

A Hand to Hold: A Holistic Approach to Addressing Barriers in the Home Retrofit Market

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ABSTRACT

Policy makers and program implementers agree that we need more comprehensive residential retrofit programs. Getting more households to implement holistic measures will yield the deeper energy savings needed to address climate change while creating green jobs and reducing household energy costs. There is also increased recognition that programs need to address behavior as well as equipment.

The only question is how to make this happen. After decades of efforts that have yielded relatively low participation rates, inconsistent measure implementation rates, and other lost opportunities, we launched a pilot in two Milwaukee neighborhoods in 2008. Our aim was to test a more aggressive approach to barrier reduction. As part of this pilot we substantially increased incentives and financing (to reduce first-cost barriers), integrated behavioral savings opportunities with shell measures and equipment, and hired "case managers" to help households overcome the various hassle barriers associated with efficiency improvements. The results were substantial; nearly 100% of households that initiated activities completed comprehensive measures despite the fact that many households in the program had substantial income restraints. Initial estimates suggest that household savings will exceed 25% for both gas and electric usage.

This paper provides an overview of the program, documents program evaluation results, and discusses the lessons learned from the first year pilot program. Specific to the program evaluation, this paper focuses on the findings related to the differentiating components of the program: the energy advocate, the turnkey service offering, and the co-payment (or incentive) assistance.

Overview

The Milwaukee neighborhood efficiency project, Together We Save, uses a community-based approach to increase energy efficiency investments in Milwaukee homes. The program targeted homeowners within two neighborhoods in the City of Milwaukee. These neighborhoods were selected due to their demographics of homeownership and moderate to low-income households. The primary objectives for the pilot were to:

- Utilize the community by forming partnerships with neighborhood leaders, neighborhood groups and city/utility/government agencies
- Test various outreach/marketing and ongoing communication techniques to assure broad reach and pilot clarity, maximum participation and well-informed homeowners
- Deliver optimal building science practices/products (based on experience with weatherization and home performance programs) to assure energy efficiency standards are met
- Guide/redirect home energy efficiency attitudes/behaviors toward sustainability

Homeowners who participated in the pilot were eligible for sizable incentives on products and services (such as insulation, air sealing and mechanical equipment) that increased the efficiency and comfort of their homes. In addition to financial incentives, the homeowner received support throughout the process from a program representative (an energy advocate) who offered such services as walking the homeowner through the application and energy assessment process, selecting and scheduling of service contractors, setting home electronics and control equipment to optimal energy efficiency settings and educating the homeowner on sustainable energy practices/behaviors.

The project aimed to capitalize on a community-based design structure by testing different communication, delivery and implementation practices and learning from the group dynamic. Working together with the community leaders and neighborhood members, Together We Save aimed to help make participants' homes more comfortable, durable, safe and energy efficient.

A priority of this pilot was to get deep energy savings among a limited number of participants (established at 100 for contract year 2009), rather than a shallow level of savings among a large number of participants. In designing the Together We Save pilot the program presumed that various barriers have prevented these households from participating in past programs (see below for details), making it reasonable to assume that measures left undone are not likely to be pursued through the standard efficiency programs. This deep strategy had to be balanced, of course, by the need for the measures to be affordable. One of the issues the program hoped to sort out through this pilot was where that 'sweet spot' is where we get substantial savings at a cost, both financial and in terms of hassle factor that is affordable and tolerable to customers.

Target Neighborhoods

Two Milwaukee neighborhoods, both of which have at least 50% home ownership rates, were targeted for the pilot.

Figure 1 Neighborhood Maps



North side: Capitol Dr. (south) to Villard Ave. (north); 84th St. (west) to 60th St. (east); South side: Lincoln Ave. (south) to Pierce St. (north); 43rd & 38th Sts. (west) to Layton Blvd (east)

Each neighborhood was comprised of older housing stock, with the south side homes being older, on average 50+ years, predominantly Cape Cods. The north side homes were on average 30-50 years, with a greater mix of styles including bungalow, Cape Cod and ranch. On average the residents of both neighborhoods were well below the state median income of \$70,700.

