy and Climate Action Network) and local governments ■ Goals: 3 percent participation by community ■ Program Description: Competition between 79 towns to increase participation in Efficiency Vermont's Home Performance with ENERGY STAR. The community in each of the 6 districts with the highest percentage of participants win $10,000 to support EE in municipal buildings and other community-level projects. Used pledge cards to increase participant follow through. ■ Outcomes: Efficiency Vermont determined there was a slight increase in the proportion of projects in participating towns as compared to previous years, although results varied significantly across towns. Evaluators made these comparisons using simple trend analysis. ■ References: (Jones & Vine, 2015; Markowitz, 2014)
NeighborWorks® of Western Vermont H.E.A.T. Squad (VT) ■ Years implemented: 2007-2009 (V-Saver period), 2010 – 2013 (Better Buildings Grant period), 2013- Ongoing ■ Key Stakeholders: NeighborWorks® of Western Vermont, Efficiency Vermont, Green Mountain Power, and local governments ■ Goals: 1000 thermal retrofits in homes in Rutland County, VT ■ Program Description: The H.E.A.T. squad program was created by NeighborWorks® of Western Vermont (a nonprofit housing organization) with a DOE Better Buildings Neighborhoods grant to provide outreach, education, concierge service, and accessible financing to homeowners for energy efficiency upgrades. The program leveraged incentives provided by Efficiency Vermont to reduce the upfront cost to participants while implementing targeted, community-based marketing and education campaigns for both consumers and contractors. The program also ran competitions among participating towns as well as contractors to increase the number pf participants and contractor conversion rates, respectively. ■ Outcomes: An independent evaluation found the program induced participant lift above the statewide Home Performance with ENERGY STAR program implemented by Efficiency Vermont and was cost-effective as a standalone initiative. In addition, the program was expanded with a state grant to four additional counties in 2013. ■ References: (Gamble, 2014; NeighborWorks of Wester Vermont, 2014; NeighborWorks of Western Vermont, 2012; The Cadmus Group, 2012)

Program Description
Sustainable Jersey (NJ) ■ Years implemented: 2009-ongoing ■ Key Stakeholders: New Jersey Board of Public Utilities, New Jersey Office of Clean Energy, and other stakeholders founded Sustainable Jersey. NJ BPU continues to fund program development and implementation, the Sustainability Institute at the College of New Jersey helps staff and manage the program. The state offices, municipalities, and schools across the state partner to provide energy efficiency, renewable energy, and other services to municipal buildings and community members in pursuit of sustainability. ■ Goals: Goals set for individual municipalities and schools in terms of generally "increasing" the adoption of energy efficiency, increasing participation in the NJ Clean Energy Programs (e.g., direct install programs, ENERGY STAR programs, and others), and increasing use of renewables like solar. As of the 2016 filing, 75% of municipalities participate in the program. ■ Program Description: Sustainable Jersey is nonprofit organization that provides tools, training, and financial incentives to support communities (particularly, municipalities and school districts) as they pursue sustainability programs and Sustainable Jersey certification. Sustainable Jersey helps create a Green Team within each participating organization to serve as the main point of contact. Organizations are rewarded for both primary actions, which typically are directly aligned with NJ Clean Energy Program (the state energy efficiency brand) goals, as well as secondary actions, which are more indirectly associated with reductions in energy usage, such as energy leadership recognition programs. ■ Outcomes: As of 2016, 441 municipalities are part of the program, 205 of which have achieved certification. Over the 2011-2014 period, participating municipalities have completed 513 primary energy actions that were approved for certification. ■ References: (Sustainable Jersey, 2015)
Clean Energy Works Oregon (CEWO)/Enhabit (OR) ■ Years implemented: 2010-ongoing ■ Key Stakeholders: The lead non-profit (Enhabit) partners with the Energy Trust of Oregon to deliver incentives, and with other non-profits (Craft3) to deliver green financing. ■ Program Description: This program is an expansion of the Clean Energy Works Portland (CEWP) program, after CEWP ended. In contrast to CEWP, CEWO operated across Oregon, made possible with DOE BBNP grant of $20 million in June 2010 and then funded by a program per home upgrade fee and $10 million from Oregon Legislature in March 2014. Fully integrated as a Home Performance program path. CEWO was then was re-branded as Enhabit, which is a now a stand-alone non-profit organization that works outside of Oregon as well as in the state. ■ Outcomes: The program has continued as a path of the ETO's Home Performance program, using Enhabit, a non-profit, to secure funding for financing energy efficiency upgrades. The ETO found the program increased participation relative to a comparison group in 2011. ■ References:(Cadmus, 2011; Department of Energy, 2015; Energy Trust of Oregon, 2014)
Clean Energy Works Portland (CEWP) (OR) ■ Years implemented: 2009-2011 (Pilot) ■ Key Stakeholders: Energy Trust of Oregon, government (local and county), local utilities, local and national community organizations (Enterprise Cascadia, Green For All) implemented this legislatively required pilot. ■ Goals: Weatherize 500 homes by Fall 2010, reduce energy usage by 10-30 percent in participating households ■ Program Description: Public-private partnership was designed to increase participation in and savings from the Home Performance program administered by ETO by providing concierge service to participants as well as on-bill financing. In addition, participants were screened based on both participation criteria (credit score) and potential savings (high-energy usage intensity and savings potential). Incorporated a strong jobs component, requiring contractor certification and agreement to wage and job-quality requirements laid out in the Community Workforce Agreement. Satisfied EEAST Act passed by Oregon Legislature. ■ Outcomes: At the end of the pilot, the program transitioned to Clean Energy Works Oregon with support of a DOE competitive Better Buildings Neighborhood grant. The program met its goal of serving 500 Portland area homes and the ETO found the program generated savings relative to a comparison group in 2010. ■ References: (ACEEE, 2011; Cadmus, 2011; Research Into Action, 2010)

