



# EVALUATION OF THE EFFICIENCY MAINE TRUST PACE LOAN PROGRAM: REVIEW OF SUCCESSFUL PRACTICES IN FINANCING PROGRAMS

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# 1. INTRODUCTION

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First cost has been an ongoing barrier to the installation of energy efficiency measures since the advent of energy efficiency programs in the early 1980s. As a result, energy efficiency programs have developed multiple strategies to reduce the first cost, or premium, associated with making investments in energy efficient measures. These strategies have ranged from simple rebates to more complex financing mechanisms including leases, loans, and bonds.

Recently, energy efficiency organizations have developed different types of financing strategies to appeal to residential customers as a way to encourage them to make “deep” retrofits to their homes. These strategies include on-bill financing (OBF) as well as off-bill financing, e.g., using a line of credit, a home equity loan, or a similar type of credit arrangement. One of the more innovative approaches is the Property Assessed Clean Energy (PACE) financing model. PACE loans are different from other home equity loans because they stay with the property, rather than the homeowner, if the property is sold.

However, financing only addresses the barrier of first cost, and only for those who qualify. There are still a variety of other barriers. Many people are not motivated enough to deal with the transaction costs of arranging an energy-related home improvement project and signing up for a loan. For those, securing a loan for such a project may not be worth the effort, even if it is a “good deal” (Fuller, 2009).

Despite the more than 150 loan programs currently available for residential energy efficiency in the U.S., only a very small fraction of the target population has been reached. Most of these programs have reached less than 0.1% of their “potential” customers (Fuller, 2009), and even the most successful programs have barely tapped into the potential market.<sup>1</sup>

This report identifies successful practices and lessons learned from other financing programs as a way to provide additional guidance to Efficiency Maine’s PACE and Power Saver programs.

## 1.1 METHODOLOGY

The successful practices and lessons learned findings were distilled from a combination of sources including:

- A literature review of innovative financing programs and strategies that have been used throughout North America. The full list of references is provided in Section 6 of this report.
- In-depth interviews of program administrators involved with four financing programs: the Pennsylvania Keystone HELP program, the Midwest Energy How\$mart Program,<sup>2</sup> the HECO Solar Saver Pilot Program, and the Berkeley FIRST Pilot Program. One-page summaries of selected programs are provided in Appendix B.

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<sup>1</sup> For example, the 8,100 households that participated in Manitoba Hydro’s program only accounted for 1.9% of customers. Similarly, SMUD reached only 0.6% of its customers (3,200 households) in 2007. (Fuller 2009)

<sup>2</sup> Midwest Energy implements its How\$mart Program utilizing funds from the Efficiency Kansas Loan Program.

- Our team's first-hand experience in both developing and evaluating innovative financing programs throughout North America.

## **1.2    *REPORT STRUCTURE***

This remainder of this report is divided into the following sections:

- **Section 2: Overview of PACE and Other Financing Programs.** This section provides background information on PACE and other types of financing programs.
- **Section 3: Structural Components of Financing Programs.** This section provides an overview of the ways in which financing programs are structured, focusing specifically on the successful practices and lessons learned from programs using innovative financing approaches, such as PACE.
- **Section 4: Operational Components of PACE Programs.** This section focuses on key features of operating financing programs and identifies the successful practices and lessons learned regarding marketing, application processing, and the role of contractors.
- **Section 5: Summary of Successful Practices.** This section provides summary conclusions organized by topic and is designed to provide Efficiency Maine with guidance on potential program refinements and adjustments to its overall strategy.
- **Section 6: References.** This section contains a bibliography of the sources consulted in preparing this report.
- **Appendix A: Glossary of Key Financial Terms**
- **Appendix B: Financing Program Case Studies**

## 2. OVERVIEW OF PACE AND OTHER FINANCING PROGRAMS

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Approximately 28% of U.S. homeowners made home improvement investments in 2009, with an average project size of just under \$9,000. Energy efficiency-related home improvement projects – including HVAC equipment upgrades, major appliance installations, insulation improvements, and window and door replacements – represented about 25% of the total \$47 billion in residential home improvement expenditures. In terms of energy efficiency project categories, upgrades to HVAC equipment, major appliances, and insulation were the most common in 2009. More than 3.3 million homeowners – close to 4% of all U.S. homeowners and around 16% of those engaging in home improvement projects – completed projects involving HVAC equipment upgrades with an average project cost of over \$3,300. Nine percent of all homeowners (close to one in three of those engaging in home improvement projects) reported spending on major appliances including water heaters and dishwashers, and approximately 2% of all homeowners made improvements to home insulation. (Brown, 2011)

Given these statistics, the energy-efficiency related home improvement market is potentially worth hundreds of billions of dollars. But despite its promise, energy efficiency financing programs only capture a small fraction of this activity, and continually face hurdles to drive demand, develop a scalable program, and withstand economic challenges.

The following two subsections provide an overview of financing programs currently offered in North America as well as background information on PACE programs.

### 2.1 TYPES OF FINANCING PROGRAMS

A variety of energy efficiency financing programs have been offered to U.S. customers in the past two decades, including programs offering traditional secured and unsecured retail installment contracts (RIC), energy efficiency mortgages, and home equity lines of credit (Fuller, 2009). While these programs differ in many design details, most share the following key characteristics (Fuller, 2009; Hayes, Nadel & Granda, 2011):

- The target market for almost all programs is single-family owner-occupied homes, with a few programs open to multifamily homes and rental properties.
- Marketing channels are mostly through contractors and direct marketing from utilities.
- Loan amounts typically range from \$4,000 to \$10,000.
- Interest rates vary from 0% to 12%, with most programs offering interest rates of 4% to 8%.
- Terms tend to be for five to eight years, with a few programs offering longer terms.
- Most programs serve less than 0.1% of the customer base.
- Annual default rates range from near 0% to around 3%.

Table 1 summarizes ten financing programs and their key characteristics.



Table 1: Summary of Financing Programs

Sponsor Entity / Start Date	Financing Mechanism	Sources of Capital	Collection Mechanism	Target Market	Eligible Measures	Application Processor	Credit Requirem.	Security Interests	Interest Rate & Term	Enhancements	Average Loan Amount	Financing issued in 2007	% of Customers Served in 2007	Default Rate in 2007
AFC First Financial Corporate 2005	Retail Installment Contract or mortgage	PA Treasury, Housing Finance Agency & Energy Dev. Authority	Separate Monthly Bill from Lender	Single family owner occupied	Energy efficiency, solar, wind, geothermal	Sponsoring entity	FICA >640 ~65% approved	Loan loss reserve fund, some secured with mortgage	unsec 8.99% for 3, 5, of 10 yrs; sec 6.375-8.75% for 10/15/20	Below market rate interest	\$6,000-unsec. \$10,000 max; sec. \$35,000 max	~1,500 loans \$9 million	<0.1% (1,500 loans/ 4.8 million homes)	<0.5%
City of Berkeley 2008	Special tax levied	Municipal bond	On property tax bill	Res & Comm'l Property owners	EE, solar thermal, solar PV	TBA	Must own property and be current on property tax pmts.	Secured by lien on home	5-7% (tba) 20 years	Interest payments are tax deductible	Tba	n/a	n/a	n/a
Efficiency Vermont 2006	Consumer loan or mortgage	Lender funds, plus public benefit charge	Separate Monthly Bill from Lender	Single family owner occupied	Energy efficiency	Lender	Varies based on loan product 100% approved	Some loans are secured with home equity or another asset	Buy down 3.5%; final interest varies, 2-6.5%, 5 years max	Interest buy down	\$8,000 \$15,000 max	34 loans \$257,000	<0.1% (34 loans/ 250,000 homes)	None so far
Hawaiian Electric Company 2007	Tariffed installation program	Public benefit charge	Separate bill within the utility bill envelope	Single & multi-family rented or owned	Solar hot water	Contractor	No set bar, review credit and bill pmt history	Disconnect for non-pmt	0% 8 yr. term avg	Zero percent interest	\$5,000 no max	16 loans \$80,000	<0.1% (16 loans/ 40,000 homes)	None so far, started last year
Manitoba Hydro 2001	Consumer loan	Utility's general revenue funds	On utility bill	Single family owner occupied	Energy efficiency	Utility	No set bar; review credit and bill pmt history, 94% approved	Unsecured	6% up to 5 yrs	Below market rate interest	\$4800 \$7500 max	8,100 loans; \$39 million	<1.9% (8,100 loans/ 420,000 homes)	<0.2%
Midwest Energy 2007	Tariffed installation program	Utility's general revenue funds & st. housing fund	On utility bill	Single- and multi-family rented or owned	Energy efficiency	Utility	Good utility bill payment history	Disconnect for non-pmt	4% 15 years	Below market rate interest	\$4,000 no max	47 loans closed \$188,000 since 8/2007	n/a	None so far, started last year

