



BEST PRACTICES FOR ENERGY RETROFIT PROGRAM DESIGN

CASE STUDY: BOULDER, COLORADO

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.

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SUMMARY

The ClimateSmart initiative in Boulder, Colorado, is made up of various programs designed to reduce local greenhouse gas emissions. This case study focuses on two components of the initiative: the ClimateSmart Loan Program (CSLP) and the ClimateSmart Residential Energy Action Program (REAP).

The ClimateSmart Loan Program provides Property Assessed Clean Energy (PACE) financing for residential energy efficiency and renewable energy projects. Under the program, the county issues bonds to lenders that are repaid by program participants via assessments added to their annual property tax bills. In 2008, a voter-approved special assessment bond established a \$40 million Clean Energy Options Local Improvement District, which allocates \$28 million for residential projects and \$12 million for commercial projects. All homeowners in Boulder County are eligible to participate in the program, except those listed as delinquent or those who have been delinquent on property taxes within the past three years.

As currently structured, the ClimateSmart Residential Energy Action Program (REAP) reaches out to homeowners in Boulder County, recommends that they get an audit, and then conducts an energy consultation with the homeowners to suggest next steps and encourage them to act. The program is run by the Center for ReSource Conservation (CRC), a local nonprofit.

Boulder's programs have come under some scrutiny recently, with several news articles referencing low conversion rates by people who have had energy audits. The intent of the REAP program is to boost conversion rates through more intensive follow-up. CSLP is also focused on increasing the number of homeowners who follow through with retrofits.

PROGRAM PROFILE

Incentive Type:

PACE financing for efficiency retrofits and renewables, subsidized audits and consumer education initiatives

Time Frame:

REAP started in 2006; PACE loan program started in 2009

Homes in Jurisdiction:

119,900 single- and multifamily housing units in Boulder County

Property Owners Participating:

CSLP: 612 residential loans issued; 2009 REAP results: direct outreach to 924 homeowners, 465 audits, 269 action consultations, of which 79-91% have taken action (according to a poll of 98 participants)

Investment:

CSLP: \$28 mil. allocated for res. projects, \$13 mil. used to date, incl. \$9.8 mil. in direct project financing and the rest covering fees and a reserve account

Energy Savings:

REAP: Savings from measures reported installed in 98 participant homes surveyed, 128,136 kWh, 20,550 Therms

Carbon Abatement:

REAP: Savings from measures reported installed in 98 participant homes surveyed, 229 mtCO_{2e}

Finance Mechanism:

REAP: Funding comes from a voter-approved carbon tax

Jobs Created:

Data not available

Web Sites:

www.bouldercounty.org/bocc/cslp
www.conservationcenter.org/energy/reap.html

FINANCING AND AUDIT PROCESS

ClimateSmart Loan Program

Before applying for CSLP financing, homeowners must attend a mandatory information session about the program run by the Center for ReSource Conservation. Homeowners who attend a session and want to apply for financing then obtain a bid from a contractor and submit an online application. Homeowners can use any contractor certified in their respective trade to complete the project. In addition to giving the customer an official written estimate, the contractor must fill out a bid/estimate cover sheet for the program application.

After the application has been received by the program, a county loan originator schedules a meeting with the homeowner to review the application and funding process. If the application is approved, the county will sell bonds for the project and issue the homeowner a notice to proceed. The homeowner then has 180 days to complete the project. After the work has been completed, the homeowner submits documentation to the program office, including an acknowledgement form, copies of any required permits and inspections, and final contractor invoices. The county then issues the funding by paying the contractor directly.

Full energy audits are not provided or required by the program, though free “energy counseling” – a two-hour basic energy assessment (clipboard audit) – is available. At the mandatory information sessions, participants are encouraged to engage in more comprehensive audits, and to have the audit performed by a third-party auditor who is not affiliated with the contractor that will perform the retrofit or installation. Third-party audits are available through the REAP program described below.