Setting the Stage

In designing the pilot, the program team first identified key barriers that seem to prohibit customers from participating in retrofit programs. This included:

- The costs and the financing those costs
- The hassle factor associated with home improvement work
- Limited awareness or understanding of the benefits of making efficiency upgrades
- Limited awareness of their homes' needed efficiency upgrades

Before delving in on the design with these assumptions, the team contracted with the Energy Center of Wisconsin (ECW) to conduct a small market characterization study of the customers in the targeted neighborhood. These surveys, conducted via telephone, probed for customer demographics as well as potential barriers to installing high efficiency equipment. The surveys confirmed that those items noted above were indeed barriers. Among the group surveyed, ECW¹ found:

- High recognition that their homes could be more efficient;
- High motivation to pursue energy improvements;
- High interest in an energy audit as a next step; and
- Low ability to follow through with deep energy savings.

Nearly all respondents thought their homes could be more energy efficient and they backed this up with comments about cold rooms, drafts, and high energy bills. Among those who participated in the survey energy costs were the strongest motivator to take action. Forty-eight percent said they would consider borrowing money to make the improvements if the savings offset the monthly loan cost. A few respondents noted that any energy savings from past efficiency projects just disappeared because utilities continue to raise their rates. Other considerations, such as comfort and environmental concerns, were less of a consideration.

It was also important for the program team to understand what was keeping customers, who indicated that they believed there is benefit in improving the efficiency of their home from taking action. Based on the initial surveys, the program found that for 53% of respondents cost was the primary barrier, followed by the notion that they "need assistance" to get this type of work done. Following third and fourth was the concern that they would not see the benefit and that they preferred to wait until they felt it was "needed".

In addition, the program team also needed to understand if taking away some of the hassle factor of home improvement would increase participation. When asked if they would rather choose their own contractor or use a program contractor, 56% said they would prefer the program offer the contractor services, in essence that it be turnkey. It is interesting to note that

the same percentage of actual participants in the program noted in the post evaluation that having the turnkey contractor was an important piece of the program.

In considering the outcomes of the survey, the program team developed a model that addressed the key customer concerns with the following tactics:

- Capital required to pay for efficiency improvements – Because first cost seemed to be a key barrier, the program team developed a model that offered high incentives, tiered based on income, to move customers past the first cost barrier.
- Lack of awareness and understanding of energy efficiency opportunities and benefits – In order to address this the program developed a targeted communications campaign that relied on local leaders and community members acting as champions and spokespersons for the program; including outreach via print, neighborhood newsletters and through community events.
- Hassles associated with identifying what needs to be done and getting those measures installed – In order to address eh program was designed as a turnkey model where every actor from Advocate, to Consultant to Contractor was selected for the customer.

Overcoming Barrier #1: Capital/First Cost Through Financing Options

Early in the planning phase for the pilot there was significant discussion of including on-bill financing in the model. There are several barriers that, in the end, kept that option out of the pilot. These included a now repealed State law that prohibited utilities from running on-bill financing program and lack of interest in financing from survey participants. Instead the program, as noted above, developed a model that overcame the financial barrier by dramatically increasing incentives and tiered incentives based on income. Customer co-pays ranged from 50% to 0%. The pay rate was determined based on the customer's Federal Poverty Level, an income classification based on income and household size established by the Department of Health and Human Services. Those customers required to pay 0% are also the lowest income and eligible for State Weatherization.

In addition the program offered several payment options. The first is a “pay as you go” model where customers could put their co-pay on lay away, paying a bit each month until they hit 75% of their co-pay at which point work on the project would begin. The second is a financing option through Energy Finance Solutions (an unsecured loan at a 9.9% interest rate). The table 1 shows how income tied to participant co-pay amounts:

Overcoming Barrier #2: Lack of Awareness through Marketing and Communications

Marketing and communications in the pilot were targeted to the eligible neighborhoods. Strategies included direct mail, door hangers, outreach through neighborhood association news letters, a presence at neighborhood events, neighborhood canvassing, yard signs at the homes that were going through the program and neighbor to neighbor outreach (asking homeowners who go through the program to share the results and experience with their neighbors). In addition the team counted on the “buzz” created by homeowners through their daily interactions (backyard, school or church conversations) based on information that was provided.