## Overview of PACE and Other Financing Programs

Sponsor Entity	Financing Mechanism	Sources of Capital	Collection Mechanism	Target Market	Eligible Measures	Application Processor	Credit Requirem.	Security Interests	Interest Rate & Term	Enhancements	Average Loan Amount	Financing issued in 2007	% of Customers Served in 2007	Default Rate in 2007
Nebraska Energy Office 1990	Consumer loan	Lender funds, oil overcharge funds	Separate monthly bill from lender	Single & multi-family property owners	Energy efficiency, renewables	Lender	Lender does underwriting, Approval rate varies	Varies based on lender's requirements	Under 5% on average	Below market rate interest	\$9,000 SF max \$3,000 MF max \$75,000	784 loans \$7.1 million	0.1% (784 loans/ 700,000 homes)	<.01%
NYSERDA's Energy \$mart Loan 1998	Consumer loan	Lender funds, plus public benefit charge	Separate monthly bill from lender	Single & multi-family property owners	EE, solar thermal, solar PV, wind	Lender	Lender does underwriting, Approval rate varies	Loans over \$7500 must be secured	Buy down of 4% term varies	Interest buy down, Addl \$ for low income	SF \$11,000 \$20,000 max MF varies widely	SF 340 loans \$3.8 million MF 29 loans \$23.2 million	0.1% (369 loans/ 6 million homes)	<1%
NYSERDA's HPwES Loan 2003	Consumer loan	Fannie Mae funds and public benefit charge subsidy	Separate monthly bill from lender	Single family owner occupied	Energy efficiency	Lender	FICA >640 ~65% approved	Unsecured	5.99% for 3, 5, 7, or 10 yrs	Below market rate interest, Addl \$ for low income	\$7,800 \$20,000 max	541 loans, \$4.2 million	<0.1% (541 loans/ 6 million homes)	2-3%
Sacramento Municipal Utility District (SMUD) 1977	Consumer loan	Utility's general revenue funds	Separate monthly bill from utility	Single family owner occupied	EE, solar thermal, solar PV	Utility	Yes, std bank metrics used plus bill pmt. history 73% approved	Secured with a fixture filing to the property	7.5% up to 10 years	Below market rate interest	\$8,750 no max	3,200 loans \$28 million	0.6% (3,200 loans/ 520,000 homes)	1.8%

Source: Adapted from Fuller, 2009

## 2.2 PACE PROGRAMS

PACE programs were developed as a way to overcome some of the challenges of developing a successful financing program such as requiring a FICO credit score above 640. These PACE programs also received a large portion of government funding through the American Recovery and Reinvestment Act (ARRA) because the current administration believed that:

*“[...] PACE programs have the potential to increase the accessibility and affordability of energy savings measures, consequently lowering energy bills to residents and reducing the environmental footprints of participating localities. If programs are not properly constructed, however, the programs could potentially create risk for homeowners and lenders. Adoption of best practices, including strong contracting standards in the selection of those doing the retrofits, will help deliver the type of market transformation we need to see retrofitting scale up and achieve our goals.”*  
(White House, 2009)

### History of PACE Programs

From 2008 through 2010, 24 states and the District of Columbia passed legislation enabling PACE programs. In many cases, this legislation established special energy improvement districts which gave municipal authorities the ability to engage in contractual assessments by which loans are provided to home and property owners. These loans are subsequently repaid through the property tax bill and typically have senior lien position.<sup>3</sup>

Some of the earliest PACE programs were adopted in California (Berkeley, Sonoma County, Palm Desert); Boulder County, CO; and Babylon, NY. While these programs met with early success, they also faced some tough regulatory opposition from the Federal Housing Finance Agency (FHFA) due to concerns that PACE financing would increase homeowner debt obligations.<sup>4</sup> (Brown, 2011)

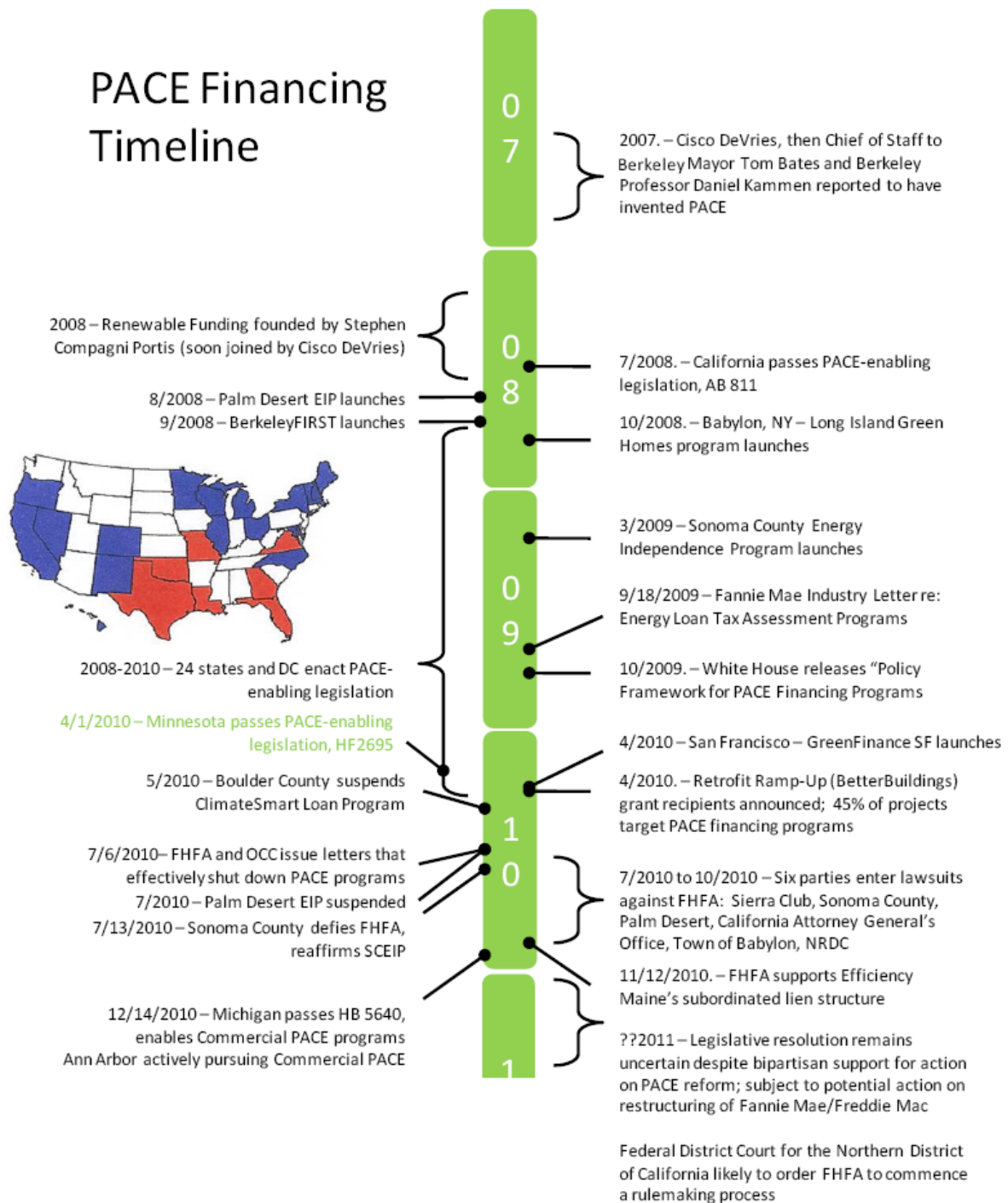
Figure 1 illustrates the evolution of PACE programs in the U.S.

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<sup>3</sup> It should be noted that PACE loans in Maine are different from those in other states because Maine's PACE law dictates that the loans do *not* have a senior priority over a primary home mortgage, original or new. In addition, loan assessments (payments) are *not* added to or treated like a property tax.

<sup>4</sup> FHFA is the regulator serving as conservator of Fannie Mae and Freddie Mac, owners or guarantors of the majority of single-family mortgages in the U.S.

Figure 1: PACE Financing Timeline



Source: Brown, 2011

Table 2 compares the different type of PACE structures currently in place in the US, which illustrate the overall diversity of these types of programs.