ClimateSmart Residential Energy Action Program (REAP)

REAP is run by the Center for ReSource Conservation in partnership with Xcel Energy, an investor-owned utility serving Boulder County. Homeowners enter the REAP program by contacting CRC directly; by agreeing to be contacted via an opt-out on the Xcel Energy audit form; or as a result of the CRC’s own direct outreach work (see information on marketing efforts below).

If homeowners contacted by the program have not yet had an audit, program staff refer them to Xcel Energy’s audit program (or for areas or homes that are not included in Xcel’s audit program, the CRC conducts the audit using independent auditors). The audit provides:

- An energy bill analysis to help homeowners understand how much energy they are using
- A comprehensive audit report including a list of recommendations showing which measures can save the most energy and money
- A comparison of costs and savings for any suggested improvements

For those who have already had an audit, CRC program staff follow up to suggest an action plan for implementing the measures recommended by the audit. The program

provides ongoing assistance to homeowners, giving them helpful information about energy upgrade measures and contacting homeowners with reminders and to see if they have moved forward with retrofit measures.

PROGRAM DEVELOPMENT

In 2002, the Boulder City Council passed a resolution to reduce greenhouse gases to 7% below 1990 levels by 2012, and in 2006, voters passed a local carbon tax to help fund programs intended to reduce greenhouse gas emissions. Boulder launched its Climate Action Plan in 2007 to guide development and implementation of carbon reduction programs. The ClimateSmart initiative is made up of various programs intended to help meet the goals of the Climate Action Plan.

In late 2007, the Boulder County Board of Commissioners and staff took note of a pilot program proposed by the city of Berkeley, California, to provide tax-assessed energy improvement financing for solar photovoltaic installations (see separate case study in this series). In 2008, Boulder County staff worked with Rep. Alice Madden, the Colorado Governor's Energy Office, Environment Colorado and others to ensure passage of House Bill 08-1350, which created the necessary state-level authority to run a local PACE financing program funded by tax-exempt bonds. In November 2008, Boulder County voters approved Ballot Measure 1A with 63% support, authorizing the county to sell up to \$40 million in bonds to fund CSLP loans.

In February/March 2009, the Board of County Commissioners held meetings to approve the structure of the loan program for the residential sector. Upon approval by the Board of County Commissioners, Boulder County launched first phase of CSLP, freeing \$28 million in loans for the residential sector. Initial rounds of residential financing were released, and as of November 2009, \$13 million of funding had been used, with \$9.8 million going to residential energy projects and the rest covering fees and a reserve account for the bonds.

The next phase of the program is set to roll out in 2010, and will involve an additional \$12 million in loans for the commercial sector. The program has announced that the next phase of residential financing is planned from April 12 to May 7, 2010. Homeowner workshops for this next round are taking place between March 15 and late April 2010.

REAP was launched in 2006 as an audit program (it was originally called the Residential Energy Audit Program). The intent was to give homeowners information about their energy use that they could then act on.

In early 2009, Xcel began offering energy audits. REAP now largely directs homeowners to get audits through Xcel, though they still offer audit services in areas that are not part of Xcel's coverage territory. The focus of REAP has now shifted from audits to follow up and action.

Marketing

CSLP loans have been marketed through print and radio advertisements, public meetings, the Sierra Club and other local groups. The program is also able to leverage participation in other ClimateSmart programs to market the loan component. For example, the REAP program (and the future “Two Techs and a Truck” program now under development) including CSLP loan information in their public outreach efforts. CSLP also has a Web site that helps homeowners navigate through the process.

The REAP program is marketed in several ways. Some participants are recruited through community outreach efforts. Many participants now are recruited through Xcel Audits – Xcel includes an opt-out signup for REAP for everyone who gets an audit through their program. The CRC also runs mandatory educational sessions for the loan program, during which they recommend that homeowners get audits and participate in the REAP program.