Table 1 Income and Participant Co-Pay

Income	% of Total Cost Paid by Program
At or below 200% Federal Poverty Level	100% or referred to state Weatherization Assistance Program
201%–250% Federal Poverty Level	90%
251%–300% Federal Poverty Level	75%
Over 300% Federal Poverty Level	50%

Overcoming Barrier #3: Hassle Factor through Turnkey Approach

The Together We Save pilot relied on a small group of allies who meet a high level of stringency to ensure the hassle factor was kept to a minimum. Contractors were chosen through a competitive Request for Proposal (RFP) process. For the homeowners, the entire process was facilitated via the program and they had no responsibility for hiring or managing either the Consultants or Contractors.

All customer interactions, from signing up with the program through the initial visit, the pre assessment, the payment process, the work done and the post assessment was entirely turnkey. This meant customers had to do very little work to get their home retrofit completed. In return, they gave up the right to select their own contractors, complete work over time or customize the job. They had to do what the program recommended; no special adjustments were made based on customer preferences.

Program Processes

The program consists of four main components that were designed to work in concert to achieve long-lasting energy savings in the targeted neighborhoods. These components included community-based Energy Advocates, technical assessments, incentives and payment-plan options for recommended energy efficient equipment, and pre-selected contractors that, as noted above, could perform recommendations turnkey.

The program was designed as a multi-stage offering. Each of these stages was designed to build upon each other with a community-based Energy Advocate as a common thread throughout the program experience. These stages are described next.

- **Application.** The potential participant completes a program application. Focus on Energy then verified the applicant’s eligibility to participate in the program. The building had to be within the targeted neighborhood and the program required that all buildings were owned by the applicant. Rental properties were eligible, but the landlord had to apply for the program.
- **Walk through audit.** Focus on Energy assigned an Energy Advocate who set up an appointment with the homeowner to complete the audit. During this appointment, they recorded prior efficiency improvements, noted the type and did an inventory of appliances and electronics. They also provided recommendations for energy savings

through behavioral opportunities. They then promoted the next phase of the program, the pre-assessment and installation and if needed they offered the homeowner translations services.

- **Pre-assessment.** A Consultant provided a technical walk-through of the home. Throughout this more in-depth energy assessment, the Consultant provided services including blower door testing, combustion safety testing, and technical analysis of the equipment in the home. The assessment resulted in written recommendations and estimated costs overall as well as covered by the pilot program.
- **Participant sign off.** After receiving the recommendations and cost information, the participant would determine if they would proceed with the installation of equipment. The participant was provided with financing options if they were not able to pay their portion of the co-payment.
- **Installation of efficiency improvements.** Next, the pre-selected contractors made all the energy efficiency improvements included in the work order. Energy efficiency improvements include attic and wall insulation, air sealing, and equipment. Building envelope improvements were the most common recommendations followed by new exhaust fans and replacing hot water heaters. Once the work was completed by contractor, the Consultant did a final inspection of the home to ensure the recommended improvements were made.

Program Results

In total, 159 customers have been involved with the program. Twenty-two of those customers (14 %) declined to continue with the program before receiving the walk-through audit and were not included in the participant survey. Of the 137 that received walk-through audits, 19 customers opted not to continue with the program (14 percent). Of those 19 customers that opted-out, 14 decided to not continue after receiving the audit and another 5 decided not to continue after receiving the technical assessment.