**Table 2: Comparison of PACE Financing Programs**

Sponsor	Region	Customer Targets	Financing Structures
New York State Partnership for Innovative Financing of Energy Efficiency Retrofits	Albany, NY	RES, COM, GOV/EDU	RLV, PACE, OBF
Los Angeles- Retrofit California	LA, SF Bay, Sacramento, San Diego, CA	RES, COM, MF	PACE, OBF
Efficiency Maine	Across state of Maine	RES	RLV, PACE
Chicago Region Retrofit Ramp-Up	Chicago Area, IL	RES, COM, IND	RLV, PACE, LRF,
EnergyWorks KC	Kansas City, MO	RES, COM, IND	PACE, LRF
Wisconsin Energy Efficiency (WE2) Project	Madison, Milwaukee and Racine, WI	RES, COM, IND	PACE
Southeast Community Retrofit Ramp-Up Consortium	Southeast	RES, COM	RLV, PACE, LRF, OBF
Greater Cincinnati Energy Alliance	Cincinnati, OH	ALL SECTORS	PACE, OBF
New Hampshire's Beacon Communities Project	Berlin, Nashua and Plymouth, NH	RES, COM, IND, GOV/EDU	PACE, LRF
Austin Climate Retrofit Protection Program	Austin, TX	RES, COM, MF	PACE, IRB
San Antonio Green Retrofit Initiative	San Antonio, TX	RES, COM, IND, GOV/EDU	RLV, PACE, LRF
Greensboro- Energy Efficiency as a Pathway to Community by Health & Wealth	Greensboro, NC	RES, COM, IND, GOV/EDU	PACE
Resort Communities Retrofit Program	Eagle, Pitkin, and Gunnison Counties, CO	RES	RLV, PACE, OBF
Kicking Kilowatts on the Treasure Coast	St. Lucie, FL	RES, COM	RLV, PACE
emPower SBC	Santa Barbara County, CA	RES, COM, IND	RLV, PACE

Key to Financing Structures: LRF=Loan Loss Reserve Fund, OBF=On-Bill Financing, PACE=PACE Financing, RLV=Revolving Loan Fund

Source: U.S. DOE Office of Energy Efficiency & Renewable Energy (EERE) Better Buildings, Financing Energy Efficiency Improvements, 2011; cited in Brown, 2011, p. 24

## **Benefits of PACE Programs**

The PACE program structure has certain advantages for local governments, property owners, and local businesses, compared to other types of financing programs. Table 3 summarizes these advantages.

**Table 3: Benefits of PACE Programs**

<b>Local Government Benefits</b>
Means to effectively implement energy conservation/Greenhouse gas reduction policies
Stimulus for local economies
Means to support retrofit/renewable energy programs without committing general fund dollars
<b>Property Owner Benefits</b>
Means to pay for energy efficiency improvements or renewable energy systems with no upfront cost
Loan for energy efficiency improvements with no credit score or other type of borrower history qualification
Long-term payback
Loan is tied to the property and does not need to be repaid at the time of sale if the property is sold
Way to overcome the 5-7 year home ownership turnover barrier to making long-term improvements
Hedge against rising energy prices
<b>Business Benefits</b>
Increased uptake of construction-related goods and services

Source: Options for Clean Energy Financing Programs, 2010

## Future of PACE Programs

Despite their appeal, PACE programs face an uncertain future as a viable financing option in the U.S. While some PACE programs are more successful than others, the overall structure of PACE programs has been facing increased scrutiny from the lending community and the federal government (Options for Clean Energy, 2010).

On July 6, 2010 the Federal Housing Finance Agency (FHFA) – which regulates Fannie Mae, Freddie Mac, and the 12 Federal Home Loan Banks – and the Office of the Comptroller of the Currency (OCC) concluded that Property Assessed Clean Energy (PACE) programs “present significant safety and soundness concerns” to the housing finance industry. Based on a detailed review of the PACE model, the regulators concluded that property owners who participate in senior-lien residential PACE programs will violate standard mortgage provisions and trigger a mortgage default. Furthermore, FHFA instructed Fannie Mae and Freddie Mac to use more restrictive mortgage underwriting standards for all borrowers in jurisdictions with PACE programs. Those warnings – coming from the issuers or holders of more than half of the nation’s mortgages – effectively stopped PACE in its tracks.

Typically, the tax liens created by assessments are senior to other obligations, like mortgages, and must be paid first in the event of foreclosure. Fannie Mae, Freddie Mac the FHFA, and other financial regulators reasoned that PACE assessments were, in effect, loans not assessments and so violated standard mortgage provisions requiring priority over any other loan (Clean Energy Financing Policy Brief, 2010).

In October 2009, the White House issued a Policy Framework for PACE Financing Programs which included guidance on various aspects for PACE programs including: the use of qualified auditors,

inspectors, and contractors; targeting PACE financing to “high value” projects and measures with the highest energy savings-to-investment ratio; and limiting financing to no more than 10% of property value and restricting applications to only those customers whose property value clearly exceeded mortgage debt.

Despite this guidance, there were still concerns among many of the cities, counties and states that had developed, or planned to develop, PACE models with ARRA grants because of the senior lien position. Some programs were suspended, including San Francisco’s \$150 million program and the California Energy Commission’s \$30 million municipal PACE program which was intended to support 23 counties and 184 cities. Several early adopters of PACE such as Sonoma County, CA and Babylon, NY decided to continue their programs but to focus on commercial-only PACE programs or accept only a subordinated lien (PACE Policy Brief, 2012). Even the ongoing PACE programs are facing an unknown future, largely because it is not clear how well they will be able to “scale up” to meet demand due to difficulty attracting secondary market financing in the wake of the problems facing Fannie Mae and Freddie Mac (PACE Policy Brief, 2012).

While 24 states have passed PACE enabling legislation, many statutes explicitly declare that PACE assessments create senior property liens. Several states may require legislative amendments to existing PACE authority to allow subordinate-lien PACE special assessment districts, as a way to mitigate potential risk (PACE Policy Brief, 2012).

Although the DOE and current administration continue to support pilot PACE financing programs, its future is still unclear in the current regulatory environment (Zimring & Fuller, 2010).



### 3. STRUCTURAL COMPONENTS OF FINANCING PROGRAMS

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This section provides an overview of the ways in which financing programs are structured and outlines successful practices and lessons learned. The following features are discussed:

- Sources of Capital
- Credit Limits
- Enhancements
- Eligibility and Bridging
- Qualifying Measures
- Cost-Effectiveness

#### 3.1 SOURCES OF CAPITAL

Capital for financing programs comes from a wide range of sources, including federal or state funds, private capital (e.g., from financial institutions), or, depending on the scope of the program, annual demand side management (DSM) budgets.

Start-up capital for many financing programs, including Efficiency Maine's PACE Loan Program, has come from ARRA funds. Since ARRA was designed as a one-time funding opportunity, program sustainability depends on finding alternate solutions. Other sources of capital include federal loan pools, pension funds, Community Development Financial Institutions (CDFI's), issuance of bonds, and financing from manufacturers of energy efficiency equipment (Bell et al., 2011; Fuller, 2009).

*Midwest Energy invests in the How\$mart program. On occasion, Midwest has been able to borrow at low or even zero percent interest rates on behalf of program participants. For a while, Midwest had access to state stimulus funds which were borrowed by Midwest on behalf of investments in the How\$mart program. Savings associated with low-cost capital were rolled over to the participating customer. (Volker, 2012)*

Many programs rely on small banks or credit unions, but this limits large scale implementation as their access to the secondary market is limited, thus preventing the program from recapitalizing when the initial funding has been lent (Hayes, Nadel & Granda, 2011). Clean Energy Works Oregon (CEWO) has mitigated this issue by recruiting additional banks and third-party lenders as a way to scale up the program throughout the state (CEWO Staff, 2012).

Partnering with an organization that has experience in underwriting retrofits to manage the loan application process can allow a municipality, or other PACE program administrator, to reduce its financial risk and take advantage of outside expertise. Possible partners include state housing agencies, CDFIs, credit unions, and other financial institutions.



*In Pennsylvania, the Keystone HELP program is administered by AFC First Financial. The program is financed by selling the loans to the Pennsylvania State Treasury. This has proven to be a great combination as Treasury's best performing asset class during the recent downturn has been the AFC loans. (Brown, 2011)*

In many cases, program funding is a combination of both private capital and either public funding or annual DSM budgets. The latter can be used to buy down interest rates for loans provided by private institutions such as banks and credit unions. (Hayes, Nadel & Granda, 2011)

### **3.2 CREDIT LIMITS**

Correctly sized program credit caps and amortization periods are critical to maximizing the ability of programs to offer a “cash flow positive” product. To the extent that the program's goals include “deep” or comprehensive retrofits, program administrators should take great care to ensure that amortization periods are not needlessly short as compared with the expected life of energy savings and that the amount of credit available to a given project is not unduly limited.

*The Keystone HELP program offers up to \$35,000 with a maximum 20-year term for its whole house retrofit tier. (Shin, 2012)*

*The Efficiency Kansas How\$mart Program uses the results of an energy audit and subsequent conservation plan to determine the amount and amortization period of the financing. The monthly tariff repayment must be less than 90% of the estimated bill savings. If the bill repayment is set to be greater than 90% after creating the conservation plan, the participant is able to make an upfront payment in order to meet the above requirement. (Volker, 2012)*

Other programs have developed funding caps in combination with tiered interest rates as a way to promote and reward deeper energy retrofits. Energy organizations using this approach include:

- Clean Energy Works Portland: This program caps loans at \$4,300 for basic weatherization (minimum 10% savings) but goes as high as \$19,850 for deeper retrofits (>30%); the program also has tiered interest rates (5.99% vs. 7.99%) for deeper retrofits (Brown, 2011).
- Pennsylvania HELP program: Interest rates are significantly lower if air sealing and insulation are included (Hayes, Nadel & Granda, 2011).
- Maryland Home Energy Loan Program: Participants can qualify for a lower interest rate if they include upgrades to insulation and duct sealing as part of the project (Hayes, Nadel & Granda, 2011).

