

EnergyWorks

A BETTER BUILDINGS NEIGHBORHOOD PROGRAM

IN THE FIVE-COUNTY GREATER PHILADELPHIA REGION

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Executive Summary

EnergyWorks, funded through a \$25 million grant from the U.S. Department of Energy's Better Buildings Neighborhood Program (BBNP), was developed as a comprehensive energy solutions program for home and commercial building owners in the Greater Philadelphia five-county region. Driven by the theory that people are willing to invest in energy efficiency improvements but either don't know the first/next steps to take or are unaware of the benefits, EnergyWorks sought to ramp up energy efficiency activity and gain new insights into consumer behavior and demand.

The goals of the program were to:

- Educate the marketplace on the benefits of energy efficiency;
- Grow demand for energy efficiency in the region;
- Generate at least 2,500 residential retrofits and approximately 12 commercial projects, committing all initial revolving loan fund dollars to projects by the end of the grant period;
- Drive energy savings and GHG reductions;
- Help to stabilize and grow businesses and jobs in the energy efficiency sector;
- Expand access to capital;
- Highly leverage BBNP dollars with other energy efficiency sector investments.

The table below summarizes the top line results of the program from the program start in November 2010 through December 2013.

Table 1: EnergyWorks Program Results

Building Type	Completed Energy Assessments	Retrofits	No. of Loans	Square Footage Retrofitted	Total Amount Loaned
Residential	2,688	2,229	1,906 ¹	3,483,519+ ²	\$17,596,297
Commercial	8	6	6	1,143,653 ³	\$12,957,010

The City of Philadelphia served as the overall program manager. The EnergyWorks Commercial Building Loan Fund is jointly managed by The Reinvestment Fund (TRF) and the Philadelphia Industrial Development Corporation (PIDC). EnergyWorks partnered with the Energy Coordinating Agency (ECA) and the Keystone HELP Program for residential projects.

¹ The remaining 323 jobs were self-financed with cash

² This figure is through September 2013; all other numbers through December 2013.

³ Ambler Boiler House (48,060), Coventry House (140,000), Drexel University (431,310), Esperanza College (17,400) Parkway (151m000), 1400 Spring Garden (355,883)

EnergyWorks was guided by the belief that there is untapped demand for energy efficiency; but that a major barrier to action is that no programs exist in the region to bring the various pieces together into a streamlined retrofit process for both home and commercial building owners. We created a comprehensive program to do just this by buying down the cost of the initial assessment, providing a network of certified contractors, and making low interest financing available to pay for improvements.

Given the recession context in which these ARRA supported federal dollars were granted, EnergyWorks focused the majority of its funding on developing financial tools to grow the building retrofit market in the Greater Philadelphia region. To do this, EnergyWorks and its partners sought to strengthen and build on two existing programs:

1. The City of Philadelphia's EECBG funded Greenworks Loan Fund
2. The Commonwealth of Pennsylvania's Keystone Home Energy Loan Program (HELP)

Each partnership program was scaled and modified to improve on already tested and proven track records. By making affordable financing available, during capital constrained years, both the commercial and residential arms of EnergyWorks were designed to highly leverage BBNP dollars with private dollars, greatly expanding the number of projects we were able to advance.

Rather than putting funds towards large grants and rebates to customers, BBNP funding was used to buy down interest rates on loans (in the residential case to as low as 0.99% and to 3.5% for commercial projects) as a means of making the BBNP dollars go further. Approximately 60% of total grant funds were allocated for commercial and residential revolving loan funds, loan loss reserves, and interest rate buy-down.

Over the course of the initial three-year performance period, EnergyWorks has been largely successful in meeting its top line program goals. The residential program completed 2,229 projects as of December 15, with app. \$2M remaining to lend from the revolving loan fund. We are confident that we will exceed our 2,500 goal by November 2014. To-date we have closed loans on six commercial projects - four of which are complete - with two more in active underwriting and a pipeline to commit remaining dollars in 2014. A number of our commercial loans were for larger amounts (over \$1million) than we anticipated there being demand for at the onset of the program. Though we will likely complete closer to ten projects in total, down from our initial goal of 12, we will commit all of the loan fund dollars to projects. With the City of Philadelphia's commercial benchmarking and disclosure law now in place, we plan to use the opportunity to connect building performance measurement to taking action through an active outreach effort to see if education leads to increased demand for retrofits.

In addition to hitting our marks, we believe that we catalyzed growth in the high performance retrofit sector during a period of economic downturn, stabilizing the contractor base, and that this positions our region well for growth.

Our program partners learned a lot through this experience and the valuable lessons and takeaways will be applied to the next generation of approaches, improving our understanding of how we effectively meet and grow consumer demand.

Final Technical Report

This report covers the grant performance period of July 1, 2010-September 30, 2013 and will provide a discussion of the program design, outcomes and best practices as they relate to the following six areas:

1. Institutional Design and Business Model
2. Program Design and Customer Experience
3. Driving Demand
4. Workforce Development
5. Financing and Incentives
6. Data and Evaluation

INSTITUTIONAL DESIGN AND BUSINESS MODEL

COMMERCIAL

The institutional design and business model for the Commercial EnergyWorks Loan Fund (EnergyWorks) reflects several best practices that can be replicated for future programs including: (1) forming strategic partnerships, (2) creating a financial model that fits the local market, and (3) removing the political context from lending decisions.

Partner Roles and Responsibilities

EnergyWorks is a unique partnership between the public sector, represented by the City of Philadelphia (City) and the Metropolitan Caucus, and the private sector, represented by two community development financial institutions (CDFIs), The Reinvestment Fund (TRF) and Philadelphia Industrial Development Corporation (PIDC) as well as an energy engineering firm, Practical Energy Solutions (Practical).

The City acted in a “chief executive officer” role and was responsible for the overall management of the program, coordinated interactions among all the partners, provided overarching marketing support, linked the commercial program to the residential program, connected all the partners to the DOE, and supervised all reporting activities. The City was well suited for this role based upon its experience managing other large-scale, federally funded programs such as Community Development Block (CDBG) and formula Energy Efficiency and Conservation Block Grant (EECBG) grants.

TRF, a CDFI with 20 years of energy efficiency lending experience, and PIDC, a CDFI and the City's economic development corporation with 50 years of experience managing public private partnerships and lending, were selected to create, implement, and manage EnergyWorks. The City strategically chose to work with PIDC and TRF for several reasons.

First, the City based EnergyWorks on existing structures and relationships in order to most effectively create and implement a new lending program. For example, both PIDC and TRF are experienced lenders with large portfolios and had the ability to take on additional loan volume with very little incremental cost. In addition, these CDFIs have deep networks to populate a pipeline of projects and strong relationships with the region's developers, institutions, and businesses. This experience and these relationships ensured an efficient program roll-out and continual administration.

Second, EnergyWorks was structured to build upon each of the partner's existing strengths. The City leveraged TRF's experience in energy efficiency lending with PIDC's expertise administering federal funds and adhering to complicated government regulations such as the Davis-Bacon Act. In addition, both lenders have experience working with complex financial products and had existing lending resources which could be coupled with funds from the Better Buildings Neighborhood Program.

Needs of the Local Market

The City, PIDC, and TRF strategically crafted a business model and financial product that directly responded to the needs of the local market and that leveraged each partner's core competencies.

In order to create a sustainable energy efficiency product, the partners decided to provide financing through loans rather than grants. This ensured that funding will revolve back to the partners for future use.

In addition, PIDC and TRF recognized that the economic recession of 2008 created an economic environment which stalled many large-scale economic development projects. The challenges these projects confronted included high construction costs compared to projected rental rates, more stringent private capital market underwriting standards, and a steady decline in the value of real estate collateral. In this economic climate, even credit-worthy borrowers could not access adequate private capital and most projects had a financing gap. PIDC and TRF filled that gap through EnergyWorks by providing subordinated debt with flexible features typically not offered in the private sector such as low interest rates, long amortization periods, and higher LTV ratios. EnergyWorks enabled PIDC and TRF to fill the financing gaps in many of the region's large scale, high impact economic development projects while also compelling those projects to implement energy efficient measures that reduced each building's energy consumption by at least 25%. It is important to note, however, that we began to see a shift occur in 2013. More of the leads that began to come through the pipeline were "pure" energy efficiency focused projects. Whether this indicates the penetration of EnergyWorks into the marketplace over the

three years or an improving economy – or a combination of both – we cannot be sure. But it is a positive trend that indicates a shift in demand.

Finally, PIDC and TRF were willing and able to blend their existing financial products with EnergyWorks in order to create a one-stop shop for large-scale, high impact projects.

Removing Political Context

EnergyWorks was strategically created as a financing tool that was removed from political influence. This was accomplished by placing the responsibility for all credit decisions with PIDC and TRF. As independent nonprofits, these CDFIs are removed from the political process and have the ability to make lending decisions based on the credit of the borrower. Certain design elements of EnergyWorks reflect this commitment. For example, EnergyWorks was created as a regional product that was available to projects throughout the five county region based upon a competitive process. Instead of allocating a certain dollar amount of funds to each county, EnergyWorks based its funding decisions on the credit-worthiness of each project as well as each project's ability to quickly proceed to construction. This effectively removed the political context from lending decisions. Each of the counties knew and understood the competitive nature of EnergyWorks. In addition, county officials were informed of the EnergyWorks pipeline on a regular basis. Project selection was based on the quality of each transaction rather than through political relationships or other lenses.

RESIDENTIAL

The residential EnergyWorks program was designed to serve as a “one stop shop” that would take homeowners through every step of the home energy efficiency improvement process, bringing affordable financing and available rebates to the table. Prior, there was not a streamlined, comprehensive program available in the region (though it's important to note that two area utilities recently launched comprehensive home programs). By increasing the volume of retrofits, we hoped to also grow businesses, create jobs and heavily leverage the BBNP dollars with private capital to make the public investment go further.

Partner Roles and Responsibilities

In an attempt to hit the ground running, EnergyWorks brought together existing organizations and programs already working in the regional energy efficiency marketplace.

The Commonwealth of Pennsylvania's Keystone HELP program and its operator, AFC First Financial (AFC), runs the energy efficiency lending program.

The Energy Coordinating Agency (ECA), a non-profit energy services organization, supported assessment, quality assurance and community outreach efforts.

