Community Based Outreach Strategies in Residential Energy Upgrade Programs

By

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Submitted to the Department of Urban Studies and Planning on May 22, 2012 in Partial Fulfillment of the Requirements for the Degree of Master in City Planning

Abstract

Home energy upgrades can reduce residential energy consumption and improve indoor conditions, thereby realizing environmental, economic, health and other social benefits. Utilities, government and other actors have established numerous home upgrade programs, providing incentives, financing, marketing, and other support for the upgrade market. Unfortunately, upgrades have proven a "tough sell", with only a small fraction of eligible households engaging in these programs. To increase participation, many programs are experimenting with using formal and informal social networks as channels through which to promote upgrades, a process this thesis terms 'community based outreach' (CBO). Some analysts theorize that CBO can increase trust in programs, create social norms around undertaking upgrades, and improve the quality of information recruits receive; CBO may thereby persuade more households to participate in upgrades than could otherwise be achieved. However, questions remain regarding whether CBO can be delivered cost-effectively, and the extent to which it can increase total demand for upgrades.

This thesis explores the use of CBO by six upgrade programs operating in five regions in the USA. Through interviews, it seeks program managers' and outreach personnel's qualitative impressions of the efficacy of different CBO methods, and the factors that contribute to this efficacy. It seeks answers to two questions: What specific CBO strategies have proven effective at increasing participation in programs? And what institutional arrangements dictating who organizes and delivers CBO can be sustained and scaled up, especially as Federal government subsidy wanes in the coming years?

This research suggests that meeting-based formats provide a promising means of augmenting traditional marketing, capable of providing households a rich introduction to the concept of upgrade services and of leveraging social norms. It further finds that multiple network types are appropriate to promoting upgrades, and that marketers should seek to engage with a wide range of strong networks to deliver CBO. Coordinating closely with community organizations improves the delivery of program marketing, but marketers must be careful to use community groups' resources judiciously, to avoid 'burn out'. It concludes that CBO is not a panacea to the challenge of rapidly scaling upgrade programs. However, with community engagement and savvy administration, it can contribute to the cost-efficacy, sustenance and growth of upgrade programs.

Thesis Supervisor: Harvey Michaels, Lecturer, MIT Department of Urban Studies and Planning.

Thesis Reader: James Buckley, Lecturer, MIT Department of Urban Studies and Planning.

Acknowledgements

I have many people to whom I owe deep thanks. I want to thank my thesis supervisor Harvey Michaels for his big thinking, inspiration, and the unwavering encouragement he provides to his students to solve energy efficiency puzzles; it is a huge treat gleaning from Harvey's pragmatic idealism. My thesis reader Jim Buckley is everything a planner should be: He listens closely, provides great advice, and he may be the nicest human being on Earth – so big thanks to Jim.

I want to extend very warm thanks to the staff and volunteers affiliated with the programs I review in this thesis, for sharing their thoughts and experiences, and for all the important work that they do. Thank you to everyone at: Clean Energy Works Oregon, the Home Performance Guild of Oregon, the High Road Contractors and Community Alliance, NeighborWorks of Western Vermont, Better Buildings for Michigan, Energy Upgrade California, the San Francisco Home Improvement Program, and the Minnesota Center for Energy and Environment.

I am extraordinarily lucky to get to spend time with such smart, good-hearted, forward-thinking people as are found at DUSP, MIT more broadly, and in my other walks of life. I have learned from and been inspired by a huge range of faculty, staff, and students while at MIT. I cannot list them all. I should acknowledge a few peers who made my school life particularly enriching: Rosie Sherman, Elena Alschuler, Nikhil Nadkarni, Lindsay Reul, Ksenia Mokrushina, Amy Stitely, Tushar Kansal, Keren Charles, Kira Intrator, Melissa Schrock, Yoni Freemark, Daniel Broid, Daniel Yadegar, Maryann Hulsman, and Wes Look – thanks for all the stupendous thinking, superlative humor, and for being such great friends to boot.

Lastly, I want to recognize a few friends and family. To Eric Drewes, Jill Dalton, Caitlin Meggs, Tess Grainger, and Zoë Neill-St. Clair – I love you guys and think the world of you. And especially huge thanks to my mom Kriss Boggild, dad Sean McEwen, and sister Tasha McEwen; boundless love and gratitude to you.

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1 Introduction: The Potential and Challenges of Energy Upgrade Programs

This thesis examines community based outreach (CBO) methods to promote residential energy efficiency upgrade programs ("upgrade programs"). It focuses particularly on documenting community based strategies in six upgrade programs operating in five regions across the USA:

- Clean Energy Works Oregon.
- NeighborWorks of Western Vermont's HEAT Squad.
- Better Buildings for Michigan in Grand Rapids.
- Energy Upgrade California and the San Francisco Home Improvement Program.
- The Minnesota Center for Energy and Environment's Community Energy Services program.

Based on experiences from these programs, this thesis investigates the promise of particular CBO mechanisms to recruit households in scalable and sustainable ways – in other words, the outreach strategies that programs and participants find economical and worthy of ongoing replication and expansion. Additionally, it focuses on the institutional arrangements that make such outreach mechanisms possible, including the types of organizations that deliver outreach, how program administrators engage with community organizations, and how different organizations interact within the broader framework of upgrade programs and markets.

Better understanding the scalability and potential sustainability of CBO is important to the development of future policy and programs promoting upgrades. CBO strategies have been employed in numerous energy efficiency programs, as well as in firms' marketing efforts. Such community based approaches have been theorized as important components to expand the market for home energy upgrades, as they may reach and mobilize households who might otherwise lack knowledge or motivation to engage in home upgrades (Stern et al. 1986; Fuller et al. 2010; Michaels et al. 2011). However, CBO mechanisms have also been characterized as expensive, and for this reason perhaps untenable as means of promoting energy efficiency programs (McLean-Conner 2009). The jury is still out regarding whether CBO can substantially increase the uptake of upgrades in a cost-effective manner, and what are the most effective means of conducting CBO.

This first chapter defines what is meant by "home energy upgrade". Next, it reviews the compelling case for policy makers to encourage home energy efficiency upgrades, from environmental, social and economic perspectives. It then documents the limited extent of upgrades' penetration in the broader home improvement market. Finally, it reviews academic theory and empirical conclusions from evaluations of upgrade programs, suggesting the market-based and behavioral barriers that limit households' engagement in upgrades.

Chapter 2 explores literature on CBO strategies in more depth, and investigates how these strategies fit into broader upgrade program marketing paradigms. Chapter 3 describes the methods used to develop case studies. Chapters 4 through 8 are case studies of energy upgrade programs, focused on describing their CBO practices within the broader operations of these programs. Chapter 9 summarizes common

themes between cases, and suggests directions for future iterations of upgrade programs. Chapter **Error! Reference source not found.** is comprised of conclusions, and a schema for organizing thinking about the role of community organizations and social networks in upgrade programs.

1.1 What are Energy Upgrades?

Home energy upgrades can be defined as a service for existing homes that implements a suite of energy efficiency improvements in one concentrated effort, with appropriate measures determined using building science techniques to optimize homes' performance (CEE 2010). Thus, home energy upgrades can be conceived of as a "proactive" improvement to energy efficiency, different from piecemeal "reactive" improvements to efficiency that occur as part of home maintenance, such as installing a new more efficient furnace (Zimring et al. 2011). By rapidly installing all cost-effective energy efficiency opportunities in a home, such programs hold the promise of rapidly realizing economic, social and environmental benefits.

Much of the upgrade market is structured by utility and/or governmental upgrade programs. These programs provide incentives, financing mechanisms, quality assurance regimes, and customer outreach and education.

Upgrade services often involve two phases. First, households are recruited into a building assessment, where assessors analyze the home and recommend efficiency improvements.[1] A variety of different assessment and analytical practices have been developed, with varying assumptions and levels of rigor. Assessment tools may include: a blower door test to test for air leakage, utility bill analysis, computer modeling software of homes' energy use, and infrared cameras to note areas of heat loss (Palmer et al. 2011). These mechanisms serve to determine the value of different energy upgrade measures in a systematic manner. Assessment professionals will typically provide a list of upgrade measures households could undertake, often noting potential energy savings, expected improvements to comfort and/or health, and price. Some programs are beginning to experiment with using historical data and statistical methods to pre-determine appropriate upgrade measures for homes, and minimize the cost of assessments; however, all programs studied in this thesis included a comprehensive assessment phase at the time of the study.

The second step in the process is for households to opt to continue with implementing measures. Contractors will typically bid on the scope of work specified in the audit report. Programs and upgrade markets differ according to whether the assessor will bid on the scope of work they propose, or whether other contractors are encouraged to bid as well in a more competitive process. Thus, upgrade programs can be classified as either:

- Single-bid, whereby the assessment contractor is also the default contractor to perform upgrade measures.
- Multi-bid, where the assessment contractor provides the scope of work, and households are responsible for sourcing upgrade contractors.

[1] Some upgrade offerings forgo the assessment stage, instead providing a prescriptive set of upgrade measures based on assumptions about appropriate measures for the eligible housing stock.

Both bidding systems feature theoretical benefits and drawbacks. Notably, without competitive forces, households in single-bid systems may be more vulnerable to overcharging by contractors. Conversely, multi-bid systems can decrease the rapport between upgrade contractors and households, negatively impacting the sales process, and placing greater onus on the customer to take the initiative of soliciting bids. These dynamics of multi-bid systems may lessen households' likelihood of proceeding with upgrades. Moreover, the strong competition in pricing that is encouraged by multiple bids could create greater incentive for contractor firms' to perform low-quality work.

1.2 The Benefits of Home Energy Upgrades

Increasing the energy efficiency of our building stock represents a key opportunity to realize environmental, social and economic benefits. Buildings account for 40 percent of the energy consumption in the USA, of which residential and commercial buildings account for 22 percent and 18 percent, respectively (US DOE 2011a). Globally, buildings account for 33 percent of all emissions (ürge-Vorsatz et al. 2007). The share of building energy use and emissions, and the intensity of emissions, is dominated by developed countries in Northern latitudes, notably the USA (Gupta and Chandiwala 2009) (see Figure 1).

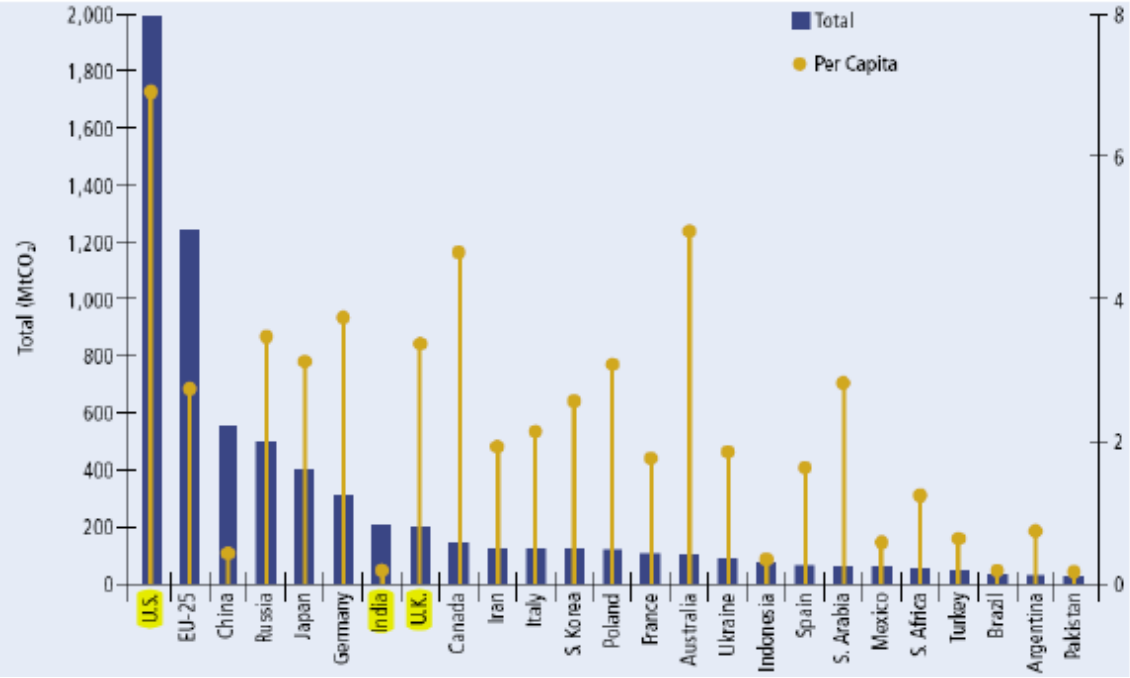


Figure 1: CO2 emissions by nation, total and per capita. Source: Gupta 2009.

Numerous studies suggest that there is significant potential to cost-effectively increase the energy efficiency of buildings (Chandler 2010; Rohmund et al. 2008; Granade et al. 2009; Sadineni, France, and Boehm 2011; Brecha et al. 2011). While new buildings can be constructed very energy efficiently, fully realizing the benefits of energy efficiency will depend to a large extent on reducing energy use in existing buildings. California's history of implementing energy efficiency underscores this point; roughly

80 percent of energy savings from utility demand side management initiatives have stemmed from investments to upgrade existing buildings (CEC 2005). Approximately two thirds of the developed world's existing building stock is expected to be standing in 2050, further suggesting that maximizing energy efficiency relies in large part on implementing efficiency upgrades to today's existing building stock (ürge-Vorsatz et al. 2007).

The energy savings potential of the residential sector is particularly large. According to estimates by Granade et al. (2009), cost effective upgrades to building shell, major appliances and lighting in existing buildings could realize a 23 percent reduction in end-use energy from existing residential buildings between now and 2020, and a 22 percent reduction in GHG emissions. Moreover, Granade et al.'s analysis indicates that the potential economical energy savings from the existing residential sector are greater than those available in existing commercial buildings. Thus, savings in the residential sector are especially important to realizing the full benefits of energy efficiency. Such benefits are outlined below.

1.2.1 Environmental and Health Benefits

Maximizing building energy efficiency will be critical to mitigating climate change and other environmental challenges in the coming decades. By one estimate, cost-effective building efficiency improvements represent 13 percent of all greenhouse gas emissions reduction potential globally (McKinsey & Company 2009). Maximizing this emissions reduction potential is especially urgent given that the prospects for limiting dangerous climate change are increasingly becoming limited (Anderson and Bows 2011).[2] Further supporting the case for energy use reductions, recent studies have suggested that common energy sources such as conventional natural gas, shale gas, and coal, may be more greenhouse intensive than assumed by current emissions accounting standards (Howarth, Santoro, and Ingraffea *in press*; Tollefson 2012; Shindell et al. 2012).

In addition to mitigating climate change, efficiency lessens other environmental impacts of energy extraction, distribution, and use. Such impacts include air pollution, water pollution, and landscape degradation. With proper attention to healthy and green building practices, energy upgrades also serve to improve indoor environmental conditions, such as temperature and air quality. This improvement may reduce occupants' morbidity and mortality amongst lower income households, and increase occupants comfort and productivity (Clinch and Healy 2000; Kuholski 2010). Conversely, it is important that upgrades be performed by suitably knowledgeable contractors, to avoid exacerbating indoor environmental health problems and/or structural issues, by overly restricting air flow, engendering moisture problems, and/or increasing exposure to contaminants like lead paint (Bone et al. 2010; Manuel 2011).

1.2.2 Economic Benefits

Energy efficiency can realize local and regional economic development benefits by creating jobs, retaining energy spending in local circulation, and stimulating greater spending in local economies.

[2] Global greenhouse gas emissions are increasing at rates higher than projected in the most pessimistic scenarios of the International Panel on Climate Change (IPCC); moreover, recent research suggests that even modest global average temperature increases will be more dangerous than IPCC assessments have thus far indicated (Anderson and Bows 2011).

Energy efficiency is typically more labor intensive than energy supply options, providing a greater amount of employment per unit of energy spending (Pollin, Heintz, and Garrett-Peltier 2009). Residential efficiency programs appear to create more direct employment per unit of spending than programs targeting the commercial sector. According to one study, the Weatherization Assistance Program, which provides low-income households energy efficiency services, generates 9.8 person years of direct employment per million dollars spent, compared to the 2.5 jobs stemming from an equivalent investment in energy service companies, which typically provide efficiency for larger commercial and industrial facilities (Goldman et al. 2010). Likewise, Sundquist (2009) estimates that residential upgrades provide 9.1 direct jobs per $1 million of investment, versus 4.3 jobs for an equivalent investment in commercial building efficiency.

While spending on energy supply typically leaves local economies for large utilities, spending on energy efficiency retains spending in local circulation (Kubert and Sinclair 2011). Indeed, the retained energy savings can stimulate much greater local job creation than the direct employment of people within efficiency programs themselves. Howland et al.'s (2009) macroeconomic model found that 88 percent of the job creation attributable to utility energy efficiency programs in the Northeast of the USA stem from the reinvestment of energy savings; they found 66 total jobs created per million dollars invested in efficiency programs (Howland et al. 2009). Likewise, input-output analysis of the Californian economy between 1972 and 2006 found that energy efficiency measures implemented as a result of California's energy policies have realized $56 billion in savings, allowing for an additional 1.5 million FTE jobs to be created from redirected savings (Roland-Holst 2008). For each job lost in energy supply jobs, 50 new jobs were created due to these multiplier effects (Roland-Holst 2008). Residential upgrade programs may induce fewer jobs than commercial programs, which frequently achieve greater net-present value savings; however, greater shares of residential savings are probably more likely to recirculate in local economies.

Finally, upgrades can contribute to household's financial well-being by reducing homes' energy spending. For households at the lower end of the income bracket, non-automotive energy spending represents a substantial proportion of total household expenditures (EIA 2011; see Figure 2). The potential for household scale financial benefits from upgrades should not be overstated, however; often times, upgrades are only cash flow neutral or a net cost, considering only amortized upgrade payments and energy savings. Of course, upgrades realize benefits for households over and above energy savings, including comfort, increased home value, and the realizations of households' values. These benefits should also be considered when evaluating the costs and benefits of upgrade programs (Knight, Lutzenhiser, and Lutzenhizer 2006; LeBaron 2011; Tetra Tech and NMR Group 2011).

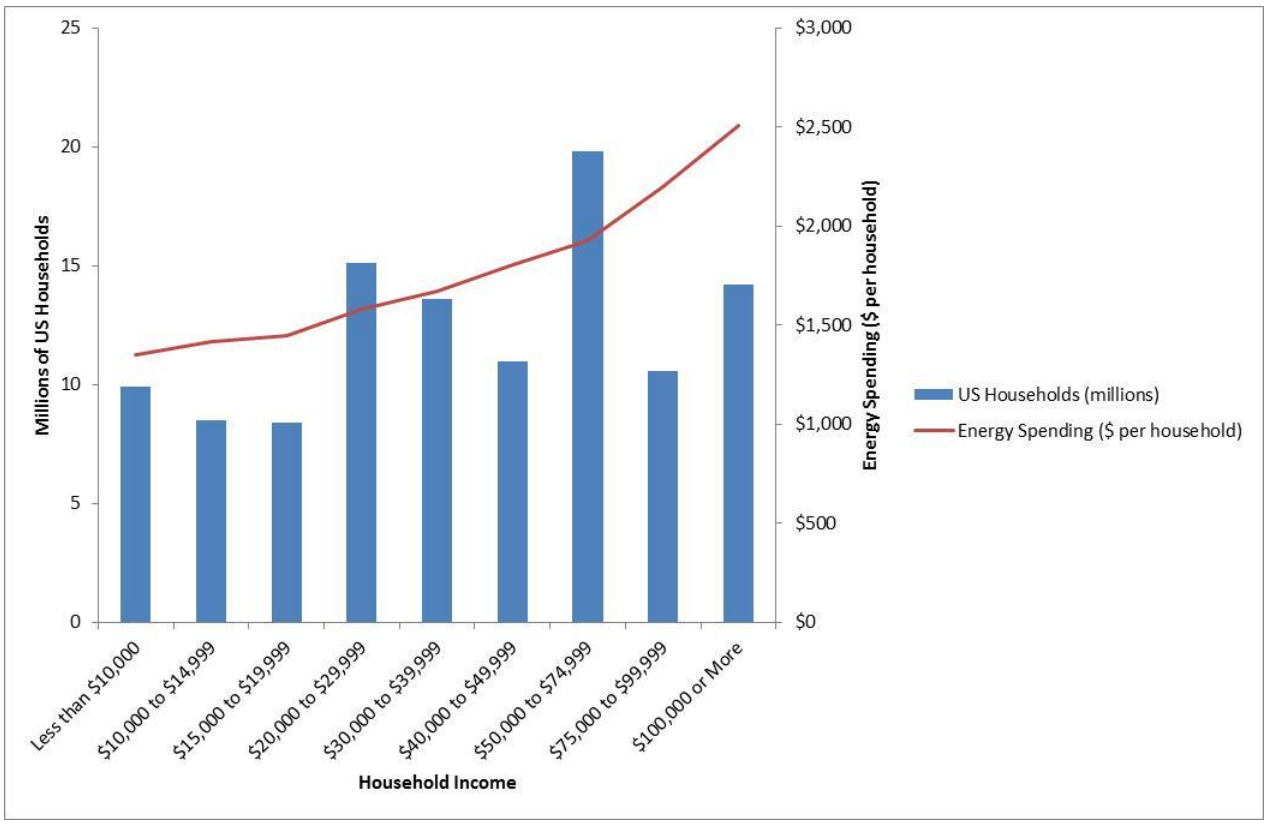


Figure 2: Household energy spending by income bracket. Derived from: EIA 2011.