### **3.3 PROGRAM ENHANCEMENTS**

Programs can employ several strategies to “enhance” their loan product and make it more attractive and accessible to the target market. Key types of enhancements include credit enhancements, reduced interest rates, and rebates.

#### **Credit Enhancements**

One concern with relying exclusively on banks or other private lenders to fund PACE loans is their discomfort with the lack of practical PACE experience and concern over default rates. As a result,

they may impose strict underwriting criteria, leading to high rejection rates.

Credit enhancements, such as loan loss reserves and guarantees can help attract competitive private capital to support PACE programs by absorbing all or a part of the risk of defaults. Enhancements can apply to the whole loan portfolio (e.g., by funding a part of the loan loss reserve) or to individual loans (e.g., tailored enhancements for each loan to less qualified borrowers) (Zimring, Goggio Borgeson & Hoffman, 2011). By reducing the risk to the lender, these credit enhancements can help secure financing with more lenient underwriting standards, thus reducing rejection rates for loan applicants.

*The Pennsylvania Home Energy Loan Program has a 10% loan loss reserve. The state of Maryland is starting a new program using a loan loss reserve approach, and Vermont is exploring the use of RGFI funds to serve as a loan loss reserve. (Hayes, Nadel & Granda, 2011)*

## **Interest Rates**

Energy efficiency financing programs can also enhance their product by offering below-market rates, either through interest rate buy-downs or by setting up a loan loss reserve to lower the risk of non-payment for lenders. Ultimately, interest rate buy-downs or other similar strategies amount to incentives, and must depend on program administrators' budgets, cost-effectiveness, and other constraints.

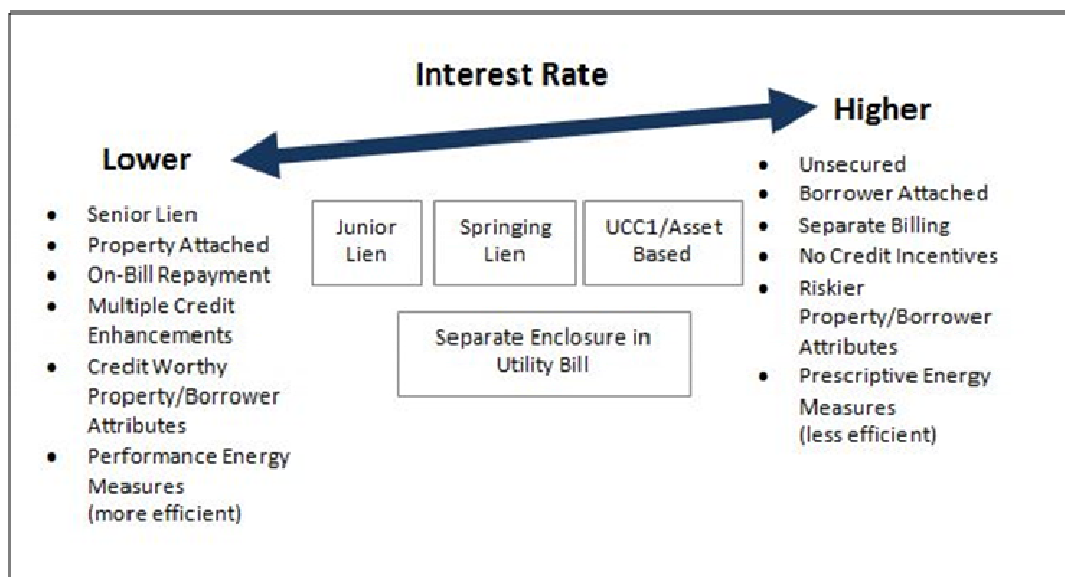
*The Solar Saver Pilot Program offered 0% interest financing, with a repayment period as long as 12 years, depending on the cost of the system and bill savings, to allow for loan payments equal to 80% of monthly savings. (Hee, 2012)*

*In the CT HOME program, a 0% interest rate was highly attractive, but the interest rate buy-down was reported as being "exorbitantly expensive." In New York, the interest rate reduction was also very costly; an alternative financing program has been established to complement the existing program. (Hayes, Nadel & Granda, 2011)*

*At nearly twice the rate for a home equity loan, the interest rate for the Berkeley FIRST pilot steered many applicants to other sources of money but also deterred some from proceeding with installation of solar panels. (De Snoo, 2012)*

Figure 2 illustrates the relationship between interest rates and other program attributes, a key issue to consider in developing an energy efficiency financing program.

Figure 2: Effects of Program Attributes on Loan Interest Rates



Source: Brown, 2011

## Rebates

Rebates are another strategy for financing programs to drive the uptake of energy efficiency measures, address specific market barriers not covered by financing alone, and contribute to the program's overall success. Rebates can be based on the estimated savings of the home improvements, or they can be prescriptive. Prescriptive incentives are easy to understand and risk-free for participants and they can be bundled/linked to encourage comprehensive retrofits.

Some energy efficiency programs offer only rebates or only financing, but the most successful financing programs use rebates to reduce the first cost of the equipment or to offset the costs of the in-home assessment. When possible, and depending on the context, offering combinations of financing and rebates can be valuable, both to improve customer attraction and to allow the financing component to be cash flow positive for homeowners. If rebates are offered as part of a financing program, they should be deducted from the cost of the retrofit for purposes of financing, as indicated in the Policy Framework for PACE Financing Programs (White House, 2009).

### 3.4 ELIGIBILITY AND BRIDGING

Many PACE loan programs are secured loan programs that require equity in the home; however, this has created a barrier for middle-income households that may have little to no equity in their homes (Zimring et al., 2011). An emerging program practice is to offer alternative loan products to those customers who may not qualify for PACE loan because they do not have sufficient equity in their home. Several financing programs are offering a menu of loan options, including smaller and unsecured loans to complement secured loans (Freehling, 2011). This approach, often called bridging, lowers the program's overall customer acquisition cost while providing attractive options to a wider pool of applicants.

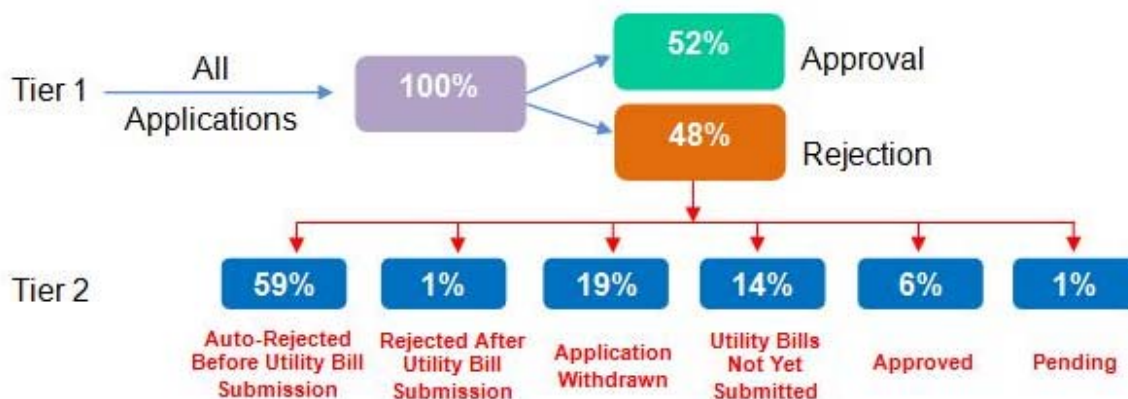
Clean Energy Works Portland (CEWP) found that applicants, even those who did not qualify for their standard loan, still represented a “cohort of homeowners motivated to complete energy efficiency upgrades to their homes. Even if they are excluded from the program or ultimately drop out, they represent the type of engaged homeowner Energy Trust works to identify. Providing these homeowners with targeted communication about other opportunities to obtain financial or technical assistance could encourage them to take action sooner or complete more comprehensive projects than they might complete on their own.” (Peters, 2011)

The Indianapolis Neighborhood Housing Partnership began an unsecured program to complement its conventional secured loan program. The secured product had a longer term (10 years versus 4 years) and larger loan limit (\$15,000 compared to \$4,000). Leverage obtainable was far higher for the secured product, but the more diverse financing offering could reach a larger segment of the population. (Freehling, 2012)

New York State developed a tiered approach that matches the loan options to the borrowers’ credit history. This approach, illustrated in Figure 3, has led to a wider pool of potential applicants, thus ensuring that middle-income households have access to loan options to encourage energy efficiency improvements. With this approach, the loans are available to a wider group of potential participants, depending on whether they qualify for either a Tier 1 or Tier 2 approach.