The City of Philadelphia/Mayor's Office of Sustainability (MOS), as the lead on the program, provided overall program management and coordination. MOS also managed the marketing activities of the Neiman Group and later LevLane. Under her direction, the marketing firms

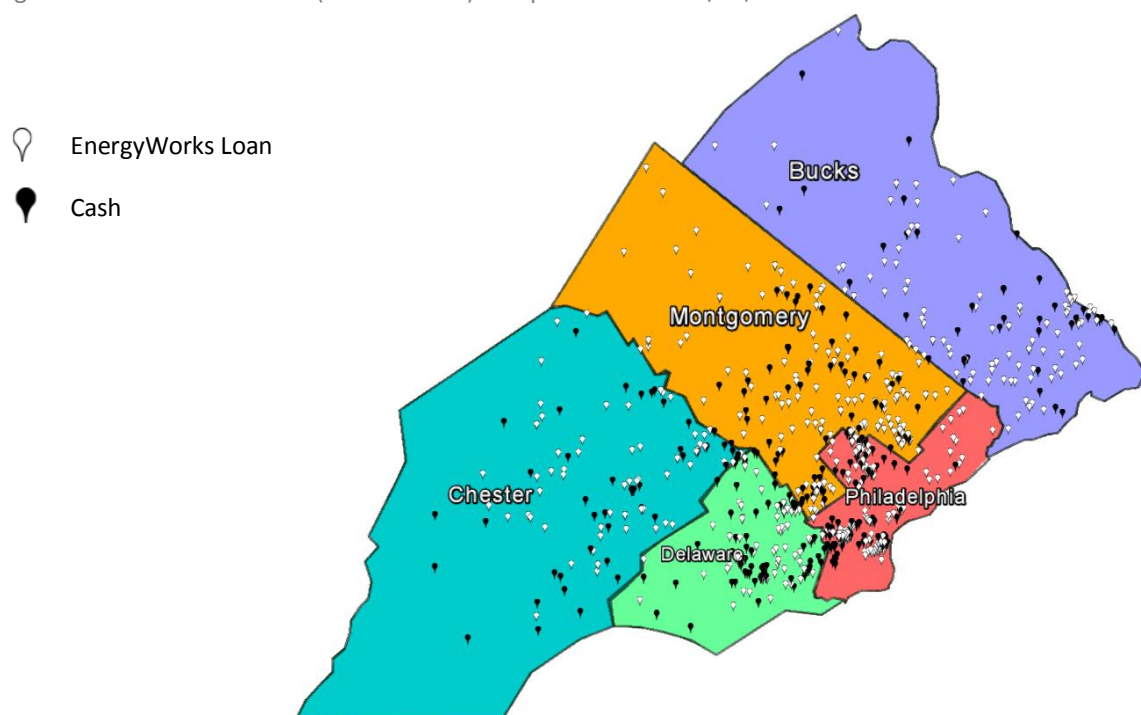
developed the program's marketing strategies. Neiman Group and later LevLane were responsible for the execution of the marketing plans.

EnergyWorks provides assessments and energy upgrades at two levels: Gold and Silver.

"Gold" Whole Home Jobs

The Gold level, a whole-house approach, begins with a assessment by a participating technician, at a cost of \$150 to the homeowner (originally set at a prohibitive \$400 with a complicated rebate structure, we brought the cost down to \$150 early on). If the homeowner decides to follow through with a project of \$1,000 or more, EnergyWorks will rebate \$50 of the assessment's cost, bringing it down to \$100. Eligible measures qualify for low-interest loans of up to \$15,000, in addition to tax credits and rebates. The interest rate is tied to the degree of energy efficiency attained by the project as a means to encourage air sealing and insulation and/or other deep energy savings measures. Gold projects, consisting of multiple measures guided by an assessment, are eligible for the lowest possible rate of 0.99% fixed for 10 years.

Figure 1: Distribution of Gold (Whole Home) Completions as of 12/15/2013



"Silver" Single Measure Jobs

As an alternative to the Gold level, the Silver level allows homeowners to install a single measure, which can qualify them for a loan with a rate as low as 4.99%, in addition to rebates and tax credits. Over the course of the program, we were able to consistently grow the relative proportion of Gold versus Silver projects, which we think was a result of consistent education on the benefits of a whole home approach, which was introduced in the marketing materials and reiterated by contractors, and the attractive financing. As of December 2013, approximately 40% of total completions were whole home Gold jobs.

Table 2: Gold vs. Silver and Cash vs. Loan Comparisons

	Gold	Silver	Cash	Loan
2011	28.7%	71.3%	18.3%	81.7%
2012	44.1%	55.9%	20.9%	79.1%
2013	38.3%	61.7%	11.4%	88.6%

In developing our residential financing program, EnergyWorks followed these guiding tenets:

- **A focus on “middle market” homeowners.** For these homeowners access to affordable financing is playing an increasingly bigger part in their decision to make energy efficiency home improvement improvements such as HVAC upgrades, air sealing and insulation, energy efficient windows and doors, solar hot water etc.
- **An approved contractor network authorized to perform the work.** Recruitment, monitoring and training of a qualified contractor network is essential. Qualifying contractors to meet the program’s standards for financial and ethical stability will greatly mitigate any issues regarding consumer satisfaction for work performed. Contractors are also the marketing drivers on point of purchase finance programs. They become the most cost effective method of marketing the program to consumers as well as for delivery of the end product.
- **Streamlined loan origination procedures.** Financing programs for smaller home improvements (from \$1,000 to \$15,000) cannot be complicated. If a program involves too much “red tape” and is not user friendly, consumers and contractors will often take a more expensive path of least resistance, such as high rate credit cards, to finance these kinds of improvements. For maximum program uptake, the loan must be a simple, point of purchase with ease of use for consumers and contractors.
- **Effective underwriting and loan servicing.** The principal key to program acceptance and is simple, fair and consistent loan underwriting as well as effective “consumer friendly” loan servicing, which, when combined mitigates losses and promotes program sustainability.
- **Installed improvements qualification and energy-saving tracking and management.** A program’s effectiveness can only be measured by judiciously monitoring qualifying improvements and the resultant energy savings.
- **An approved contractor network authorized to perform the work.** Recruitment, monitoring and training of a qualified contractor network is essential. Qualifying contractors to meet the program’s standards for financial and ethical stability will greatly mitigate any issues regarding consumer satisfaction for work performed. Contractors are also the marketing drivers on point of purchase finance programs. They become the most cost effective method of marketing the program to consumers as well as for delivery of the end product.

One of the strongest components of the residential program was having the Keystone HELP program at its center. EnergyWorks built upon Keystone HELP in two core areas: 1) by buying down the interest rate and cost of lending to consumers and 2) by promoting the low interest loans with a robust marketing effort. The ability to leverage U.S. DOE's BBNP funds against AFC and PA Treasury's pool of capital meant that EnergyWorks funds went farther and had greater impact than a rebate/grant-based program, which deplete funding rather rapidly. Over 130 auditors and contractors actively participated in the program, which provided over 2,200 job opportunities at the end of 2013 and so far total more than \$17 million in project costs.

PROGRAM DESIGN AND CUSTOMER EXPERIENCE

COMMERCIAL

Eligible borrowers include commercial, nonprofit, government, multi-family residential and industrial entities in the Greater Philadelphia region. EnergyWorks took seriously the need to structure our program to provide a positive customer experience. We have come to see that there are many barriers to energy efficiency and we needed to provide a cafeteria of services to help our clients overcome the barriers that were stopping them. We needed to help our clients answer four key questions if they were to be successful in implementing an energy project:

1. Why should I care about energy?
2. What are the specific opportunities in my building?
3. Who are the knowledgeable contractors I can trust with my project?
4. How do I pay for the work?

To help clients answer these questions, EnergyWorks provided a variety of services in addition to financing, including general energy education, technical assistance (energy audits and energy modeling), contractor referral lists, generic documents (such as equipment specs, RFBs, etc.), contracting assistance (reviewing bids and suggesting questions to the contractors) as well as the EnergyWorks financing.

To reduce the paperwork to the necessary minimum, EnergyWorks employed a two-step application process. The first step was a two-page Initial Financing Request Form for initial intake which gathered key general information about the proposed project. Staff then met with the applicant to determine whether EnergyWorks was a good fit for their project and whether their projects was a good fit for EnergyWorks. Only then did we ask applicants to fill out the complete loan application form with its numerous exhibits. Throughout this initial process, Roger Clark at TRF was available to answer questions and served as the clients' energy advisor. Having a point-of-contact system proved useful to clients as well as to the management team.

EnergyWorks also sought to be responsive to what building owners needed, so we designed the program to finance:

1. Single measures (e.g. the chiller that was at the end of its useful life or the owner who just wanted to do a lighting upgrade)
2. Whole-building retrofits of occupied buildings (the classic project involving a number of different energy measures to reduce energy consumption)
3. Gut rehab (where an existing building is stripped and new systems are installed to allow new uses of the building)

And with some of the energy dollars other than Better Buildings, EnergyWorks finances new construction.

All of these projects were required to show a 25% energy savings, though the energy baseline was different for each type of project:

1. Single measure projects needed to show that the new equipment or system would use 25% less energy than the old equipment or system.
2. Whole-building retrofits needed to show that the historical energy use of the whole building would be reduced by 25%
3. Gut rehab projects used an energy baseline of the average energy use for the proposed building use for the appropriate climate zone as shown in DOE's Commercial Building Energy Consumption Survey.

And new construction needed to show that the proposed building would use 25% less energy than if it were built to the current building energy code.

To reduce the barrier to entry, EnergyWorks offered to subsidize the cost of the energy audit or the energy modeling that the program required. In reviewing request for this support, the EnergyWorks team asked two questions:

1. Is the applicant committed to doing a qualifying energy project (as opposed to simply trolling for cheap financing); and,
2. Is the applicant someone we would likely lend money to?

If we answered yes to both questions, then we offered to cover 75% of the cost of the technical services of Practical Energy Solutions. Practical would visit the site and meet with the applicant and then present a scope of work and a budget. When the applicant paid their 25% share, Practical began the work. We felt the 25% share was appropriate so the applicant would have some skin in the game.

EnergyWorks also addressed early in the relationship with each applicant the regulatory requirements that came with the EnergyWorks financing so they were not surprised with the prevailing wage, historic preservation or other requirements. These requirements also caused us to target sophisticated borrowers, larger projects and projects with other public dollars in them so the commitment to compliance with these regulatory requirements had already been

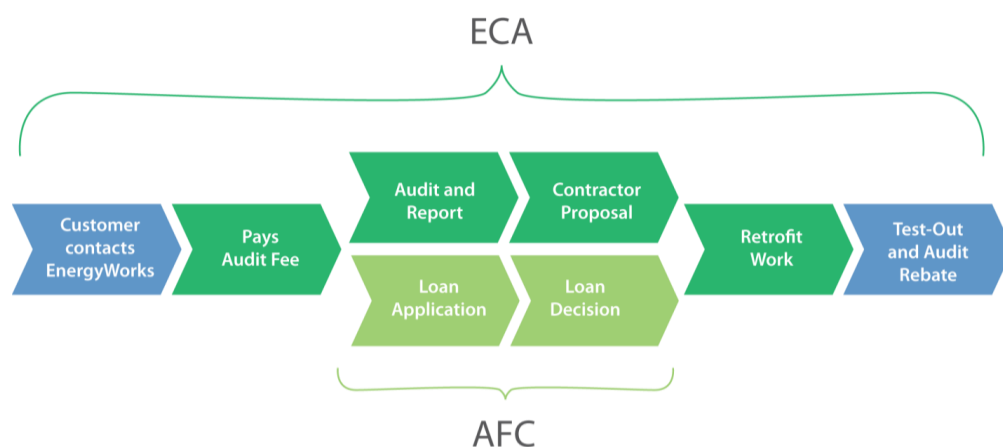
made. EnergyWorks lost applicants, especially in the smaller projects, when they learned of the regulatory requirements that came with our dollars.

Another useful device EnergyWorks used was the List of Energy Measures spreadsheet. This spreadsheet listed the typical energy measures by type (building envelope, HVAC, lighting, plumbing, plug load, etc.) and has cells to be completed that describe each measure, detail the equipment spec and model information and show the cost. This form is used to let applicants know the range of energy measures that can be financed. It is also used to show the cost of each measure so we can determine the total loan amount. Practical Energy Solutions uses the form when they review the applicant's energy analysis to make certain that the applicant is planning to install the same equipment and measures as were assumed in the energy audit or energy modeling. And finally, our project inspectors use the form to ensure that the measures assumed in the energy analysis are the same as the measures that were actually installed and that there was no last-minute "value engineering" that stripped the more efficient equipment from the project.