1.2.3 Impacts to Utilities

Achieving efficiency typically provides the cheapest means for utilities to supply new energy resources (Friedrich et al. 2009). In jurisdictions with enabling regulatory and policy contexts, utilities are increasingly investing in energy efficiency (CEE 2011). Residential energy upgrades are a higher cost proposition because of the administrative burden of a high volume of smaller upgrade projects, as well as relatively more expensive upgrade measures. Nevertheless, supporting the home upgrade industry has provided cost effective energy efficiency for some utilities, and can contribute to utility savings. Indeed, it is estimated that in mature programs, the Home Performance with Energy Star upgrade program framework achieves a levelized cost of energy of about $0.05 per kWh saved (Energy Star 2011). This cost is greater than that typical of energy efficiency portfolios, which is $0.023 to $0.044 per kWh of electricity, with a median value of $0.03/kWh, but is still less than the typical cost for new supply side resources, which typically range from $0.07 to $0.15 per kWh (Friedrich et al. 2009). Similar savings pertain to natural gas and fuel oil efficiency measures.

Nevertheless, despite rising energy efficiency budgets, a number of utilities and regulators are hesitant to increase investment in residential upgrade programs because of their higher costs per kWh than other programs in utilities' energy efficiency portfolio. They are concerned that relatively expensive efficiency will overly inflate utility retail rates, especially compared to the declining long run costs of

supplying additional electricity via new natural gas turbines (NAPEE 2008; Michaels 2012, *personal communication*). The utility industry is seeking means of delivering residential upgrade programs with lower rate-payer subsidies.

1.2.4 The Limits to Upgrades and Efficiency

Efficiency improvements are no panacea to the problems of residential energy use, however. Scott (2011) documents that the most efficient buildings use the most absolute energy, likely due to their occupation by more affluent households (Scott 2011). Moreover, Scott (2011) suggests that realizing energy upgrades in the least efficient buildings might simply engender a rebound effect, where lower-income households can afford to heat their homes to a greater extent. This would improve indoor conditions, but erode absolute energy and emissions reductions.

Conversely, other studies find that income plays a lesser role in dictating energy use, once certain behaviors and technologies are held constant across income groups. Sanquist et al. (2012) find that household income contributes only 1 percent of the difference in American's use of energy, once energy price, climate zone, and reported behavior and lifestyle patterns including the use of air conditioning, laundry, personal computers, and television, are accounted for (Sanquist et al. 2012). Regardless, to realize the potential of energy upgrades, it may well be that programs must engage all types of households in long-term behavior change efforts to realize the potential of energy efficiency.

1.3 The Extent of the Home Energy Upgrade Market

The multiple benefits of energy efficiency in the residential sector provide strong justification for utilities, government, businesses, and non-profits to develop, implement and participate in programs that facilitate markets for upgrades. Utilities dominate spending on energy efficiency, and are projected to continue providing the lion's share of funds for efficiency programs (Barbose, Goldman, and Schlegel 2009). Overall, North American energy efficiency budgets have been increasing, though efficiency spending is highly concentrated in a few American states and Canadian Provinces that have made a policy commitment to energy efficiency (Barbose, Goldman, and Schlegel 2009; CEE 2011). Utilities support a number of energy upgrade programs. Fifty-four percent and 68 percent of electrical and gas efficiency program administrators, respectively, report offering whole-home energy upgrades in a 2010 survey (CEE 2011). In addition to utility spending and program administration, government, businesses, and non-profits have contributed to the development and delivery of numerous upgrade programs. Notably, the American Recovery and Reinvestment Act (ARRA) funded forty "Better Buildings for Neighborhoods" upgrade programs, administered by local governments and non-profits across the USA (US DOE 2011b). The Better Buildings for Neighborhoods program has emphasized CBO in its capacity building activities and funding guidelines (US DOE 2011b). Many of these programs have developed sophisticated CBO strategies; notably, four of the five programs I review in this thesis are ARRA funded.

The potential market for home energy upgrades is vast. The State and Local Energy Efficiency Action Network's Residential Retrofit Working Group developed scenarios depicting potential growth in the home energy upgrade market between 2011 and 2020, accounting for utility, government, and household spending on energy upgrades. Table 1, below, presents the extent of market penetration, investment, and energy savings associated with different scenarios. The Working Group anticipates that

programs will be dominated by rate-payer funded programs, with greater provision of publicly funded programs as part of more aggressive scenarios. The aggressive scenarios also assume households will invest more than ten times what they currently do in upgrades (SLEEAN 2011; see Figure 3). This level of investment would allow approximately 22 million households to be served by upgrades. Such investment levels may still not capture all the full potential of upgrades – one residential efficiency program manager estimates that roughly 40 million homes in the USA would make good candidates for energy efficiency upgrades (Chapin 2011), almost twice the number associated with SLEEAN's aggressive case. Yet the number of homes appropriate for upgrades may be larger still; more than 65 million homes in America were constructed prior to 1980, before the broad adoption of residential building energy codes (Martel 2011).

The actual rate of upgrades is many orders of magnitude less than this potential, however. While exact figures on the penetration of home upgrades in the USA have not been tabulated, LeBaron and Rinaldi's (2010) survey of USA upgrade programs suggests an upper bounds of roughly 80,000 per year in the USA prior to 2009, before ARRA funded programs were established.[3] Using this estimate, the residential upgrade rate in 2009 was roughly 0.2 percent nationwide, assuming that 40 million homes would make good candidates for these programs. Upgrade program administrators and analysts typically cite a similar uptake rate. Despite the low penetration of comprehensive upgrades overall, a number of programs operating at more localized scales have achieved substantially greater rates of uptake; examples of such programs and the elements that may be associated with their higher rates of participation are explored towards the end of this chapter.

Table 1: Future scenarios of the home upgrade market. Source: SLEEAN 2011)

	Base Case	Moderate Case	Aggressive Case
Cumulative homes upgraded (2010-2020)	7 million	14 million	22 million
Penetration rate by 2020 (Of households >149% Poverty Level, and Pre-2005 construction)	7%	15%	23%
Total annual investment in 2020	$2 billion	$10 billion	$19 billion
Cumulative Energy Savings (2010-2020)	0.53 Quads	1.14 Quads	1.59 Quads

It is important to note that the home improvement industry is much larger than the more narrowly defined home energy upgrade market, and that significant investments impacting homes' energy efficiency are made on a regular basis. Citing the Harvard Joint Study for Housing Studies, von Schrader (2011) notes that contractors conducted approximately 18.2 million energy related home improvements annually, including HVAC replacements, window and door, insulation, water heater, and siding/roofing jobs; for this work, contractors receive annual gross revenues of approximately $55 billion. While such home improvements can improve energy efficiency, they are typically not designed to optimize energy efficiency in the way that comprehensive energy upgrades can allow. Thus, integrating comprehensive upgrade services into the home improvement industry represents a potentially potent means of

[3] 80,000 homes is a figure I calculated multiplying the number of programs they identified by the larger range of upgrades achieved in programs they surveyed. It is therefore likely an overestimate.

increasing residential energy efficiency. Indeed, von Schrader (2011) suggests that developing business models, program models, and regulations that can achieve greater integration with the traditional home improvement industry should be a key focus of upgrade programs.

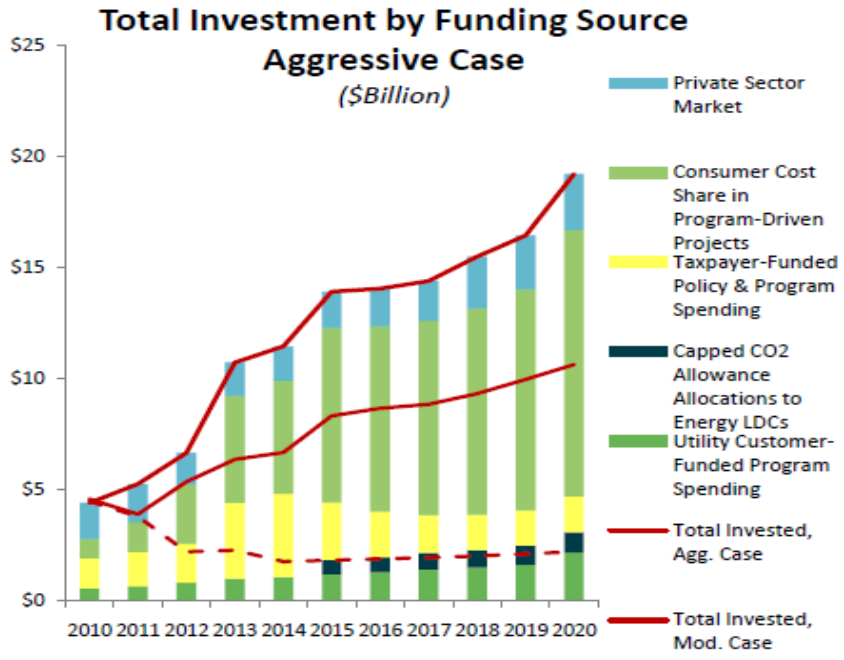


Figure 3: An "aggressive case" projection of total spending on energy efficiency upgrades. Source: SLEEAN 2011.

1.4 Explaining the "Efficiency Gap" – Market Barriers

The previous section suggests that households have great potential to increase their energy efficiency, but that the upgrade market is only serving a tiny percentage of homes. In this section and section 1.5, I review a range of theories that seek to explain this underinvestment in energy efficiency, coined the "efficiency gap" (Jaffe and Stavins 1994). The efficiency gap is typically attributed to a variety of "barriers" to investments in efficiency (Joskow 2009). Gillingham, Newell, and Palmer (2009) differentiate between two main categories of barriers: Market barriers, which hinder those who behave in an economically rational way from making investments in energy efficiency; and behavioral barriers, which occur when consumers do not act in an economically rational way to maximize their personal wealth. These categories of barriers align with different conceptual models of how we make decisions about energy use. Market barriers fit within so-called "physical-technical-economic" models; behavioral-models recognize a broader range of interventions that may impact energy use, while still recognizing the importance of market barriers (Lutzenhiser et al. 2009). The conceptual models used by program designers and implementers matter – adopting models that do not capture the actual dynamics that lead households to undertake upgrades will limit the impact of interventions. The remainder of this section reviews different market barriers that analysts suggest may hinder energy upgrades, using the organizational framework suggested by Gillingham, Newell, and Palmer (2009). In section 1.5, I review different theories of behavior explaining households' energy related decisions, using a framework

developed by Wilson and Dowlatabadi (2007) to summarize different behavioral disciplines' perspectives on residential energy use.

1.4.1 Energy Market Barriers

The markets and regulatory structures for energy, as well as upgrade services, feature a variety of imperfections that can impede adoption of upgrades:

"Adverse bundling" of upgrade measures – Adverse bundling occurs when energy investments with a good economic case are combined with those that have a lesser economic case (Gillingham, Newell, and Palmer 2009). When households associate more expensive measures with more cost effective retrofits, whether due to their own preconceptions or contractors' financial incentive to up-sell jobs, they may forgo any investments in energy upgrades.[4]

Necessity to address non-energy "pre-retrofit" upgrade measures – So-called "pre-retrofit" upgrades may include structural, health, and safety improvements that must be undertaken during energy upgrades. Such work adds cost without realizing energy savings, and in some cases may preclude customers from participating in upgrade programs entirely. The prevalence of pre-retrofit barriers varies substantially according to the age and construction of the housing stock in different markets, though they are probably most prevalent in more poorly maintained housing that could especially benefit from efficiency improvements. Pilot cities in the Green and Healthy Homes Initiative had rates of health hazards that had to be addressed during upgrades ranging from zero percent in some cities to 60 percent in others (NCECLP 2010). Similarly, the low-income Weatherization Assistance Programs average about 10-15 percent deferrals to healthy homes programs due to pre-retrofit barriers nationwide, though some cities with older housing stock experience deferral rates of 50 percent (Wilson and Tohn 2011).

Allotments for risk - Investors face risks that upgrades will not realize savings, comfort or other benefits due to contractors' errors. Such risk increases the rate of return that an economically rational investor expects from a project, reducing the appeal of home energy upgrades. Zimring et al. (2011) note that such risks are magnified for lower income households, for whom changes in energy spending cash flow can appreciably exacerbate economic hardship.

Artificially low energy prices - The price we pay for energy does not adequately reflect the externalized social costs in the form of pollution, environmental degradation and health impacts that supplying energy engenders. Moreover, many sources of energy are otherwise subsidized, resulting in consumers paying less than what it truly costs to provide power. One study suggests that retail rates for generic electricity supply are approximately three to seven times less expensive than what it actually costs society to supply, when the full range of externalities and subsidies are taken into account (Kammen and Pacca 2004). Indeed, estimates of the social costs of carbon used in government policy making (see

[4] Moreover, some investments in home improvements that are marketed as environmentally responsible energy efficient choices can actually have negative life-cycle environmental impacts; for instance, prematurely replacing old single pane windows with new windows may entail more embodied energy in the windows' manufacture than is saved in building operations due to the new window (Sims and Powter *undated*).

IWGSCC 2010) may improperly account for climate sensitivity, the damage expected at high global average temperature increases, and the discount rate that should be used to compare future costs to the present day (Ackerman and Stanton 2011). What is more, in most jurisdictions, residential customers predominantly pay the average cost of supplying power; however, dynamic pricing that more accurately reflects the real-time value of supplying power would provide customers with incentives to invest in household energy systems that lessen energy consumption during peak demand (FERC 2009).

Perverse incentives and inertia amongst program implementers - In many jurisdictions, utilities administer energy efficiency programs; however, due to volumetric utility tariff structures that provide increased utility income for energy sold, they are perversely incentivized against implementing all cost effective efficiency (RAP 2010). Moreover, regulated utility monopolies are typically remunerated according to a percentage of their total physical capital, or "rate base". Therefore, they face an incentive to install as much physical capital as possible; energy efficiency can delay the need for such investments (NAPEE 2007). These dynamics can result in program administrators resisting innovation and program expansion that would allow for more robust energy efficiency markets.

Lack of programs, scale, and contractor capacity - Many jurisdictions lack any upgrade program framework whatsoever. In areas with small programs the size and skill of the workforce is limited; rapidly scaling up the base of contractors with the knowledge to properly implement upgrades is challenging. Moreover, contractors have difficulty anticipating the future demand for upgrade services due to the cyclical nature of incentives and program funding. What is more, contractors may not have good incentives to provide high quality upgrades, nor to market their services, if quality assurance and enabling program structures are not in place.

1.4.2 Capital Market Barriers

Households may lack the access to financing to undertake energy efficiency projects. In many areas, markets for the financing upgrades are not well developed. Lending for energy upgrades is still a relatively rare phenomenon; those lending mechanisms that exist often feature high interest rates. Financiers frequently do not recognize the positive impacts on households' cash flow that energy upgrades can engender. Lower-income households are most likely to require financing to afford upgrades, but are also least likely to be eligible for attractive financing terms unless supported via subsidies and/or targeted lending practices (Fuller 2008).

1.4.3 Information Barriers

Most households do not have a good understanding of how buildings use energy and the potential for cost-effective upgrades. Indeed, the average person greatly under-estimates space-conditioning and hot-water heating's share of household energy consumption, the two energy uses for which upgrades have the greatest reduction potential (Attari et al. 2010). Moreover, many customers are unaware of the existence of a market for energy upgrades at all; 50 percent of surveyed contractors cite customers' ignorance of the energy upgrade market as a central reason why more customers do not participate in energy upgrades (Palmer et al. 2011).

1.4.4 Principal-Agent Problems

Principal-agent problems are defined as situations where the owner of an asset contributing to efficiency does not receive the financial benefit of implementing it (Gillingham, Newell, and Palmer 2009). An important such problem is the split-incentive between landlords and tenants. Tenants pay energy bills, while landlords are in a position to invest in energy upgrades. Landlords will forgo this investment as they reap no financial returns. Significant percentages of households are renter occupied, particularly at the lower end of the income spectrum (Zimring et al. 2011 - see Figure 4).

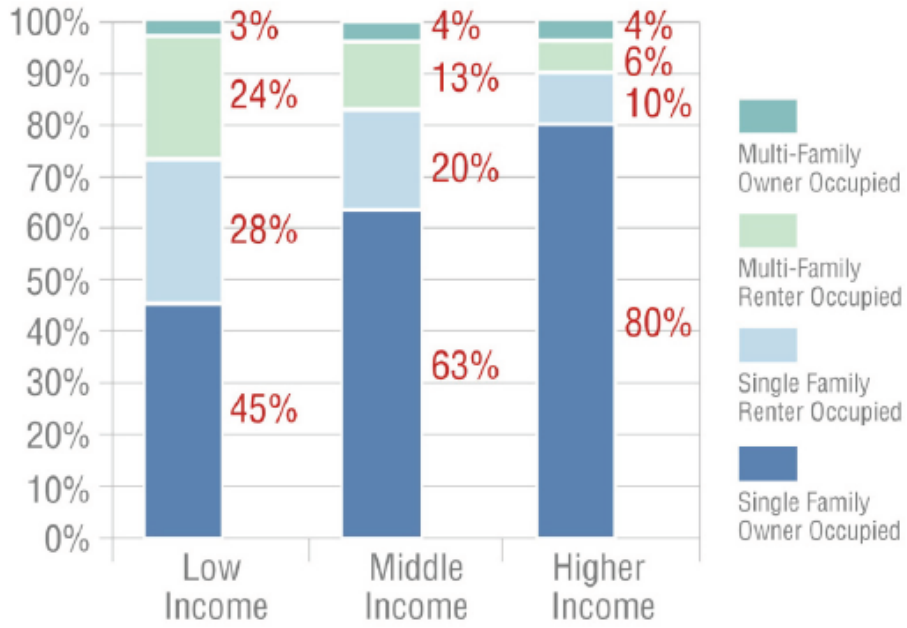


Figure 4: Household income, housing type and tenureship. Source: Zimring et al. 2011.

1.4.5 Contractor supply side barriers

The home improvement contracting industry is highly fragmented, overwhelmingly comprised of very small firms (Thorne 2003). Their size results in poor economies of scale, including hurdles to investing in new equipment, new staff, training and innovation (Weil 2010). Additionally, contractors are also often reticent to invest in the assessment component of upgrade services, when the actual upgrade work may be undertaken by others (Thorne 2003).[5] These factors can impede growth of the upgrade market (Weil 2010; Scheffer and Levitt 2010).

1.5 Behavior Theories

Theories and empirical studies of behavior change provide an important complement to our understanding of the market barriers to energy efficiency. Behavioral studies suggest reasons that

[5] Thorne (2003) suggests a "contractor centered" approach to implementing residential energy efficiency, whereby organizations tasked with market transformation seek to expand the range of skills provided by traditional contracting segments; for instance, an HVAC contractor would be encouraged to progressively install efficient equipment, perfect installation techniques to achieve efficiency, expand into duct sealing services, and ultimately offer envelop improvements to accompany efficiency interventions.

people might not realize the full economic potential of energy efficiency. By attending to morals, norms, and people's sense of agency, these works also suggest that people may be willing to invest in more efficiency than is strictly economically justified. Moreover, it suggests means by which households may be convinced to undertake upgrades.

Behavior theories from a range of academic disciplines can explain household's decisions to undertake upgrades. Wilson and Dowlatabadi (2007) review behavior theories pertaining to residential energy use. The following subsections summarize Wilson and Dowlatabadi's schema.

1.5.1 Behavioral Economics

Behavioral economics seeks to explain economic decisions, particularly those that differ from utility maximizing behavior predicted in classical economics. Important behavioral economic theories that may explain decision-making surrounding energy efficiency include:

Bounded rationality – People possess limited informational resources, time, and cognitive abilities, constraining the extent to which they can make decisions to maximize their self-interest.

Reliance on cognitive frames and decision making heuristics – People are predisposed to understand their options and decisions according to certain frameworks. Important cognitive frameworks include:

- Loss aversion or "prospect theory" – People are more averse to economic losses than they are predisposed to pursue an equivalent gain (Tversky and Kahneman 1992).
- Anchoring on information or states of being – People are biased to continue to believe what they think they know.
- Time inconsistency and purchase context – People will assign smaller discount rates when investment decisions are planned in advance, and/or when all benefits accrue in the future. In contrast, more pressing decisions and contexts in which much of the gratification occurs immediately are associated with larger discount rates (Camerer and Loewenstein 2002). Notably, weatherization, heating and air-conditioning decisions feature smaller discount rates, while appliances feature larger discount rates (Train 1985).
- Satisficing – Consumers will identify base thresholds of quality for products they purchase. They are likely to choose the first product available to them that meets a basic threshold, even if other choices offer more value.
- Mid-range purchasing – Consumers are biased towards purchases in the middle range of price, even if other ranges offer more value.