The Green Jobs - Green New York Program provides guidance for segmenting loans into two tiers. “Tier 1” loans are funded through capital markets and are issued to highly creditworthy customers (credit score over 640, debt to income ratio less than 50%, no bankruptcy, etc.). “Tier 2” loans are funded through a revolving loan fund, and credit worthiness is assessed through utility bill and mortgage payment history. (Bell, Nadel & Hayes, 2012)

Figure 3: NYSERDA’s Tiered Approval Process



Source: NYSERDA, 2011

Another approach being used by some program administrators to increase the pool of program participants is to use proxies for traditional credit scores. For example, Clean Energy Works Oregon (CEWO) developed an innovative low-cost underwriting process that increases customer access to financing. While the process includes a traditional credit score check, CEWO examines utility bill repayment history instead of analyzing an applicant's debt-to-income (DTI) ratio. This approach reduces loan underwriting expenses and has resulted in a loan rejection rate of about 10%, compared to rejection rates of 20 to 50% for many other energy efficiency loan programs (Zimring, Goggio Borgeson & Hoffman, 2011; CEWO Case Study, 2012). To further increase choice, CEWO recently recruited a second lender and now has the ability to offer customers different loan products, based on varying requirements (CEWO Staff, 2012).

### **3.5 QUALIFYING MEASURES**

Another critical element of successful loan programs is to make sure that the qualifying measures lead to deep and lasting energy savings. Many of the early PACE financing programs focused on financing high-priced solar installations, while some of the later programs have expanded to include more traditional energy efficiency improvements.

*Local governments in other states have taken various approaches regarding eligible improvements. In Berkeley, although its local regulation permitted both solar and energy efficiency improvements, the City made the first round of funding only available for solar projects. The City of Palm Desert, California, included both solar and energy efficiency improvements in its program. (Options for Clean Energy Financing Programs, 2010)*

*In Sonoma County, California, financing is available for projects that combine eligible improvements, such as bundling of water conservation, energy efficiency, and renewable energy measures. For example, a property owner may choose to replace an aging and inefficient furnace, install weather stripping, install low flow toilets, and install a photovoltaic system. (Options for Clean Energy Financing Programs, 2010)*

### **3.6 CUSTOMER CASH FLOW**

A critical issue for financing programs is to target those home improvements that lead to a positive cash flow for the participants. The following quotes outline the approach used by Midwest Energy to encourage measures that will be considered "economical" (or "cost-effective") by the homeowner.

*Since estimated savings are calculated for each retrofit, allowing any bundle of measures that meet the program's cash flow positive criteria enables the participant and the contractor to find a solution that is best for their situation. This allows maximum flexibility in meeting program energy performance targets, and is the path followed by Efficiency Kansas How\$mart. (Volker, 2012)*

The cash flow positive criterion is operationalized as follows:

*The charge on the utility bill for the Kansas How\$mart Program can be no more than 90% of the estimated savings. The charge on the bill is the recovery of the investment cost, so the savings bound the maximum investment and there is no need for a limit. Kansas also allows for an upfront payment to meet the cash flow positive requirements of its program. (Volker, 2012)*

PACE financing programs offer an advantage over traditional home equity (or home improvement) loans by having a longer term and therefore increasing the overall likelihood of positive cash flow for even expensive energy efficiency improvements or renewable energy installations (Brown, 2011). However, in order to generate long term positive cash flow, the term of the loan should not exceed the useful life of the improvements.

*In Palm Desert, California, the term of the loan cannot exceed the reasonably expected useful life expectancy of the energy efficiency improvements financed by the loan. (Options for Clean Energy Financing Programs, 2010)*

*In New York, every loan under the program must be repaid over a term not to exceed the weighted average of the useful life of the renewable energy systems and energy efficiency programs. (Options for Clean Energy Financing Programs, 2010)*

According to a recent analysis conducted by Lawrence Berkeley National Laboratory, there is a strong relationship between household income and energy costs as a portion of overall household income. Specifically, lower income households are spending a significantly higher proportion of income on energy costs. Therefore, achieving a positive cash flow from energy efficiency improvements can lead to an improved standard of living among lower income households (Brown, 2011). Also, emphasizing cost-effective energy efficiency improvements could help those middle-income households caught in the “credit crunch” to invest in energy efficiency improvements that would also boost their overall standard of living and quality of life (Zimring, Goggio Borgeson & Hoffman, 2011).

*About 40 % of households that have applied to the Keystone HELP program earn 80% or less of Average Median Income (AMI) suggesting that many middle-income households are attracted to the program. However, these participants are more difficult to serve, as 57% of them do not meet the program’s underwriting standards, compared to 31% of wealthier households. Furthermore, fewer middle-income households move forward even when financing is available. Still, middle-income households account for about a quarter of all Keystone HELP volume. (Zimring, Goggio Borgeson & Hoffman, 2011)*

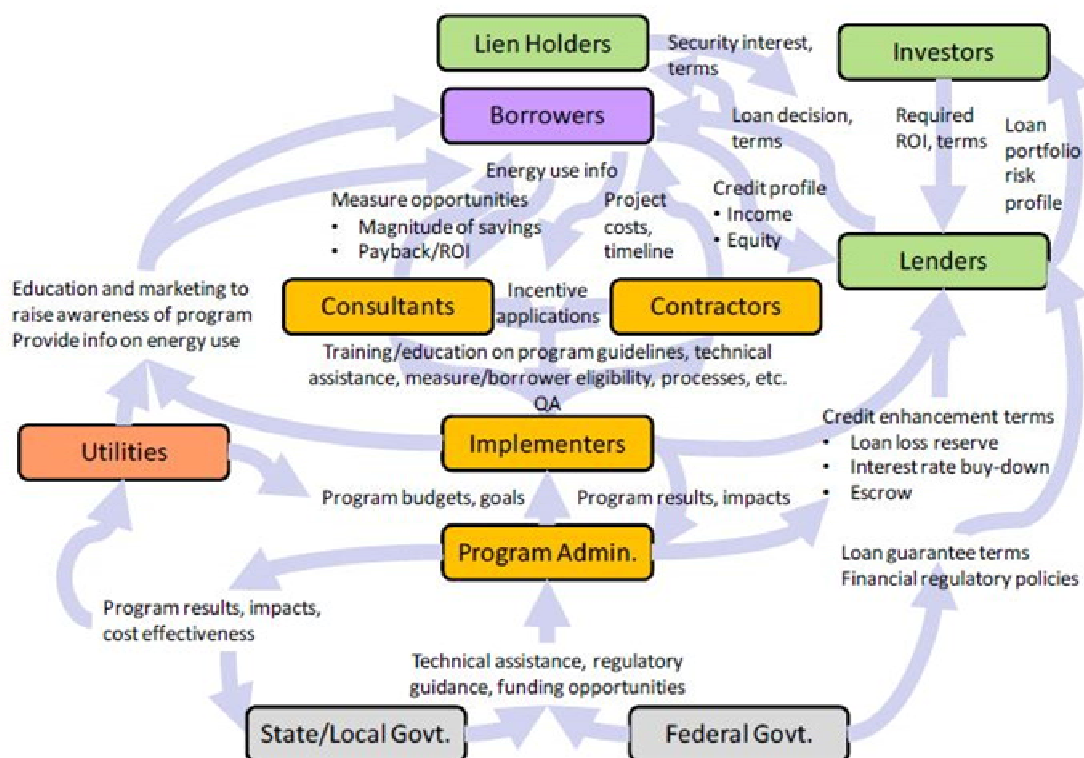


## 4. OPERATIONAL COMPONENTS OF PACE PROGRAMS

This section focuses on the “nuts and bolts” of financing program operations. It illustrates some “successful practices” and “lessons learned” regarding the best ways to operate a successful loan program.

Figure 4 captures the dynamic nature of communication flows within a financing program and further illustrates the overall complexity of managing financing programs. All of the information exchanges involved in such programs are subject to delays, confusion, and can generate significant documentation requirements. While some program functions may be performed by a single organization – including program implementation, lending, or assessment consultations – other stakeholders, including end-use customers and contractors, constitute large and fragmented populations that present significant challenges to consistent communication and smooth process flow among these various players (Brown, 2011).

Figure 4: Communication Flows within Financing Program



Source: Brown, 2011

## **4.1    *MARKETING***

A key challenge facing loan program administrators is to create demand for their products. Energy efficiency financing programs have the interconnected challenge of creating demand for energy improvements and financing products.

In general, PACE programs should develop a comprehensive marketing plan to educate homeowners about the availability and benefits of the program, and how they can participate. Marketing materials should provide basic information about the program, eligibility requirements, and benefits.

### **Sell Something People Want**

Recent research has concluded that success in motivating comprehensive home energy improvements will require program sponsors to find new ways to understand and appeal to the wants of specific customer segments (Zimring et al., 2011) and close coordination with capable program partners is necessary to craft effective messages and expedite productive services (Brown, 2011).

