



**BEST PRACTICES FOR ENERGY RETROFIT PROGRAM DESIGN**

## **CASE STUDY: CLEAN ENERGY WORKS PORTLAND**

**MARCH 2010**

This document is one of nine case studies conducted by the Best Practices Committee of the Home Performance Resource Center to examine government-run incentive programs that target residential energy efficiency retrofits and renewable power generation. These nine case studies were used to compile best practices recommendations for the design and implementation of successful home energy retrofit programs, specifically focusing on the areas of financing and incentives, marketing, workforce development and business models. Additional documents in the *Best Practices for Energy Retrofit Program Design* series are available online at [www.hprcenter.org](http://www.hprcenter.org).

## CASE STUDY: CLEAN ENERGY WORKS PORTLAND

### SUMMARY

Clean Energy Works Portland (CEWP) provides low-interest financing for energy efficiency retrofit measures to qualified homeowners in Portland, Oregon, coupled with consumer advocacy services designed to assist homeowners with the retrofit process. Loan payments are made via an assessment added to the homeowners' energy bills over the 20-year term of the loans.

The program attempts to match payment structures as closely as possible with predicted monthly energy savings, so homeowners can expect to see little or no increase in household expenses as a result of the financing. For properties that are sold before the financing is paid off in full, the loans are optionally transferable to subsequent owners who agree to assume if the loan obligation.

The Portland Bureau of Planning and Sustainability leads municipal oversight of the program, and has partnered with several third-party entities to administer various program functions:

- The Energy Trust of Oregon (ETO), a nonprofit organization funded by utility ratepayer surcharges, recruits and qualifies retrofit contractors and manages the program-contractor relationship.
- ETO also screens financing applications and has subcontracted with Conservation Services Group (CSG), a Massachusetts-based nonprofit consultancy, to provide workforce development training and manage consumer advocacy services.
- ShoreBank Enterprise Cascadia, a certified nonprofit Community Development Financial Institution, funds the CEWP improvement loans.

### PROGRAM PROFILE

**Incentive Type:**

On-bill financing for energy efficiency retrofits

**Time Frame:**

Pre-pilot phase, June 2009 to Sept. 2009; now in pilot phase through Aug. 2010

**Homes in Jurisdiction:**

About 100,000 homes in Multnomah County could qualify for the program

**Property Owners Participating:**

23 in pre-pilot phase, 37 total as of Jan. 2010; goal for pilot phase is 500 retrofits

**Investment:**

\$2.5 million in ARRA funding to launch; eventually financing will come from private capital

**Energy Savings:**

Data not available

**Carbon Abatement:**

Data not available

**Finance Mechanism:**

Owners repay borrowed funds over 20 years in incremental payments added to their utility bills

**Jobs Created:**

Data not available

**Web Site:**

[www.cleanenergyworksportland.org](http://www.cleanenergyworksportland.org)

- Three energy utilities serving Multnomah County – Portland General Electric, NW Natural and Pacific Power – process CEWP loan payments as part of their routine customer billing process and transfer the funds to ShoreBank.

## **FINANCING PROCESS**

Applicants begin by filling out an online form that collects the names and social security numbers of all homeowners on the title of the property, along with homeowner demographic information, utility account numbers (to be used for accessing energy usage data), square footage of the home’s heated area, and household income data.

Upon receipt of the application, Energy Trust of Oregon screens the data to determine if the home meets the program’s energy intensity requirement (based on energy use per square foot). This screening allows CEWP to prioritize homes with the greatest potential for energy savings. ETO reports that approximately 50% of applicants are disqualified during energy intensity screening. Applicants who pass the energy intensity requirement undergo additional screening by ShoreBank, including a review of the applicant’s financial history and credit score, and verification that the homeowner is in good standing with his or her utility company. Most applicants meet these requirements.

Applicants who pass the initial screening process receive a phone call from ETO/CSG program staff to review financing requirements with the homeowner and discuss estimated energy savings and loan assessments the applicant might expect given the information they have provided about their home. Program staff also ask questions suggested by contractors to screen out applicants whose homes might not be best suited for retrofits.

If in the course of this call no structural issues are revealed that would make a retrofit more difficult, and if the homeowner is still interested in following through with retrofit financing, the program staff member schedules an appointment with a qualified contractor who will complete a comprehensive energy audit of the home. (Contractors that have been approved to participate in the program are assigned to specific time slots, and matched with program applicants according to the time slots requested by the homeowner.) Applicants are also assigned a program-employed, BPI-certified “Energy Advocate” who will be present during the audit. The advocate’s role is to guide applicants through the retrofit process, and to provide homeowners with independent verification of the contractor’s audit report and proposed work scope and bid.

Once the contractor has completed the audit and submitted a work scope to the homeowner and the advocate, the advocate checks the work scope against program-developed benchmarks and cost caps. If the work scope meets CEWP requirements, the advocate is authorized to approve the work scope, get a signature from the homeowner, and finalize the retrofit contract.