The observations of behavioral economics may apply to upgrade decisions. Upgrades are a relatively unfamiliar concept, with complex technical and financial considerations. The case for upgrades and other energy investments may not align with consumers' rational capacities, cognitive frames, or heuristics. Their tendency to anchor on certain knowledge, satisfy only minimum requirements, and make mid-range purchases, may make marketing upgrades more of a challenge.

1.5.2 Technology Diffusion Decision Models

The technology diffusion literature describes how technologies, products and services are progressively adopted by different consumer segments: Innovators, early adopters, the early majority, the late majority, and non-adopters/laggards (Bohlen and Beal 1954). These groups differ according to their wealth, ideology, influence on social norms, and other factors. Technology Diffusion literature typically uses the Theory of Planned Behavior (TPB) to explain why members of these segments choose to adopt novel products. The TPB assumes that individuals aim to maximize their personal benefit, and proceed through the process of becoming cognizant of the option, being persuaded of its benefits, making the decision, and providing feedback to themselves and others. Different consumer segments acquire knowledge in different patterns; therefore, strategies to influence these patterns must be tailored to individual segments.

The technology diffusion literature suggests that marketers of novel upgrade services should focus marketing efforts on early adopters, who can then model the product to broader segments. Persuasive marketing strategies documented within the literature include: Emphasizing benefits of intervention over status quo; minimizing the complexity of adoption; allowing users to engage in trials of the intervention, to reduce risks of adoption; making interventions tangible and visible; and empowering participants, emphasizing their agency to undertake upgrades.

1.5.3 Social and Environmental Psychology

Social and environmental psychology behavior models pay greater attention to values, morals, the normative influence of society, people's sense of self-efficacy, and the perceived and actual viability of behavior, than the technology diffusion literature. Wilson and Dowlatabadi's (2007) review of environmental psychology literature suggests that influencing personal values and social norms can realize environmental action where markets and economical opportunities facilitate taking such action; where this enabling environment does not exist, this work will have little impact.

More recently, Bamberg and Möser (2007) conducted a meta-analysis of 46 environmental psychology studies. They found that three factors each explain about 30 percent of the variance in people's intention to undertake environmental actions: People's perception of control over an action, their attitude towards the action, and the social norms surrounding the action. However intention itself only explained about 52 percent of the variance in actual behavior, suggesting that other factors should be explored (Bamberg and Möser 2007). It should be noted that this analysis investigated many environmentally related behaviors, and the factors influencing the specific decision to undertake upgrades likely differ somewhat. Nevertheless, it suggests that fostering convenient programs, providing a compelling case for action, and demonstrating positive social norms, are all important in influencing upgrade decisions.

1.5.4 Sociology

Finally, Wilson and Dowlatabadi (2007) find that sociological literature on residential energy use deemphasizes personal values and decision making, attributing greater influence to the development of pervasive social norms that evolve with the prevailing technology. Behavior should be viewed as a product of socio-technological systems. Such a conception would argue that significant penetration of

energy upgrades will not occur without broader systemic changes to technology and market offerings, with the consequent evolution of new social norms guiding people to undertake upgrades.

1.5.5 Summary of Barriers to Efficiency Literature

The market barriers literature suggests a range of impediments to household's making economically rational choices in energy efficiency. Likewise, behavioral studies provide a diversity of reasons why people might not make rational choices, even when economical options exist. Conversely, and encouragingly, environmental psychology suggests that households' may make investments in sustainability beyond what is strictly rational from an energy savings perspective, because of their moral persuasions, community norms, and sense of self efficacy; to do so, they require access to the right enabling services, however. Similarly, reviews of behavioral studies and environmental programs suggest a variety of 'nudges', or behavioral interventions, that can overcome behavioral barriers; these may include appropriate default options, public commitments, modeling behaviors, regular reminders, and others (McKenzie-Mohr and Smith 1999; Thaler and Sunstein 2008). While the optimal combination of market based and behavioral interventions is unclear, reviews of upgrade programs can shed light on the sorts of barriers that most impact household's adoption of upgrades, and the elements of programs that are important to realizing significant participation. The next section reviews findings from upgrade program evaluations.

1.6 Factors Impacting Households' Propensity to Undertake Upgrades

1.6.1 Evidence from Program Reviews

Reviews of efficiency programs suggest that multiple factors, both market-based and behavioral, influence peoples' propensity to engage in upgrade programs. In their review of efficiency program evaluations, Mast and Ignelzi (1994) found that the provision of incentives and a good financial case were important to generating customer participation, but that a financial case alone does not predict participation in energy upgrade programs. Rather, they found programs require effective communications avenues to customers; a streamlined, convenient process of engagement in programs for customers; and involvement of trade allies in the design and management of programs, to ease implementation (Mast and Ignelzi 1994). Likewise, Stern et al. (1986) find that the value of incentives has a positive relationship on program uptake. However, upgrade rates varied markedly amongst programs with the same financial case. Notably, in three instances natural experiments occurred wherein the same incentive scheme was offered across numerous program administrators; the penetration of upgrades differed by factors of 13.8, 13,4 and 50.4, suggesting the significant impact that non-financial variables have on program outcomes (Stern et al. 1986).

Further evidence suggests energy prices' important but limited influence on upgrade decisions. Residential energy investments do not appear to be highly correlated with price shocks, exhibiting low short-term and only marginal long-term elasticity (Russell 2006). Zundel and Stieß (2011) survey of upgrades customers in the Netherlands found upgrades were largely justified based on economic considerations; however, homeowners did not employ detailed assessments of the return on the investment. Rather they report considering upgrades a precautionary investment against the potential

for price increases. The survey also found that comfort and status were important rationales for undertaking upgrades (Zundel and Stieß 2011).

Palmer et al.'s (2011) survey of upgrade contractors suggest that contractors believe homeowners' perception of the benefit-cost ratio of upgrades to be the most important factor influencing households' decisions. However, contractors also note that households may not understand upgrade economics well. Indeed, the survey suggests that customers are no more likely to follow through with upgrades whether the live in jurisdictions with high or low energy prices (Palmer et al. 2011).

1.6.2 The Fundamental Elements of Successful Upgrade Programs

The findings noted above suggest that while price factors may be important to motivate households to participate in upgrades, customers' experience and understanding of the value of their undertaking energy upgrades also matters a great deal. A comprehensive, holistic approach to program and market development may be the most effective means of providing energy efficiency services. Fuller et al. (2010), CESI (2010), and other industry analysts prescribe elements of programs that together may allow them to overcome the multiple barriers to energy efficiency. Based on this literature, and my own speculations, I suggest important components to future outreach programs:

A long term commitment to program funding and support – Longer term program support can better reap the benefits of early investments in program infrastructure and developing personnel. Notably, the Sacramento Municipal Utility District's upgrade loan program has provided financing about 26 percent of eligible households since it began in 1977, covering all program costs through interest on its loans (Fuller 2008), effectively requiring no utility subsidy whatsoever. Fuller (2008) credits its cost-efficacy to the scale and experience the program has realized over time. Programs, new and established, should focus on garnering long-term support from government, utilities, contractors, and other trade allies, to support their operations over the long-term.

Utility support is justified up to the point that cost-effectiveness tests dictate. Utilities should be willing to invest in upgrade programs up until the combined costs of their administration and incentive payments equal the cost of procuring power, the so called Program Administrator Cost Test (PACT) (NAPEE 2008). Utilities are often subject to other cost tests, notably the Total Resource Cost test, which can decrease investment below PACT prescribed levels. It is important that regulators specify that utilities use cost tests that reflect the total benefits of home upgrades, including the comfort, health, and status benefits many customers cite when expressing their reasoning for pursuing upgrades (Knight, Lutzenhiser, and Lutzenhizer 2006; LeBaron 2011).[6] Governments may wish to further support upgrade programs, due to their local economic development and environmental benefits. Likewise, contractors, trades, and suppliers of energy efficient products may support upgrade programs because they generate demand for their products and services.

[6] Some applications of the Total Resource Cost (TRC) do not recognize these measures. In such cases, the TRC test compares total costs of programs to only energy saving benefits, ignoring non-energy benefits, despite non-energy benefits having value to participating households and as well as broader non-energy social benefits (Knight, Lutzenhiser, and Lutzenhizer 2006; LeBaron 2011).

A simple, convenient process for households conducive to building relationships with contractors – The literature on upgrade processes consistently calls for a simple and expedient customer experience (Fuller et al. 2010). Programs should seek to reduce the burden of customer paperwork, the number of home visits required to participate in the program, and the extent of interactions with the program. Notably, single bid contracting systems provide for a simplified project experience. Likewise, scheduling, financing, and quality assurance must be streamlined.

A capable and sufficiently sized workforce – To realize quality and expedient work, programs require a well-trained and sufficiently sized workforce to perform upgrades. Programs can facilitate workforce development by establishing training and certifications programs, wage subsidy programs, labor pools, and coordinating with contracting firms to provide workers or upgrade existing personnel's skills.

Quality assurance – Programs must ensure that contractors perform high quality work at a reasonable price. The Building Performance Institute (BPI) provides a common quality control regime in the USA, providing spot checks of contractor's work, audits of contractors' documentation and reviews of prices. Some programs may go beyond BPI's framework, including more frequent checks, or graduated levels of contractor oversight, based on performance.

A reasonable financial case for customers, including incentives and financing – Through a combination of incentives and financing, programs must provide a reasonable economic case for households to participate in upgrades. The extent of financial assistance may need to be large to reach scale - Historically, programs have not been able to reach sizeable percentages of households without paying most of the costs (Fuller et al. 2010). As noted above, ideally utilities and government should incent upgrades to the extent this is socially justifiable and fair, and financing options should be provided to cover the remainder. In addition, well-designed financing mechanisms can provide accessible, convenient repayment options, thereby reducing the burden of subsidies while still providing an attractive financial case for upgrades to households.

A case can be made to vary the volumetric levels of incentives, providing more assistance to lower income households to undertake upgrades. Higher income households can better afford the non-energy benefits, such as comfort and realization of values or status, than lower income households. In this case, the same level of subsidy to higher income households could be a considered a form of free-ridership, as they are freer to undertake the upgrades for other reasons. In contrast, many low-income households are cash constrained; their participation may be predicated on upgrades proving a cash-flow positive investment. Indeed, I would argue that upgrade programs have a moral imperative to especially insure that lower income households receive cash-flow positive upgrade services, given the greater marginal value of money for these households.

Regulation – Ultimately, regulation may be required to realize the extent of uptake of upgrades that is socially and environmentally desirable (Zimring et al. 2011). A number of jurisdictions have begun experimenting with mandatory home energy upgrade requirements (Dunsky et al. 2009; Coleman 2011). Requiring upgrades could reduce the cost of delivering energy efficiency, by reducing the programs' and contractors' marketing expenses. Additionally, such regulations provide a steady amount of effective

demand, allowing a more certain environment in which to scale up the supply side of the home upgrade market. Requiring upgrades may not be politically feasible in many jurisdictions for some time, however. Delivering voluntary programs and innovating improved marketing strategies will be necessary in the foreseeable future for a number of reasons. First, upgrade markets must reach a sufficient scale before such requirements can be considered. Second, even where upgrades are mandated, they will likely not consist of the deepest energy saving measures. Efforts to proffer deeper measures will still be required.

Outreach and marketing – Programs will need to facilitate the marketing of upgrade services. Broadly defined, marketing refers to the act of providing value to customers via a product or service, and capturing the value of providing these products or services to customers (Kotler and Armstrong 2012). Kotler and Armstrong (2012) note that the act of "telling and selling" is a subset of the broader marketing framework; ideally, services should be developed to provide so much value that the need to aggressively promote them is reduced. In this thesis, I am primarily focused on the "telling and selling" component of energy upgrade programs, and use the terms outreach and marketing to capture this more specific act. Nonetheless, the broader marketing strategies of crafting the provided service, determining price, and the placement of both in a social context, are integral to successful upgrade programs.

Marketing addresses informational barriers to engaging in efficiency, as well as compelling households via emotional appeals and evoking social norms to engage in upgrades. Programs can both engage in their own marketing efforts, as well as empower contractors, trade allies, and community partners to engage in marketing. I focus this thesis specifically on community based outreach (CBO) strategies that engage communities' in the process of marketing to their constituencies.

1.7 Conclusion

This chapter reviews evidence suggesting that upgrades are beneficial for environmental, social, and economic reasons, but that they are not widely implemented. Theory and empirical evidence suggest that a range of market failures and behavioral barriers are limiting uptake of upgrades. Along with a variety of other program elements, marketing plays an important role in addressing these barriers. The following chapter expands upon marketing's role in upgrade programs, describes the forms of CBO, and reviews literature on the case for CBO as part of upgrade programs.

2 Community Based Outreach and Marketing

CBO strategies have been employed in numerous energy efficiency programs and in firms' marketing efforts. Such community based approaches have been theorized as important components of expanding the market for home energy upgrades, by mobilizing householders who might otherwise lack knowledge or motivation to engage in home upgrades to participate (Fuller et al. 2010; Michaels et al. 2011). However, CBO mechanisms have also been characterized as expensive, and for this reason perhaps untenable as a prominent means of promoting energy efficiency programs (McLean-Conner 2009). This chapter first defines CBO, reviews a typology of CBO strategies, and examines the nature of community organizations who deliver CBO. Second, it reviews the theorized advantages of CBO compared to other marketing strategies. It then reviews the broader marketing strategies and frameworks that support upgrade programs. Lastly, it reviews analysis of CBO's cost efficacy from a program administrators' perspective.

2.1 What is Community Based Outreach?

Community based outreach (CBO) comprises of acts using community networks to promulgate energy upgrades, or other products or services. In this context, community networks refer to the formal and informal connections that link different people together. Gilchrist (2009) reviews literature on the nature of community networks, and how they impact individuals situated within these networks. She notes that community networks may be defined spatially within neighborhoods; however, people's social connections also extend beyond neighborhood geographies, including informal friendships and acquaintances, civil society organizations, religious institutions, common employers, online communities, and other connections. Gilchrist avers that strong community networks can realize benefits for individuals and social causes, and enhance the delivery of programs within communities by exogenous agents such as government or utilities. She reviews literature documenting that strong community ties and high levels of social capital are associated with collective action and collective efficacy in political contests; individuals' access to economic opportunity, including employment or services; and individuals' health and emotional wellbeing. Pertinently for considerations of CBO, Gilchrest notes that "community networks act as cheap and user-friendly referral systems" (p.15); though she makes this comment in reference to health services delivery, the mechanics of such referrals can work equally well for a range of services and products, including energy upgrades.

Indeed, a number of analysts and practitioners have noted that community networks can facilitate the dissemination of upgrades, and other environmentally or socially beneficial products, services and behavior changes (Coltrane, Archer, and Aronson 1986; McKenzie-Mohr and Smith 1999; Gliedt, Parker, and Lynes 2010; Berry 2010). Such dissemination can occur in a variety of ways, with or without any purposeful intervention by program marketers. For instance, knowledge of the availability of a service, and norms around its use, may disseminate through a community via word of mouth or postings in online community forums, without any promotion. Alternately, organized marketers can undertake different strategies to spur the diffusion of knowledge and norms in communities. In its exploration of CBO strategies, this thesis is concerned with this latter sort of deliberate intervention by an

organization, such as a program administrator, contractor, or formal community organization, to promote upgrades.

2.1.1 Outreach strategies

CBO practitioners can use a variety of mechanisms to reach households through their networks. Such mechanisms can be classified into five broad categories, proceeding in the order of greater interpersonal involvement with community members by outreach practitioners:

Community media – Programs can market via community media, including communities' publications, listservs, postering in common areas, and a range of other media and communications forums that community groups use.

Referral systems – Referral systems may be quite simple, such as when contractors request that customers provide referrals amongst their networks; these requests may be augmented by reminders and media to nudge these past customers to act. More complex systems may arise whereby programs provide past customers with incentives to recruit new participants from amongst their networks.

Canvassing, tabling and phone-banking – Programs may engage communities by canvassing a geographical area, tabling at events, or otherwise achieving a human presence within a community. The people engaged in these activities may be members of a community network. Alternately, they may be program personnel from outside the community. Outside marketers may leverage community members' understanding of what messages will resonate most with the community; engage in pre-existing community forums during which to promote upgrades; and take advantage of other resources provided by community organizations.

Meetings and events – Programs may host meetings or other events, wherein attendees are presented information about upgrades, their benefits, and program processes. The devotion of a significant portion of time during these events to explain upgrades, and respond to attendees queries, can allow for more information to be conveyed than during the shorter term interactions possible during canvassing and tabling. Such events may occur during existing community forums, such as regular meetings of civil society organizations or religious communities. Alternately, meetings may be specifically for promoting upgrade programs, with attendees recruited via community networks.

Ongoing assistance – Community organizations may be engaged not only in the original recruitment of program participants, but also in encouraging and assisting participants in an ongoing manner as they navigate the upgrade process. Community members who are knowledgeable about the upgrade process can assist others in contractor selection, financing options, and a range of other issues. In addition to serving as a knowledge resource, they can also provide encouragement and behavioral nudges to community members to participants to continue with the upgrade process. Programs can develop resources and incentive systems to support and incent community members to take on this ongoing assistance role.

This thesis is primarily concerned with efforts to organize more interpersonal means of promoting upgrades, though it also notes promotions via community organizations' media and the development of referral systems.

2.1.2 The Extent of Community Engagement in CBO

CBO practices vary in the level of engagement by community organizations, and the agency and responsibilities that community organizations assume. An important CBO paradigm informing the design and delivery of many environmental programs is McKenzie-Mohr and Smith's (1999) Community Based Social Marketing (CBSM). CBSM suggests a range of interventions intended to address behavioral and market barriers delivered within a neighborhood, employer network, or other community. Despite its counsel to deliver outreach at the community scale, McKenzie-Mohr and Smith's CBSM methodology does not specify what roles formal and informal community organizations will ideally play in promulgating sustainable behaviors and goods. Under their conception, CBSM campaigns could be developed and delivered by community networks to their own memberships; conversely, they may be delivered entirely by an exogenous entity, simply aligning its outreach within the bounds of geographic communities. McKenzie-Mohr and Smith leave the implications of different levels of engagement by community organizations unexplored.

Gliedt, Parker, and Lynes (2010) provide a richer exploration of the implications of deepening levels of partnership with community organizations when delivering environmental services, defining three levels of partnership:

Strategic partnerships – Community organizations are engaged only at a high-level to lend their brand to outreach campaigns, provide counsel on how best to reach their membership, and provide the platforms with which to communicate with their membership.

Operational partners – Community organizations deliver outreach or other elements of programs, typically with volunteers.

Collaborative partners – Community organizations are actively involved in designing services and interventions.

Gliedt, Parker, and Lynes (2010) theorize that deeper levels of engagement in partnerships allow for programs to more effectively reach community members, while also making programs more resilient to disruptions such as changes in funding. Likewise, Peters and McRae's (2009) interviews with upgrade program evaluators suggested that extensive engagement with community groups during design and implementation increased the uptake of efficiency programs.

Of course, other factors determine the extent to which community organizations and networks can realize program uptake. Berry (2010) asserts that community organizations require sufficient "institutional capacity", which he theorizes as comprising of: Large social networks and forums for interacting with households; pre-existing partnerships; and sufficient experience and scale. I would add that the efficacy of such institutions at outreach may depend on their motivation for promoting upgrade programs; experience in sales; capacity to adjust and alter outreach strategies based on experience;

experience with efficiency upgrade programs and the techniques associated with upgrades; involvement in subsequent steps in the upgrade process, beyond recruitment into the assessment stage; and perception of trustworthiness amongst customers and experience with customer groups. The efficacy of CBO depends on some combination of the qualities of the service it promotes, the outreach mechanisms used, qualities of the community organizations and the extent of their engagement, and qualities of the communities to which upgrades are promoted.

2.2 The Advantages of CBO

Academics, program evaluators, and outreach practitioners have articulated ways CBO complements, and outperforms, other marketing strategies. Stern et al. (1986), Coltrane, Archer, and Aronson (1986) McKenzie-Mohr and Smith (1999), Berry (2010), CEE (2010), ARI (2010), Fuller et al. (2010), ODC and EE (2011), and others articulate advantages of CBO, informed by the behavioral and market-based principles reviewed in the previous chapter, some experimentation, and plenty of impressions gleaned from programs' trial and error experience. Together, this literature suggests that CBO offers advantages because it:

Is delivered via trusted networks and community leaders – Household members have an established relationship with community networks, and are more likely to trust their recommendations than those of unknown or more socially distant entities. The behavior literature suggests that messengers' credibility to households influences their likelihood of undertaking upgrades (Stern 1992).

Word of mouth referrals represent the ultimate form of vetting and promotion by communities, and reflect the unorganized, un-catalyzed recommendation of upgrades. Hirst (1989) credits word of mouth for much of uptake of upgrades in the Hood River program. He notes that the program's early intensive engagement with 15 percent of households and a Community Advisory Committee lead to widespread recommendation of the program and minimal subsequent need for advertising. Connecticut Light and Power's Home Energy Solutions program's market research suggests the strong impact of word of mouth, with 85 percent of participants citing word of mouth as bringing them to the program (CEE 2010). Similarly, Prendergast et al. (2010) attribute the long-term success of the Waterloo, Canada, Residential Energy Efficiency Project to the credibility of the non-profits delivering the program and their ability to generate word of mouth referrals.