Energy efficiency improvements are not generally viewed as a high-value transaction by homeowners. Reasons for this include that energy improvement projects are just not as appealing or as critical as other types of home remodeling projects, and they compete for homeowner's limited home improvement budgets with other projects both discretionary (e.g., kitchen/bath remodels) and emergency (e.g., roof replacements). (Brown, 2011)

In order to increase the value of energy efficiency improvements in the eyes of homeowners, programs should highlight the benefits of the improvements that are most appealing to homeowners. A recent process evaluation of Clean Energy Works Portland (the pilot program for CEWO) revealed that saving energy is a higher motivator for energy efficiency improvements than lowering heating bills or having a more comfortable home, and the lowest motivating factor is to increase the overall value of their home (Peters, 2011).

### **Meet Customer Needs**

An important first step of program marketing is to segment customers into key groups to better address their needs. Potential energy financing program participants fall into two categories: those who are "proactively" seeking out home energy improvements and those who are "reactively" trying to make an emergency purchase to replace failing equipment.

Peter Krajsa, Chairman and CEO of AFC First Financial, administrator to the Keystone HELP program in Pennsylvania, contrasts the "twilight zone" dislocation that confronts the *reactive* consumer contemplating the fallout from putting a \$5,000 emergency furnace replacement on his/her credit card with the thoughtful *proactive* consumer looking to maximize economic returns from a major home performance investment. The Keystone HELP program's tiered interest rate structure, secured and unsecured options, and incentive bundles are carefully geared to appeal in different ways to these two different motivations.

### **Avoid "Energy Jargon"**

Another critical best practice in marketing energy financing programs is not to rely on "energy jargon" but rather use language that is constructive to earn trust and avoid turnoffs with customers.



When developing marketing materials, programs should consider that the language used to describe the program affects how participants react to the program offering. The language used should be easy to understand and carry positive connotations.

*The Energy Upgrade California Program Team created a glossary of preferred words based on work they carried out. Examples include using “home improvements” instead of “home retrofit” or “home renovation.” The term “home energy assessment” was preferred over “audit” as the latter was found to suggest scrutiny of the homeowner’s worthiness. (Brown, 2011)*

The suggested terms include the following:

- “Improvements,” “home improvements,” and “home efficiency improvements” are recommended while “retrofit” and “remodel” are discouraged because of their suggestion of a more extensive project consuming significant time and money.
- “Home energy assessment” suggests opportunity while “audit” foreshadows scrutiny of one’s worth as a homeowner.
- “Home” is warmer than “residence.”

## **“One Touch Is Not Enough”**

Another marketing best practice for these types of programs is the notion that “One Touch Is Not Enough” but that marketing and outreach campaigns need to repeatedly “touch” potential participants. Programs should take steps to ensure residents are receiving consistent and/or coordinated messages, across the multiple touches, especially if there are multiple program messengers (Brown, 2011; Hayes, Nadel & Granda, 2011).

*In Oregon, the Clean Energy Works program has included a significant marketing effort, using utility mailers, targeted e-mails, and radio and print ads. Home owners are recruited through social marketing targeted to neighborhoods and include open houses, door hangers, and information tables at local events. These marketing efforts have been crucial to achieve participation goals and maintaining public interest. (Hayes, Nadel & Granda, 2011)*

## **Engage the Wider Community**

Outreach and marketing to engage the community is another vital component of any successful energy efficiency retrofit program. It may be productive to coordinate with existing community structures such as Cooperative Extension Services county offices, local Weatherization Assistance Programs providers, and other community-based organizations. (Options for Clean Energy Financing, 2010).

Examples of financing organizations using community-based marketing include:

- The Cook County Energy Savers program sponsors found that the most effective outreach strategies for multifamily property owners come in partnering with organizations including community building groups, landlord associations, and associations of housing developers (Brown, 2011).

- The Duluth Energy Efficiency Program had help from a local community action organization to knock on 9,000 doors (in a town of about 38,000) to promote upcoming workshops on home performance and related program opportunities (Brown, 2011).
- The City of Houston targets a neighborhood and sends a letter to every household; this effort results in an approximate sign-up rate of 10% of the residents. Then the city connects with community leaders, the city council member from the community, church groups, neighborhood associations, and others to get the word out. They follow that with a block party featuring food and music to attract more participants. These techniques are relatively inexpensive because they rely on volunteer support, but they have resulted in 40% to 80% participation rates, depending on the neighborhood. (Fuller, 2009)

## **4.2 LOAN APPLICATION AND PROCESSING**

Another challenge to operating a successful financing program is making it simple and easy. This is a particular challenge for PACE programs, or those that require the participants to secure liens, notations, or second mortgages on their properties.

A streamlined application process is important both to the customer and the contractor. Any burden for the customer or a delay in paying the contractor creates a barrier to participation. Programs such as Manitoba, SMUD, AFC First, Viewtech, and Clean Energy Works Oregon offer quick application processing, often with approval over the phone for unsecured loans, and several programs deposit loan funds directly into contractors' accounts as soon as customers sign off. (Fuller, 2009; Johnson, 2009)

Efficiency Vermont's program, in partnership with the local credit union (Vermont State Employees Credit Union, VSECU), offers three different options, and the process, from a customer's perspective, is both simple and customized. The customer talks directly to a bank representative, figures out which option will work best, and then the bank, the contractor, and Efficiency Vermont work together on the project approval and payment process.

By comparison, Hawaii's Solar Saver Program requires that the customer get a form notarized as part of the loan application process, after which it can take more than a month to obtain approval, delaying the project several months. The application process is also tied to contractor payments. For example, immediately upon completion of the "*Installation Completion Certificate & Customer Warranty*" form the contractor receives payment for the cost of the system, less the \$1,000 rebate. Once all the documents have been received, the balance of the remaining cost is paid to the contractor. The \$1,000 rebate is paid to the customer through a different rebate approval process. The multiple payment streams add to the complexity of the overall program and have led to some contractor dissatisfaction. (Johnson et al., 2010)

An emerging "best practice" in loan programs is to develop a "one-stop-shop" approach. For example the Green Financing Initiative in New York City, the Cook County Energy Savers program in Chicago, and the Enterprise Multifamily Green Retrofit Program have designed their programs so that customers can complete all application steps online to streamline the process. Energy Upgrade California is using a "one-stop clearinghouse" approach for its web portal that is similar to the Lending Tree consumer loan search site, giving customers visibility to a full menu of options and allowing them to find the most attractive solution. (Brown, 2011)

Perhaps the best-known one-stop-shopping model has been developed by Clean Energy Works Oregon (CEWO). This program offers no-money-down, no-fee financing, and simple qualifications.

This program bundles multiple energy upgrades into a one-time, one-stop home energy remodel and equips homeowners with expert guidance from start to finish. (Going Beyond Green: Spring 2011 Newsletter)

*The Clean Energy Works Oregon one-stop shop experience helps participants with each of the program steps from start to finish. Participants can apply online through the program's web portal and receive advice from an "Energy Advisor." Energy Advisors are trained in building science and can give advice and step-by-step guidance to participants throughout their retrofit. (CEWO Staff, 2012)*

Other examples are Berkeley First and Midwest Energy.

*The Berkeley FIRST program used a streamlined application process that took 13 minutes on average to complete. There was a simple credit check authorized by the participant. (De Snoo, 2012)*

Midwest Energy goes a step further by creating a “conservation plan” as part of the audit, which is essentially the work scope that contractors must follow in order for participants to receive funding. This approach ensures that only the most cost-effective measures are completed, while also simplifying the decision-making process for customers. (Fuller, 2009)

## **4.3 CONTRACTORS**

Contractors are often the “program ambassadors” and they are therefore critical to developing a successful long-term program. NYSERDA found that more than half of their customers learned about the program from contractors (Fuller, 2009). Leveraging contractors’ existing relationships to deliver program messages can be a cost-effective way to increase demand for comprehensive energy upgrades.

The programs with the highest volume of loans all have strong contractor networks and regular program communication with those contractors. Manitoba Hydro has 1,100 contractors and 200 retailers in their program; AFC First has 700 approved contractors in Pennsylvania; SMUD has 180 contractors in the Sacramento region; and NYSERDA has 147 contractors in New York. (Fuller, 2009)

### ***Contractor Training***

It is not sufficient to simply recruit contractors into the program; successful programs also invest in contractor training. The Energy Trust of Oregon supports the Home Performance Contractors Guild, a local trade association, by offering both training and support to strengthen the home performance contracting community in the state. Similarly, CEWO has provided contractors with Executive Coaching, mentoring, and business management classes as ways to ensure that their contractors are equipped to deal with the anticipated program volume. (CEWO Staff, 2012; Energy Trust Staff, 2012)

Other examples include AFC First, which dedicates staff to travel around Pennsylvania offering contractors training in marketing techniques and in the mechanics of the financing product.

*Training programs should be designed to ensure that participating energy auditors and contractors installing the energy efficiency improvements not only understand the program requirements, but are fully knowledgeable to employ best practice. (Options for Clean Energy Financing Programs, 2010)*

### ***Contractor Qualification***

Contractors also play an essential role in that they perform the initial assessments to identify the types of energy efficiency improvements that are needed. Therefore, it is vital that these programs recruit qualified contractors who have the skill set needed to not just sell the program, but to also complete the assessments and make installations satisfactorily and safely.