RESIDENTIAL

The process for the residential program was as follows:

Figure 2: Process Map of Customer Process



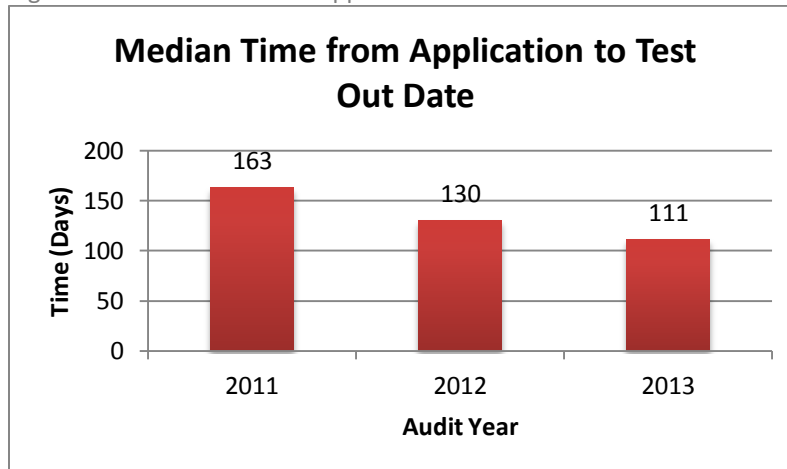
Customers could have fairly different experiences with the program depending on whether they chose to pay for the work with cash or a loan, whether they pursued a single measure or whole-home retrofit, and whether their auditor and contractor were one and the same. We believe that some degree of customer choice is essential and so flexibility needs to be built into the program design to allow for homeowners to customize their project to an appropriate degree. However, the downside is that you then need to be able to manage for a wider range of project trajectories and outcomes.

Despite the attempt at streamlining, the program was acknowledged to still have a number of moving parts and points of contact. A customer had to interact with ECA, AFC (if financing), an

auditor and, in some cases, a separate contractor. There were many opportunities for customer confusion, time delays, or for things to fall through the cracks at some point along the way. Looking back, we needed to focus more attention early on to tightening up transitions between these various steps, along with the accompanying customer service, to enhance the customer experience, increase conversion rates from application to audit and from audit to completion. We were able to effectively drive interest in the program through the marketing program. However, our best opportunity for growing the number of completions was with the steps after bringing customers through the door.

It was a lengthy process, with the median time from customer application to project completion being 122 days, or roughly four months. Over time, the median time improved from 163 days to 111 days, a 32% improvement.

Figure 3: Median Time from Application to Test Out Date



Process and timing improvements were experienced at each leg of the journey, for example:

- The median time from application to auditor assignment improved from 4 days to 1 between 2011 and 2013.
- The median time between auditor assignment and audit completion went from 28 days in 2011 to 31 days in 2012 and 26 in 2013.
- By 2013, 88% of end-of-project test outs were completed within 6 months of audit completion, up from 63% in 2011 and 73% in 2012.

Table 3: Conversion Rates

Application to audit completion	67%
Audit completion to retrofit completion	31%
Overall conversion rate (application to completed Gold project)	21%

A core challenge throughout was that we did not have the appropriate systems in place from day one to track a series of data sets and milestones, putting perhaps too much emphasis on

tracking total completions as the core measurement of relative success rather than monitoring a series of both leading and lagging indicators. When greater attention was placed on process improvements app. 2/3 of the way through the program, we saw results from assessing contractor performance rates, working to tighten turnaround times, and enhancing the customer helpline - staffed by ECA - to serve more as full service energy concierge, openly available for questions and more proactively following up with customers throughout. Establishing a clear and high-quality customer helpline was an essential component of the program. Training the staff who interacted with customers to understand how to be effective communicators, problem solvers and subtle sales people was important and should have been emphasized from the start. Every customer interaction needed to simultaneously serve to educate and encourage the person towards the next step in the process.

We made a few important changes along the way to reduce the amount of work we were asking customers to do and to enhance the customer experience, simplify the process, and remove barriers to participation. These changes included:

- Online Assessment Transaction: At the beginning of the program, paper applications were sent to interested customers. We quickly moved the process online so that customers were able to complete their assessment form on the website. The online process allowed for an email confirmation and next step messaging.
- Online Payment via PayPal: Initially, the payment for the assessment was made to ECA with the only option of paying by check. Cumbersome in many ways, this added a major barrier at the front end of the program. Later on in the program, we introduced a PayPal option via the website to more easily process assessment payments, allowing the customer to fill out the assessment form and pay at the same time. This led to a higher turnover rate for form completion and processed payments.
- Customer Friendly Website: Our original website was too content heavy, making it difficult for customers to search and take action. Site communications were focused on educating consumers on energy efficiency improvements rather than focusing on the end benefits consumers could expect to gain from participating. In the last year of the program, the website was reconfigured to create a cleaner, easy-to-follow look and navigation. Clear, easy to understand calls to action on the homepage and throughout the site, along with ensuring that all homepage banner messages tied to our communications plan, yielded synchronized and clear results for the consumer and on the backend.

Overall, customer experience and satisfaction levels were consistently high. We believe this was no doubt in part due to the 100% post inspection and quality assurance process.

DRIVING DEMAND

COMMERCIAL

EnergyWorks drove demand for our energy efficiency financing through a multifaceted outreach strategy that includes our established networks as well as a targeted marketing effort to certain groups and through using common marketing materials and a coordinated outreach strategy. Through this strategy, EnergyWorks identified high impact energy efficiency projects.

PIDC and TRF are CDFIs with rich histories of delivering quality products and services in an effective manner throughout the Philadelphia region. Through our professionalism and reliability we have created a diverse referral network which is populated by corporate and community leaders, government representatives, the professional banking and brokerage communities, and LIC stakeholders. These established networks served as the basis for the EnergyWorks pipeline. In addition, we targeted specific marketing efforts to building professional such as developers, architects, engineers, and stakeholder groups such as Building Owners and Managers Association and the Delaware Valley Green Building Council. These groups were specifically targeted because they were assumed to have first-hand and updated knowledge about sustainable building projects.

One benefit of the PIDC – TRF partnership is that we created one energy efficiency product for our market rather than having two competing products distributed by two different CDFIs. By having one energy efficiency product we were able to convey a unified, cohesive, and coordinated message to potential borrowers. This helped to drive demand for our product. The PIDC-TRF partnership worked well because EnergyWorks used common marketing materials and a coordinated outreach strategy to drive demand for our financing. Examples of our marketing materials and outreach strategy include an EnergyWorks specific website and collateral materials that provide a brief overview of the EnergyWorks program. We also used mailings and email blasts to advertise EnergyWorks and often served on panels or at conferences related to sustainable buildings and financing. PIDC and TRF worked closely together to develop these materials and strategies as well as to carry out marketing efforts.

Finally, we structured EnergyWorks to be a flexible financing tool available to a diverse array of potential borrowers. This also helped to drive demand for our product. For example, multiple project types were eligible for financing as were multiple types of borrowers. We also reduced barriers to entry to this program by subsidizing energy analysis costs.

RESIDENTIAL

When the EnergyWorks program was introduced in September 2010, there was a lot of noise in the regional marketplace around energy efficiency. At that time, it was a hot topic: Rate caps were about to expire; energy supply companies were wooing customers with extensive advertising; utilities were promoting state mandated conservation programs; and there were many public programs and private companies promoting sustainability, green building

stemming forth from ARRA investment dollars. Altogether this resulted in a crowded and confusing marketplace for consumers to navigate and make sense of. The EnergyWorks brand and brand image were designed to cut through the clutter and capture the attention of a wide and varied demographic of homeowners.

EnergyWorks was structured to provide maximum appeal to homeowners, making it as easy and compelling as possible to take advantage of the program benefits. Specifically, the program is structured around these three articulation buckets:

Simple

An experienced professional will guide you every step of the way and make energy efficiency easy.

- Expert advisors on staff
- One-stop shop from planning to execution

Affordable

Take advantage of all available incentives, such as rebates, tax credits and low interest loans.

- Keystone HELP loans are sponsored by PA Treasury and the U.S. Department of Energy

Reliable

Work with qualified building analysts and approved contractors, and feel secure with a proven independent quality assurance program.

- A network of approved contractors working across all five counties
- Free, independent third-party quality insurance inspection
- Supported by a grant from the U.S. Department of Energy's Better Buildings Program

Target Audience

Initially, we perceived our target audience to be homeowners between the ages of 25-65, with a proclivity toward engaging in sustainability efforts and an interest in saving energy and saving money. We realized a few things though that caused us to broaden from our initial assumption. For example, due to the many lingering effects of the economic downturn, homeownership went down quite dramatically among the younger members of our target market. Overall, early assumptions regarding a possible EnergyWorks customer proved to be inaccurate. There seems to be no one profile or motivation trigger, the customer profile is diverse and requires a communications focus on end user benefits and driving action. Potentially, there is a large and varied audience for residential energy efficiency; Homeowners wishing to undertake energy efficiency home improvements who are in a position to sustain the associated costs can be found in unexpected places. Energy efficiency is not necessarily a values-driven investment for all who participate, especially since the program does not prescribe a path or energy conservation measures. In fact, we found that not all residential customers are motivated by financial savings; some are more concerned about comfort, especially those living in older homes. Other homeowners are more concerned about optimizing the indoor air quality of their home. Talking about those benefits that matter to the target audience seems to be essential to

promoting energy efficiency and because one size does not fit all, a dynamic marketing and communications initiative must be utilized.

Marketing and Communications

Going into the program, we anticipated that our market would be generally familiar with the benefits of residential energy efficiency. We learned that this was not the case and that basic education tied to the EnergyWorks product was necessary. We determined that a significant marketing and communications effort would be needed to 1) raise the awareness of the energy efficiencies services being offered and 2) drive consumer interest and action.

In the early stages of implementation, we put out an RFP for a firm to oversee program marketing and communications. We also established a Communications and Marketing Director position to manage this important piece of the program.

We developed a dynamic brand that could be applied to both the residential and commercial arms and created strict guidelines via a “Spirit of the Brand” document. We needed to distinguish the program from utility offerings, what private contractors were marketing and clearly identify it as a publicly supported program that could thus be trusted. But we did not want the look and feel we conveyed to be too “government-y,” believing it needed to be clear and sophisticated.

Figure 4: EnergyWorks Logo and Tagline



Once the brand was established, the marketing roll out plan was designed to introduce the program to the marketplace. Key elements included message development, website launch, ad creation and production, and media plan placement. Over the course of the program multiple mediums were used, including: SEPTA regional rail advertising (platform and in car ads), print media, earned media, social media, radio, and extensive online strategies.

Constructing a communications plan with a layered approach that utilized a mix of media working in concert to drive a particular message was a successful approach for us. Our Spring-Summer 2013 plan is our best example of this strategy. This phase included a mix of offline and online media, all building upon each other to generation optimum message reach and frequency levels.

Our communications firm developed a plan that made sure messaging ran at complementary times, across all the various media vehicles, allowed for consistency, clarity and, ultimately, increased customer engagement. Again, taking Spring-Summer 2013 as an example, there were five major messaging windows in that timeframe:

1. February-March: Cold Weather
2. April-May: 6 Month Loan Offer
3. April-June: Spring
4. July: Hot Weather
5. August: Last Chance

By concentrating our communications approach and budget resources into focused windows of activity and bringing all of our media vehicles to bear on one message at a time, we maximized efforts and drove our highest levels of program results. This phase of the plan proved to be the most successful in terms of conversion metrics and program project completion numbers.