Develops social norms around upgrades – Households are strongly influenced by "descriptive norms", whereby peers will model a behavior or decision that subsequently becomes normalized and desirable for a household; likewise, they are influenced by "injunctive norms", which suggest that an action contributes to peoples' social status or moral standing (McKenzie-Mohr and Smith 1999). Norms can be reinforced through various behavior change strategies – people are more likely to act when they make a commitment to an action, especially a public commitment or one which will be made public; when they receive ongoing prompts and feedback; and/or when other community members model the behavior (McKenzie-Mohr and Smith 1999). By delivering messages via community channels, CBO may make upgrades a more normal behavior.

Allows detailed information to be conveyed – Many interpersonal CBO strategies allow for richer, conversational engagement, increasing householders' reception and acceptance of more nuanced information. Indeed, customer research by Action Research Inc. suggests that many household decision-makers want resources to understand upgrade programs in-depth, given the novelty of the service provided, financing opportunities, and the value-case for upgrades; they recommend in-person communication, web-platforms or detailed collateral be available to provide this information (ARI 2010). Likewise, Fuller et al. (2010) suggests that marketing must convey the importance of multiple steps in the upgrade process, to overcome householders' tendency towards "single action bias" wherein actors may feel satisfied having undertaken a single step.

Appeals to peoples' values and desires – Fuller et al. (2010) suggest upgrade programs must "sell something people want"; their interviews suggest this is seldom the small net utility savings upgrades can realize, but rather comfort, investment value, health, environmental performance, goodwill and status. While such values can be conveyed via any marketing medium, CBO methods provide skilled practitioners with opportunities to tailor their message to individuals and audiences. Notably, CBO frequently allows marketing agents to interact directly with household members, allowing marketers to get a sense of people's values and interests and subsequently appealing to these sentiments. Thus, CBO may allow for richer, more nuanced messaging than other forms of marketing, such as direct marketing, can provide.

Invokes competition – CBO can facilitate a sense of friendly competition between rival community networks. Fuller et al. (2010) note programs that are structured to promote competition between neighborhood groups, while Alschuler, Donnelly, and Michaels (2011) note the applications of competition between corporate entities to realize energy conservation behavior. This competitive instinct provides additional compulsion for community members to engage in and complete upgrades.

Transcends language and other cultural barriers – Heterogeneous communities face barriers to the diffusion of information and practices. ODC and EE's (2011) evaluation of CBO efforts notes that engaging with minority cultures via their trusted networks is especially important to reaching these demographics.

2.3 Marketing Energy Upgrades

Programs market upgrades in a variety of ways besides CBO, and it is important to review these broader frameworks. CBO strategies frequently complement other marketing efforts, comprising one part of a more holistic marketing strategy. However, CBO also competes with other strategies for scarce marketing resources. Therefore, deciding how to engage in CBO requires understanding the synergies and tradeoffs with other marketing efforts. Section 2.3.1 below outlines generic, idealized marketing phases. Section 2.3.2 then describes the typical utility program development cycle, and reviews how changes to marketing practices within this cycle might realize more effective promotion of programs, and use of community based outreach in particular.

2.3.1 Marketing Phases

Market Segmentation - Marketing typically involves efforts to classify potential customers into different segments, for whom certain products and marketing channels are tailored. Upgrade programs frequently seek to classify customers according to:

- Building energy savings potential, for which building age, type, or utility spending can serve as proxies.
- Financial resources, including income, wealth, and credit scoring.
- Values and beliefs pertaining to energy and the environment.
- Issues that might lead households to seek home improvements, such as asthma and other health concerns related to the indoor environment. (CEE 2010)

Segmentation can identify appropriate 'early adopters' to target in nascent markets. In their market assessment to inform CBO in California's residential energy services market, ARI (2010) recommended that particularly prime market segments were households that had already engaged in some energy efficient action; had recently settled in a new home; and/or were older, higher-income households, without children living at home.

Segmentation can also suggest target geographies. For example, CBO efforts in Better Buildings for Michigan, the Columbia Gas Home Performance Solutions Program, and Weatherize DC have sought to characterize the extent to which neighborhoods comprise of different market segments; they then customize delivery and offerings for these neighborhoods, prequalifying whole neighborhoods for particular upgrade subsidies and delivery offerings (Zimring et al. 2011; BBM 2010).

Customizing Product Offerings - Product development frequently involves customizing a wide range of subtly varying product offerings, to appeal to different customer segments. Some upgrade programs vary their home upgrade products according to households' financial resources, offering different incentive levels, financing tools, and upgrade scope according to customer segments (Zimring et al. 2011). Likewise, the messages used to promote upgrades are customized to different segments.

Identifying marketing channels – A marketing 'channel' comprises of a combination of the actor engaged in marketing, and the media and strategies employed in marketing. The CEE (2010), McLean-Conner (2009), and Fuller et al. (2010) specify various actors involved in marketing upgrade programs:

- Upgrade program administrators – Upgrade programs will typically market the availability of their program to households.
- Upgrade contractors and other home improvement contractors – Upgrade contractors frequently engage in marketing efforts, generating their own work within broader program frameworks. Fuller's (2008) review of upgrade programs found that home improvement contractors especially focus on fostering referrals and repeat customers. To encourage contractors to actively market upgrade programs, it is important that programs marketing, administration, and implementation be compatible with their business models (CEE 2010).
- Trade allies – Trade allies include home improvement contractors, designers, real estate agents, equipment manufacturers, home improvement retailers, and others.

- Community networks.

Likewise, the range of marketing strategies includes:

- Direct marketing – Including bill inserts, direct mail, web, and paid and earned media.
- Internet-based viral marketing – Sharing program messages and encouraging web-community members' endorsement of upgrades via electronic social media.
- Retail marketing – whereby retail partners program upgrades during customers retail shopping.
- Referrals and CBO.

2.3.2 Program Development Cycles

Upgrade programs often occur within governments and utilities' policy cycles. Vine (2010) describes the archetypal framework through which utilities implement their demand side management initiatives, comprising of five cyclical stages: The formulation of broad policy objectives; portfolio and program planning; detailed program design; implementation; and monitoring and evaluation. Sullivan (2009) notes that this structure constrains the development of effective efficiency services. He notes that this process lacks a rigorous "management of innovation" process, which features in most product and service industries. Management of innovation involves substantial early attention to evaluating the concepts' business case; iterative service development and evaluation; and extensive market testing in small trials, using experimental and quasi-experimental techniques. Only after these steps are completed will products and services be released to a larger market (Sullivan 2009). Similarly, Blumstein, Goldstone, and Lutzenhiser (2000) articulate a process of market transformation via iterative experimentation and theory development. Likewise, Lutzenhiser et al. (2009) note that adaptive management frameworks can be employed to incorporate more frequent trials and testing of innovations. In contrast, the program development cycle articulated by Vine leaves all evaluation until the end of the cycle, missing opportunities to iteratively improve offerings early.

These exhortations to consciously engage in innovation and trial innovative marketing efforts *ex ante* have interesting implications for CBO. CBO strategies tend to accommodate trials, given their incremental nature. However, a focus on trial-based innovations to hone messages may lead practitioners to ignore the intuition and customized messaging that is a part of communications amongst members of a community network. Community members may know what messages will resonate most with their peers, providing a better crafted message than prescribed trial-tested messages can achieve. This community based understanding does not mean that trials are worthless, only that there are limits to the extent that messaging can be honed before services like upgrades are taken to a widespread market.

Instead, members of communities could be engaged to discuss resonant messages and marketing strategies before engaging with their broader community. Programs could institutionalize reflection and sharing on marketing practices between program administrators, contractors, volunteers, and community members before and after engagement with a community. This process would facilitate ongoing evaluation of marketing opportunities, and what strategies will work in different types of communities. Practitioners and community members possess substantial experiential knowledge, which

can lead to strategic insights (McDowell et al. 2005). This knowledge can inform thinking on the optimal strategies, competencies, and organizational arrangements to realize uptake of upgrades amongst different types of communities.

2.4 How effective is CBO?

The extent to which CBO increases participation in upgrade programs and increases the cost-efficacy of program delivery is unclear. A number of reviews suggest that CBO is important to achieving sizeable levels of participation in upgrade programs, and that CBO can be delivered reasonably cost effectively. The Hood River Conservation project is recognized for achieving near universal participation in a home energy upgrade program. Hirst (1989) attributes the program's success in recruiting participants into the program to the fact that audits were free, the strong financial case for upgrades, and to the CBO strategies the program employed. The project used less than 25 percent of its original marketing budget (Fuller et al. 2010, citing Philips et al. 1987), though substantial amounts were invested in communicating with early participants. Likewise, the Minneapolis Energy Office's Neighborhood Energy Workshop Program achieved recruitment rates of 50 percent using volunteer-driven community outreach strategies organized at the block level, at the low-cost of $20 per household (1984 dollars) (Brummitt 1984). This program featured low conversion rates to deeper upgrade measures; however, a poorer conversion rate might be expected as the program focused on educating residents in how to conduct simple weatherization themselves, and less on pursuing deep upgrades. Peters and McRae's (2009) review of evaluation professionals finds that leveraging existing relationships, local groups, and recognized regional and national initiatives, minimizes the high transaction costs of reaching the residential market. Similarly, case studies of programs operating today indicate that CBO can succeed in recruiting large percentages of households into upgrade programs, and may make them more likely to follow through with upgrades (Fuller et al. 2010; Bathurst Sustainable Development 2011; Efficiency 2.0 2009). These evaluations suggest that CBO can make an important contribution to cost-effective program delivery, at least in some cases.

However, some program designers and administrators question the feasibility of programs' reliance on CBO strategies. McLean-Conner (2009) notes the high cost of CBO in some upgrade programs. The case studies in Fuller et al.'s (2010) review of upgrade marketing efforts seem to indicate lower costs for program administrator per recruit cost in programs that emphasize contractor marketing than those with intensive CBO, though the sample size for comparison is limited. Indeed, mobilizing significant percentages of residences to take socially beneficial action is a paradigmatic challenge facing all change agents. Organizing community based forums and ongoing engagement requires substantially more human resources than direct and viral marketing strategies. A key question is: Are community based strategies sufficiently more effective at engaging households in upgrades, to warrant the additional investment? The jury is still out on the impact of CBO, and what the best channels and strategies are to deliver CBO.

3 Case Selection and Methodology

To further explore the potential of CBO in upgrade programs, this thesis evaluates the marketing strategies and frameworks of five ARRA funded programs. The programs studied are:

1. Clean Energy Works Oregon (CEWO).
2. NeighborWorks of Western Vermont's (NWWVT) Home Energy Assistance Team (HEAT Squad).
3. Better Buildings for Michigan (BBM).
4. The San Francisco Home Improvement Program (SFHIP) and Energy Upgrade California (EUC) program.
5. The Minnesota Center for Energy and Environment's (MNCEE) Community Energy Services (CES) program.

These cases were chosen in an attempt to use "matched case" comparisons, where locales with similar contexts are chosen in an attempt to better isolate the variables under study (Locke and Thelen 1995). Comparing between programs that share good upgrade economics and favorable political climates can suggest what programs are best able to address informational and behavioral barriers. These programs share the following important characteristics:

- With the exception of BBM, all programs hail from States with policy climates supportive of energy efficiency – in their wide-ranging assessment of State's leadership in efficiency policies and programs, the American Council for an Energy Efficient Economy ranks California second, Oregon fourth, Vermont fifth, and Minnesota eighth (Sciortino et al. 2011).
- Households' financial case to engage in upgrades is relatively strong in these jurisdictions. All programs have accessible subsidized financing available. EUC/SFHIP features substantial government incentives for energy efficiency, and the other programs feature some utility subsidy for upgrade measures as well. NWWVT's HEAT Squad, BBM, and the MNCEE CES programs operate in energy markets with relatively cold weather, providing a stronger financial case for energy upgrades.

The programs do differ in some important ways, including the demographics, income levels, and political sentiments and values of prospective program participants.

3.1 Development of Cases

A case was developed for each program, outlining the programs' genesis, important elements, outreach and marketing strategies, and findings. The CEWO case is developed in greater depth, due to its relative maturity and the presence of an unusual CBO model, comprising of a partnership between unionized contractors and community organizations. Cases were developed using semi-structured interviews with program administrators and community-based marketing practitioners from each program. For the CEWO case, upgrade contractors were also interviewed, to gain their perspective on marketing strategies. These interviews are supplemented with internal planning documents and program reports, as well as previous case studies, where such literature exists. From these sources, the following issues are documented:

Program background – What organizations and businesses are associated with the program? How is the program funded? What is the history of the programs' genesis, and that of associated organizations?

The different CBO mechanisms employed by programs, and their success in recruiting households into the assessment phase of upgrades – What CBO techniques have marketers used to engage program participants – meeting formats, canvasses, direct marketing via community media, and/or other strategies? The interviews sought program personnel's qualitative impressions of the cost-efficacy of programs' outreach strategies. Originally, this research sought to provide more quantitative assessments of cost-efficacy, measured in terms of dollars or resources (staff time, etc.) invested per assessment participant recruited; however, program staff largely could not or would not supply this information. Interviews with practitioners also sought to determine whether these strategies appear to have the potential to recruit significant numbers of participants, compared to other recruitment avenues, measured as a percentage of eligible households recruited per year.

The advantages and drawbacks of different organizational frameworks to conduct marketing – Conducting CBO entails a variety of different organizational considerations: What types of community organizations are engaged – Neighborhood groups, religious institutions, other civil society organizations, employers, and/or others? Are community organizations rewarded for their involvement in CBO, and if so how? To what extent do community organizations drive the design of upgrade programs? What are the expectations of community organizations, versus the program administrator, in delivering CBO? To what extent are volunteer resources leveraged? How do program administrators structure their operations to allow them to engage with community partners? What tools do programs provide to community organizations to assist in their efforts conducting CBO? How do programs attribute different recruited households to different community organizations? And what motivates community organizations?

Better understanding how these different organizational frameworks impact the delivery of CBO can help program designers, administrators and practitioners develop better upgrade programs and practices. It can inform both the choices of outreach strategies and the choice of what institutional types will serve as primary vehicles for program marketing. The cases document upgrade programs' structure and organization, and the nature of community organizations that engage within them, influence the delivery of outreach and marketing.

To suggest what organization frameworks are effective, the cases rely substantially on practitioners' qualitative descriptions of the success of different outreach mechanisms, and their theories and experiences about what makes these outreach mechanisms successful.

Limitations to cross case comparison - It is important to note that programs are at different stages of development, and thus metrics of success achieved to date, do not accurately reflect the potential of their strategies. Moreover, programs differ across multiple variables, not just their marketing strategies and nature of their customer services. Given the difficulties in these comparisons, this thesis seeks mainly to note promising marketing strategies and associated institutional frameworks, not to state

definitively that some programs are more effective than others due solely to their outreach and marketing frameworks.

3.1.1 Interview protocol

Interviews were guided by a standard set of open-ended questions, ensuring comparable data between cases while allowing for unanticipated insights to be shared by interviewees (Hammer and Wildavsky 1989; Leech 2002). Interview guides are located in Appendix 1. Interviews were recorded and transcribed. Key themes in the perceptions of interviewees were noted in these transcriptions. Conclusions about the efficacy, sustainability and replicability of CBO activities were drawn based on these insights, particularly where multiple parties shared similar perceptions (Hesse-Biber and Leavy 2011). Such conclusions are noted in cases, and summarized in Chapter 9. This thesis concludes by speculating on program design and implementation strategies, based on these findings.

4 Clean Energy Works Oregon

Clean Energy Works Oregon (CEWO) is a non-profit home energy upgrade program, providing financing, marketing, workforce development, business development, and other services to foster a broader market for upgrades. CEWO is enabled by Oregon's 2009 Energy Efficiency and Sustainable Technology Act (EEAST), which mandates an on-bill financing mechanism for home energy upgrades (State of Oregon 2010). In June 2009, the City of Portland founded the pilot Clean Energy Works Portland (CEWP) as a semi-autonomous non-profit program, funded by a federal Energy Efficiency and Conservation Block Grant and City resources. The City transitioned CEWP to CEWO in March 2011 with an additional $20 million infusion of American Recovery and Reinvestment Act funds, expanding to other regions outside Portland. CEWO aims to achieve 6000 upgrades by the end of 2013 (City of Portland 2011).

CEWO's establishment and ongoing operation are characterized by substantial collaboration between multiple parties, including:

- The City of Portland, who convened stakeholders to develop the program and provided funding.
- The Energy Trust of Oregon, Oregon's non-profit energy efficiency program administrator. Through their program management contractor, Conservation Services Group, the ETO provides Energy Advisor services to CEWO participants and schedules assessments, and also buys down project costs with utility rate-payer funding.
- A variety of financial institutions, which provide upgrade financing. Enterprise Cascadia was the first lender for the program, making loans enhanced by a loan loss reserve established with ARRA funds. Other lenders have since entered the market without credit enhancements.
- Electric and natural gas utilities, which are required by EEAST to provide an on-bill financing repayment mechanism. They have also assisted with marketing via bill inserts and other mechanisms.
- The Home Performance Guild of Oregon, a trade association of contractors that advocate for contractor interests, provide business development resources, aggregate purchasing, and facilitate other benefits for contractors.
- A variety of civil society and community organizations. Notably, members of the High Roads Contractor and Community Alliance (HRCCA) are active marketing upgrades and as stakeholders advocating for social justice outcomes.
- Multnomah County, which operates the low-income Weatherization Assistance Program in the Portland region; low-income households entering the CEWO stream are referred to this program. (ETO 2010)

CEWO consults with these various organizations as it develops elements of its program, via multiple sub-committees and other forums. Section 4.1 below notes some key program elements that impact CEWO's marketing. Section 4.2 then delves more deeply into marketing and outreach strategies used by the program and its stakeholders. Section 4.3 reviews the formation of HRCCA, and the nature of this partnership between contractors and community organizations to deliver CBO. Throughout, findings from CEWO's marketing efforts pertinent to the design and delivery of CBO are noted.

4.1 Key Program Elements

CEWO and its stakeholders have developed policies and strategies to support the market for energy upgrades, which relate to program marketing in varied ways. Important such elements include:

Energy Advisors – CEWO contractors operate on a "single bid" system, whereby the same contractor that provides the home assessment bids on and completes upgrade work. To ensure fair bids and quality work by the contractor, CEWO features an "Energy Advisor", employed by the ETO. The Energy Advisor advises households on upgrade decisions, reviews contractor bids, and provides quality assurance. The Energy Advisor supervises a "check-out" home assessment for all projects, ensuring quality installations of upgrade measures.

Coordinated customer relationship management - CEWO features a complex standardized project workflow, designating communications and reporting requirements for contractors, Energy Advisors, financiers and CEWO staff. CEWO's computerized customer relationship management system tracks households through each step of the process, automatically queuing reporting by contractors and Energy Advisors.

Community Workforce Agreement - CEWO features a Community Workforce Agreement (CWA), providing employment benefits to local workers and historically underrepresented peoples in the construction industries. CEWO's CWA builds on the EEAST Act's living wage and local hiring requirements. The CWA was established via a multi-stakeholder process, convened by the City of Portland and the non-profit Green for All, which included participation by contractors, labor unions, community groups, faith organizations, environmental justice advocates, and the Energy Trust of Oregon (ISC 2010). The CWA stipulates a variety of 'high road' goals, including that:

- Employees be paid above 180% of the state minimum wage and provided health insurance, enforced by a Project Labor Agreement.
- 80 percent of employees in CEWP be sourced from the local workforce.
- Historically disadvantaged people, including people of color, women, low-income residents, and formerly incarcerated people, will work at least 30 percent of the hours in the program.
- Businesses owned by historically disadvantaged people will receive 20 percent of CEWO's project dollars. (City of Portland 2009)

This agreement's local workforce and diversity targets are not legally binding, but nevertheless guide CEWO's ongoing performance targets and operations. To track performance against these targets, CEWO maintains a workforce reporting database, requiring contractors to report on wages and the hours worked by employees of different demographics (Haines 2012). Contractors performance helps inform contractors' status in the program and their allocation of upgrade jobs, discussed in greater detail below.

Workforce development - CEWO supports the development of a skilled workforce, to help realize high quality work and high road goals. CEWO has partnered with union and non-profit workforce development organizations, to provide training in weatherization skills. CEWO has also organized an on-the-job training program with the non-profit Worksource Oregon, providing a 50 percent wage subsidy

to participating contractors for new hires' first three months of work. Interviewed contractors note that the training program enables them to make new hires and grow more quickly, by reducing the costs of training new hires with little experience in weatherization. Additionally, CEWO has sponsored scholarships for weatherization employees to upgrade their skills with Building Performance Institute (BPI) training, allowing weatherization professionals to assume project management and lead contractor responsibilities. CEWO stays in close communication with contractors to identify firms in need of new hires and those personnel ready for BPI training (Haines 2012).

Contractor qualifications and status – CEWO qualifies contractors who can participate in the program on an annual basis. Qualifying contractors must meet the wage and health insurance requirements of the program, be BPI Certified contractors, undertake program reporting to CEWO, and perform quality work. CEWO designates two levels of participating contractors:

- "Full" status contractors, who are allocated households that CEWO's program marketing generates.
- "Basic" status contractors, who do not receive allocations from CEWO, and must rely solely on their own marketing efforts.