As of May 3, 2010 one hundred and six households received recommendations from the assessor on energy efficiency improvements to their home. As table 2 shows, the most commonly recommended measures are insulation and air sealing. The table illustrates, however, relative comprehensiveness of the measures recommended for each home. The program recommended water heaters for a third of homes and furnaces for a fifth of homes

Table 2 Recommended Measures

Recommended Equipment	Percent
Insulation (includes attic, sidewall, sill box, etc.)	77%
Air sealing	70%
Exhaust fan	53%
Pipe wrap	46%
Hot water heater	34%
Furnace	20%
Boiler	13%
Central air conditioner	9%

Source: Together We Save Program Database

In addition to these high impact measures, the program also distributes compact fluorescent light bulbs (CFLs), low flow showerheads, and faucet aerators to households at the time of the walk-through audit. These measures may or may not be directly installed depending on participant preference. Sixty-five percent of participating households received CFLs, 54 percent of households received low flow showerheads, and 46 percent of households received faucet aerators.

Evaluation Overview and Results

The evaluation included two sets of data collection activities. First, the program evaluator, PA Consulting (PA) conducted nine qualitative in-depth interviews with program staff involved with the program. PA also conducted quantitative telephone interviews with 74 program participants. We included a census of these customers in the telephone survey. The resulting response rate for this survey effort was 64 percent.

Overall, the pilot program was positively received by all parties interviewed. Staff providing services through the program commented favorably on its ability to work so closely with participants and provide holistic services from which they believe these households benefit. Participants were also satisfied with the program and its various components. The technical assessment and equipment installed received the highest satisfaction ratings followed by the contractors that provided the equipment and the Energy Advocate.

While the evaluation explores a wide range of process issues related to the pilot, this paper focuses on the findings related to the differentiating components of the program: the energy advocate, the turnkey service offering, and the co-payment (or incentive) assistance.

Energy Advocate Role

One unique feature of the Together We Save program is the Energy Advocates' close involvement with the households throughout the program. During the in-depth interviews, all parties interviewed unanimously mentioned the Energy Advocate role as not only a key differentiator, but also an important component to this program that they believe enhances its effectiveness.

Interviews with the customers confirmed this finding, ranking the Energy Advocate as the second most influential reason for program participation (the most influentially rated component was the incentive). Ninety percent of participants also said the energy advocate played an important role in their decision to install the recommended equipment.

The Energy Advocates were involved with the customers at several critical junctions throughout the program. They were the initial point of contact for program participants, lowering the customers' participation burden by explaining and helping with paperwork, extolling program benefits, and in some cases, providing translation services.

During the walk-through audit, Energy Advocates have an opportunity to affect that household's energy efficiency both directly and indirectly. They provide low-cost energy saving measures (CFLs, low-flow showerheads, and faucet aerators) in many of the customers' households by either leaving the equipment with the customer or installing it directly. As part of this process, they were able to speak directly with the customer about the benefits of the provided equipment, which increases the likelihood that the equipment will remain installed after the audit. Though this research covers a limited timeframe, interviews suggest that this process was working; almost all of the customers that received equipment from the Energy Advocate report that it is currently installed.

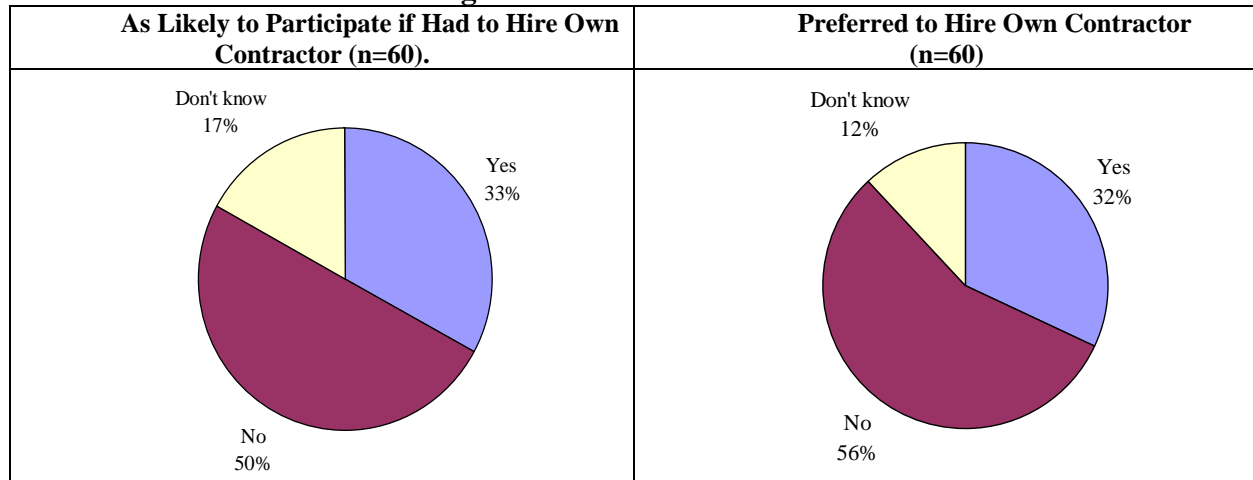
The walk-through audit is also an opportunity for indirect energy savings. During the audit, the Energy Advocate provides energy conservation and efficiency information in a manner that is not as technical as an assessment but can resonate with program participants. During training, Energy Advocates receive information regarding the use and benefits of compact fluorescent bulbs (CFLs), adjusting thermostat settings for heating and cooling seasons, and reducing plug-load with household electronics such as televisions, game systems, cell phones, and computers.