Figure 5: Digital Billboard – Summer 2013 Real-Time, Weather-Driven Advertising



Making Program Changes to Drive Demand

We made a few meaningful program changes over the course of the performance period to better meet customer demand.

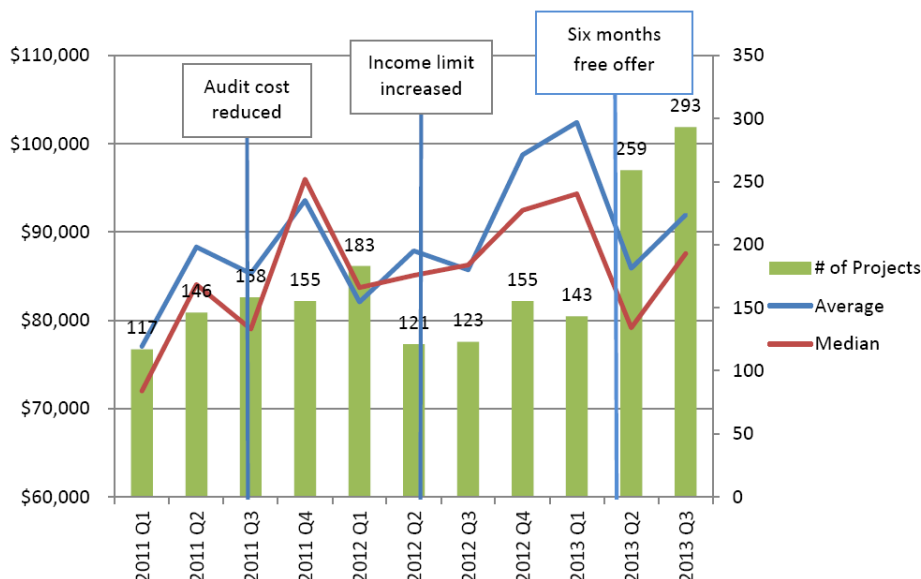
- We revised our target audience to better accommodate middle income homeowners. We learned that even dual income households either wanted or needed to finance their work, so we increased the household income limit for lending from \$150,000 to \$250,000.
- \$400 is the going price in the regional marketplace for a home assessment/audit. Program partners and contractors feared that lowering the price would cheapen the perceived value of the service. So, at program launch, we set the home energy assessment price at \$400. We quickly found this to be a prohibitive barrier to entry and experienced low uptake. We offered a \$150 price promotion, originally intended to be a limited time offer that would run from Memorial Day to Labor Day 2011. As soon as the price was lowered, demand spiked. We chose to buy down the cost of the assessment (reimbursing the analysts for the full \$400) and permanently reduced the cost of the home energy assessment to \$150.

- Customers are motivated by proximate offerings. Time sensitive, promotional offerings increase the likelihood of program engagement. By far the most successful program promotional offer was the 6 FREE Months loan offer, which was made available towards the end of the program in spring 2013. The program funded the first six months of payments (principal and interest) for a ten-month loan term. This proved wildly popular and generated a significant increase in loan applications – and loans – over the promotional period. It is important to note that this offer came at a cost of app. \$150,000, which came out of the loan fund dollars managed by PA Treasury.

Figure 6: Digital Screen Transit Ad – Driving Action with a Special Offer



Figure 7: Average and Median Income Changes over Time



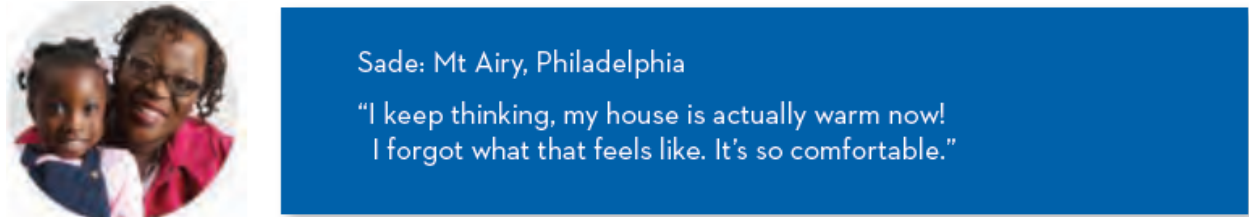
Key Takeaways

- An effective marketing effort needs to match education with a clear call to action. Information alone will not necessarily drive action. Our greatest successes were realized

after we began utilizing a clear call to action that focused on the end user benefits. Once all marketing was aligned and combined with the aggressive “6 months free” promotional offer, volume spiked significantly.

- Leads can be cultivated through a dedicated, consistent and ongoing marketing effort.
- Using real-life customer examples is an effective and memorable way to communicate energy efficiency. Satisfied customers make wonderful salespeople.

Figure 8: Customer Testimonial Example



- Create a sense of urgency. We realized a direct correlation between extreme weather events and program engagement activity, and began messaging accordingly in ways that were relevant during times of those events (for example, synching media plan executions to go live during extreme hot or cold weather days). In the absence of extreme weather or promotional offers, seasonal relevancy was used. Two examples of this during the spring 2013 campaign included tax return/home improvement seasonal messaging and spring allergies comfort messages keep program messaging topical during times of non-extreme weather.
- Online tactics proved to be the most effective use of paid media dollars. Shifting resources to online ads and paid search allowed for a more targeted, flexible approach.
- Don't have too many cooks in the kitchen! Everyone has an idea or opinion when it comes to marketing. What “feels right” to one person though may not be fully informed by the full set of factors that need to be taken into account when developing a multi-faceted campaign. It is essential to have all parties aligned behind one set of key messages and clearly banded program communication channels at all times. Solicit input so that people feel heard and are able to share insights and opinions, but do not attempt to design by committee. The importance of having a fully aligned partner and contractor network cannot be understated.
- Customers respond positively to the reassurance provided by a government-backed program, applying the government “seal of approval” proved to be a helpful means of differentiating the program from private companies. Clearly denoting all program official support partners – including the U.S. Department of Energy - helped to establish trust.
- It is very difficult to get PR and social media penetration, especially in a major media market like ours. A targeted approach tied to key program new and events with a personal touch – as opposed to ongoing generic content – would most likely have been more cost effective and beneficial. Soft PR pitches such as highlighting homeowners undergoing energy efficiency improvements or providing tips were of little interest to the regional press. Furthermore, it was a crowded space and EnergyWorks was competing with other regional energy efficiency stores from utilities, private companies,

etc. Ultimately, the press is only interested and able to cover the topic so many times. With resources, dedicated staffing and a strong strategy, social media impact can be realized but it is important to do a cost-benefit analysis to understand the most effective placement of program resources.

- Be open to making changes along the way as you gain a better understanding of what does and does not work.

The marketing of EnergyWorks proved to be as essential part of achieving the program's goals. Not every tactic over the three-year span yielded significant results, but taken overall, the marketing and communications component was successful in generating program leads and driving conversion metrics that direct led to assessments and loans. Simply put, the EnergyWorks program would not have achieved its completion goal numbers without the dedicated, focused marketing effort. A full summary and analysis report is provided as an appendix, providing an in-depth overview of the residential marketing and communications program design, strategy and performance.

WORKFORCE DEVELOPMENT

COMMERCIAL

The market for commercial energy efficiency retrofits in our region is still relatively nascent. EnergyWorks played an important role, especially in the context of bridging the economic downturn and recovery, in bringing low cost capital to bear to projects for which it was a fit. As has been noted in this report already, we have seen considerable demand to wrap energy efficiency into larger building projects, mainly gut rehab. It's a project type where the costs can often be justified within the construction budget, paybacks are being calculated and thus are a more meaningful motivation, and the split incentive roadblock is either not present or negligible. Two of the projects we have funded so far – Ambler Boiler House and State Office Building – are good examples of how the EnergyWorks dollars leveraged other capital sources and helped complex projects to advance during difficult economic times.

EnergyWorks partners with Philadelphia Works and the Office of Economic Opportunity (OEO), a division of the City's Commerce Department, to increase workforce development opportunities for construction workers as well as the full time employees working for project sponsors. Through these partnerships, EnergyWorks connects project sponsors with a workforce and promotes opportunities for recruiting, training, and advancement. This is memorialized in the closing documents. Philadelphia Works is a nonprofit that supports regional workforce development initiatives by providing job training and connecting low income persons with job opportunities.

Unique among other lenders, PIDC and TRF required all project sponsors to inform Philadelphia Works of the job opportunities projected to be generated through their projects. Through this innovative partnership, EnergyWorks ensures that project sponsors and Philadelphia Works

collaborate to inform LIPs about available jobs in their communities. We also work with OEO to promote job opportunities for minority and woman owned construction contractors. OEO ensures that prior to and during the construction process, minority and woman owned construction contractors are informed of subcontracting and professional service opportunities through EnergyWorks projects.

EnergyWorks has also expanded the use of building energy simulation modeling by Pennsylvania architects and engineers. Because energy modeling was required to demonstrate that an applicant's gut rehab project satisfied the 25% energy savings requirement, we can safely say that energy modeling was used in projects that very likely would not have used energy modeling as part of the design process. We also are proud of the role that our energy consultant, Practical Energy Solutions, played in reviewing the submitted models and mentoring the modelers. Telling an engineer or modeler that her or his work will be reviewed and must be accepted by a third party generated no little concern, but we were told several times how useful it was to have Practical Energy Solutions mentoring them on their modeling.

RESIDENTIAL

When the program was established, the decision was to make the auditor and contractor network as inclusive as possible to bring more companies into the program – thus extending program reach – and supporting growth, especially during the economic downturn when many were experiencing business contraction. Our region was fortunate in that it had a robust contractor base in place, in part thanks to the pre-existing Keystone HELP program. Our role was not to train and certify firms to do work in the field but rather to support and grow existing businesses by catalyzing the supply of and demand for high performance retrofits.

EnergyWorks developed a network of trained, BPI certified energy professional that could conduct audits and implement energy upgrades for residential customers.

Benefits to Participation:

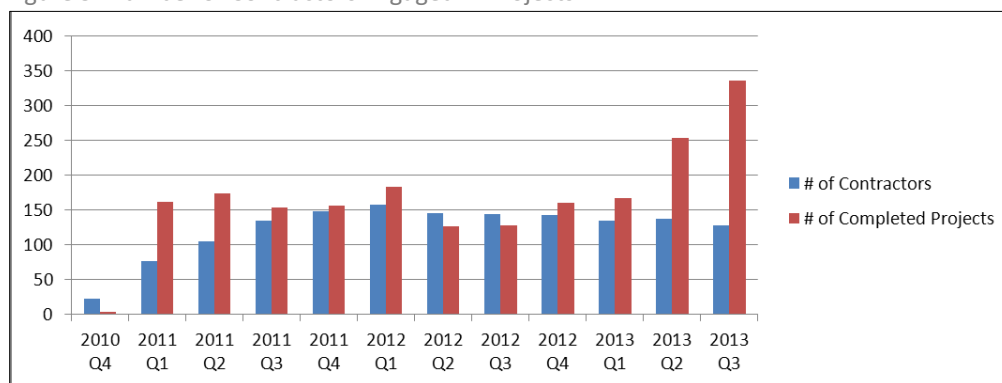
- No cost to participate
- Advantage of program supports (e.g. \$150 assessment, website, marketing, QA test out)
- Ability to market low-interest loans to customers (if approved by Keystone HELP)
- Customer leads (provided over 2,000 project opportunities)
- \$50 rebate to auditors if a report led to a job
- Training opportunities

The participating auditors and contractors were listed on the website and homeowners were able to choose who they wanted to work with. If they did not have a preference, the customer facing staff at ECA would make a recommendation based primarily on location and availability. It's important to note that the referral process needs to be clearly designed, made fully transparent, and employed with utter consistency so as to give contractors confidence in the fairness of it.