Contractors' status is based upon a rating computed by CEWO staff, which considers: How expediently contractors are guiding households through the program, the quality of their upgrade installations, the number of households they recruit via their own marketing, and their attainment of CEWO's high roads standards. This qualification scheme aims to provide contractors incentives to grow the upgrade market while providing quality work, and to foster a more self-sustaining industry (Clemmer 2012).

Business development and mentoring – CEWO, larger contracting firms, and the Home Performance Contractors Guild (HPCG) display a notable commitment to developing less experienced contractor firms' ability to effectively serve the upgrade industry. In Spring 2012, CEWO introduced requirements for new contractors to attend business coaching sessions, sponsored by CEWO. The sessions will cover good practice in marketing and sale, human resources, customer relationships, and accounting. New contractors will also be designated to pair with a mentor, an experienced contractor. The mentorships will entail the new contractor following the experienced contractor through the upgrade process. Mentor contractors will be awarded with additional allocations of households from CEWO. Over the past few years, mentoring by more senior contractors has played a significant role in the development of the upgrade industry. The HPCG has facilitated these relationships. The HPCG and senior contractors report that they believe mentoring their competition can help the aggregate upgrade market grow, as quality work leads to good perceptions of the industry. This growth in turn will benefit established contractors. In the words of one contractor:

> "*We're a young industry, there are a lot of new contractors... it wouldn't take too much to derail what we're trying to achieve. To be able to mentor others, have roundtables [via the HPCG], be able to talk to others in the business, can have a lot of benefits. It helps to float the whole boat*."

Financing – CEWO features on-bill financing of upgrades of up to $20,000, amortized over twenty years. Enterprise Cascadia was the first to offer loans, backed by a loan loss reserve (LLR). These loans were made at 6 percent interest; additional credit enhancements allowed households with 250 percent of the federal poverty level to borrow at 4 percent interest. The on-bill repayment has experienced low delinquency rates, and other lenders have since entered the market offering more attractive financing without the LLR credit enhancement. Interviewed contractors report that this financing allows many households to undertake comprehensive upgrades at one time, as opposed to selecting only low-cost measures or staging upgrades over a number of years.

4.2 Marketing and Outreach Strategies

A range of different program stakeholders market upgrades, including CEWO itself, local governments, contractors, and civil society organizations. These parties in turn use a variety of marketing mechanisms. This section outlines how CEWO attributes new households to different stakeholders, and the strategies used by CEWO and others to recruit households.

4.2.1 Attributing households to contractors via the 'Rebate Code'

CEWO provides all its marketers a "Rebate Code" to use in their promotions, which households must enter on the CEWO intake webpage. These organizations subsequently provide the code to households they recruit, including it on collateral and during sign-up. In this way, households are attributed to the marketers which/who bring them into the program. Furthermore, CEWO can identify the total number of leads different actors generate, and compare this value with the number of leads CEWO marketing generates. CEWO reports this information to program stakeholders on a weekly basis.

Sometime in the Spring of 2012, CEWO plans to start providing its marketers with multiple rebate codes. This strategy will allow marketing organizations to monitor what different outreach strategies lead households to sign up for upgrades, and better assess their cost efficacy.

4.2.2 Contractor marketing

CEWO staff espouse the philosophy that, ultimately, the aim of the program should be to develop a larger self-sustaining upgrade market. To this end, CEWO encourages contractors to market the program, making recruitment of households part of the criteria for "full" status contractors, and thereby rewarding them with additional allocations of households generated by the program. The self-marketing imperative is further reinforced in CEWO communications with contractors.

Likewise, HPCG contractors have worked to empower contractors to more effectively sell upgrades. During the development of the EEAST legislation and the CEWP pilot, the HPCG lobbied successfully to switch to a one-bid system, moving away from the separation of assessment contractors and upgrade contractors that prevailed in previous ETO upgrade programs. HPCG members recognized that the one-bid system allows contractors to form relationships with households right from the beginning of the upgrade process, and to engage in the sales process during the home assessment.

A further factor impacting sales is gender. CEWO staff and contractors note the positive impact on program recruits, and conversions to upgrades, achieved by employing women contractors. Staff and contractors hypothesize that some households feel more trusting of a woman contractors' advice, and

that women are better able to communicate the purpose and value of the program. CEWO's high roads diversity requirements have thereby reaped unintended positive consequences, increasing program participation and efficiency.

Contractors employ a variety of marketing strategies. Thus far, they have experienced substantial success marketing to past customers. Portland's largest contracting firm, Neil Kelly, has achieved more registration for assessments via mailings to past customers than any other marketing method used as part of the program. Likewise, firms offering a range of home improvement and design services report regularly marketing CEWO upgrades as part of other home improvements. Contractors also report using booths at trade fairs and community events, auctioning audits as part of school events, direct marketing, and leafleting.

Some contractors have made use of CBO marketing efforts. Notably, Neil Kelly has integrated the delivery of upgrades into the Solarize Portland program, a separate initiative of the City of Portland which uses neighborhood scale CBO outreach to install household solar energy systems. In the Solarize Portland program, neighborhood groups will organize residents to bulk purchases of solar hot-water and photovoltaics, reducing the costs. Solarize offers materials, organizing guidance, certified contractors, and financing mechanisms to assist communities (Irvine, Sawyer, and Grove 2011). Neil Kelly has sought to integrate energy upgrades as part of Solarize Portland work, offering free assessments for households purchasing solar panels. They report success when community organizations are the driving force behind marketing. Conversely, Neil Kelly faced challenges when their staff led the marketing effort. The Manager of Neil Kelly's Home Performance Division, Chad Ruhoff, explains:

> "*I tried to put a program together called 'Energize Southeast Portland' [that did not feature a prominent independent community partner] that would include bulk purchasing of upgrades to reduce prices. It just didn't grow legs like I wanted it to. It's difficult for a contractor to spark [interest in upgrades], it sounds just like a commercial, and people tune out commercials. A project like that needs the voice of the community to really succeed. It needs to be a non-profit or community organization that owns it and promotes it*." (Ruhoff 2012)

Ruhoff thus suggests that neighborhood scale outreach requires strong ownership, development and participation by community organizations to achieve success.

4.2.3 CEWO's marketing strategy

In addition to encouraging contractors to develop their own marketing strategies, CEWO is undertaking substantial marketing efforts to increase the total demand for upgrades over the lifetime of this cycle of the program, 2011-2013. CEWO's in-house efforts predominantly focus on directly marketing, including outdoor advertising and mailings. Except for one neighborhood based experiment during the CEWP pilot (see below), CEWO has opted to forgo community-based efforts due to concerns that that such methods are resource intensive and cannot generate sufficient demand to meet CEWO's uptake goals. CEWO's Director of Marketing, Will Villota, explains:

> *"I'm skeptical that community based methods can get to scale. [CBO] is a 'slow burn'. We want to achieve a 'fast burn' early. We think that to get to the kind of scale we would like, we need our message everywhere. We want to get [households] to our website, and then let the website and contractors sell the program. Then we'll have the social proof [of the value of upgrades] that can allow for extensive word of mouth advertising amongst people. The slow burn may burn for a long time, but there is also the possibility that if it is too small, it goes away."* (Villota 2012)

CEWO is operating under the theory that direct marketing can induce sizeable percentages of the population to visit their website, which will then provide sufficiently compelling information to convince households to sign up for upgrades. It relies on contractors and Energy Advisors to screen customers for eligibility and interest; address customer concerns; and to achieve the conversion from assessment to upgrade. CEWO is also seeking to familiarize many households with their brand, to improve the chances of contractors' marketing strategies and word-of-mouth resonating with households. This challenges some of the premises justifying a focus on CBO as part of upgrade programs, such as the notion that direct marketing is insufficient to entice households to participate in programs. As CEWO progresses, it will be interesting to observe whether CEWO's direct marketing or contractor and community groups' more community based methods attract households most effectively. Section 4.3 turns to HRCCA, which has been actively promoting upgrades via community based methods.

4.3 The High Roads Contractor and Community Alliance

HRCCA is a partnership between unionized home performance contracting firms, the Laborers' International Union of North America (LIUNA), and civil society organizations, including: The Oregon Chapter of the Sierra Club; the Ecumenical Ministries of Oregon, an association of Christian denominations; and the Metropolitan Alliance for Common Good (MACG), an affiliate of the Industrial Areas Foundation (IAF) that comprises of a coalition of civil society, neighborhood, and faith-based organizations.

HRCCA has its origins before CEWP was established. During community engagements in 2008, MACG constituents expressed concerns about the environment, local unemployment, and energy bills. Motivated by these concerns, and inspired by the example of IAF affiliated SustainableWorks in Seattle, MACG initiated a Sustainable Jobs Action Team to encourage home energy upgrades. At the same time, LIUNA and the broader Change to Win collective of unions, were keen to unionize workers in nascent energy efficiency industries. Change to Win sponsored a staff-person at LIUNA to organize upgrade workers. MACG and LIUNA subsequently lobbied for high roads employment standards during the development of the EEAST legislation. When CEWP was established, they lobbied the City to include a pilot using CBO techniques in Cully, a lower income neighborhood in Northeast Portland (Belson 2012; Heumann 2012; Isaacson 2012).

4.3.1 The Cully Pilot

The City issued a request for proposals, offering a $20,000 grant to recruit 100 households in Cully. MACG, LIUNA, and other partners teamed with six contractors. To partner, contractors were required

to sign a Project Labor Agreement, requiring unionization, slightly higher wages, and a more comprehensive health plan than CEWP's minimum standards. This coalition subsequently won the bid.

The coalition used a variety of methods to recruit households into upgrades, listed in the table below.

Table 2: CBO mechanisms in Cully Pilot. Source: Isaacson 2010.

Outreach Mechanism	Touches	Applications	Uptake Rate	Volunteer Hours	Staff Hours	Total Hours/ Application
Canvass	2503	84	3%	108	147	3
Door-hangers & Fliers	6750	23	0.3%	263	31	13
Kickoff Event	170	36	21%	193	195	11
Meetings	66	27	41%	Not specified - high		High

These data suggest canvassing was the most resource effective outreach mechanism. House meetings and events resulted in a greater percentage of recruited households; however, significant time was invested recruiting participants. The resources invested in recruiting meeting participants suggests that participants may have been 'pre-sold' on the concept of upgrades, or participants were effectively screened to include those predisposed to undertaking upgrades. Still, the data seem to indicate that more intensive meeting opportunities can realize higher participation rates than other marketing strategies.

Conducting and administrating the Cully pilot was resource intensive. In addition to the $20,000 grant from the City, MACG estimates it expended $30,000 in staff time, and comparable numbers of hours in volunteer time (Isaacson 2010).

4.3.2 Establishing HRCCA

Following the Cully pilot, the participating contractors approached MACG and HRCCA, proposing that the partnership continue. They formed HRCCA. Under HRCCA, community organizations recruit households to undertake an audit. Contractors donate a $300 "finder's fee" to community organizations that recruit households that ultimately undertake upgrades. LIUNA funds a half-time staff person to administer the program. CEWO passes along different community organizations' rebate codes to HRCCA, allowing for recruited households to be attributed to different community organizations. LIUNA distributes these leads equally amongst contractors.

4.3.3 Contractor Responses

The one HRCCA member contractor interviewed reports strong satisfaction with this partnership. Having HRCCA source customers interested in supporting unionized contractors reduces these contractors' marketing burden, and proffers households that are more likely to convert from assessment to upgrade:

> *"It's a huge pitch to have the high roads standards; it is our value proposition. Following a meeting with community groups, it's a hot lead. They know the costs of the program and what is involved. The sign up ratio is way higher if a friend is recommending the*

program. You've got a trusted person that is part of an organization. There is huge word of mouth potential. It reduces our overhead costs of screening customers."

Moreover, this contractor expressed a commitment to providing high quality jobs, with union wages and a career ladder. However, he notes that without CEWO's Community Workforce Agreement they would be priced out of the market. HRCCA provides access to households who have a preference for union labor and high roads standards; indeed, community organizers influence community preferences for such standards. This contractor hopes that HRCCA can provide 'high road' contractors the potential for continued business should CEWO and its CWA fold.

HRCCA has been challenged by internal debate over what will constitute its employment standards, however. There has been concern about HRCCA's health plan and wage requirements amongst some member contractors. Three of the six HRCCA contractors recently left the organization over these differences. Recently hired workers in HRCCA firms also expressed concerns about union dues, though MACG staff report that a meeting with MACG and LIUNA organizers resulted in mutual understanding of HRCCA's history and the value of HRCCA's project labor requirements. HRCCA's ability to sustain itself would seem to depend on arriving at labor standards that are mutually agreeable between contractors and community groups, as well as on community groups' ability to recruit households into HRCCA.

4.3.4 Community Organization Responses

Since the Cully pilot, HRCCA outreach has been predominantly driven by two MACG affiliated organizations, Havurah Shalom and St. Andrews Catholic Church, as well as the Oregon Sierra Club. These organizations have recruited significant numbers of participants. The Sierra Club employed a part time canvasser during the Fall of 2010, while other organizations relied mainly on house meetings and community forums to generate recruits.

Garnering recruits through HRCCA's organizing efforts appears to be an intensive process. When community organizers describe their outreach process, the time and attention they invest in the process is evident, as is their interpersonal skill and commitment to community organizing. To take a prominent example, Michael Heumann of Havurah Shalom reports that he follows up with households once after their initial meeting to remind them to sign up, again following their assessment, and at other junctures as necessary. He notes that assuring prospective participants that he will intervene if they have troubles with contractors provides a real boost to people participating, though such help has not been necessary. He also has guided households to alternative means of funding upgrade work (Heumann 2012; Logan 2012; Isaacson 2012). Mr. Heumann's skill and dedication in promoting upgrades is evident; a challenge to scaling up CBO may be cultivating sufficient numbers of volunteers with these attributes.

MACG staff and many member organizations have not focused extensively on recruiting households into HRCCA. Laura Belson, Administrative Manager of MACG, notes that staff and volunteers felt "burn-out" after undertaking the Cully pilot. Furthermore, she notes that MACG and member organizations' core focus is developing the leadership potential of its constituents; organizing around energy efficiency is more peripheral to their mandate, and valuable to MACG only to the extent to which it facilitates leadership development (Belson 2012). Some HRCCA participants aver that CEWO and HRCCA's efforts should focus on providing lower income households greater access to the program, and increased

subsidies to ensure upgrades are cash flow positive for these households. They note that more attention to serving these classes would result in greater commitment by MACG affiliates to recruiting households. Indeed, St. Andrew's Church's Bev Logan notes that the commitment to social betterment is the primary motivator for participants in HRCCA. Participating HRCCA organizations value the "finder's fee" provided by contractors; nevertheless, they are only willing to engage in promotions on their terms, promoting union contractors and serving disadvantaged neighborhoods (Logan 2012).

Despite the substantial investment of time and barriers to sustaining broad participation in outreach activities amongst HRCCA affiliated organizations, HRCCA's model shows promise as a means to engage communities in social and environmental actions. A small core of volunteers has managed to recruit significant numbers of households into the program, using just a few recruitment events post-Cully, albeit with sustained communication with recruits. Leaders of HRCCA's community organizations are committed to continuing in this capacity, and to activating a greater range of HRCCA organizations in this outreach. Moreover, HRCCA's outreach to promote energy upgrades can dovetail with MACG's broader agenda of community engagement and empowerment, and their promotional house meetings serve as an excellent platform to engage in this broader agenda. Having a service such as home upgrades to offer community members may prove valuable as MACG and its affiliates work to increase community cohesion and individuals' sense of self-efficacy.

5 NeighborWorks of Western Vermont HEAT Squad

NeighborWorks of Western Vermont (NWWVT) is a non-profit organization providing housing counseling, home repair project management, and lending to households in three Vermont counties. NWWVT founded the Home Efficiency Assistance Team Squad (HEAT Squad) in 2010, seeded by a $4.5 million Energy Efficiency and Conservation Block Grant as part of the ARRA stimulus. The HEAT Squad program comprises of the following elements:

- Qualified home performance contractors, providing both assessments and upgrades on a single bid system.
- An Energy Advisor, to provide households with a point of contact at NWWVT, assist with interpreting assessment reports and bids, review bids, and provide quality control.
- Upgrade financing. NWWVT can provide an unsecured loan up to $15,000 at 4.99 percent interest for credit score qualifying customers, and make accommodations for lower credit scoring households based on loan-to-value and debt service coverage considerations.

5.1 Outreach and Marketing Strategy

NWWVT predominantly relies on CBO strategies, augmented by some direct marketing including leafleting, posters, and advertising signage. A core element of NWWVT's outreach strategy is a competition between the 27 towns that comprise Rutland County. Each town has been assigned the goal of recruiting 5 percent of households into the HEAT Squad program. Towns that meet this 5 percent target will receive small financial rewards that can be used towards energy improvements of public facilities – towns will receive $50 for each house substantially upgraded; additionally, two $10,000 prizes will be awarded to the towns with the greatest percentage and total number of upgraded households.

NWWVT employs one full-time Outreach Coordinator, and engages volunteers in outreach activities. NWWVT recruited volunteer "Energy Champions" from each town. Many of these volunteers were recruited from Vermont's network of Town Energy and Climate Action Committees, some of which have existed since the 1980s oil price shocks (VECAN 2011). NWWVT's Mary Lamson characterizes these volunteers as:

> *"The people in their towns who already do everything. It's the same 5 people on the select board, planning commission, and school board. They tend to be more progressive, and are connected to their communities, and to environmental and social issues. They are doers, competitive, and care about their town; and they are really motivated to win $10,000 for their town."* (Lamson 2012)

NWWVT has organized a variety of different CBO strategies, including: Meetings at Town Councils and with civil society organizations; "phone-a-thon" campaigns; community events; and starting in November 2011, five energy parties at homes that have undergone upgrades. When households are recruited into the HEAT Squad program, they report how they heard about the program; results from these surveys are provided in Figure 5.

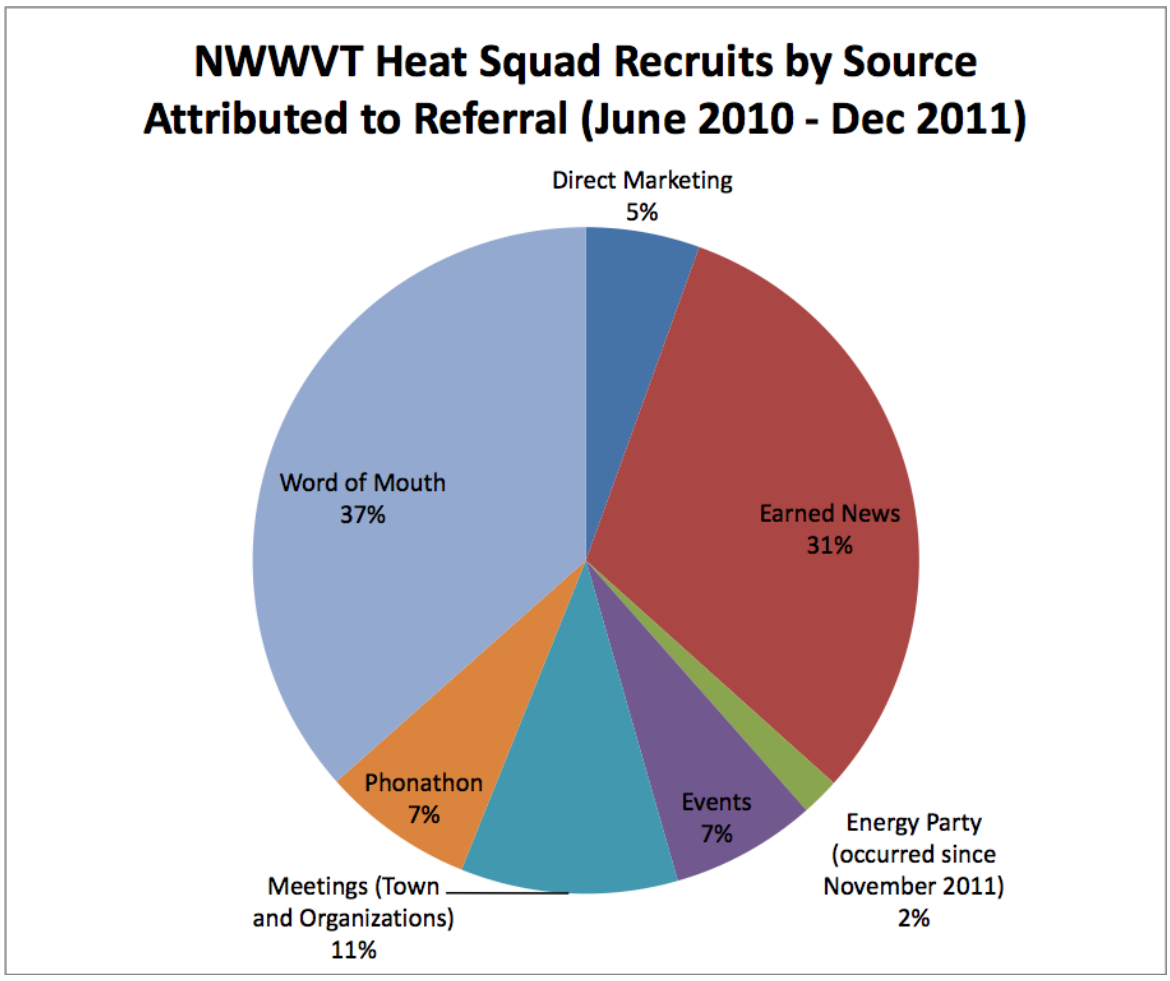


Figure 5: NNWVT Heat Squad recruited household responses to the intake question: "How they heard about the program".