Program Description
System Reliability Pilot (SRP) (RI) ■ Years Implemented: 2012-ongoing ■ Key Stakeholders: National Grid ■ Goals: Reduce demand on congested substations through direct load control at selected homes and increased adoption of energy efficiency. SRP uses enhanced marketing and outreach to enroll additional participants in select statewide energy efficiency programs (EnergyWise and Small Business Direct Install), the DemandLink DSM program, and SRP-specific energy efficiency offerings (like the window air conditioner rebates or recycling). ■ Program Description: This is a component of the RI System Reliability Procurement Pilot which focuses on energy efficiency and demand response on Tiverton, RI and Little Compton, RI, which focuses specifically on customers residing within a constrained substation feeder. The energy efficiency portion focuses on increasing participation in the existing EnergyWise home audit program. The pilot uses targeted marketing which emphasizes the importance of energy efficiency and demand response for the community and delivers messaging through a variety of channels including community events, newsletters, and outbound telemarketing. ■ Outcomes: From 2012 through 2014 the program completed 625 EnergyWise audits on the congested substation compared to a target of 650. In addition, evaluators found the program induced a 53% incremental participation rate in the pilot area over a comparison town in the same period. ■ References: (Opinion Dynamics Corporation, 2014b, 2014c, 2015a)
Project Energy Savings (WA) ■ Years implemented: 2009-2012 ■ Key Stakeholders: Clark Public Utility District (Utility), Local government (City of Vancouver, Clark County), and community organizations collaborated to provide energy efficiency services to underserved populations ■ Goals: increase program penetration to moderate-income participants ■ Program Description: Clark PUD partnership with Vancouver, Clark County, community groups to market/outreach to medium income residents/small business. Used existing Clark PUD incentives augmented by other funding sources. ■ Outcomes: The program served 300 residential assessments, over 200 residential retrofits, 7 small business retrofits, and 9 commercial lighting retrofits. ■ References: (Schueler, 2013; Washington State University, 2012)
Energy Efficient Communities (WA) ■ Key Stakeholders: Puget Sound Energy ■ Goals: Increase participation in PSE programs through community outreach or media blitzes ■ Program Description: Outreach team within PSE that focuses on promoting residential and commercial programs through partnerships with local organizations or direct-to-customer marketing, depending on the program and community. Methods include presentations to community groups, door-to-door outreach, direct mail, staffing at community events. ■ Outcomes: In 2015, PSE Energy Efficient Communities gave over 50 presentations to community groups and conducted in person outreach with 60 hospitality businesses on Whidbey Island, and conducted direst-to-customer outreach for the HomePrint™ program in 10 targeted neighborhoods. ■ References: (Puget Sound Energy, 2015, 2016)
RePower (Bainbridge, Bremerton, Kitsap County) (WA) ■ Years Implemented: 2010-2014 ■ Key Stakeholders: Puget Sound Energy, Local government (Cities of Bremerton and Bainbridge Island, Kitsap County), community organizations, and implementation vendor (CSG). Per the final evaluation report, "The Washington State Department of Commerce partnered with Washington State University (WSU) Energy Program to supplement and extend existing utility incentives offered by Puget Sound Energy (PSE) and Cascade Natural Gas and to offer energy efficiency finance options through the Kitsap Credit Union and Puget Sound Cooperative Credit Union (PSCCU)." In Bremerton, the PSE existing utility HomePrint assessment was used, with a $90 incentive, community events, community marketing programming. Repower Kitsap, an initially separate financing program, was funded by a SEP grant through WA Department of Commerce. All three initiatives aligned through the process.

Program Description
■ Goals: 5,000 assessments, 2,000 upgrades, create 65 direct jobs, 252 indirect jobs, save 15 percent energy in each home ■ Program Description: Originally a partnership between Bainbridge Island and Puget Sound Energy with the goal of reducing demand on the capacity strained island, the RePower brand was later expanded to Bremerton and Kitsap County. The three overlapping RePower pilot programs merged in January 2014. Designed to overcome barriers related to an untrained contractor network, a weak economy, and overlapping utility service areas that made incentive programs overly complex. Built on existing utility incentives and provided homeowners with low- to no-cost energy assessments, low-cost financing from local credit unions, kick-started a trade ally network and provided trade ally and real estate appraiser/sales professionals on energy performance ratings to build a market for energy-improved homes. ■ Marketing and Community Engagement Notes: Used a "locally branded" approach. Final report found that, "The Cities of Bainbridge Island and Bremerton were key delivery partners: … formal calls to action, event notices, and direct-mail letters sent by the City accomplished the greatest response rates. Mailing program materials via official city post resulted in program confidence, lend validity, and galvanized action on behalf of the residents" (Conservation Services Group, 2014) ■ Findings: Multiple pilots of the same program structure provide a comparative analysis that shows why the specific messaging, rebate structure, and other program offerings need to be tailored to resonate with homeowners and stakeholders in each community (e.g., income, renters, community history/motives); moreover, this intel should be collected up-front. Reported that a clear community-wide "call to action" boosted neighbor-to-neighbor momentum in Bainbridge, whereas Bremerton did not have an impending goal and momentum was lower. ■ Outcomes: Although the program did not meet its goal related to energy assessments or home retrofits, it did meet many other goals including demand reductions of 2 MW to avoid the need for a new substation and enroll 700 homes with demand response systems. ■ References: (Cadmus, 2014; 2014)

Appendix C. References

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