After the work has been completed, the advocate performs a test-out and ShoreBank pays the financed amount directly to the contractor. The bank issues checks twice a week, and contractors are paid within one week after test-out and approval of the work.

Loan payments are then appended to the homeowner's monthly utility bills. The utilities process the payments in conjunction with their normal billing process and transfer the funds to ShoreBank.

## **PROGRAM DEVELOPMENT**

Clean Energy Works Portland is a component of the *City of Portland and Multnomah County Climate Action Plan 2009*, which was issued in response to resolutions passed in 2007 by the Portland City Council and the Multnomah County Board of Commissioners directing staff to develop a strategy to achieve an 80% reduction in local carbon emissions by 2050. The CEWP pilot was launched in June 2009 with \$2.5 million in American Recovery and Reinvestment Act funding.

The pilot includes funding for up to 500 retrofit projects in the city of Portland, divided into five phases:

- Phase 1: Pre-pilot, June-Sept. 2009, goal of 30 loans, 29 completed
- Phase 2: Oct. 2009-Jan. 2010, goal of 50 loans
- Phase 3: Feb.-May 2010, goal of 200 loans
- Phase 4: May-Aug. 2010, goal of 120 loans
- Phase 5: Community-based marketing pilot simultaneous with Phase 4, goal of 100 loans

An estimated 100,000 homes throughout Multnomah County could be eligible for the program once it is past the pilot phase.

### **Marketing**

Marketing for the program is coordinated by the City of Portland. Some participants in the pre-pilot program were recruited via a database of homeowners who had clipboard audits performed by the city within two years prior to the program launch but had not yet followed up with retrofit work. The city has advertised extensively through print media and radio media, and has received earned media attention through local news organizations.

Recently, the program has incorporated direct marketing strategies (including postal mail and e-mail) to recruit participants. A direct mail piece distributed in early 2010 to 18,000 recipients failed to generate a significant uptick in applications at the time (possibly due to outdated messaging provided for the mailing), though many program applicants have since reported on program application forms that they learned about CEWP from the mailing.

ETO staff report that most applicants say they heard about the program via e-mails from their utility companies. A recent Portland General Electric e-mail newsletter with a link to the program generated a significant spike in visitors to the program Web site – about 600 in a day, compared to the normal rate of about 100 site visitors per day.

## Workforce Development

The pilot program now includes a detailed Community Workforce Agreement (CWA) approved by the Portland City Council in September 2009. The terms of the CWA include:

- Local hiring: 80% of employees in the program must be from Portland.
- Diversity: 30% of work hours must be completed by people who have been historically disadvantaged or underrepresented, including people of color, women and low-income residents; 20% of contracts are required to be awarded to companies owned by people who meet similar criteria.
- Training: Employers must hire from approved training programs only, until they fill 50% of their positions.
- Wages: Required worker wages of 180% of minimum wage, or prevailing wage (whichever is higher).
- Contractor scoring: The program awards points to contractors based on the benefits they provide to their workers; the diversity of their workforce; hiring practices, including hiring of union workers; and subcontractor practices.

The program allocates applicant referrals to qualified contractors based on contractor scoring under the terms of the CWA – the more scoring points, the more audit assignments a contractor will receive.

## Finance and Incentive Models

Qualified homeowners may borrow up to \$4,300 for basic weatherization work (10% energy savings required) or up to \$19,850 for deeper retrofits (30% energy savings required), with loan payments appended to the homeowner's utility bills over the 20-year term of the loan. Outstanding principal must be paid in full if the borrower sells the house before the 20-year term is up, unless the new buyer agrees to assume the loan obligation. Current interest rates are fixed at 7.99% for basic weatherization packages; 5.99% for extended weatherization packages or deeper retrofits that also include hot water and/or heating system improvements; or 3.99% for any retrofit package if the applicant's income is below 250% of the federal poverty level.

The program has developed cost caps for various retrofit measures, and retrofit bids must not exceed those caps except in special cases (such as radon removal). Caps are based on 150% of historical costs for each installed item.

The \$300 cost of the audit, plus a program fee, is added to the loan principal, so most participants can complete retrofit work without paying anything up front. Currently, if homeowners do not complete a retrofit, the program covers the cost of the audit, though this may change in the future.

## METRICS AND FEEDBACK

During the pre-pilot phase, the program financed 23 retrofits out of a 30-retrofit goal. As of January 2010, the program had financed 37 retrofits and conducted 84 audits, indicating an audit-to-retrofit conversion rate of about 45%. The actual conversion rate may have increased since January as more applications have progressed to the retrofit stage, and program administrators now estimate that the conversion rate is about 65-70%. Financing averaged about \$9,800 per retrofit, with monthly assessments averaging about \$57. Those averages may drift up or down in the future as more costly energy measures and higher interest rates could increase costs, while potential federal rebates and other incentives could reduce the project costs for which homeowners need financing.

One probable reason for the high conversion rate is that the program dedicates specific resources early in the application process to screen out applicants who are less likely to qualify for program financing or who are less likely to achieve significant energy and cost savings from a retrofit. The program also educates homeowners prior to the audit about what to expect from the audit and the retrofit.