Nearly all the respondents report that the Energy Advocates discussed ways that they can save energy (93 percent). Providing this level of information consistently for participants is a distinguishing characteristic of the program compared with other residential programs offered throughout the state. Participants stated that this information was new to them, with almost three quarters reporting that they feel they know more about saving energy because of their interactions with the Energy Advocate (74 percent).

The Turnkey Approach

While the customers showed some interest in the turnkey approach, research indicates that its effect on the equipment up-take and participation is not as strong as the other components. Half of the participants said they would not have been as likely to participate in the program if they were required to hire their own contractor. However, only 11 percent of participants listed the turnkey approach as the most influential factor in their decision to participate in the program. Additionally, 56 percent of participants said they prefer the program hire the contractor, even if it was only from a pre-selected list. This interest is similar to the results presented in ECW's initial market research where 56 percent of survey respondents said they would have preferred that the program select and arrange the contractor work².

Figure 2 Contractor Preference



Source: Together We Save Participant Survey

This turnkey approach also created administrative burdens on program staff who were responsible for managing all components of the program, including contractor selection and work completion. As such, they oftentimes found themselves in the position of being a general contractor in a sense, ensuring that all pieces are operating as intended and, if they are not, identifying a resolution to the situation. Thinking into the future, the program needed to evaluate the benefit realized against the cost of providing this approach. The administrative burden, coupled with the participants' perspectives, needs to be taken into account.

Co-Payment Assistance

Another distinguishing component of the pilot program was the sliding co-payment values based on federal poverty level. The program was designed as such to minimize the capital investment barrier relative to all income classifications.

Table 3 documents the percentage of customers that fit into each income and co-payment category. Based on database analysis, nearly half (47 percent) are low-income and having their project fully funded. An additional 25 percent of participants are paying 10 percent of the project cost. Only a quarter of participants were within the highest co-payment classification, contributing 50 percent of the project costs.

Table 3 Percentage of Project Cost Paid by Income Category (N=51 Participants)

Federal Poverty Level (FPL)	Percentage of Total Cost Paid by Program	Number of Participating Households	Percentage of Total with Co-payment Data	Average Contribution Amount by the Program	Average Contribution Amount by the Customer
<= 200%	100%	24	47%	\$8,679	\$0
201% – 250%	90%	13	25%	\$4,721	\$525
251% – 300%	75%	1	2%	\$3,596	\$1,199
> 300%	50%	13	26%	\$2,310	\$2,310

Source: Together We Save Program Database through January 21, 2010.

One goal of the program was to serve moderate to low income households. The neighborhoods were selected based on their low income demographic. The distribution analysis

of participants' federal poverty levels and co-payment levels showed that the program is reaching the targeted group of households.