Ultimately, EnergyWorks involved a network of app. 130 active participating energy professionals per quarter. However, a total of 311 contractors executed at least one retrofit job for the program over the course of the three year performance period. There was a broad range of participants: some were small, some big; some were new, some old; some had EnergyWorks as a part of their project flow, for others all of their leads were EnergyWorks leads; some worked as an auditor of contractor only, some encompassed both in their business.

Below is a view of the number of contractors who were actively engaged in EnergyWorks projects over the life of the program in comparison to the number of projects completed each quarter. As would be expected, the number of participating contractors ramps up steadily through the first year of the project, reaching a high of 158 actively engaged contractors in first quarter 2012. After that time, there is some fall-off possibly attributable to contractors choosing not to continue with the types of projects funded by EnergyWorks or not being interested in continuing with the EnergyWorks program.

Figure 9: Number of Contractors Engaged in Projects

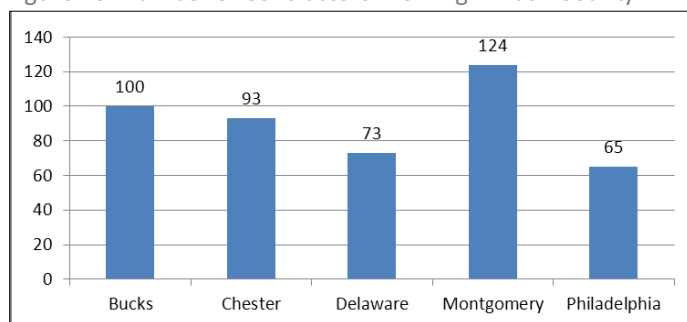


For those who stayed with the program, the number of projects available increased substantially in the final two quarters and provided more income opportunity for them.

Overall, the size and diversity of the contractor pool posed a challenge to management both by way of data tracking, information deployment but also in terms of setting requirements and making decisions based on key performance indicators. It was hard to both get feedback and to make a program change and quickly disseminate it across the hundreds of participants, that kind of nimble network management wasn't available to us.

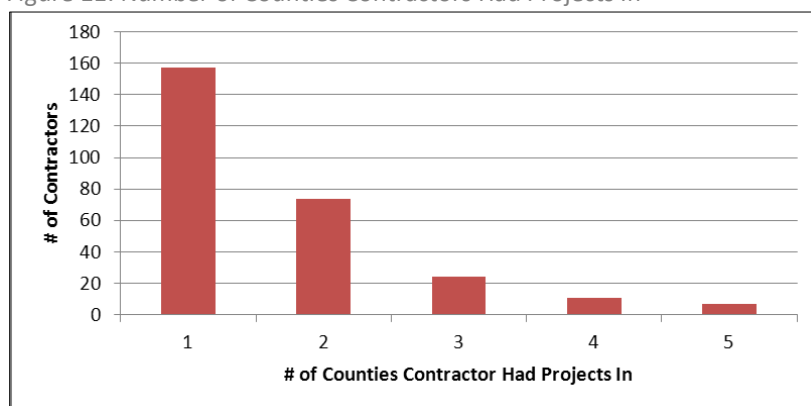
Having a large network had its benefits as well, namely coverage across the five counties and a scaled workforce that allowed for fairly quick deployment. The network became self selecting over time; with those for whom the program was not a fit reducing or ending engagement, others maintaining a steady pace of jobs, and some growing their project flow considerably.

Figure 10: Number of Contractors Working in Each County



While 7 contractors took projects in all five counties, 58% of all contractors worked on projects in just one county. An additional 27% expanded to two counties, demonstrating the highly local orientation of most contracting firms.

Figure 11: Number of Counties Contractors Had Projects In



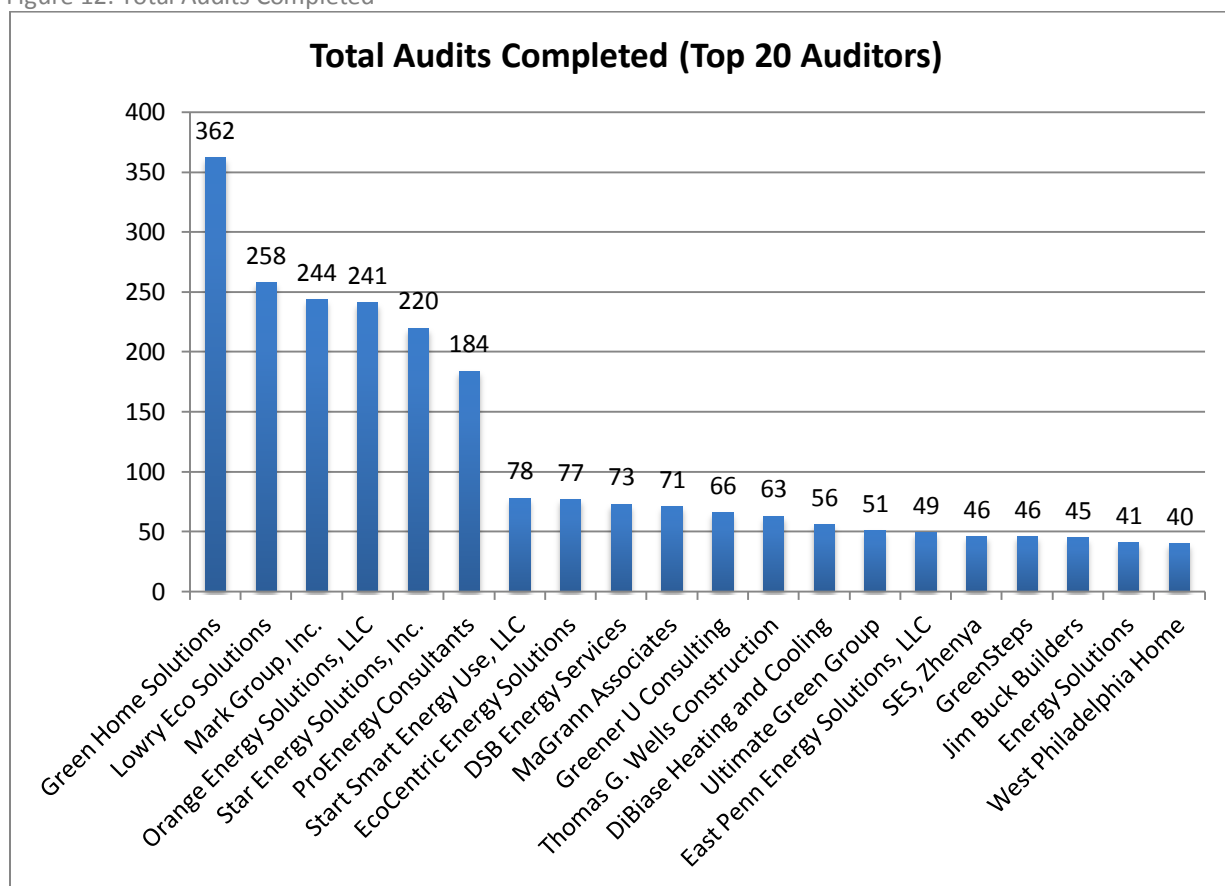
In an analysis of the top 10 contractors by dollar volume compared to the top 10 contractors by project volume, 9 of the 10 are the same. However, when comparing these two groups with the top 10 contractors by average project size, none of those in the first two groups appear in the top 10 by average project size. Eight of the ten with the highest average project size had only one project as part of EnergyWorks. The other two had a relatively small number, 5 and 6 projects respectively.

Among the top 10% of contractors by project volume in silver projects, 62% did only silver projects, no gold. Conversely, among the top 10% of contractors by project volume in gold projects, 45% did only gold projects. It is tempting to assume that gold contractors do more of a mix of gold and silver projects because of the relatively lower number of gold projects available, but without extensive contractor feedback, that cannot be proven.

A small group of auditors completed the vast majority of audits. The top 6 auditors in total number of audits completed accounted for over half (56%) of the audits completed, and 86% were completed by the top 20 auditors, as the below chart demonstrates. Interestingly, whether an auditor was also a contractor had no correlation to the likelihood that a project would progress past the audit stage to a retrofit. Of the top 15 auditors in number of successfully completed retrofits, only 8 were combination

auditors/contractors, meaning that auditors who were solely auditors were just as likely to be successful in advancing projects.

Figure 12: Total Audits Completed



An admitted weakness in our internal reporting was that we did not have a system for monitoring job growth and loss among participating firms nor did ECA keep records or when new contractors were approved for program participation, making it difficult to determine the program's full workforce development impact. However, by comparing the EnergyWorks volume to the statewide Keystone HELP volume, we know that EnergyWorks grew the regional market over the life of the program, creating over 2,000 job opportunities with a quantifiable impact of over \$17 million in project investment dollars across the five counties.

FINANCING AND INCENTIVES

COMMERCIAL

The EnergyWorks financing product was created to provide borrowers with a flexible source of capital for energy efficiency projects. We accomplished this through offering borrowers subordinated debt, low interest rates, long amortization periods, and higher loan-to-value ratios than banks can offer. We complemented these flexible underwriting standards with subsidized auditing and modeling available through our partner, Practical Energy Solutions. The

program provides qualified energy upgrade projects with loans in amounts from app. \$100,000 to \$2,500,000 million or more. (Because the administrative and underwriting costs are essentially the same for a small and large commercial project, we were generally not attracted to projects under \$100,000.) The typical interest rate on a commercial loan is 3.5%, though the terms of an EnergyWorks commercial loan depend on the specifics of each project and are negotiated by TRF, PIDC, and the borrower. The general loan features are:

<i>Loan Amount</i>	\$100,000 to \$2.5 million +
<i>Interest Rate</i>	As low as 3.5%
<i>Loan Term</i>	Up to 15 years, with longer amortization possible
<i>Collateral</i>	Security for loans will be negotiated on a case-by case basis
<i>Legal Fees</i>	Typically range from app. \$2,000-\$3,000, and are due upon settlement
<i>Origination Fee</i>	1.5% of the financing amount provided, payable upon settlement

PIDC and TRF brought additional value to projects through our ability to leverage other public and private sources to finance complete rehab projects, in addition to the energy measures. For example, we were able to combine EnergyWorks funds with a vast array of other products, including New Markets Tax Credits, Low Income Housing Tax Credits, and Historic Tax Credits to finance a project in its entirety. EnergyWorks funds were used exclusively to finance energy efficient measures, while other sources of public and private funding were used to finance other elements of complex building projects. PIDC and TRF were able to offer developers and businesses a complete and coordinate package of financing to complete large-scale projects. This was particularly important due to the economic climate and unwillingness of traditional lenders to extend capital to building projects.

Table 4: Financing Investments and Results

Financing Investments and Results (as of December 2013)	
RLF (Commercial)	\$5,000,000
RLF (Residential)	\$0
RLF % of Award Funds	20%
LLR (Commercial)	\$4,292,258
LLR (Residential)	\$778,000
LLR % of Award Funds	20%
IRBD (Commercial)	\$1,832,098
IRBD (Residential)	\$2,540,000
Total Financing Investment	\$14,442,356
	Commercial: \$13,871,338
	Residential: Changing ratio
% of Award Funds	58%
Amount Loaned (Residential)	\$17,596,297
# of Loans (Residential)	\$1,615
Average Loan Amount (Residential)	\$10,896
Amount Loaned (Commercial)	\$12,957,010 (PIDC and TRF)
# of Loans (Commercial)	4
Average Loan Amount (Commercial)	\$1,851,001

Note: The residential funds expended to PA Treasury have not been strictly allocated between LLR and IRBD; allocations are based on ongoing spend rates. The numbers above represent our current best estimate based on current activity. The total amount contracted to PA Treasury is \$4,916,093. The commercial numbers do represent actual total dollars committed to each.