5.2 Findings

Word of mouth referrals and earned media are powerful – Surveys during customer onboarding indicate that the majority of HEAT Squad participants cite word of mouth and earned media in small community newspapers, newsletters, and other sources, as the referral leading them to sign up for the program. These reports must be viewed with a degree of skepticism, however; multiple sources may lead to the decision to contact a program, and customers have little incentive to carefully consider their answer to these questions. Nevertheless, the rough percentages attributed to these sources indicate the importance of these community based communication mechanisms to recruiting households.

Energy parties cited as an effective outreach method - Despite their small contribution to the total number of recruited households since NWWVT's inception, Outreach Coordinator Richard Dow avers that household energy parties have proven NWWVT's most effective, low-cost means of outreach (Dow 2012). Recruitment rates for attendees of these parties is high, with 69 percent of attendees (18 total) at five house parties signing up for an assessment. NWWVT recruits households to host parties via a phone call after upgrades are completed. Agreement to host parties has been limited; Dow estimates

that 10 percent of households agree to hosting such an event. NWWVT sends hosting households pre-paid post cards to invite their friends, and arranges for the contractor who undertook the work to be present at the party. Based on his experience of these house parties, Dow describes the benefits of parties as a recruiting tool for upgrades:

> *"It puts a face to the stranger [the contractor] who is going to come to your house, and walk past your dresser and jewelry. When it's over the phone and you call NeighborWorks, you don't know what the contractor is like and if you're going to get along. Having that guy there sets people at ease and allows them to ask questions about their home."* (Dow 2012)

Considerations of NWWVT's enthusiasm for energy parties should be tempered by the fact that only 18 participating households can be attributed to these parties as of December 2011. NWWVT's enthusiasm for this outreach method may be partly due to its novelty at the time of the interview. Dow notes that NWWVT is in the process of developing a more systematic means of having contractors request that homeowners engage in house parties. At present, however, the scalability and staying power of this outreach mechanism remains to be seen.

Other community based strategies require greater organizing, but can be delivered at low cost - NWWVT staff expressed more measured praise for more volunteer intensive recruitment strategies, such as phonathons and canvassing. They noted that these events typically reached nearly all households in towns where they were staged; this scope allowed them to bring in substantial numbers of customers. However, whether these outreach measures can be replicated extensively by NWWVT is questionable. Staff noted that organizing volunteers for these events comprises a "big ask".

Reduced volunteerism following response to Hurricane Irene – In the fall of 2011, Vermont was struck by Hurricane Irene. Many of NWWVT's network of "Energy Champions" volunteered extensively during the recovery effort. NWWVT staff report that people interest in volunteering with the HEAT Squad waned after this effort, with many volunteers experiencing "burn out".

Support for contractors and difficulties in encouraging change in marketing and customer service – NWWVT staff qualify contractors to participate in the program based on the quality of work they perform. They also limit the allocation of new jobs to contractors which are behind schedule on previous jobs. Staff note, however, that some contractors are frequently behind schedule in their communications with customers and with NWWVT.

NWWVT does not strongly emphasize contractors' engagement in their own marketing. NWWVT has worked to further the involvement of contractors in CBO, with limited success. For instance, while one contractor has embraced energy parties as a means of outreach, others are reticent to participate in such methods. Besides communication, NWWVT does not seem to have developed means to encouraging contractors to participate in marketing or in providing expedited home upgrades.

Women frequently make upgrade decisions – NWWVT energy advisors have found that communicating with women more frequently results in households pursuing upgrades. For this reason, NWWVT staff emphasize speaking with women household members when possible.

A philosophy of experimentation and adaptive management – NWWVT staff consistently cite the importance of learning from experience, experimentation, and adapting new strategies in their approach to marketing their upgrade program. They suggest that what will work in any given locality is very much dependent on the communities present there, and that programs will need to develop optimal outreach strategies based on trial and error. Broadly, NWWVT staff's insights into the variations in communities and the vagaries in optimal outreach strategies suggest that programs require time to optimize their outreach strategies and the mandate to experiment.

6 Better Buildings for Michigan

Better Buildings for Michigan (BBM) is a program of the Michigan Energy Office, offering residential and commercial energy upgrade programs in select communities in Michigan. It was seeded in June 2010 by a $30 million competitive ARRA grant. A multi-stakeholder group applied for the grant and developed the initial program design, including:

- Michigan Saves, a non-profit established in 2009 by the Michigan Public Service Commission to provide efficiency financing and to vet upgrade contractors.
- Michigan's Department of Energy, Labor & Economic Growth.
- The Southeast Michigan Regional Energy Office.
- Local governments, including the Cities of Detroit and Grand Rapids, and other smaller communities. (BBM 2012; MS 2012; Hudson 2010)

BBM is delivered by three regional coordinators serving different geographical areas: The City of Grand Rapids; the Southeast Michigan Regional Energy Office, which serves the Detroit area; and the non-profit Clean Energy Coalition, serving other local governments. These regional coordinators report to the BBM Program Manager, who oversees program implementation. This case focuses on efforts in the City of Grand Rapids, while also including interviews with a BBM staff person that partly reflects experiences implementing BBM beyond Grand Rapids.

The City of Grand Rapids employs one full-time staff person to coordinate the BBM program, with additional city staff regularly supporting IT systems development and management, communications, and other functions. The City contracts with West Michigan Environmental Action Council (WMEAC) to conduct outreach in targeted neighborhoods. WMEAC is a non-profit organization, with experience engaging households in environmental campaigns. WMEAC's team currently consists of a program manager, a full time paid intern, a number of part time interns who are predominantly university students, and a broader network of volunteers.

BBM's residential offering consists of two phases:

- Home assessment and direct installation of simple energy conservation measures. BBM charges households a small co-pay ($25-$100) for the assessment and installations, subsidized via BBM and utility incentives.
- Deeper upgrades. BBM offers households financing via Michigan Saves' Home Energy Loan, an unsecured personal loan made by partner credit unions and backed by a loan loss reserve seeded by ARRA funds. Michigan Saves also offers an energy efficiency Home Mortgage via its partners. BBM provides incentives and also accesses utility incentives to reduce the cost of upgrade measures.

BBM issues requests for proposals from Michigan Saves qualified contractors to serve the different regions. Contractors operate on a single bid system, providing households with assessments, direct installs, and quotes for deeper upgrade measures.

6.1 Outreach and Marketing Strategy

Neighborhood Sweeps – BBM's initial design was predicated on the notion that neighborhood scale outreach is the most effective means to recruit households to undertake upgrades. Outreach efforts are organized into a series of intensive "Sweeps" of neighborhoods, each lasting approximately twelve weeks. BBM aims to reach every eligible household in a neighborhood. Originally, the program targeted recruiting 80 percent of households into the assessment stage. BBM staff have found this goal unrealistic, but have still consistently achieved recruitment of 25 percent of eligible households statewide, and 40 to 50 percent in a number of the Grand Rapids sweeps. In January of 2012, BBM Grand Rapids opted to begin Sweeps of major area employers, and not just neighborhoods. This decision is discussed in more detail in section 6.2 below.

Experimental Design of Sweeps - Within the context of this neighborhood based outreach, the Sweeps are intended to test what packages of upgrade incentives and messaging most appeal to households. Each Sweep differs in their offers to households, with variables including:

- Amount households must co-pay to receive an energy assessment and basic upgrade measures.
- Rebate levels.
- Financing terms, particularly interest rates.
- Marketing messages.

BBM's designers anticipated that the success of different Sweeps in recruiting households could indicate which combination of messages and prices most attract households to implement upgrades (Templeton 2012). Of course the Sweeps also differ according to neighborhood or employer too; amongst other factors, they may differ according to the ideology and fiscal resources of residents, and the reach of neighborhood organizations and broader social capital possessed by these neighborhoods. Likewise, Sweeps varied by implementer regional coordinator organizations, and the experience of the coordinator. These differences may invalidate conclusions about the appeal of incentives and messaging that the Sweeps were intended to elucidate, due to the inherent sampling bias of treating different neighborhoods with the same offers. However, the structure of the experiments has allowed BBM staff to observe how different outreach strategies are received in different types of neighborhood.

Recruitment mechanisms – BBM employs a range of mechanisms to recruit participants into the program. The program frequently uses direct mailings, letters, utility bill inserts, and door hangers to launch a Sweep. Likewise, they seek neighborhood publications in which to include their materials. BBM typically follows up on these efforts with door to door canvassing and/or phone-calls to staff, conducted by WMEAC interns and volunteers. They will also participate in and organize community events, frequently in partnership with neighborhood organizations. In some neighborhoods, they have sought out community leaders and asked that they be the first to undertake upgrades. They then use these prominent personalities to develop case study materials for distribution. Finally, BBM has conducted house parties, attended by contractors, WMEAC staff, and homeowners, to promote upgrades.

BBM partners with community based organizations in each neighborhood Sweep to recruit households into the program. These partners may include neighborhood associations, churches, schools, and other civil society organizations. BBM will present at community events and include spots in community media.

Staff lead CBO – Notwithstanding the use of these community channels to conduct CBO, BBM Grand Rapids relies largely on paid WMEAC staff time to interact with households and sell the program. Grand Rapids' Regional Coordinator Selma Tucker noted that he feels having paid staff responsible for outreach is necessary to better ensure professionalism, accountability and consistent messaging. Thus, BBM staff are responsible for much of the "boots on the ground" recruitment of households. Community partners may host WMEAC staff at events or plug the BBM program in their communications, but are not tasked with directly recruiting members of their constituencies (Tucker 2012). Thus, despite organizing outreach at the neighborhood scale, a good portion of BBM Grand Rapids' outreach does not rely on existing community relationships to proffer its marketing. Some Sweeps feature exceptions to this strategy, however. In one predominantly minority neighborhood, Oakdale, BBM recognized that community members would be required to promote the program, as BBM's staff would be viewed with suspicion. In this case, BBM compensated community groups $10 for each household that signed up for an assessment, with an additional $500 at the beginning and end of the Sweep process.

Data Systems Organization – The City of Grand Rapids has developed a Data Systems Organization (DSO), to facilitate customer relationship management, contractor scheduling, and outreach efforts. The DSO is a business intelligence database system developed in Microsoft Sharepoint. It uses City data on each household in Sweep neighborhoods, pulled from the City's information systems databases. This City data contains information useful to marketing upgrades and identifying the best candidate households, including properties': Net assessed value; square footage; permitting history, which can indicate whether the household has undergone renovations; tenure, and whether the landlord lives in the area; and vintage. A variety of data fields are appended to these records, allowing BBM and WMEAC staff to record communications with households, their assigned contractor, their status in the program, and other information. This data facilitates customer service and enables more targeted marketing. The system also facilitates contractor scheduling. The DSO system is based on cloud computing principles, meaning BBM staff can enter information from the field via portable tablet computers (Kontras 2012).

6.2 Findings

Effective outreach messages and conduits differ between neighborhoods – BBM staff consistently noted that the messages with the most impact and recruitment conduits differed from neighborhood to neighborhood. They note the importance of investing time in understanding the demographics, values, and social networks within neighborhoods. Mary Templeton asserts that, "the more time we spent upfront getting to know a community and a credible messenger, the better result we had" (Templeton 2012). BBM staff suggest consulting closely with existing neighborhood institutions to understand these dynamics.

The difficulty and cost of neighborhood based outreach – BBM Grand Rapids is moving away from neighborhood based recruitment and focusing their outreach efforts through major employers, as they have found recruitment in neighborhoods too time intensive and costly. Selma Tucker outlines this rationale:

> "*I am not encouraged by the neighborhood approach. [The program's success recruiting participants] is unbelievably variable on a neighborhood by neighborhood basis. You don't know how [communities] will respond to the messages you are providing. You don't have their trust; peoples' bullshit meter is really high. They don't want to talk to people knocking at their door. Some communities have a real skepticism of government. And the labor costs to conduct this type of outreach is just too expensive… We want to focus on networks, and not on geography… We need to get businesses and their networks involved, because their reach is much greater [than connections within neighborhoods]*." (Tucker 2012)

It is important to put BBM Grand Rapids attitudes towards neighborhood based outreach in context. They have consistently recruited 30 to 50 percent of households in neighborhoods to undertake upgrades, in the span of 12 to 16 weeks. Such efforts may require more staff time investment than neighborhood-based efforts conducted over a broader span of time and partnering with multiple organizations concurrently, as opposed to BBM's practice of concentrating on small geographies for short periods of time. It is also important to note that BBM Grand Rapids relied on paid staff to serve as the main outreach agents for their program.

Canvassing inconsistent – Within the broad neighborhood based framework, staff report varying degrees of efficacy recruiting households via different outreach mechanisms. BBM staff consider canvassing a "hit or miss" strategy; in some cases, experienced canvassers in neighborhoods characterized as possessing high social capital were successful in recruiting significant numbers of households. In other neighborhoods, canvassing comprised "a lot of work, with not much return" (Erhardt 2012).

Meetings effective at recruiting attendees, but limited hosting and attendance – BBM staff report that house parties achieved consistent participation in the program by attendees, though they faced difficulties in recruiting sufficient numbers of people to attend. BBM reports operating only a small number of house parties, and their recruits do not comprise a significant number of attendees. BBM has attempted to increase the number of parties by incenting households to host parties, waiving hosting households' copayment fee for assessments.

Burnout of community partners – Though Sweeps last only two to three months, BBM staff note that they do face 'burn out' amongst their community partners. Mary Templeton describes the early stages of partnerships as involving a lot of excitement, but that over time groups' other activities take priority. This effect was particularly noted around the Christmas season, when partner church groups shifted focus to such seasonal organizing.

Value of organizing upgrades in establishing contacts for environmental advocacy – WMEAC's Program Manager Ann Erhardt describes the connections they have made with people interested in energy and environmental issues over the course of their CBO as a "treasure trove of contacts". WMEAC anticipates these contacts will prove valuable in future advocacy and provision of environmental services. This sentiment suggests that CBO can aid in other organizing efforts undertaken by community organizations.

Realizing more effective experimental design – BBM's design is intended as an experiment, testing the appeal of different offerings via different neighborhood Sweeps. However, drawing accurate conclusions from the Sweeps may prove difficult, as the Sweep design inherently entails sampling bias. Moreover, variables were not isolated between each other and multiple variables were tested at once, potentially compounding one another. Future efforts could use more randomized assignment of offerings, testing a more limited sample of variables.

7 Energy Upgrade California and the San Francisco Home Improvement Program

Energy Upgrade California (EUC) was launched in March of 2011 by the California Energy Commission, to provide common marketing and coordinated delivery of home energy upgrades across Californian local governments and utilities (CEC 2011). EUC's marketing is delivered by the non-profit consultancy Ecology Action. In the San Francisco Bay Area, the program is administered and funded by Pacific Gas and Electric (PG&E). In parallel with EUC, The City and County of San Francisco's Department of Environment (SF Environment) offers their Home Improvement Program (SFHIP), launched in October 2010. SFHIP was developed to provide upgrade services to 2-4 family buildings, which comprise 22 percent of residences in San Francisco (US Census Bureau 2011), but which neither EUC, nor other PG&E programs, serve. In the City of San Francisco, EUC and SFHIP typically market their program together under the SFHIP banner, to avoid confusion amongst households. PG&E provides incentives for the SFHIP program.

EUC and SFHIP are both intended to serve as "one stop shops" to guide households through upgrades, providing customers with streamlined access to incentives, financing, and contractors. Both feature online platforms serving to inform customers about the program, and link them with home assessment contractors. Participants are expected to download a list of qualifying contractors and select the contractor to perform their assessments and upgrades; both EUC and SFHIP staff will assist households that request recommendations, and also will connect households with participating contractors at meetings and other community events. The contractors operate on a single-bid basis. The programs also features quality assurance protocols and workforce development. The EUC provides a clearinghouse of local government and utility incentives, and of financing tools, which lenders can competitively bid into the program to minimize program costs (CEC 2010).

7.1 Outreach and Marketing Strategy

Both EUC and SFHIP employ a range of marketing techniques, including: Direct marketing, including mailings, earned media, paid television and radio advertisements, and City communications via tax assessment reports; promotions and referrals from trade allies, including efforts to engage realtors, home improvement retailers, and the broader remodeling contractor industry; customer referrals; and promotions via different community networks. SF Environment employs an Outreach Coordinator responsible for marketing the program, and has personnel and a volunteer network that promote a range of SF Environment programs to residents and businesses. EUC has state-wide direct marketing efforts, and also employs personnel to conduct marketing efforts in various counties throughout California. The EUC interviewee for this case study, Jeffery Liang, conducts outreach efforts in San Francisco, Alameda and Contra Costa counties.

CBO efforts – Both programs employ similar CBO methods. They will seek existing networks, organizations and other forums to present program information. Program outreach personnel report working with networks including: homeowner associations; neighborhood associations; minority communities; cities' networks of active citizens and organizations; religious institutions, and civil society interest groups. Frequently, EUC and SFHIP will organize or attend community organizations' existing

meetings and other functions. Their presentations often include contractors, as well as participants who have proceeded through the programs; EUC asks contractors to identify good candidate households with which the target community will identify. The programs also seek media coverage in newsletters and other publications targeted to these community segments, such as Spanish and Chinese language newspapers (Apilasky 2012; Liang 2012).

Lack of customer relationship management systems - Neither program features customer relationship management systems which outreach staff can use to monitor customers progress through the program, from intake through to upgrades. Instead, contractors are expected to complete customers' registration and paperwork, and report this data to PG&E once customers have completed assessments and upgrades. PG&E subsequently provides rebates to households, and distributes information on participating households to EUC and SFHIP. This limits marketing personnel's ability to assess the efficacy of marketing campaigns, and to provide ongoing customer communications.

Web analytics - SFHIP reports that they use Google Analytics and other web traffic analysis tools to determine what sources are driving visitors to their website. Google analytics allows for weblinks to be 'tagged' to determine what emails and websites are directing visitors to SFHIP's website. SFHIP typically presumes anyone entering their URL directly is working from a piece of physical collateral, such as a handout or door hanger. SFHIP will stage different marketing campaigns in roughly one week increments, to compare their success in driving visitors to their website and to download the list of contractors. This experimentation has allowed them to identify effective marketing channels.

7.2 Findings

Upgrades require an extended explanation to convey their value – SF Environment Outreach Coordinator Friday Apilaski suggests that the novelty of energy upgrades as a service means that substantial time is required to convey their value to households, especially given the complexity of the building science involved in home assessments and customizing a suite of upgrade measures. She explains:

> *"The reality is that, you need to have a conversation in order to get someone interested in this program. You can't sell this program in 30 seconds, it's not possible. Because you're talking about the home as a system, and it's a new concept, it takes time to learn about what we are offering. [In order to have that longer conversation] customers can either call a neighbor who [participated in the program], or the [participant] can spend half an hour on the website, or they call us. In 30 seconds, you can maybe generate enough interest to get people to have a conversation."* (Apilasky 2012)

Moreover, SFHIP frequently has ongoing interactions with participants as they proceed through the program. Some customers evidently require ongoing guidance as they navigate the program and interactions with contractors.

Impact of meeting participating homeowners and contractors – Both SFHIP and EUC staff note that community meetings comprise an important means of recruiting participants. Both programs host their own events for community organizations, as well as seek speaking opportunities at established forums.

SFHIP's Apilaski characterizes such meetings as "the most labor intensive [form of marketing], but the biggest bang for your buck". She describes the ideal formula for such community meetings as comprising: A homeowner who has proceeded through the program, and can vouch for its value; a contractor, to explain technical details; and SFHIP staff with polished presentation skills to convey the legitimacy and competency of the program.

Likewise, EUC's Jeffery Liang estimates he presents at a community event three to four times per week, suggesting the emphasis placed on this recruitment strategy. He cites the importance of meetings to introducing recruits to contractors: "The workshops are just a Trojan horse to get people to talk to the contractors. People need to meet the contractor to feel comfortable about energy upgrades." Recruits from meetings will typically be paired with attending contractors. Both SFHIP and EUC noted that because they are government funded agencies, they cannot favor particular contractors over others. They offer all contractors the opportunity to participate in these meetings, and revolve those that opt to participate.

Fostering networks – Outreach personnel from both programs stress the importance of establishing referrals from parties that households know and trust, at opportune times. Based on their estimations of web hits, SFHIP has identified a few outreach channels they have found to be most effective at generating interest in the program:

- Realtors – SFHIP has approached realtors and asked them to email information about the program to their past clients mailing lists. Realtors have been receptive to marketing programs in this way because it provides an opportunity to stay in touch with clients, and to refer them to a valuable service. SHIP further believes that by focusing on connecting with realtors, they can connect with home buyers immediately after buying, a time when they may be especially interested in performing upgrades and other home improvements.
- Vouchers from existing program participants – SFHIP is offering households that have completed the program a $250 voucher for each participant they recruit; the referred customer likewise can capitalize on an additional $250 of incentives. This provides substantial incentive to engage in word of mouth referrals. SFHIP staff characterize this incentive for referrals as very effective for building participation in the program.
- Retailers and remodelers – SFHIP is in the early stages of coordinating with home improvement retailers and home remodelers. They are seeking to establish appropriate means of referrals.