The database analysis showed that lower income customers' projects are higher in total project cost on average than those in the higher income category. In fact, total project costs for households below 200 percent of Federal Poverty Level were nearly double than that for the highest income category (\$8,679 total project value compared with \$4,620, respectively).

The evaluation found that the incentive was clearly a programmatic component that drives participation. Program participants rated the incentive as the most influential piece to encourage their initial participation through the program as well as to get them to install the recommended measures. And no program participants said, that, without the program (including the incentives provided), they would have installed the same equipment at the time they did.

Participant survey results did provide some indication that the participants may have installed the equipment if their contributions were higher. Of the customers that had no contribution amount, 53 percent would have continued to participate in the program if they were expected to pay the minimal amount (10 percent of the project cost) although this rate sharply declines when they reach 25 percent of the total cost.

In addition to the incentives, it is important to recognize the importance of the information services provided to customers. A third of households also mentioned the assessment as influential. These statistics indicate the importance of providing services to overcome the information barriers as well as the financial barriers to move projects from recommendation to completion.

Conclusions and Future Program Considerations

The Together We Save Pilot program has been well received by program staff and participants, who spoke favorably of the program, their interaction with WECC and other staff, and the community-based program design. All program staff interviewed identified the Energy Advocate as a differentiating program element that is particularly beneficial for the program.

The distribution of households within specified federal poverty levels confirm that the program is serving the target, lower income markets. However, while the program is serving an intended lower income population, a significantly higher percentage of households than initially anticipated have a low enough income to participate in other social service programs, including the Weatherization Assistance Program. Serving this income classification, while from a social perspective is beneficial to the community and program, increases the cost to the program. The homes are more costly to provide services to and the participants do not contribute toward the project value. In considering the direction of the program in the future, these additional costs will need to be considered.

Additionally, devoting resources to the lower income households means the program is not serving the number of moderate-income households it could be. These moderate-income households may be financially constrained as well but without the social service infrastructure to support energy efficiency efforts. It may be that the ability to promote deeper efficiency services to these customers is overshadowed by program's expansion into the low income pool.

The program design and evaluation were consistent in the hypothesis and findings that the Energy Advocate is a distinguishing component of the program. The design and evaluation were also in line with each other regarding the importance of the need to decrease the financial burden with the capital investments particularly for the lowest of income households. Based on

these and other process findings, the following were areas that the program is considering in future program designs.

- **Include the role of an Energy Advocate when implementing similar programs.** Interviews with both program staff and customers strongly suggest that the Energy Advocate is a key role in the program, providing a high level of customer service throughout the entire process. Evidence suggests that they were influential in program participation and provide some level of direct and indirect energy savings.
- **Rethink the necessity of the turnkey contractor program offering in the context of the cost of the program.** While there is some customer interest in using turnkey, pre-selected contractors, this component seems to be having little influence on the customers' decision to install the recommended equipment and is over-shadowed by the financial incentives and technical assessment. Making this change would help reduce the amount of effort required from program staff to act as "general contractors," solving problems and coordinating efforts between installation contractors and customers, all of which are costly in terms of both time and dollars.
- **Revisit the incentive structure, as there is some evidence that incentives may be slightly too high.** In future program designs, program staff will revisit the Together We Save tiered incentive structure and consider reducing the top incentive tier for each income level to maximize cost-effectiveness of the program. A majority of customers across all income levels said they would have participated in the program if they had been asked to pay a larger percent of the total project cost.
- **Weigh the value of including the lowest income category and/or targeted neighborhoods in future program design.** As a significant portion of current participants fall below the 200 percent Federal Poverty Level, this is a population that can be served by the state Weatherization Assistance Program. These households, on average, incur the highest overall project costs (nearly twice as much as the lowest income level) and the program subsidizes the full value of these costs. The program will need to consider whether it is cost-effective to continue to serve this population, or if there are other target neighborhoods that may have a lower incidence of this lowest income category and a higher incidence of moderate-income households.

References

- ^{1,2} Ingo Bensch and Karen Koski, Energy Center of Wisconsin. **Me2 Market Research Results – Owner-Occupants**. December 2, 2008.