RESIDENTIAL

The residential financing component of the EnergyWorks program was able to "hit the ground running" and achieve immediate consumer uptake and contractor acceptance because of the decision to leverage an established and successful state financing program rather than starting a program from scratch. The Keystone Home Energy Loan Program (Keystone HELP®) is Pennsylvania's award winning residential financing program with low fixed rates for single measure and whole house improvements.

EnergyWorks provided additional support that makes Keystone HELP loans available at even lower interest rates to customers in the Greater Philadelphia Area. Keystone HELP® was started in 2005 by AFC First Financial Corporation and the West Penn Power Sustainable Energy Fund. The program was expanded statewide with principal capital support provided by Pennsylvania Treasury and program support from the Pennsylvania Department of Environmental Protection, with additional funding from the Pennsylvania Housing Finance Agency. There is a network of over 1,600 independent Pennsylvania energy contractors approved to perform work under the program. Administered under AFC First's sponsorship, Keystone HELP functions as the state's Home Performance with ENERGYSTAR (HPwES) program.

By providing lower Keystone HELP loans in the greater Philadelphia rates through the EnergyWorks Better Building program, along with additional consumer and contractor outreach the program has achieved some significant milestones:

- To date, the EnergyWorks program has helped financed over 1,900 jobs, with total funded loan money totaling over \$17 million towards improvements in the five country Philadelphia region.
- This is an annualized increase of close to 40% over pre-EnergyWorks Keystone HELP volume in the region
- Since the inception of EnergyWorks, "whole house" loans as a percentage of total loans have increase from a small fraction of loans made to over 40% in 2013.

Table 5: Loan Data (as of 12/20/2013)

Total Funded Loans	Total Funded Loan Money
Gold: 559	\$6,437,465
Silver: 1,347	\$11,454,651

Affordability is a key concern of many homeowners when it comes to installing high efficiency and other energy-saving improvements. As the price of energy efficiency improvement

increases, more and more consumers are looking for simple fixed rate monthly payment plans that can be offset by energy savings. Most consumers want the stability and certainty of a fixed monthly payment and many are reluctant to make the investment in energy efficiency upgrade if the only financing option they are offered by a contractor is a large cash payment or the type of variable payment or "teaser" rate plan that converts to a much higher rate and payment when the promotional period is over.

Energy efficiency improvements can be categorized into two groups:

- **“Reactive” energy improvements** are those that a customer must make quickly to address an immediate need, such as faulty or inefficient heating and cooling, defective windows or air sealing etc. These kind of improvements account for 90% of all energy related improvements. The typical size of these improvements, \$2,500 to \$15,000 often falls within a consumer’s financing “twilight zone” – too big to put on a credit card and too small to go through a time-consuming home equity loan process. The alternative is that consumers end up either not making the upgrades, succumbing to “bait and switch” programs such as “zero percent” financing that morphs into 18 to 32% APR or settling for less expensive, lower efficiency items. As the price of energy (and efficiency improvements) increase, more and more consumers are looking for simple fixed rate, fixed payment monthly payment plans that can be offset by energy savings. Most consumers want the stability and certainty of a fixed monthly payment and many are reluctant to make the investment in energy efficiency upgrade if the only financing option they are offered by a contractor is a large cash payment or the type of variable payment or "teaser" rate plan that converts to a much higher rate and payment when the promotional period is over. The most appropriate and, in the programs’ history, the most successful type of financing for this kind of improvement is a simple, unsecured loan with minimal paperwork for both the contractor and consumer with eligible measures being clearly defined using ENERGY STAR or advanced performance standards. Banks and other lenders typically limit loan size and terms on these types of loans. Most successful energy efficiency programs not only offer lower rates for unsecured financing that targets this type of “reactive” improvement, but longer terms and larger loan sizes than those available from conventional lenders.

- **“Proactive” energy improvements** are those that a customer makes as part of a comprehensive plan to save energy. Typically these are the result of an energy audit and may include “whole house” air sealing and insulation, more sophisticated and higher efficiency heating and cooling, and significant structural repairs etc., falling under the “Home Performance with ENERGY STAR” model. These kinds of improvements have historically been financed with home equity loans (both because of the larger and riskier loan size where collateral is a requirement as well as the customer’s desire to have tax-deductible interest). In today economy, however, the customer is faced with a double edged sword. Banks have restricted the level of loan to value on homes they will lend to and customers have seen a rapid erosion of their own home equity. Some energy efficiency programs are addressing this dilemma by providing “lower than bank” rates to attract consumers with equity and an

additional suite of higher loan to value products limited only to consumers making these kinds of “pro-active” energy improvements, and not available from conventional lenders.

EnergyWorks and Keystone HELP financing addresses both reactive and proactive improvements, providing greater incentives for proactive improvements.

Contractors have a tremendous influence on a customer’s decision on how they will pay for an energy efficiency upgrade. They must be trained on how to effectively make affordability of energy efficiency a key part of every sales proposal and evaluation. Financing programs must be “consumer friendly” - simple, fast and easily communicated. In order to promote higher efficiency (and sometimes more expensive improvements) there must be a clear differentiation with “better” financing for high efficiency improvements driven through lower rates as well and longer loans terms and lower payments than those available for lower efficiency products.

EnergyWorks focused on these key elements of an effective residential energy efficiency loan program:

- Assist consumers in making better decisions regarding the energy efficiency of their home improvements by providing affordable monthly payment options.
- Train contractors on how to better utilize special financing and monthly payment plans to increase both their closing rates and market penetration for more energy efficient home improvements
- Provide program sponsored technical training for Home Performance, BPI and RESNET certification if needed
- Integrated into national standards such as Home Performance with ENERGY STAR etc.
- Promotes environmentally friendly practices such as the recycling of replaced equipment.
- Utilizes state-of-the art technology to provide maximum efficiency and customer service to both consumers and contractors in incentive origination, administration, payments and reporting.
- Provides consumers and contractors with efficient, knowledgeable and exceptional personal service as it relates to the purchase of their energy efficient home improvements.
- Provides consumer with a “tiered” incentives that encourages them to purchase higher efficiency and whole house improvements while still accommodating the dominant part of the market – consumers who need to make emergency or “reactive” improvements.
- Provides consumers with valuable, home-specific data on their energy saving and can deliver the same reporting on measured energy savings program wide.

Overview of EnergyWorks Financing Program

\$1,000 to \$15,000

Unsecured, No Lien on Home

Bucks, Chester, Delaware, Montgomery, Philadelphia
Terms to 10 Years
True Fixed Rate
No Fee to Contractor

Figure 13: Overview of Residential Loan Product

	Monthly Payment Per \$1,000	Heating & Cooling	Windows & Doors	Air Sealing & Insulation
For energy improvements installed as part of whole house project with blower door directed Air Sealing & Insulation	\$8.76	0.99% <i>As part of Whole House project</i>	0.99% <i>As part of Whole House project</i>	0.99% <i>As part of Whole House project</i>
For installation of equipment and measures which exceed current ENERGY STAR standards to program guidelines	\$10.60	4.99% * <i>*If installing Central AC, 4.99% applies to retrofit /upgrade only, New Central AC -7.99%</i>	4.99%	4.99%
For installation of equipment and measures which meet current ENERGY STAR standards	\$11.10	5.99% * <i>*If installing Central AC, 5.99% applies to retrofit /upgrade only, New Central AC -8.99%</i>	5.99%	5.99%

By reducing the cost of the Keystone HELP program to homeowners in the five county area, we were able to test whether lower interest rates and enhanced marketing drive demand. One measure of the program's success in this regard is EnergyWorks' performance as compared to the statewide program performance. EnergyWorks was successful both in driving volume well beyond the statewide average as well as in significantly growing the proportion of whole home versus single measure jobs. Only 5% of statewide HELP loans are for whole home projects, while nearly 40% of EnergyWorks projects are. We believe that the higher rate of whole home jobs can be attributed to the marketing program which successfully targeted interested customers whole consistently emphasizing the benefits of a whole home approach to energy efficiency.

COMMERCIAL

EnergyWorks requires all of its projects to report its utility data (electric, natural gas, oil, water and other) using ENERGY STAR's Portfolio Manager. Practical Energy Solutions helps set up the Portfolio Manager accounts for the borrowers. This benchmarking of energy use has added value for the EnergyWorks projects located in Philadelphia, which has a building energy benchmarking ordinance that requires commercial buildings of 50,000 square feet and larger to benchmark their energy use with Portfolio Manager and to report that use to the public. Several of the EnergyWorks projects are subject to this ordinance, so the requirement of our financing and the City's benchmarking law aligns perfectly.

Practical Energy Solutions is also preparing a one-year anniversary report that will compare the predicted energy use with the actual metered energy use.

EnergyWorks is interested in outcomes other than energy savings. We are tracking the construction employment in our projects, as well as the permanent employment added by our borrowers and the local economic development that has been encouraged by some of the EnergyWorks projects.

RESIDENTIAL

We had a number of data sources because of the number of partners involved with diverse requirements for data collection. The primary sources were:

- AFC First Financial (AFC) - data on loan applications, funding amounts and loan terms as well as information on contractors and customer income levels.
- Energy Coordinating Agency (ECA) – data on program applications, audits, test-outs, auditors and contractors, community outreach programs, response times, and conversion rates.
- PA Treasury – data on loan support costs from EnergyWorks and DEP
- PECO and PGW – utility usage data filtered through the DOE (not acquired directly)
- Department of Energy (DOE) – aggregated data from quarterly reporting by MOS as well as periodic utility reporting