SFHIP's efforts to cultivate relationships with realtors and referrals from past participants suggest how marketing organizations can experiment with and foster different CBO channels.

8 Minnesota Center for Energy and Environment's Community Energy Services Program

The Minnesota Center for Energy and Environment's (MNCEE) Community Energy Services (CES) program provides residential upgrades to a number of communities in Minnesota, though the large majority of its efforts have thus far been focused on providing upgrades to households in Minneapolis. The MNCEE is a non-profit organization that administers a variety of energy programs for residences and businesses; provides financing; and serves as a research center and think-tank (MNCEE 2011a). CES evolved from the broader Minnesota Energy Efficient Cities (EEC) project, which ran between 2009 and 2011. MNCEE lead the design the EEC project, and implemented the project in partnership with a range of other non-profits, local governments and utilities (MNCEE 2011b). CES employs much the same program structure and recruitment methods as EEC. The CES continues to be funded by utilities Xcel Energy and CenterPoint Energy, and the City of Minneapolis.

Households participating in CES follow a three-step process. First, they attend a community meeting hosted by MNCEE, where they receive information about the program and the value of home upgrades. Second, MNCEE contractors deliver a 'home visit', which entails both an energy assessment and low cost direct install measures. MNCEE delivers a report to households, recommending upgrade measures. Third, households may elect to undertake deeper upgrades, based on the MNCEE's recommendations. The CES operates on a multiple bid system, whereby households solicit upgrade contractors, who were not the assessment contractors, to undertake upgrades. MNCEE provides a list of qualified contractors. MNCEE also conducts quality assurance, assessing the work in 10 percent of households (Nelson 2012).

The review of MNCEE's CES outreach and marketing strategies below focuses on MNCEE's efforts to recruit people into the first workshop phase. The subsequent findings section reports on these efforts, as well as the functioning of the workshop and other phases in recruiting and retaining participants in the program.

8.1 Outreach and Marketing Strategy

Engagement via Neighborhood Associations - MNCEE initially relied extensively on CBO methods to recruit people to attend the introductory workshop, coordinating closely with the boards of Minnesota's various Neighborhood Associations. Minneapolis is notable for its strong, clearly defined neighborhoods, and the level of involvement by Associations in neighborhood governance and in the daily lives of residents (City of Minneapolis 2012). The CES workshops would typically be located within neighborhoods. MNCEE would engage with Association boards to "knock their block", organizing door knocking, street canvassing, and providing template messages to deliver via neighborhood email listservs and newsletters. The MNCEE has employed two full-time Community Organizers over the past two years, who are responsible for coordinating with neighborhood associations to support their outreach. Neighborhood Associations have been highly receptive to promoting the MNCEE's programs both because they have historically served as a conduit to providing households with a range of government and non-government programs, and because they have experience working with the MNCEE directly on the Minnesota Neighborhood Revitalization Project, where MNCEE serves a primary lender for building improvements.

City-wide program implementation and a move to direct marketing – In recent months, the MNCEE has moved to deliver the CES at a more City-wide scale. Consequently, they have used more direct marketing materials, including mailings, door-hangers, and utility bill inserts alerting community members to the next meeting.

8.2 Findings

Meetings compel and prepare households to undergo upgrades – CES's introductory meeting is an effective means of recruiting households, while also preparing households for the services and facilitating a more efficient delivery of the program. Ninety-five percent of meeting attendees sign up to receive a home visit (Nelson 2012). MNCEE staff suggest that the meetings function to influence households' behavior in two ways: First, they serve an educational component, providing households a rich introduction to the program and an opportunity to have questions and concerns addressed. Second, attendees are influenced by seeing other community members sign up for the home visits, resulting in a sort of peer-pressure or norm to sign up.

The meetings also make the subsequent delivery of the program more efficient. The presentations help develop attendees' understandings of how buildings use energy. Households are primed about the nature of the diagnostic tests and direct install and upgrade measures to be performed. The meetings also prepare customers to interpret their home energy rating and the recommended measures, and prepare customers for the cost of upgrades to avoid "sticker shock" and reticence to undertake deeper upgrades. This preparation allows CES contractors to deliver home visits in about 1.5 hours, substantially less than typical length of home visits in other programs, reducing program costs. CES staff further believe that this preparation makes customers more likely to follow through with deeper upgrade work following the first visit (Crane-Smith 2012).

Achieving conversions from assessment to upgrade – About 30 percent of the households receiving upgrade recommendations ultimately implement some measures. Additionally, the MNCEE reports that they have found it takes a customer about six months after the initial assessment to opt to undertake upgrades (Crane-Smith 2012). MNCEE communications between the home visit and any upgrades include a follow up call, and subsequent mailings to prod customers. MNCEE staff and other observers have sought to explain why participants drop out, and how to increase the conversion rate. Crane-Smith (2012) notes that MNCEE has simplified its upgrade recommendations list to the three most effective measures, to avoid overwhelming participants and reduce costs. In her Master's thesis reviewing reasons for participating in the program, Stern (2011) found that drop-outs cited financial reasons, including uncertainty about the financial case and concerns and confusions about taking on financing. Only five percent of CES upgrades make use of CES's lending, opting instead to use their own savings or a home equity line of credit; it may be that changes to the financing, and promotion of financing, could entice these households. Lastly, I speculate that relying on a MNCEE contractor to perform assessments, and other contractors to perform upgrades, limits the efficacy of the home visit as a marketing opportunity. Homeowners have no experience with the upgrade contractor, and assessment contractors may have limited incentive to sell households on the idea of further work.

Nevertheless, the CES is a relatively cost-effective deliverer of home upgrade services. A review of the Efficient Cities Program found total program costs between $500 and $700 per participant, resulting in costs of 3.2 cents/kWh of electricity saved, and 33 cents/therm for natural gas.

The importance of strong, well-resourced community channels for CBO – MNCEE's outreach via neighborhood organizations has realized substantial levels of participation. MNCEE only recently began asking meeting participants what led them to attend, so it is difficult to attribute the level of participation during the phase of CES when marketing was focused more on community organizations. However, MNCEE staff convey that Minneapolis' robust network of neighborhood associations were critical to recruiting participants. As of February 2012, CES had served 4700 households with home visits, a substantial proportion of eligible households in their service area.

MNCEE staff note that the neighborhood associations that continue to be active and effective in recruiting households to participate in the program are better resourced, typically with full-time staff. These better resourced associations tend to serve more affluent communities, and those with a higher degree of social cohesion and tradition of neighborhood activism. CES staff note that CBO channels have been substantially exhausted – the residents who could be compelled to participate by neighborhood associations have largely already been recruited. Likewise, many neighborhood associations' time commitment to recruit households into upgrade programs is waning.

Importance of direct marketing – Direct marketing appears to be important to recruiting households. When registering at meetings, participants most frequently cite direct mailings and door hangers as what served to recruit them. MNCEE staff theorize that using community based channels helps legitimize the program, and that direct marketing materials can serve as a reminder to induce households to participate.

Keen to develop referrals – MNCEE staff note that they are looking to develop marketing based on referrals from previously participating households. They have developed profiles of participating households, which are used in their program marketing. On occasion, they have also sought past participants to vouch for the program at meetings.

9 Summary and Recommendations

This chapter summarizes some themes common to the case programs, and speculates principles that may be useful for other upgrade programs. It reviews findings across programs. It then suggests some approaches to inform the future design and implementation of CBO in other upgrade programs. Lastly, it includes speculations on the form that program administration might take to better capture efficiencies in CBO, suggesting structures that could engage community networks in the promotion of upgrades, as well as a broader array of sustainability related services.

9.1 Findings

Reaching a large percentage of residences is challenging and often costly – This point is broadly understood amongst would-be change agents and marketers of products to households, but it bears repeating. Convincing large segments of the population, who differ in their knowledge, values, and interests, to undertake a novel service is not a simple undertaking. Marketing upgrade programs is therefore resource intensive, and CBO especially requires substantial time commitments, by program staff and/or volunteers. This thesis attempted to report the resources expended on marketing by programs. However, the program staff interviewed were consistently hesitant to share budgetary and financial information, in part because of concerns about the high levels of outreach costs. Marketing may become more cost effective as programs' initial investments are amortized over longer periods of time, as they become more efficient, and as upgrades become more familiar and socially normative.

Value of CBO – Experiences from the studied programs suggest that certain CBO strategies have the potential to tap into pre-existing networks, and reach households that would not otherwise be served. CBO can generate greater trust in the program by having trusted networks vet the program, and provide a forum where households can learn more about the novel service of energy upgrades. Interviewees frequently characterized recruits from community based forums as "hot leads", whose trust and knowledge of the upgrade process makes them more likely to participate. They may thereby realize greater participation in programs' assessment phase and greater conversion rates to upgrade phases, than other marketing strategies could in isolation.

Word of mouth was also frequently cited as an important channel to program participation, suggesting the important dynamic that informal community networks play in fostering upgrades. Outreach practitioners frequently noted their desire to generate more word of mouth buzz about programs. Some experimented, or intended to experiment, with compensating households for referrals they generate, and/or more systematically requesting referrals.

Limits of CBO - CBO mechanisms are not the sole, or even the most prominent, means of recruiting participants in the programs reviewed. All programs relied on other marketing mechanisms in addition to interpersonal community based strategies. Program personnel's impressions and customer-intake survey data suggest that most participants cite direct advertising as what alerted them to the program. While asking participants to cite what lead them to participate in programs may not reflect all the conversations or media that influenced them, it does suggest the importance of direct advertising strategies. Community based strategies cannot match the scope of exposure that direct marketing

efforts achieve via mailings and bill inserts; even a small response rate to these direct outreach strategies can result in sizeable numbers of customers participating. Given the advantages and performance of such other outreach strategies, CBO should probably be conceived as just one of a number of important components to a comprehensive marketing strategy.

The importance of volunteerism – The outreach practitioners interviewed generally suggested the substantial investment of time required to undertake CBO to recruit and retain participants. For example, at the recruitment stage, personnel must organize events, canvasses, and establish commitments to attend events from community members. Following recruitment activities, outreach practitioners will frequently follow up with households as they proceed through the upgrade process. Paying staff to undertake much of this process can be cost prohibitive. Conversely, programs that successfully relied heavily on volunteer labor conveyed that they felt outreach was not overly costly.

The limits of volunteerism – All programs noted that volunteers and partner organizations tend to experience 'burn out' and waning interest in conducting outreach, however. Volunteers and organizations typically engaged in a variety of other activities, which draw them away from promoting upgrades. Those organizations and individuals that sustained more regular involvement in outreach were typically well-established in communities and well-resourced.

Moreover, successful, long-term volunteer outreach requires talented communicators who feel ownership over the process. For example, leading voluntary outreach personnel in HRCCA, NWWVT's Energy Champion network, and other volunteer networks reviewed were frequently cited for their interpersonal skills and sense of commitment; these qualities were evident in interviews with these personnel. Likewise, BBM limited volunteer participation due concerns about controlling the message and image of the program in its interactions with the public.

Networks, not geography - Experiences from programs suggest that, to paraphrase BBM's Selma Tucker: Networks, and not necessarily geography, should guide programs' attempts to engage in CBO. BBM and CEWO's Cully pilot both experienced high costs attempting to recruit large proportions households in single neighborhoods into upgrades. In CEWO's case, HRRCCA has managed to achieve (comparably) less resource intensive participation by tapping into religious and civil society networks. Indeed, all the programs reviewed leveraged networks that are not necessarily bounded at the neighborhood scale, including: Civil society organizations, employers, religious organizations, and informal networks of friends and acquaintances.

Geography can define important networks, however. MNCEE's CES, NWWVT's Heat Squad, and some BBM Grand Rapids' Sweeps all achieved substantial participation at reasonable cost by working with neighborhood associations and other organizations defined within neighborhoods. Program staff attribute the impact of using these neighborhood organizations to the fact that residents identified strongly with their local geography, and had been engaged with neighborhood organizations in the past.

Exhaustion of networks – Experience from programs suggests that networks can be exhausted. Interviewed staff noted in a number of instances that they experienced diminishing rates of participation when partnering with community networks multiple times. This saturation point can occur

before the majority of network members are enlisted. Programs must recruit new networks to engage in CBO. Personnel from all the programs reviewed noted the need to continue to find out new networks, and tie them into outreach efforts for upgrades. Additionally, discovering means to reach these networks' later adopters may be a critical component of CBO, and upgrade programs more broadly, reaching scale.

Notable Mechanisms – Outreach practitioners described a variety of strategies to recruit households into the program, noting especially meetings and neighborhood canvassing efforts:

Meetings and house parties **-** House parties and community meetings were found to be effective means of convincing attendants to participate in upgrade programs. Programs' staff typically noted that most attendees agreed to sign up after attending a party or meeting. Outreach practitioners typically characterized such events as cost-effective. Moreover, they noted that these events provide an exceptional forum for connecting potential recruits with past participants and contractors. Both these facets of meetings serve to build attendees' trust in the program. These forums provide opportunities to make a more detailed case for upgrades, which is important as the service and the building science behind it is unfamiliar to many people, and thus the concept takes time to explain. Lastly, many attendees seem to feel a collective peer pressure to participate.

The evidence for meetings' ability to drive participation in upgrades should not be overstated, however. Recruits from these gatherings never accounted for more than a small percentage of the total number of households recruited, except in the case of MCCEE's CES where meeting attendance is a requirement of the program. The challenge consistently for programs is recruiting sufficient numbers of new households to attend these events. No program had devised a systematic strategy of having past participants host events, though many interviewees noted that they wanted to establish such a system.

Canvassing – Canvassing comprises another CBO strategy frequently employed by programs. The performance of canvassing as a marketing strategy has been less consistent. In some programs, such as BBM, small groups of experienced canvassers have been successful. However, other programs report that organizing canvassing requires much effort, can be intimidating for volunteers, and achieves minimum uptake. A number of factors may contribute to canvassing's erratic performance: The length of interactions that a canvas entails probably provides fewer opportunities to explain the concept of upgrades. Canvassing often involves less trusted networks; people may be less receptive to a conversation at their door with a stranger, than they would be in other forum. Moreover, it involves organizing larger groups in a typically one-time effort, providing limited opportunities to hone messages.

Gender, equity and representation matters – NWWVT staff noted that women are typically the most important members of households to converse with when marketing upgrades. Similarly, the success of women contractors in CEWO suggests that increasing the representation of women in the contractor workforce can serve to help households identify with contractors, and increase their propensity to pursue upgrades. Policies to promote women's participation in the workforce may serve not only social justice ends, but also increase participation in programs.

Likewise, it may be that similar processes of identification and trust occur between minority or otherwise disenfranchised communities, when their peers are represented in the contractor workforce. For instance, HRCCA lobbied to include workforce composition targets CEWO's program, and the programs' diversity targets seems to have played a role in HRCCA's desire to promote and support the program. Besides such policies' social justice merits, efforts to increase the representation of historically under-represented groups should be explored as a way to increase the appeal of upgrades to households comprised of such peoples.

Customer relationship management tools and data – Programs with strong customer tracking systems were better able to identify what outreach strategies, and which outreach agents, were effective. Outreach practitioners used these systems to conduct ongoing experimentation and informed theory making about what outreach strategies are most effective.

The importance of empowering contractors – Contractors are perhaps the key agents in marketing upgrades. In CEWO, contractors are encouraged and incented to recruit participants, and nearly half of the programs participants have reported being referred by contractors. Events at which contractors met prospective recruits were cited as important to establishing a relationship between households and contractors, and developing a sense of trust.

One important element of contractor empowerment is whether programs operate on a single-bid or multiple-bid system. Of the five cases, MNCEE CES was the only program not to use a single-bid system. It also had the lowest rate of conversions from assessment to upgrade of the programs reviewed. Of course, other factors may be at play, and this is worthy of further study. Additionally, contractors varied substantially in their assessment to upgrade conversion rates within programs, suggesting the importance of contractors' sales skills and use of the assessment phase to communicate with customers. Many programs sought to improve contractors' sales and business management abilities via training opportunities, mentoring, and other programs.

Organizing and collaboration with community groups – Lastly, a common theme across programs was that engaging with multiple stakeholders realized benefits to programs' operations. Organized interest groups such as HPCG and HRCCA are able to influence legislation and program management, for their benefit and the benefit of the upgrade industry. In terms of outreach and marketing, many program personnel noted that working closely with community organizations to determine communities' values and a devise an outreach strategy increased the chances of success in a community. Moreover, programs' experiences suggest that those community groups that are engaged in the programs design and governance may play a deeper and more intensive role in delivering CBO. Collectively, these experiences suggest the importance of collaborating with community groups in the design and implementation of CBO, and in affording them opportunities to deliver CBO on their own terms.

Table 3 below summarizes programs experiences in CBO; it includes the CBO mechanisms that community organizations engaged in, and the extent of partnership with community organizations.

Table 3: Program summary. Two checks indicate substantial use of mechanism or partnership. One check indicates lesser focus.

		CEWO & HRCCA	NWWVT	BBM GR	EUC & SFHIP	MNCEE
CBO Mechanisms	Community media	√√	√√	√√	√√	√√
	Referral systems				√√	
	Canvassing, tabling, etc.	√ (Cully)	√√	√√	√	√
	Meetings and events	√√ (HRCCA)	√√ (recent)	√	√√	√√
	Ongoing assistance	√√ (HRCCA)				
Extent of Partnership	Strategic partnerships	√√	√√	√√	√√	√√
	Operational partners	√√	√√	√	√	√√
	Collaborative partners	√√	√	√		√

9.2 Recommendations for Delivering CBO

This section lists some marketing strategies that marketers may experiment with as they implement upgrades. These are not intended as prescriptive, surefire strategies; moreover, programs constantly experiment and evolve strategies, based on their market, and thus will expand from any recommendations that are pursued. Rather, these suggestions are offered to help programs build on the experiences of past programs, and provide opportunities for further innovation.

Seek a scale large enough to encompass relevant communities – Many useful community networks transcend government jurisdictions and utility service areas; employers, religious and civil society organizations can all draw their membership from wide-ranging locales. Often, utilities and government boundaries dictate the geographic range of upgrade programs, sometimes narrowly. Non-profit, quasi-independent, and multi-stakeholder established upgrade programs can allow for local governments and utilities to help organize broader program frameworks. Programs should seek governance that allows

them to cover an appropriate geographic scope. Such frameworks are further discussed in section 9.3 below.

Control program costs through volunteerism – CBO requires substantial time to recruit households. Programs that can leverage volunteer time may be more financially viable. For example, much of BBM's outreach duties rely on paid staff; they found neighborhood based outreach expensive enough to move away from such strategies towards focusing more solely on working through employers. In contrast, other programs that made more use of volunteer outreach reported feeling that CBO was cost effective. I speculate that the long-term viability of many CBO efforts is contingent on committed volunteers continuing to see a good reason to promote upgrades. To sustain this commitment, the potential for environmental benefits from upgrades must be realized and documented; additionally, upgrade programs must provide the sorts of social benefits that inspire these actors to engage their communities.

Appeal to community organizations' values and interests, and involve them in program design – Programs, and the contractors they promote, should seek to align with community organizations and volunteers' values if they hope to foster ongoing volunteer involvement in CBO. Moreover, involving these organizations substantively in the development of programs will help to reflect these values. The potential for volunteer engagement when programs support their values is evident in HRCCA's involvement in the development of 'high road' standards and other program elements, and their subsequent engagement marketing programs. Program managers should seek to discover the values of households and their associated networks through market research and ongoing reflection.

Programs can also leverage competition and monetary reward for community organizations. The most aggressive town Energy Champions in NWWVT HEAT Squad were characterized as operating in a sense of friendly rivalry amongst themselves; locations with similarly competitive dynamics can leverage the community inspiration and awards competition entails. Likewise, some compensation for volunteers and their organizations based on their performance recruiting households can encourage regular engagement by organizations, and build mutually advantageous economic relationships. The three hundred dollar compensation provided to volunteer organizations that source upgrade clients for HRCCA contractors is evidence of the marketing costs of programs. While this is money that contractors are presumably recovering from households, and may thereby add to the financial burden of upgrades, it roughly reflects marketing costs contractors would otherwise be required to cover.

Programs should respect volunteer time, and provide unpaid personnel with effective tools and systems to recruit participants into upgrades. Success can breed a sense of efficacy and time well-spent, increasing the likelihood of their participation in the future. The strategies below expand on effective tools and systems.

Use meetings – The program staff I interviewed consistently noted that house parties and meetings could be delivered cost effectively, and result in a high degree of participation by attendees. They allow participants to build trust in contractors, prime participants' knowledge of the upgrade process, and foster a normative attitude towards participation in upgrades amongst attendees. Meeting hosts faced

barriers in getting sufficient numbers of participants in these meetings, however. Additionally, most interviewees report that only a small percentage of households engaged in the program were willing to host or present in meetings. Systematically hosting, securing participation, and delivering these events should be a focus of upgrade programs.