According to responses gathered on program applications, 40% of REAP participants came through various ClimateSmart and CRC programs and staff referrals; 22% came through public events and print or Web site referrals; 14% from friends, family and neighbors; 13% from the utility company; and 11% through local government sources. The program has experimented with direct contact and paid advertising, spending \$5,000 on telemarketing and \$15,000 on paid advertising. They found that phone calls were more effective at bringing in higher numbers of homeowners who were interested in the program, but follow-up was an issue (many who said they were interested were not responsive when program staff contacted them afterward).

Workforce Development

Currently, contractors are not required to have special certification or accreditation to participate in the loan program.

The REAP program previously worked with independent auditors in the Boulder area, but when Xcel took over most of the audits, Xcel began doing the audits internally. Independent audit companies have expressed concern that Xcel’s management of the audit program is causing the independent auditing business to decrease.

Finance and Incentive Models

The ClimateSmart Loan Program is financed by through the Clean Energy Options Local Improvement District, which manages \$40 million in bonds approved by voters in November 2008. The county issues bonds to lenders, who are repaid by program participants via a special assessment on annual property tax bills. One-third of approved loans are income-qualified to benefit lower income groups (residents whose income is up to 115% of the area median income).

The minimum loan amount is \$3,000. Loans have a term of 15 years. The program’s open loans are capped at 8.75% interest, as dictated by the local Board of Commissioners, and the maximum loan amount is 20% of the property value or \$50,000,

whichever is lower. Income-qualified loans are capped at 6.75% interest and have a maximum loan amount of \$15,000. Income-qualified loans must be paid off at point-of-sale, unless the property is being sold to someone else who meets program income requirements.

Loan origination through the county requires a \$75 application fee. Other loan costs rolled into the loan include 4% for “closing costs and origination fees,” 4% to cover pre-paid interest until bond payments are made on Jan. 1, and a debt reserve fund of 8-12% that goes into escrow in case of missed payments. The debt reserve fund can also be used to service the final payments on the loan. These higher costs are put in place partially to secure a high bond rating for the county and lower interest rates.

In Spring 2009, the actual interest rates were 6.68% for open loans and 5.2% for income-qualified loans. The annual assessment for a \$10,000 open loan was \$1,248, and the annual assessment for \$10,000 income-qualified loan was \$1,100.

In the REAP program, the CRC works with Xcel Energy to offer homeowners a \$90 audit that includes a blower door test. More extensive audits that include infrared testing are provided for \$120.

METRICS AND FEEDBACK

ClimateSmart Loan Program

CSLP has financed 612 residential retrofits to date through the first two phases of the program. In the second phase, 40% of the financing went to installing solar panels and 22% was for upgrading exterior windows and glass doors.

The program has been successful at attracting participants and filling program slots. Since energy audits are not required apply for financing, there is no way to track the energy savings the program will realize. The *Community Guide to Boulder’s Climate Action Plan* assumes that 1,400 homes per year will use an average of \$10,000 in PACE financing, and that carbon reductions will average 3 tons per home. Under those assumptions, each year the program’s financing would eliminate 4,200 additional tons of carbon.

In November 2009, local voters rejected Issue 1B, which would have doubled the loan capacity to \$80 million. The defeat could suggest that many residents have not been impressed with the program, though local leaders blame the defeat on lack of effective community outreach and education about the measure. The defeat of Issue 1B does not impact availability of the original \$40 million and the rollout of the second and third phases of financing.

ClimateSmart Residential Energy Action Program

Prior to 2009, REAP was focused on providing low-cost energy audits. The mission shifted in early 2009 when Xcel began running the audit component. The program and other stakeholders had noticed that only a small portion of those who received audits had proceeded with retrofit measures; some report that it was around 10%, and half of

those who had received audits had not even completed such small measures as replacing incandescent light bulbs with compact fluorescents. So the program transitioned from providing audits to conducting follow-up with those who had completed audits.