The program leverages its high conversion rate as a selling point for recruiting contractors, and emphasizes the fact that program-sponsored marketing allows participating contractors to earn business with minimal investment of their own marketing resources. However, some contractors report that the program hasn't yet filled up their assigned slots. Program administrators expect to be able to fill slots more quickly as the program progresses.

Feedback from contractors suggests that many have begun working with the program because they want to see it succeed. Some contractors they have raised concerns about specific program elements, including the terms of the CWA. Their concerns include:

- Restricting much of their hiring to a small group of approved training programs limits contractors' ability to hire the most capable workers. Some contractors already work in the industry and have existing crews that may include employees who perform high-quality work, even though they have not graduated from the training programs stipulated by the CWA. Also, some potential employees may have gone through high-quality training programs in other regions that are not included in the CWA.
- High wage requirements have been instituted in the recent phases while cost caps have stayed the same. This means that retrofit costs for homeowners will increase somewhat, and contractors will make less money on each job.
- Awarding points based on subcontractor practices threatens to penalize companies that are more vertically integrated.
- The complexity of program rules and requirements can lead to higher administrative costs for contractors.

- The cost caps may prohibit deep whole-house retrofits that could provide deeper savings over the long term for some homes.

## RECOMMENDATIONS

**Innovative Financing Options:** Early success of the CEWP program pilot suggests that on-bill financing can be a valuable tool for boosting homeowner adoption of energy efficiency retrofit measures.

**Homeowner Education and Screening:** Programs that rely on innovative financing mechanisms (such as on-bill or PACE financing), or that include complex requirements to qualify for program benefits, can benefit from pre-audit homeowner education to ensure that homeowners know what to expect from the audit and retrofit process. Thorough screening of applicants before the audit is likely to increase the audit-to-retrofit conversion rate.

**Training Standards:** Instead of requiring a percentage of employees to be drawn from particular training programs, retrofit programs should set standards that can be fulfilled through various certification and accreditation programs, and allow all workers who meet those standards to participate. Program requirements should mirror standards that are gaining traction across the country, such as BPI certification and accreditation.

### SUMMARY OF RECOMMENDATIONS

- Provide creative financing options to help homeowners cover the upfront cost of a retrofit
- Consider requiring pre-audit screening and homeowner education to foster higher success rates, particularly when innovative financing mechanisms or complex program requirements are involved
- Create standards to match other regional and national programs

## SOURCES

This report is based in part on interviews with Ryan Clemmer, Home Performance Manager, Imagine Energy, LLC, and chair of the Oregon Chapter of Efficiency First; Derek Smith, Project Manager, Portland Bureau of Planning and Sustainability; Marshall Runkel, Owner, ECO Tech, LLC; Phil Degens, Evaluation Manager, Energy Trust of Oregon; Diane Ferington, Manager of Residential Programs, Energy Trust of Oregon; Julia Thompson, Communications Manager, Portland Bureau of Planning and Sustainability; Andria Jacob, Project Manager, City of Portland Bureau of Planning and Sustainability; Jonathan Tillman, PNW New Construction Manager, Conservation Services Group.

Interviews and background research were conducted for the Home Performance Resource Center by Brant Rotnem and Coby Rudolph.

### Publications:

City of Portland Bureau of Planning and Sustainability/Multnomah County Sustainability Program. *City of Portland and Multnomah County Climate Action Plan 2009*  
[www.portlandonline.com/bps/index.cfm?a=268612&c=49989](http://www.portlandonline.com/bps/index.cfm?a=268612&c=49989)

Conservation Services Group/Energy Trust of Oregon. *Clean Energy Works Portland – Pilot Contractor Participation Application* (Form 371 P v03 100108)  
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[www.portlandtribune.com/news/story\\_2nd.php?story\\_id=126523586216985100](http://www.portlandtribune.com/news/story_2nd.php?story_id=126523586216985100)

### Program-Related Web Sites:

Clean Energy Works Portland: [www.cleanenergyworksportland.org](http://www.cleanenergyworksportland.org)

Portland Bureau of Planning and Sustainability: [www.portlandonline.com/bps](http://www.portlandonline.com/bps)

Energy Trust of Oregon: [www.energytrust.org](http://www.energytrust.org)

Conservation Services Group: [www.csgrp.com](http://www.csgrp.com)

ShoreBank Enterprise Cascadia: [www.sbpac.com](http://www.sbpac.com)

Portland General Electric: [www.portlandgeneral.com](http://www.portlandgeneral.com)

NW Natural: [www.nwnatural.com](http://www.nwnatural.com)

Pacific Power: [www.pacificpower.net](http://www.pacificpower.net)



The Home Performance Resource Center is a national 501(c)(3) nonprofit organization formed to conduct public policy and market research in support of the Home Performance industry. The Resource Center develops research materials for policymakers, energy program managers and industry stakeholders to promote job creation, economic recovery, lower household energy bills and deep reductions in residential carbon emissions through improved home energy efficiency.

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