Programs can make use of meeting formats in a more systematic way. Programs should seek out community leaders, prominent personalities and connectors, and request these people engage as early recipients of upgrades. Programs should further request that these participants subsequently promote the program. Community based organizations, and their agents, can benefit from the opportunity to host meetings, as it dovetails with their community development practices; indeed, in the community meeting is the core of many community organizing traditions (Alinsky 1989). Similarly, programs can seek hosting by all participants by leveraging social marketing principals, requesting a commitment from any participant early in the process that they will host meetings if they are satisfied with the quality of upgrade work. Programs can support these efforts using standard invitations, scheduling tools, and databases listing appropriate participants. Contractors can likewise ask for referrals, and ask that households participate with them in meetings and presentations.

Programs and contractors should focus on building households' expectations early in the commitment process that promoting upgrades during house meetings is part of the broader upgrade process. Programs should solicit a commitment from households that, provided they are satisfied with the work, they will host a party. Soliciting such commitments, and then reminding households later, can be a powerful means of realizing sustainable behaviors (McKenzie-Mohr and Smith 1999). Likewise, programs should experiment with incentives for hosts to garner a large number of attendees, and smaller incentives for households initially participating. For instance, programs could provide households a package of energy savings equipment or other gift-bags, once meeting attendees agree at meetings to undertake home assessments. The offer of something of value could provide a draw into the program, while at the same time avoiding single action bias. Of course, programs should experiment with different incentives and staging of 'asks' to maximize upgrade uptake.

A focus on meetings would likely not create great bursts of participation in upgrade programs, however. Meetings only generated a small percentages of recruits in the programs reviewed, and there may be limits to the extent they may be scaled. Moreover, meetings are more oriented to providing a slowly growing swell of baseline participation as the number of potential hosts increases with greater participation. Direct marketing, canvasses, and other marketing mechanisms will still have a role to play. However, meetings may serve as a longer-term strategy to solicit ongoing participation in programs, providing a steady stream of participants.

Time CBO campaigns strategically, being cognizant of volunteer burnout and annual market cycles – Interviewees regularly noted many community volunteers' early commitment to upgrade campaigns, and subsequent burn-out as other priorities arose. In some cases, annual events interrupted communities' engagement. Programs operating over many years could anticipate the limited involvement of communities, and focus on more intensive outreach events. Importantly, upgrade contractors report experiencing significant 'off seasons', during which demand lessens considerably –

spring is noted as such a time. Programs could work with community organizations to engage in concerted CBO campaigns during these times, allowing contractors to sustain larger workforces.

Map community assets – The conceptualization of communities' social capital via a variety of diagrammatic 'mapping' techniques and applications can support community development and entrepreneurial endeavors (Emery and Flora 2006; Dempwolf and Lyles 2011). Programs can develop maps of community organizations, outlining what organizations can serve to reach which populations. Systematically cataloguing the community networks through which to conduct outreach can help programs maximize the reach of their CBO efforts. Moreover, such mapping will necessarily involve community groups, drawing them into the design of upgrade efforts.

Improve participant relationship management systems – Computerized programs and program protocols can make CBO efforts more efficient. These systems allow for marketing personnel and contractors to update databases on participants, facilitating communications between stakeholders in upgrade programs. Amongst other functions, programs have developed applications and protocols to facilitate: Customer enrollment, scheduling, workflow administration, and financial processing; contractor and marketers scheduling, program submittals, quality assurance, and rewards for performance; testing different marketing efforts; attributing customers to different marketing organizations or contractors; and program reporting (Feblowitz 2010). Programs could develop applications that would allow community partners the opportunity to enroll and communicate with partners.

One important function of these relationship management systems is the ability to attribute customers with the organization responsible for recruiting them. CEWO's Rebate Code system suggests how such attribution can facilitate a focus on promoting contractor marketing in the context of broader programs, by allowing contractors to serve the clients they recruit. Importantly for CBO delivery, such systems can track community groups' recruitment performance, allowing them to be compensated for recruited households, engage in competition, and/or allot households to contractors in their favor. Additionally, it facilitates easy experimentation and data mining, to see which outreach channels are most effective at recruiting households. By integrating a coded attribution function, programs can more systematically develop their outreach strategies.

Engaging communities by using data indicating household data can realize powerful opportunities for upgrades. Programs like BBM Grand Rapids enter their target areas with a full database of eligible households. In the future, programs could use utility, commercial, municipal, and home energy diagnostic data to identify the names of prime candidates. Perhaps systems could be developed that would suggest households past participants to whom they should particularly recommend the program.

Upgrade programs have developed a range of systems, incorporating various components of the functionality noted above. Some practitioners interviewed during this thesis noted the potential for a common platform for upgrades. The development of open source programs for use by programs and community organizations could assist in the deployment of CBO across numerous programs.

Leverage investment in outreach infrastructure by offering multiple 'sustainability services' – CBO is resource intensive. Developing the level of connection with households such that they are willing to invest in the relatively obscure energy upgrades suggests that the same avenues might be used to market other services. Indeed, the transaction costs for marketing other services may be lessened, once households have had a positive experience with an organization, and had their trust in referrals from community networks confirmed. A variety of novel services and products need to be integrated into large numbers of households to meet coming environmental, social and economic challenges, including: Renewable energy installations; water conservation; stormwater and wastewater management systems; electric vehicle charging infrastructure; demand response programs; transportation demand management programs; sustainable food delivery, sources, and other food services; and potentially a multitude of social services. These services require financing, quality control, marketing, and other functions of upgrade programs. Section 9.3 examines institutional frameworks to realize the delivery of such a diverse set of services.

9.3 Structuring Outreach Programs

The preceding sections of this chapter focused on summarizing findings from the studied programs, and outlining principles for how programs can operate to best support upgrade markets, noting particularly strategies to leverage CBO. This final section suggests how the arrangements between different organizations that comprise upgrade programs contribute to program goals being realized. Furthermore, it suggests that programs can reduce the relative cost burden of marketing by facilitating households' implementation of a multitude of 'sustainability services', in addition to upgrades. A multitude of sustainability service programs could be housed within one trusted, non-profit, quasi-independent agency. By providing households with a range of services, such an agency can gain greater efficiencies in the difficult work of generating demand for sustainability improvements amongst residences. Indeed, many organizations already offer a range of services; examples from this thesis include MNCEE and WMEAC. Community and network organizations have an important role to play in the establishment and marketing of such organizations providing such multiple sustainability services. Some elements of this model worthy of consideration include:

Structure – Such an agency may be a product of government, utility, private and/or non-profit policy; multi-stakeholder groups could contribute to its founding. The antecedents to such a program probably matter less than its capacity to act and reputation within communities. Bensch and Pigg (2002) conducted a literature review on who is best to implement EE programs, examining utilities, third parties, public agencies, and public benefits organizations. They found that all models could be successful, and that the most important factor is a motivated and entrepreneurial organization. Likewise, Clean Energy Solutions Inc. (2010) recommends that the important elements of such 'energy alliances' are flexibility, entrepreneurialism, and the ability to garner support their services through a multitude of financial services.

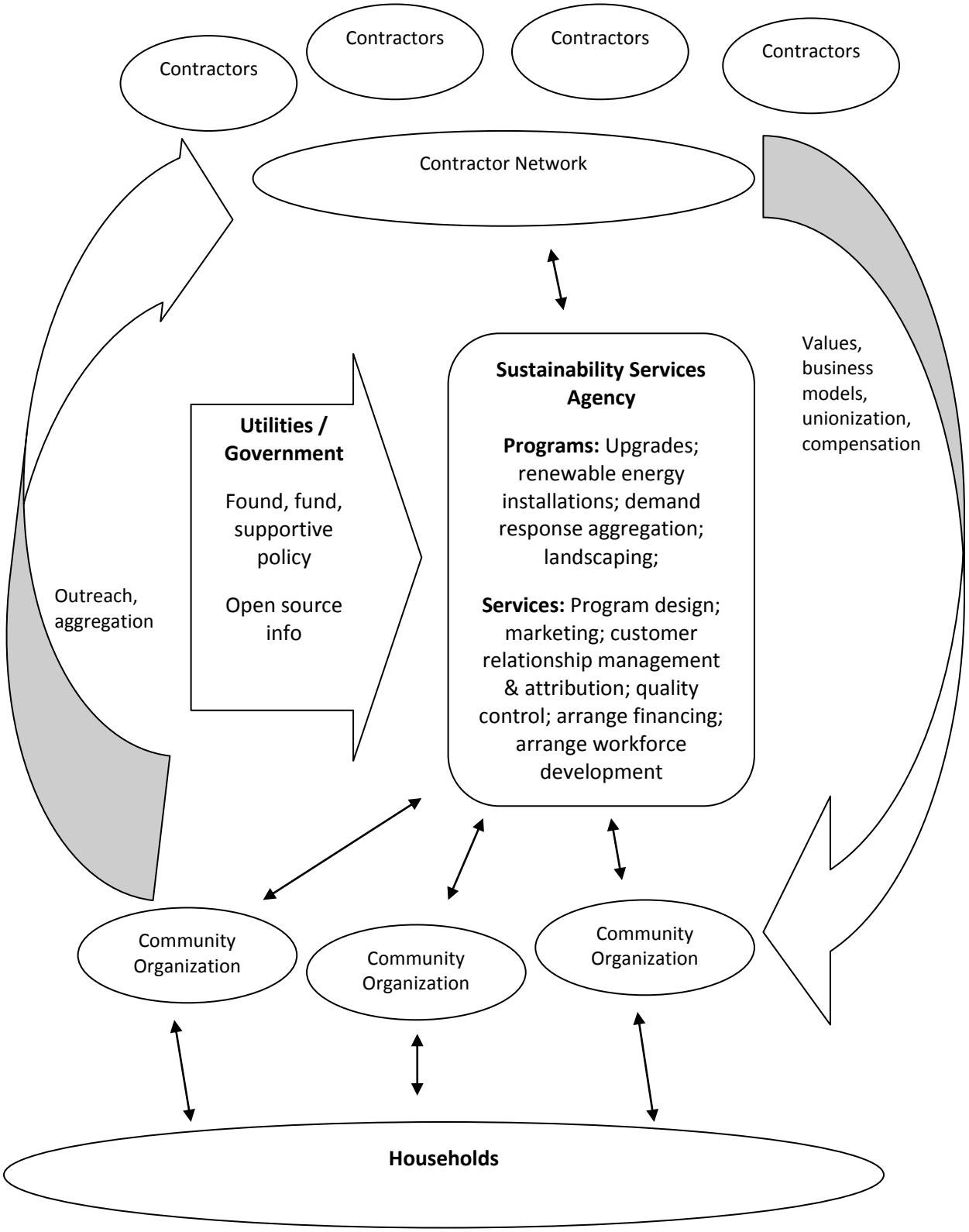
Responsibilities – Such an agency would be responsible for facilitating market functioning, and providing market transformation strategies for a range of sustainability services offered to residents and businesses. Like the upgrade programs reviewed, such an agency would: Administer programs for sustainability service markets, designing standardized workflows for services in partnership with

contractors and other stakeholders; qualify contractors and other professionals; arrange for financing, by facilitating standardized lending opportunities that financial institutions can provide for, and arranging credit enhancements; providing quality control; arranging workforce development and matching services, and organizing labor pools and other institutions; enforcing base employment standards; and marketing programs to households, businesses and others.

Fostering relationships with community organizations – Such an agency can foster relationships with community organizations, to facilitate CBO. It can organize more intensive interpersonal CBO amongst groups, using meeting structures, as well as using community channels to conduct direct marketing. Community groups can be encouraged to engage in collaborative partnerships and ongoing outreach and assistance by appealing to shared values through agencies' provision of environmental goods, good employment standards, compensation systems for recruits, and the provision of benefits to community members. Additionally, community members can be encouraged to partner with contractor networks whose business models' align with their ideology, in a manner similar to Oregon's HRCCA.

Organizing contractor networks – Such agencies could encourage contractors to form their own networks. Such networks are helpful in lobbying government and utilities, and communicating to agencies and programs about how to improve their functioning. They can also realize economies of scale and improved service delivery, by facilitating: Mentorship and knowledge transfer; bulk purchasing; shared insurance, employee medical plans, and other overheads; unionization; and concurrent implementation of multiple services. As illustrated by HRCCA, contractors may organize to respond to customers' ideological preferences.

The diagram below conceptually illustrates these frameworks.


Contractors
Contractors
Contractors
Contractors
Contractor Network
Values, business models, unionization, compensation
Utilities / Government
Found, fund, supportive policy
Open source info
Outreach, aggregation
Sustainability Services Agency
Programs: Upgrades; renewable energy installations; demand response aggregation; landscaping;
Services: Program design; marketing; customer relationship management & attribution; quality control; arrange financing; arrange workforce development
Community Organization
Community Organization
Community Organization
Households

10 Conclusion

Energy upgrades can realize environmental, health, and economic benefits. A variety of market and behavioral barriers impede their widespread uptake, however. By making the case for upgrades through existing community networks, CBO can address informational and behavioral barriers. The programs reviewed in this thesis suggest how CBO addresses these barriers, providing a means by which households can be informed of upgrade opportunities, as well as socially compelled to participate. The programs reviewed consistently suggest that meeting formats are a promising mechanism to involve households. Likewise, other CBO mechanisms provide promise: Direct marketing via communities' media provides a low-cost channel to disperse messages; and canvassing is effective in certain instances, particularly when volunteer resources are leveraged. The cases also suggest promising frameworks for organizing CBO. A central agency can be responsible for recruiting community partners to conduct outreach, providing these partners with resources for marketing. Within this context, community organizations can formulate relationships with ideologically aligned contractors, promoting their services in the context of broader programs. When using CBO, it is important that programs align with communities' values, and that communities' limited time and resources to devote to CBO are best leveraged.

This thesis concludes by suggesting what values CBO can offer to different stakeholders in upgrade programs.

Community groups – Organized community groups are key to delivering effective CBO. Providing support for upgrade programs, including substantial volunteer support, can align with community groups' values and interests in a number of ways. Many community groups are interested in a means of addressing their members' high energy costs, taking action on environmental problems, and fostering local economic activity. Upgrade programs can contribute positively to all these causes. Moreover, substantial involvement in CBO can give community organizations a greater stake in setting the priorities and policies of multi-stakeholder upgrade programs. Effectively delivering CBO gives community organizations leverage when working with programs and contractors to demand performance on community priorities, such as labor standards, addressing health issues, and other causes. CBO can provide community organizations a greater chance to engage with their members, and potentially enhance their relevance to members. Lastly, CBO for services like upgrades may provide a premise whereby communities can be further engaged in political organizing, developing collective- and self-efficacy, or simply providing greater opportunities for socializing.

Contractors – Contractors may wish to support CBO efforts because it reduces their marketing costs, and provides access to larger markets than may otherwise be achieved. Additionally, for contractors with business models premised on quality work and well paid labor, CBO can provide a source of moral suasion amongst clients to support businesses with such 'high roads' standards. Lastly, it bears noting that engaging closely within their communities may provide contractors a more fulfilling work experience.

Utilities, government and non-profit program administrators and sponsors – CBO can convey a nuanced and socially persuasive case for investment in upgrades to households. Utility, government, and non-profit programs will need more compelling marketing strategies to continue to approach the socially optimal level of upgrade activity. This need is especially pressing given the pressure on programs to attain greater financial efficiency; these programs will likely have to reduce the unit costs of delivering residential upgrades to avoid political backlash around the relatively high costs of residential upgrades and the associated impacts on utility rates. This challenge requires marketing upgrade programs that will provide fewer subsidies to households and rely more on customer financing mechanisms. To address these challenges, governments should regulate upgrade measures where feasible; however, in areas where such regulation is not politically viable, better voluntary program delivery will be needed. Effective CBO can provide an important component of programs' marketing.

While marketing to residential audiences is challenging and pricey, CBO can defray the costs in human resources that upgrade programs and utilities must invest. Utility programs administrators are typically subject to utility regulators' cost efficacy strictures, or other cost efficacy reviews in the case of governmental or civil society administered programs. Attractively for program administrators under such constraints, much of the investment in organizing CBO may be assumed by partner organizations, such as community organizations or governments. While these organizations are subject to their own cost-efficacy calculus, they may wish to participate for more value-based reasons that utility cost efficacy tests cannot justify. However, paying staff to foster community partnerships is still cost intensive, and program administrators will have to innovate more streamlined means of engaging with these partners. Part of such streamlining may include allowing community organizations more latitude in how they organize and partner with contractors. Program administrators could establish a few basic protocols for engagement, and then allow private-civil society partnerships to evolve more independently and deliver CBO.

Households – Upgrades can afford householders greater comfort, often some cash savings, and the happy knowledge that they are contributing to protecting the environment and contributing to their local economy. But engagement in CBO could make upgrades a far richer experience for households – It provides the security of advice and assistance from friends and trusted acquaintances; the pride of partaking in a community effort; and the opportunity to be a part of fun and fulfilling events. CBO practitioners need to strive to meet this potential as they deliver outreach.

CBO is not a panacea to the challenge of rapidly scaling upgrade programs. However, with community engagement and savvy administration, it can contribute to the sustenance and growth of upgrade programs. Established CBO channels provide opportunities for delivering expanded sustainability services. Moreover, CBO forums can serve as opportunities for further community development and political organizing. Lastly, CBO can be a gratifying experience for the participants and practitioners involved.

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Appendix 1 – Interview Guides

Program Managers and Outreach Practitioners

Interview Goals:

- **Program background**
- **Program performance**
- **Spending on outreach functions**
- **Specific outreach strategies and lessons learned**
- **Motivation & Sustainability of Outreach Organizations**

Introduction

Ask if it's OK to record.

My research investigates:

- The impact of CBO mechanisms – can we indicate that community based methods can drive greater participation in programs?
- What organizations & institutional structures show promise for sustainably delivering programs?
- Who should deliver CBO and how?

Questions

Background

Describe your position and background.

Please describe the steps for a household to complete a home energy upgrade. Which parties are involved? Do you have any documentation that summarizes these steps in a flow chart? [Can you send me a copy?]

Outreach Strategies

Describe the outreach and marketing strategy. Describe outreach and marketing efforts in their entirety, then note how any community based component fits in.

Who is involved/most important in conducting CBO? [How has this functioning evolved over time?]

- How are different actors effective/ineffective in recruiting participants? (home performance contractors, other trade contractors, retailers, existing non-profit groups & neighborhood organizations, intern/paid organizations (like americorps), previous participants). Describe what you think accounts for their effectiveness? Can you provide evidence, anecdotes?

Describe system for tracking participants. Do your tracking/CRM systems let you attribute different marketing & outreach strategies with participants recruited & converted? How? [How has this information affected your outreach strategy?] [this could be a computerized system, some means of regular reflection, etc.]

- Could you share resources describing the system? Historical data?
- Can you determine how much you spend on outreach strategies? How? E.G., could this be estimated from either your budget or financial statements? Would you be willing to share these documents?
- How do you measure the success of CBO efforts?

Describe some important lessons regarding how programs should conduct outreach and marketing for energy upgrade programs. How should CBO be undertaken to increase participation?

Sustainability

How do you intend to sustain outreach efforts into the future? How do you see your outreach model evolving in the future? What is necessary to increase your market and the number of homes participating in your program?

What motivates the actors conducting outreach? [Why have they organized in the way they have?] What factors can help or hinder their serving in an outreach function over the long haul?

Describe the elements of your program that allow for outreach organizations to succeed

- How will have to be funded?
- Governance?

Are you establishing relationships with community members that you think could be used to more easily market other services in the future?

Further

Connections with outreach organizations? Contractors?

Contractor

Introduction

Ask if it's OK to record.

My research investigates:

- The impact of CBO mechanisms – can we indicate that community based methods can drive greater participation in programs?
- What organizations & institutional structures show promise for sustainably delivering programs?
- Who should deliver CBO and how?

Questions

Background

Status in Program

Tell me about your personal history, and the history and mission of the company.

- Amount of time in the business.
- Services that you provide (whole home performance, single HVAC, remodeling, other?)
- How many customers have you served via the program
- Extent of growth recently

Describe the value, and drawbacks, of program, vs. aiming to sell energy upgrades in market without this program framework.

Marketing

Describe your company's marketing strategy. How have your marketing strategies changed as you have gained experience?

- How do you connect with customers?
- How much do you spend on outreach and marketing?
    - What do you budget on a monthly basis? [Note to self: This can be used to compare strategies between firms]
    - What is a connection with a customer worth?

How does this compare to others? Do you think contractors differ substantially in the outreach they undertake?

How has the program influenced the marketing you do?

- Changed specific strategies? Do you have to pursue customers, or can let jobs come to you?
- Do you feel incentivized to invest in generating leads?

Do you participate in CBO? Speak about success of this form of outreach.

- Does it attract new types of customers?
- Is it worthwhile?

What messages do you feel appeal to homeowners to get audit; follow through with upgrade?

Describe your investment in your staff's sales and customer relationship skills?

- Who needs the skills (project manager? Devoted staff)
- Do you invest in sales skill training?

What long term (2-5 years) factors is your company's growth and marketing strategies contingent on?

Demographics and class of your longer-term customers?

Workforce Development

Describe how the program has helped your company develop its workforce and recruit new employees.