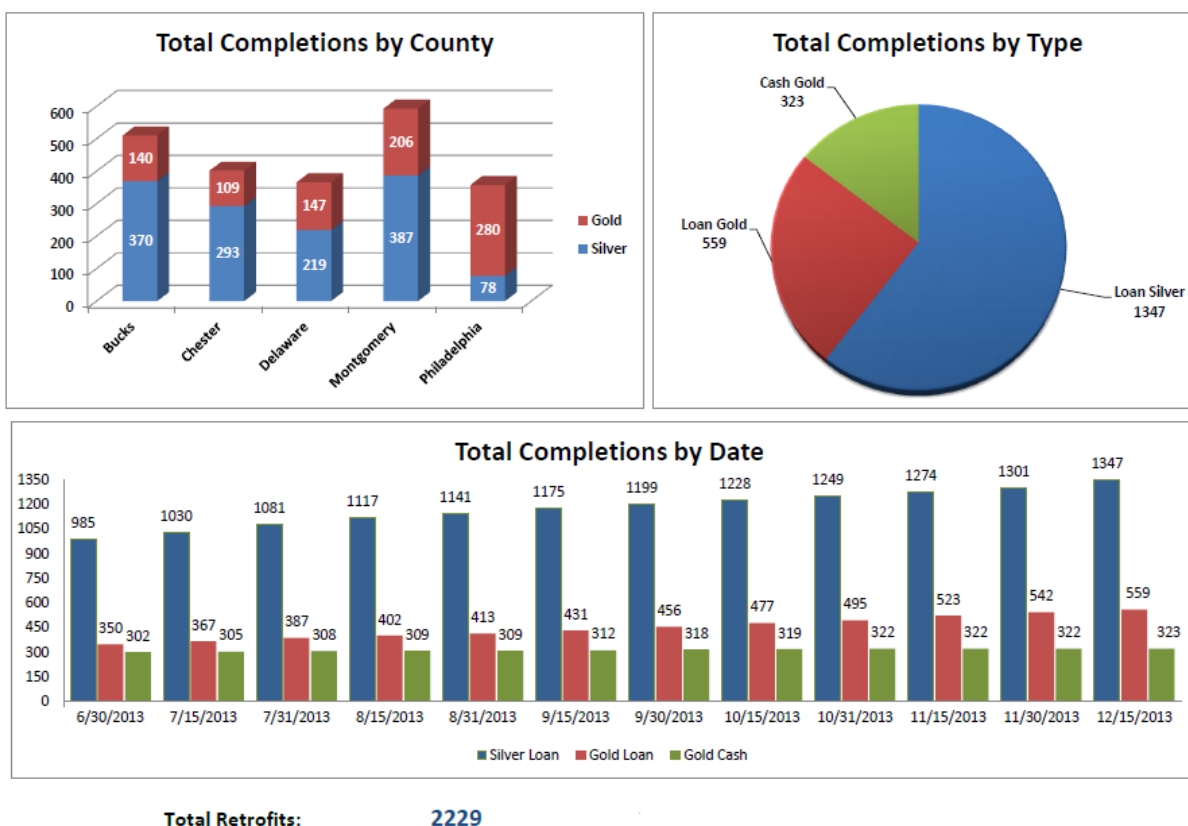
We collected and internally reported program data on a bi-weekly basis, including: audit and completion numbers, distribution of projects by county, loan versus cash jobs, the number of projects in the pipeline, and the number of participating contractors. Regular review of program data helped to keep the team focused, to see trends and try to anticipate any potential problems. These bi-weekly reports were distributed via email and reviewed at in-person monthly meetings.

A fuller set of data points was tracked and reported on a quarterly basis in accordance with DOE reporting requirements.

Customers gave permission to share their utility information as part of the application process. Requesting utility reports from utilities and reporting the information to the DOE proved challenging but did get easier with time. Despite this, it proved to be difficult to conduct robust energy savings analysis.

Below is an example of information presented in our bi-weekly report, showing the breakdown of total completions as of 12/15/2013. The full bi-weekly report is provided as an appendix.

Figure 14: Snapshot from Residential Bi-Weekly Report



Accomplishments

SOPO Task 1: EnergyWorks Commercial Loan Fund

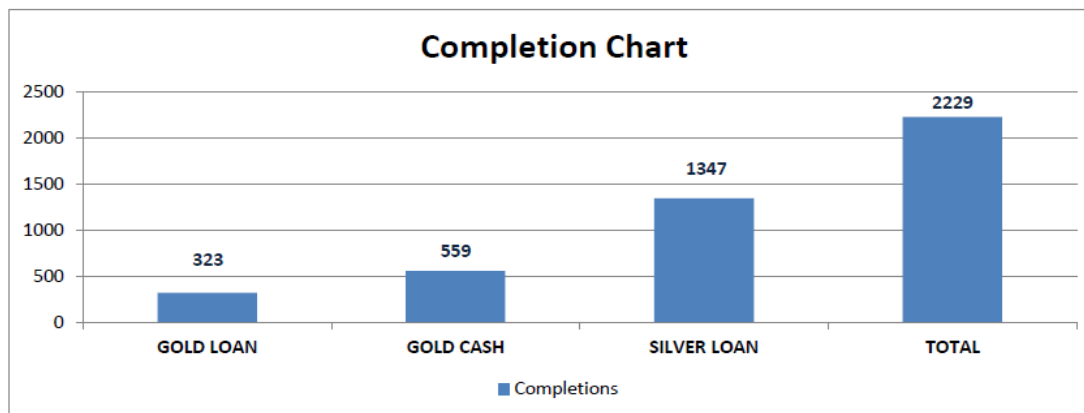
- Target: Retrofit more than a dozen commercial buildings, providing technical assistance and financial underwriting.
- Actual: To-date, we have completed 4 projects (Parkway, Ambler Boiler House, State Office Building/1400 Spring Garden, and Esperanza College), 2 recently closed (Coventry House, Drexel University) and 2 projects are in active underwriting (Cathedral Village, Omni Hotel). We have a pipeline of approximately 5 additional projects in the initial application and review stage and plan to expand the pipeline with a planned winter

2014 outreach push tied to the City of Philadelphia's benchmarking law. All in all, depending on the size of future projects, we expect to finance and complete 10-12 commercial projects in total by November 2014.

SOPO Task 2: EnergyWorks Residential Program and Loan Fund

- Target: Expand available capital through Keystone HELP and retrofit approximately 2,500 homes with loan funds, achieving 2,000 in the Phase I performance period, ending September 2013.
- Actual: We established a successful loan pool through Keystone HELP, with funds being held by Pennsylvania Treasury and administered through lending partner AFC First Financial. EnergyWorks has proven to drive volume well beyond the Keystone HELP statewide average. As of 12/15/2013, the program has completed 2,229 residential retrofits (40% of which are whole home, 60% single measure). A breakdown of the completed project is below.

Figure 15: Completion Chart



Completion Data Sheet

GOLD LOAN	323	Phase 1 Goal	2000
GOLD CASH	559	Phase 2 Goal	2500
SILVER LOAN	1347		
TOTAL	2229		

TOTAL Funded Loans

GOLD	559	Total Loan Money Funded
SILVER	1347	\$6,437,465.00
		\$11,454,651.00

SOPO Task 3: Education and Marketing

- Target: Undertake a comprehensive residential marketing and public education campaign to drive interest in the program.
- Actual: Hundreds of thousands of homeowners were reached through an effective marketing and communications campaign that included a full service website, paid advertising (regional rail, online, radio), PR and social media. The *Residential Program Marketing Summary Report* is provided as an appendix to this report.

SOPO Task 4: Project Management and Reporting

- Target: Reports and other deliverables will be provided in accordance with the Federal Assistance Reporting Checklist.
- Actual: We were successful in meeting all quarterly reporting deadlines and other program requirements.

Challenges

We came away from the past three years administering the EnergyWorks program with invaluable experiences and information that will help to guide energy efficiency work in this region for many years to come. We were able to test assumptions, try out new partnership arrangements, measure the impact of different approaches and make tweaks accordingly, and gain greater understanding of customer behavior and demand. We learned a lot about how to improve and refine outreach efforts, program structure and administration. Here is a summary of the challenges we encountered along the way:

COMMERCIAL

Marketing and Outreach: With the residential program, we knew that marketing and outreach would be essential to reaching potential customers and so built that into the budget and program design. We did not make the same assumption with the commercial program, thinking that outreach within existing networks would yield a sufficient - and even strong - pipeline of projects. We should have learned from our own residential program and put a targeted marketing program in place to reach building owners and operators outside of our network so as to build a larger and more diverse pipeline of projects. In this next year, we will be doing this and look forward to seeing whether direct marketing grows interest in the program.

Davis Bacon Provision: The federally mandated Davis Bacon requirement proved to be a major obstacle to uptake in the four suburban counties, where prevailing wage is not the norm in commercial construction. In Philadelphia, where prevailing wage is more standard, we were more readily able to get interest in the product despite this provision since many were planning to budget at this rate anyhow. However, we found it difficult, if not nearly impossible, to attract projects in the four counties. Our hope had been to have an even distribution of projects across the five counties but we ended up with a Philadelphia concentration for this reason.

Project Type and Demand: We anticipated seeing a lot more activity for straight up energy efficiency retrofits, thinking that loan interest financing and the attached program benefits in and of themselves would trigger folks to develop and advance pure retrofit projects. A really interesting takeaway for us has been a steady flow of gut rehab projects, where energy efficiency was bundled in as part of a larger project either to gain additional loan interest financing (EnergyWorks would be only one source in a capital stack) or where capital expenditures were already being planned so energy efficiency was incorporated. It is hard to

yet know whether this was because of the recession and constrained capital spending abilities or whether it is in indication of a more general hesitation to finance stand alone energy efficiency. As we get further along into the economic recovery, we will be interested to see whether there are changes to the kinds of projects we see.

Timing: Even though TRF and PIDC both have deep experience with construction and energy efficiency financing, we generally underestimated the time it takes many projects to proceed, sometimes in frustrating fits and starts. Any number of factors contributing to this, among the most common were: bids coming in higher than estimates, changing the project economics and viability; shifting priorities as projects developed; the evolution of the capital stack, if EnergyWorks was attractive as a low-interest cost of financing but other financing with fewer strings became available, sometimes EnergyWorks would be taken out of the equation; third parties would develop a project to put before a client before having client approval to proceed, in these cases the cart had to be put before the horse because they pitched the financing as part of their proposal but it meant that we had very early stage projects in our pipeline as a result.

Technical Assistance: Commercial loan applications require substantial technical assistance to get their projects ready to underwrite from both financial and energy savings perspectives. This includes help meeting regulatory requirements and assistance with energy engineering.

RESIDENTIAL

Audit Cost: Initial audit cost was set at the market rate (\$400) and proved too high, setting a major barrier to entry and slow uptake coming out of the gate. The audit was reduced to \$150 (with an additional \$50 rebate available to homeowners who completed \$1,000+ project), which we felt was an essential change to make.

Contractor/Auditor Network: We needed to spend more time during program design carefully thinking about how to best put in place clear communication and performance management systems. Making changes mid-stream as we gained insights and new ideas was impractical and unfair.

Although only 311 of the 407 approved contractors on the ECA and AFC lists participated in EnergyWorks projects, that is still a very large number of contractors to monitor for quality, timeliness and good business practice. A smaller pool of auditors and contractors would have allowed more rapid assessment of their capabilities, the opportunity to pinpoint those who could most benefit from sales trainer and overall better management of the audit and contracting processes.

Establish Key Performance Indicators and Data Collection Goals Early: Many of the problems with data tracking that became apparent during the data analysis conducted for this evaluation could have been avoided by clearly articulating and communicating data collection goals and defining key performance indicators early in the program. The overall goal of 2,000 retrofits was a good overarching goal, but

smaller, specific goals tied to performance also should have been set to better understand trends as they were occurring over the life of the program and how they were impacting the top-level goal of 2,000 retrofits.

Related to this, all key performance indicators measured (number of audits, number of retrofits, number of loans) were lagging indicators, which presented a snapshot of the past, but did not help explain why certain targets were or were not being met. To help understand program components' impact on each other and the broader goals, several leading indicators should have been identified so that program partners could respond more quickly to areas where goals were not being met. The addition of LevLane to the EnergyWorks team brought some much-needed data that informed decision-making and made the program more able to respond to changing market conditions.

Key performance indicators also needed to be directly connected to program goals. As an example, one of the program goals was to increase the size of the contractor pool capable of doing energy efficiency improvement projects. In order to quantify progress toward the goal, an initial survey of the contractor community, or at least the AFC/ECA approved contractors, needed to establish a baseline of whether the contractor already performed such work and if so, how many projects per year were completed on average and the average cost of the project. Without such a baseline, it was not possible to measure whether real growth had occurred.

Additionally, data were scattered among program partners, sometimes without a clear understanding of who was ultimately responsible for the integrity of the data, leading to fragmented and sometimes conflicting data sets. This fragmentation was exacerbated by the changing reporting requirements and formats from DOE over the course of the program, which impacted how ECA collected and tracked data.