In 2009, the REAP action program conducted outreach to 924 homeowners, 465 of whom received audits (either before or after their participation in the program). Of the 924 homeowners contacted, 269 participated in the action component of the program by receiving action consultations. Of those 269, 98 responded to a follow-up telephone survey, and 79-91% indicated that they had taken some kind of action. Based on the responses gathered, the program estimates that those 98 homes achieved an average reduction of 2.34 metric tons of CO₂, 138 kWh and 210 Therms, with an average investment of \$7,185 per home. The program evaluation uses that information to project savings data for all 269 homeowners who participated in the action program.

Out of the 98 respondents, about 60 completed air sealing and about 55 had attic insulation installed. An average of four energy upgrade measures were made per home, and 63% of homes reduced their greenhouse gas emissions.

Even with the follow-up program, it is unclear how many homeowners who received audits went on to complete deep energy retrofits. If 63% of those in the action program took actions that reduced their greenhouse gas emissions, that would translate to 170 out of 269 program participants. This rate could be lower for those who got audits and agreed to be contacted by the program but did not participate, and lower still for those who got audits but opted out of being contacted by the program.

General ClimateSmart Feedback

Some local companies say that ClimateSmart programs have not yet resulted in the creation of a thriving local Home Performance industry. The audit program is run by Xcel Energy and does not provide local auditors the opportunity to market themselves and grow their businesses. This is in contrast with many other programs where audits are performed by or in partnership with Home Performance contracting companies, who can use audits to create work scopes and bids for retrofits.

Boulder is now planning a new program called “Two Techs and a Truck,” designed to increase adoption of retrofit measures through neighborhood saturation, project aggregation and other potential strategies. Program development will be complete by the end of May and Boulder plans to launch the program shortly thereafter. In addition, Boulder is considering other measures to require energy upgrades, like incorporating energy requirements into rental licenses that must be renewed every four years.

The financing program does not require contractors to have Home Performance-related certifications, so contractors may not be using a whole-house approach for the retrofits. The required information sessions might compensate for this to some degree by providing homeowners with basic information about Home Performance and resources for arranging audits. The information sessions also may increase the likelihood that applicants will go through the program, because of the higher barrier to entry.

RECOMMENDATIONS

Diversity of Program Offerings: ClimateSmart offers several residential energy programs, including the subsidized audits and PACE financing. When leveraged effectively, these programs can cross-market, build off of each other, and work together to achieve the ultimate goal of encouraging retrofits to save energy.

Audit Pricing and Delivery: ClimateSmart's programs have demonstrated that audits alone do not necessarily increase the number of retrofits. Direct follow-up with homeowners who have received an audit can increase the audit-to-retrofit conversion rate, but removing retrofit contractors from the audit misses an opportunity to leverage the customer relationship between homeowners and Home Performance contractors. Vertically integrated businesses that provide energy audits and retrofit services are better able to sell whole-house retrofits to their audit customers, and can more efficiently develop work scopes and bids for retrofit work.

Growing the Home Performance Industry: Requiring certification and accreditation of participating contractors would help to grow the number of qualified Home Performance Professionals in the area.

Summary of Recommendations

- Combine and coordinate diverse program offerings such as PACE financing and audit subsidies
- Free or subsidized-price audits alone do not drive demand
- Enable vertically integrated businesses to provide audits and convert audits into retrofits
- Require contractor certification and accreditation to help grow the local Home Performance industry

SOURCES

This report is based in part on interviews and e-mail correspondence with with Mike Rodriguez, Energy Retrofit Specialist, Energy Logic; Ann Livingston, Sustainability Coordinator, Boulder County; Brian Brainerd, Principal, Brian Brainerd and Associates; Spenser Villwock, Interim Executive Director, Center for ReSource Conservation; and Debbie Fox, Energy Division Director, Center for ReSource Conservation.

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

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Program-Related Web Sites:

ClimateSmart: www.beclimatesmart.org

ClimateSmart Loan Program: www.bouldercounty.org/bocc/cslp

Residential Energy Action Program: www.conservationcenter.org/energy/reap.html

Center for ReSource Conservation: www.conservationcenter.org

Xcel Energy: www.xcel.com



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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