Current financing programs rely more on a “closed network” approach, meaning that contractors have to meet specific requirements in order to participate. Some of these networks are more stringent than others but all require licenses, insurance, and other thresholds to ensure sound business operations.

*Solar Saver Pilot Program contractors had to be on an approved contractor list, and agree to perform extended warranty repairs for the duration of the repayment term at no cost to the participant. Contractors were monitored for quality of work and underperforming contractors could be removed from the approved contractors list. (Hee, 2012)*

*The Kansas How\$mart Master Contractor list is simple: it’s called “easy on, easy off.” All the contractor has to do is agree to abide by local codes and complete the projects as prescribed in our Conservation Plan. On the other hand, shabby work, an unwillingness to fix problems, or refusal to abide by local codes or requirements will get the contractor quickly removed from the list. (Volker, 2012)*

Most successful financing programs, however, especially those focusing on home performance or energy efficiency installations, require higher standards including certification by the Building Performance Institute (BPI). This is becoming standard practice for most utility and energy efficiency organization’s program requirements. (Fuller, 2009)

One of the more stringent “closed network” programs is CEWO. Not only does the program require contractors to meet licensing and training requirements, but they also have to meet financial criteria and agree to pay a “living wage” to their employees. This is part of their overall objective to create “green collar jobs.” However, this requirement has meant that many smaller contractors are precluded from participating in the program – creating some tension within the Home Performance community. (Johnson, 2012)

### ***Contractor Marketing Support***

In most programs offering energy efficiency home improvements, contractors play a critical role in promoting the program to customers. To help them in these efforts, many programs provide marketing support to contractors. This can help ensure consistency in message among contractors and provide contractors with valuable tools to explain the program and benefits of home energy improvements to potential participants.

*The Keystone HELP program provides marketing materials free of charge to their participating contractors. This strategy takes the burden of developing the materials off the contractor's already heavy workload and allows for a uniform brand and message to be associated with the program, increasing its brand recognition. (Shin, 2012)*

## 5. SUMMARY OF SUCCESSFUL PRACTICES

Our research identified several successful practices that have been used to develop successful energy efficiency financing programs. Structural successful practices are summarized in Table 4; operational successful practices are summarized in Table 5.

**Table 4: Summary of Structural Best Practices**

<b>Sources of Capital</b>	
Enable large scale implementation	If relying on small banks or credit unions, recruit additional loan funder(s) to allow for scaling up of program.
Partner with expert underwriter	Partner with an organization with experience in underwriting of energy efficiency retrofits to take advantage of outside expertise and reduce financial risk.
Combine sources of capital	Utilize a combination of both private capital and either public funding or DSM budgets.
<b>Credit Limits</b>	
Correctly size credit caps and amortization periods	Set program credit caps and amortization periods to balance comprehensive retrofits with a “cash flow positive” program.
Offer tiered interest rates	Offer tiered interest rates to promote and reward deeper energy retrofits.
<b>Program Enhancements</b>	
Offer credit enhancements	Offer credit enhancements such as loan loss reserves or guarantees to attract competitive private capital and reduce strict underwriting criteria and high rejection rates.
Offer interest rate enhancements	Offer below-market interest rates through buy downs or setting up a loan loss reserve.
Offer a combination of rebates and financing	Offer rebates (either prescriptive or based on estimated savings) to increase participation and to allow the financing component to be cash-flow positive to homeowners.
<b>Eligibility and Bridging</b>	
Offer a portfolio of complementary loans	Offer customers a portfolio of loan options, including smaller unsecured loan to complement secured loans, to lower the overall customer acquisition cost and provide options to a wider pool of applicants who may not meet PACE requirements.
<b>Qualifying Measures</b>	
Allow for a variety of qualifying measures	Allow qualifying measures to include energy efficiency improvements as well as renewable energy installations to ensure deep and lasting energy savings.
<b>Customer Cash Flow</b>	
Aim for positive cash flow of financed improvements	Emphasize cost-effective improvements by offering longer term financing or payment limits and preventing payback periods from exceeding the useful life of the improvements.

**Table 5: Summary of Operational Best Practices**

<b>Marketing</b>	
Sell Something People Want	Motivate comprehensive home energy improvements by highlighting the most appealing benefits of the improvements.
Meet Customer Needs	Identify customer type (proactive vs. reactive) and gear offer to appeal to their different motivations.
Avoid "Energy Jargon"	Use language that is constructive to earn trust and avoid turnoffs.
Engage when most likely to act	Have a program available when customers need it most—usually when they are facing an equipment replacement decision.
One-Touch is Not Enough	Ensure residents are receiving consistent and/or coordinated messages, especially if there are multiple program messengers.
Engage the Wider Community	Coordinate outreach efforts with existing community structures.
<b>Loan Application Processing</b>	
Develop a “one-stop-shop” approach.	Reduce participation barriers for both customers and contractors by provide an easy one-stop-shop experience.
<b>Contractors</b>	
Invest in contractor training and building a strong contractor network.	Invest in contractor development and building a strong contractor network to ensure contractors can be successful program “ambassadors.”
Require contractors to conform to industry standards	Assure quality installations and customer satisfaction by requiring high levels of contractor qualification, e.g., BPI certification.
Provide contractors with tools to market themselves and the program.	Provide contractors with marketing materials to give to customers that help explain the program and the benefits of home energy improvements.



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# APPENDIX A: GLOSSARY OF KEY FINANCIAL TERMS

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**Acquisition cost:** The cost of a business to acquire a new customer. The company recognizes costs, including marketing and incentives, to introduce new customers to the company's products and services. The customer acquisition cost is calculated by dividing total acquisition costs by total new customers over a set period of time. (<http://www.investopedia.com/terms/a/acquisition-cost.asp#ixzz20un8TeXX>)

**Energy efficient mortgage:** Energy Efficient Mortgage (EEM) is a mortgage that gives borrowers the opportunity to finance cost-effective, energy-saving measures as part of a single mortgage and stretch debt-to-income qualifying ratios on loans, thereby allowing borrowers to qualify for a larger loan amount and a better, more energy-efficient home. To get an EEM a borrower typically has to have a home energy rater conduct a home energy rating before financing is approved. This rating verifies for the lender that the home is energy-efficient. (<http://definitions.uslegal.com/e/energy-efficient-mortgage/>)

**Retail installment contract:** A contract that provides compensation for consumer goods or services by making payments over time, usually at a high interest rate. (<http://financial-dictionary.thefreedictionary.com/retail+installment+contract>)

**Lien position:** The order in which liens will be repaid when the property is transferred to a new owner (<http://www.franklinmortgageco.com/dictionary.html>)

**Secured loan:** The borrower pledges some asset (e.g., a car or property) as collateral for the loan, which then becomes a secured debt owed to the creditor who gives the loan. The debt is thus secured against the collateral. In the event that the borrower defaults, the creditor takes possession of the asset used as collateral and may sell it to regain some or all of the amount originally lent to the borrower, for example, foreclosure of a home. ([http://en.wikipedia.org/wiki/Secured\\_loan](http://en.wikipedia.org/wiki/Secured_loan))

**Securitization:** The process through which an issuer creates a financial instrument by combining other financial assets and then marketing different tiers of the repackaged instruments to investors. The process can encompass any type of financial asset and promotes liquidity in the marketplace. <http://www.investopedia.com/terms/s/securitization.asp#ixzz20usdQQ1l>

**Subordinate lien:** Any subsequent (second, third, fourth, etc.) mortgage lien. In the event of foreclosure, holders of such liens may resort to the property for payment only to the extent of any surplus after prior liens have been paid off. Priority is usually determined by the chronological sequence in which the mortgages were created, but may be varied by agreement among the parties. (<http://www.answers.com/topic/subordinate-lien-1#ixzz20ur01Ewb>)

**Unsecured loan:** A loan that is issued and supported only by the borrower's creditworthiness, rather than by some sort of collateral. <http://www.investopedia.com/terms/u/unsecuredloan.asp#ixzz20usE90VC>

# APPENDIX B: FINANCING PROGRAM CASE STUDIES

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## How\$mart® – Midwest Energy – Kansas

### Background

Midwest Energy is an electric cooperative providing service to 48,000 customers across 41 counties in western Kansas. The How\$mart® program began offering an on-bill financing option to customers beginning in 2007. Unlike other utility loan programs, How\$mart® is a tariff-based program that attaches the obligation to the utility meter and not the individual customer. The repayment obligation transfers to the new property owner/tenant in case of ownership/renter transfer.