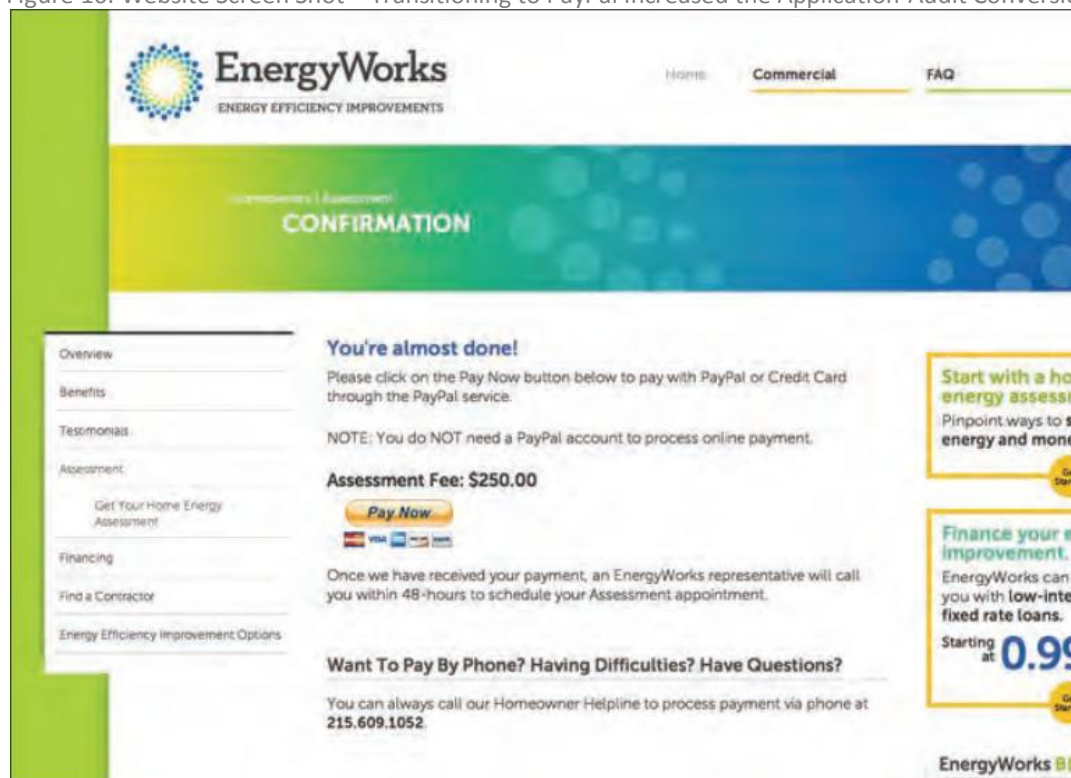
Continually Focus on Sales Training: The ability of the auditors and contractors to sell the concepts of energy efficiency and the value of retrofit work was so vital to the success of EnergyWorks that a far larger commitment to sales training to equip them for that role had the potential for enormous payback in an increase in the number of completed projects. Regardless of the quality of the early marketing program, the auditors and contractors were the people having the most direct contact with the potential customer. They needed to be prepared with as many tools as possible to convince the customer to have the work performed. Because there was substantial disagreement among some of the partners about the need for such training, this is a situation where clear role definition would have permitted MOS to go ahead and offer the training sooner and more often. Additional sales training would not only have had the short-term effect of increasing the number of completed projects but it would have had the long-term effect of permanently equipping the energy efficiency improvements community with skills that could help support the industry after the end of EnergyWorks.

Inadequate Customer Support: As an extension of the above point, we needed more customer support personnel having direct interaction with the consumer. And we needed to provide these members of our team with sales and customer service training. The very large influx of applications and audits at the end of the program were difficult to handle even though the improved website had streamlined many of the customer interactions. Operations personnel believed that, throughout the course of the program,

personal attention particularly in the area of follow-up after audit report delivery helped improve conversion rates. Another opportunity for customer support would have been a well-staffed help line for customers to get one-stop answers to questions.

Keep It Simple and Follow Up: The initial EnergyWorks process was too complicated and offered too many opportunities for customers to drop out of the program. Until the launch of the new website in April 2013, which incorporated PayPal, the very first touchpoint the customer had with the EnergyWorks program was unnecessarily difficult. The customer was able to fill out an application for an audit online, but then had no way to pay for the audit, meaning that the customer had to follow up with ECA to make payment. The goal of EnergyWorks being a “one-stop shop” for energy efficiency was not fully realized, as customers had to interact with ECA, auditors, contractors and AFC (if a loan was required) on their own. A single customer service representative assigned to each customer would have helped improve the conversion rate from audit to retrofit, especially if they followed up at each milestone in the EnergyWorks process. One of the more successful auditors stated that he believed his success in converting his audits into retrofits was due to the fact that he followed up with his customers after they received the audit report to see if they needed any help moving to the next step in the process. A dedicated customer service rep could have performed the same service for customers, leading to more conversions from audit to retrofit.

Figure 16: Website Screen Shot – Transitioning to PayPal Increased the Application-Audit Conversion Rate



Community Outreach: The first two years included a significant amount of community outreach efforts. Two programs were created to encourage community/group participation: EnergyWorks@Work and EnergyWorks Select Partnerships. These programs were ideal for community relations and as an

educational tool, but they did not in and of themselves foster a significant level of program leads. Outreach programs should be designed to have trackable performance metrics to assess so that they can be carefully designed and tweaked along the way for optimum impact.

Program Financing: Because we were working from the Keystone HELP platform, which is a fairly static offering, we were slow to try special offers or other changes to gauge consumer interest and response.

Program Administration: Underestimated the administrative burden and staffing needs. We wanted to keep the organization lean, but did so at the expense of having adequate

Keep Software and Reporting Changes to a Minimum: The change in audit software and repeated changes in reporting requirements by DOE created confusion and delay. The same was true of the change to Salesforce by ECA although in that case it improved day-to-day operations and data gathering dramatically.

Team Cohesion: Last, but certainly not least....when we weren't working tightly as a team, the program suffered. It is essential to have clear roles and accountability, making sure everyone is working towards defined shared goals.

Program Sustainability Plans

COMMERCIAL

The commercial loan fund is a revolving loan fund and thus will revolve funds indefinitely (however, we do not anticipate a critical mass of funds sufficient to lend with for a couple of years). PIDC and TRF will continue to co-manage the fund through the end of the grant period in November 2014, with a goal of having all existing BBINP dollars committed by spring 2014.

Over the course of the next year, we will be reviewing the pipeline of projects and assessing whether there is demand enough to support the raising of additional private capital to bring to bear to continue expansion of lending activities. To-date we have not seen the level of interest in dedicated energy efficiency projects that we had hoped for. Most commercial loan applications have been for gut rehab projects that incorporate energy efficiency measures, either to wrap EE into an existing scope or to build in the EE in order to access low cost capital.

However, a potentially significant recent change in the local commercial landscape is the implementation of the City of Philadelphia's benchmarking law. The law requires that commercial buildings in the city of 50,000 square feet or larger (of which there are approximately 2,000) annually benchmark and disclose their utility use using the EPA Portfolio Manager online tool. With the first compliance period having just passed, we are planning to work closely with the benchmarking program on a focused outreach effort in winter 2014 to reach out to buildings covered by the law. We will be testing whether the education achieved through the benchmarking process and the resulting score create a sufficient motivation for

building owners to take the next step towards pursuing an audit and/or retrofit project. Our hope is that the law will help to spur new projects, grow the EnergyWorks pipeline, and present a portfolio of projects robust enough for us to raise a next round of capital with.

RESIDENTIAL

The residential program will continue to make loans through Keystone HELP at the current interest rates until funds are fully expended.

In 2014, two exciting changes will be made to Keystone HELP. Firstly, the program will be shifting its source of loan capital from the Pennsylvania Treasury to the Warehouse for Home Energy Efficiency Loans (WHEEL), a national aggregation facility that will purchase conforming loans from jurisdictions around the country for eventual securitization and secondary market sale. This move will allow the program to access national capital markets, which should increase the volume of retrofits around the country and produce lower rates for borrowers. The goal of WHEEL is to transform the market for energy efficiency lending and to make it more closely resemble more traditional credit markets, such as those for residential mortgages and auto loans. This shift is important to the future sustainability of the energy efficiency lending space and would not be possible without the support of the Keystone HELP and Energy Works programs, which will be the first loan programs to partner with WHEEL.

Secondly, in an effort to extend the life of the program and make the most use out of the remaining support funds available to it, the responsibility of supporting the loans will be altered. Currently, the Pennsylvania Department of Environmental Protection (DE) has been providing a basic level of subsidy to all loans statewide, with support from EnergyWorks being layered on top for loans in its five-county footprint. However, in an effort to equilibrate the burn rate of both DEP and EnergyWorks funds to mitigate the disruptive effects of the expiration of support funding, EnergyWorks will now be taking full responsibility for supporting loans in its region, while DEP funds will only be used to support loans in Pennsylvania's remaining 62 counties. Given the current volume of originations, this new funding structure should allow EnergyWorks to support approximately \$5-6 million in additional loan volume over the course of the next 6-8 months, at which time the grant funds should be fully depleted in accordance with the November 2014 revolving loan fund program end date.

Furthermore, in designing their new whole home rebate program, EnergySense, Philadelphia Gas Works (PGW) structured the program to call on Keystone HELP for financing. Starting in summer 2013, homeowners in Philadelphia choosing to pay for work performed through the utility's efficiency program were able to call upon EnergyWorks low interest loans. This arrangement seeks to align the EnergyWorks and EnergySense programs, creating continuity in the marketplace, as well as to expand uptake of EnergyWorks loan dollars.

Another valuable aspect of the EnergyWorks program for PA Treasury was the 100% quality assurance/quality control program required by EnergyWorks. PA Treasury receives a limited budget from the PA Department of Environmental Protection for this type of work. Having the

work paid for by EnergyWorks not only freed up PA Treasury's QA/QC funds for use in other parts of the state but also provided a far larger body of data for future study.

AFC is the only private home performance program financing company in the country. The ability to collaborate with EnergyWorks and PA Treasury on this innovative public/private approach to home performance financing on a large scale provides AFC with valuable experience that can be translated into expansion of these types of offerings in other states. Their competence at administering and managing a program such as this gives AFC enhanced credibility in the home performance program financing marketplace.

AFC also acquired valuable information on the mechanics that drive conversion from audit to loan. In particular, they had direct experience in observing the effects of varying audit costs, changing income levels, and providing special offers on the sale of loans to customers considering projects in AFC's identified "sweet spot" of \$3000 to \$24,000 of job cost.

Verification of Data

Over the course of the performance period, we worked closely with the evaluation team (Dale Hoffmeyer, DOE; Rebecca Ciraulo, Navigant) to compile program data, verify its accuracy, and analyze the reported data. Coordination occurred on a quarterly basis, with communication generally following the submission of quarterly reports. In addition to program data, utility data was also periodically submitted as required. We appreciated their close eye to detail and the assistance that they provided in ensuring data accuracy and noting relevant trends.

Working with Dale and Rebecca, we completed our *Data Summary Report* in December 2013. The report serves as a summary of reported data through Q3 2013 and includes narrative content accompanied by charts and graphs.

Developed Products

- Web site: www.EnergyWorksNow.com
- Residential Customer Database (Salesforce), maintained by ECA

Appendix

- Residential Program Marketing Summary Report (2013)
- Bi-weekly residential program report (12/15/2013)

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