### Funding Mechanism

- 50% of initial funding supplied at 0% interest by the Kansas Housing Resources Corporation
- Other 50% from utility capital at 8% cost of capital
- Blended cost of capital: 4%

### Partner Coordination

- Utility training engagements with contractors provided a foundation for partnership on the program

### Notable Attributes

- On-bill tariff structure serves to remove landlord/tenant and builder/buyer split incentives
- No first cost and pay-as-you-save features for ratepayer makes attractive for low income
- Modeled after the Pay-As-You-Save® (PAYS®) programs originating in the 1980s, now defunct
- Energy savings (avoided bill payment) must exceed monthly surcharge for repayment; surcharge can be no more than 90% of estimated savings
- No upfront capital requirements from customer if energy savings exceed surcharge
- 93% of projects involve AC/Furnace or both; about half have shell improvements (insulation, air sealing)

### Addressing Barriers

- Owners are able to cover a portion of upfront project costs to ensure billing remains cash flow positive from the ratepayer standpoint; typically owners have bought down 20% of project costs (through 2009)
- Program has average surcharge of 83.5% of energy savings (through 2009)
- “Easy on/easy off” contract qualification/disqualification process provides threat of dismissal for contractors with low quality of work or unethical practices
- Disconnection for non-payment provides additional payment security

### By the Numbers

- Start date: 2007
- Interest rate(s): 5% (Res), 6% (Non-Res)

- Loan term: up to 180 months (residential), 120 months (non-residential) OR 75% of measure useful life
- Segments served: Residential (97%)
- Typical project size: \$5,300 (utility) + \$1,400
- Ownership: 86% owner-occupied, 14% renter-occupied
- Audits: 909 (through 2009)
- Installations: 331 (through 2009)
- Average program fees: \$256/project (4%)
- Average surcharge: \$40.47/month
- Average est. savings: \$47.55/month
- Default rate: zero; none identified to date

### **Sources**

Brown, M. and B. Conover, *Recent Innovations in Financing for Clean Energy*, Southwest Energy Efficiency Project, October 2009.

[http://www.swenergy.org/publications/documents/Recent\\_Innovations\\_in\\_Financing\\_for\\_Clean\\_Energy.pdf](http://www.swenergy.org/publications/documents/Recent_Innovations_in_Financing_for_Clean_Energy.pdf)

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## **Clean Energy Works Portland (Oregon)**

### **Background**

Clean Energy Works Portland (CEWP) is a community-based energy efficiency program initiated in June 2009 to leverage ARRA funding to attract private capital financing of energy improvements with a goal to retrofit 500 homes over the course of the multi-phased project. The program is a local precursor to the Clean Energy Works Oregon statewide program.

### **Funding Mechanism**

- CEWP was launched in 2009 with \$2.5 million in ARRA EECBG grant funds
- Grant funds contribute 10% loan loss reserve (10:1) to leverage private capital from ShoreBank; goal to reduce LLR to 1-2% over time
- Statewide CEWO successor funded with \$20 million ARRA BetterBuildings grant

### **Partner Coordination**

- Oversight of the program is provided by the Portland Bureau of Planning and Sustainability
- ShoreBank Enterprise Cascadia, a certified nonprofit Community Development Financial Institution (CDFI) funds the CEWP loans
- Area investor-owned utilities (Portland General Electric, NW Natural, and Pacific Power) facilitate on-bill repayment of CEWP loan obligations with customers, transferring funds back to ShoreBank
- The Energy Trust of Oregon (ETO), administrator to state ratepayer-funded energy efficiency programs, is responsible for recruitment, qualification, and management of contractor participation in the program
- ETO has contracted with Conservation Services Group (CSG) to serve as program implementer

### **Notable Attributes**

- 44% audit-to-conversion rate through January 2010; currently around 65-70% based on administrator estimates
- ETO generates leads from online customer application submissions
- Email marketing from customer utilities is identified to be the top referral source; email utility newsletter created a spike in demand
- Applicants are screened based on energy-use intensity; around 50% are disqualified
- ShoreBank conducts initial financial review and credit check, with the majority of screened applicants passing
- ETO/CSG conduct a phone interview to gather additional information and screen for additional issues with candidate homes/homeowners
- Screened candidates receive audit from BPI-Certified “Energy Advocate”

### **Addressing Barriers**

- In order to accommodate the potential for home sales during the repayment period, loans are optionally transferrable to subsequent owners who agree to assume the loan obligation, allowing the seller to avoid having to pay off the loan at the time of sale
- Tiered loan funding cap to encourage deeper retrofits; up to \$4,300 per home available for basic weatherization with minimum 10% savings; \$19,850 for deeper retrofits achieving >30% energy savings
- Tiered interest rate structure to encourage deeper retrofits and provide affordability for lower income households: 7.99% (basic weatherization), 5.99% (deeper retrofits), 3.99% (any retrofit where borrower is <250% of federal poverty level)
- Measure cost caps based on historical data help to control project costs
- Audit cost added to loan to avoid upfront costs
- \$900 in fees (\$300 loan fee and \$600 in assessment fees) are mostly absorbed by ETO rebate incentives
- Community Workforce Agreement (CWA) put in place by city council to establish workforce guidelines
- Program requires that 80% of employees in the program must be local hires; 30% must be minorities or women
- Wage requirement of higher of 180% of federal minimum wage or prevailing local wage

### **By the Numbers**

- Start date: June 2009
- Interest rate(s): 7.99%, 5.99% for deeper retrofits, 3.99% for <250% of federal poverty level
- Loan term: up to 20 years
- Max loan size: \$20,000
- Typical project size: \$9,800
- Audit cost: \$300
- Total project fees: \$900 per project
- Loans to date: ~\$5 MM (through 2010)
- Avg. monthly charge: ~\$57
- Target FICO score: >590

### **Sources**

U.S. Department of Energy, *Clean Energy Finance Guide for Residential and Commercial Building Improvements: Third Edition*, Prepared by the Finance Technical Assistance Team, December 2010. <http://www1.eere.energy.gov/wip/solutioncenter/financia/products/default.html>

Efficiency First, *Best Practices for Energy Retrofit Program Design: Case Study: Clean Energy Works Portland*, March 2010. <http://www.hprcenter.org/sites/default/files/ecpro/hprcenter/bestpracticescasestudyportland.pdf>

U.S. Department of Energy, *Clean Energy Finance Guide for Residential and Commercial Building Improvements: Third Edition*, Prepared by the Finance Technical Assistance Team, December 2010. <http://www1.eere.energy.gov/wip/solutioncenter/financia/products/default.html>

## **Keystone HELP - Pennsylvania**

### **Background**

The Keystone Home Energy Loan Program (HELP) is a loan program providing low-interest loans to Pennsylvania homeowners since 2006. Program loan capital is provided by the Pennsylvania Treasury Department.

### **Funding Mechanism**

- Treasury provides capital by purchasing loans from the program administrator; over \$30 million of capital has been invested to date
- An additional \$900,000 in state grant funds were allocated to serve as a loan loss reserve to offset non-performing loans

### **Partner Coordination**

- AFC First Financial (AFC), with over 10 years of home energy lending experience and one of only three Fannie Mae approved home energy loan originators in the U.S., administers the program
- AFC manages a broad contractor network; contractors serve as the loan originators and AFC acquires the loans from contractors to sell to the Treasury
- Partnership with the Pennsylvania Housing Finance Agency has led to the development of a secured loan product (with loans as large as \$35,000) to compliment AFC's core unsecured loan product
- In 2009 the Pennsylvania Department of Environmental Protection (DEP) approached Treasury about applying funds to buy down interest rates and stimulate increased demand and uptake of energy-saving measures

### **Notable Attributes**

- Statewide reach in all 65 counties
- 1,100+ approved contractors
- Contractors apply project discounts to buy down interest rates paid by end-use customers
- Tiered interest rates are offered based on level of assessment activity with rates as low as 4.99%
- Average return on loan portfolio is around 8%, with Treasury earning a 5% average return and AFC receiving a 3% spread
- Over course of the economic downturn, Treasury identifies the Keystone HELP program as their most consistent and lucrative asset
- Treasury currently pursuing option to sell \$20+ million portfolio of Keystone HELP loans into the secondary market, a first for the industry

### **Addressing Barriers**

- Program designed to meet needs of both reactive customers (e.g., furnace failure) and proactive customers (whole house)
- Tiered interest rates as low as 4.99% to drive customers toward higher performance/whole house improvements
- Strong collection processes help to keep losses low

### **By the Numbers**

- Start date: 2006
- Interest rate(s): tiered unsecured: 4.99%, 5.99%, 6.99%, secured: 3.875% to 6.375%
- Loan term: 3, 5, or 10 years (unsecured); 10, 15, or 20 years (secured)
- Average loan term: ~7 years (86 months)
- Average loan size: \$6,300
- Loan size min/max: \$1,000/\$15,000 (unsecured); up to \$35,000 (secured)
- Loan volume: 4,600 (through 2009)
- Loan approval rate: 65%
- LTV (secured): up to 120%
- Minimum FICO score: 640 (salaried)
- Average FICO score through 2009: 730
- Default rate: <1% to date

### **Sources**

U.S. Department of Energy, *EECBG Pennsylvania Keystone HELP Program Webcast*, January 28, 2010. <http://www1.eere.energy.gov/wip/solutioncenter/webcasts/EECBGWebex01281>