

**WHAT HAVE WE LEARNED  
FROM ENERGY EFFICIENCY FINANCING PROGRAMS?**

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## EXECUTIVE SUMMARY

The building sector consumes about 74% of the electricity used in the United States (EIA 2011a). ACEEE and others have found that electricity consumption can be cost-effectively reduced by about 20–30% in the next 10–15 years (Eldridge et al. 2010; Granade et al. 2009). These savings would reduce annual electricity consumption in the residential and commercial building sector by over 695 billion kWh annually (EIA 2009). These savings are enough to power the entire western United States (including Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming) for a year (EIA 2011b). This reduction would mean a reduction in electricity bills for American consumers and businesses by over \$78 billion per year.<sup>1</sup> Similarly, natural gas consumption can be cost-effectively reduced by approximately 22% in the near term (Eldridge et al. 2010). This would save over 1,795 billion cubic feet of natural gas annually, which equates to over \$20 billion per year of reduced energy bills for consumers.<sup>2</sup> This is more than enough to offset the natural gas consumed to heat hot water by every household in the U.S. (EIA 2005). These numbers don't account for the corollary energy benefits of improved building efficiency such as improved occupant comfort and safety.

Loan programs are a mechanism used to help achieve energy savings in the building sector by providing financing to pay for energy efficiency retrofits. While several programs have many years of experience and have issued thousands of loans, this market has yet to come to scale. There is a lack of information, uniformity, and standards that make it difficult for private lenders to evaluate the risk these types of loans present. The lack of uniformity also makes it difficult to package these small loans into larger portfolios for sale to larger financial institutions on the secondary market. Without access to private capital there will be limited funding for efficiency retrofits—and the associated jobs, energy and cost savings, and environmental benefits will not be realized.

This report is a first step toward scaling up efficiency financing. Our research summarizes the results of a survey of efficiency loan programs throughout the nation. The quantitative results of our research focused on data such as loan terms, interest rates, default rates, application approval rates, participation rates, and loan amounts. All of this information is reported in the body of the report and summarized in tables in Appendix A. We also looked at funding sources, finding that these programs are being funded by a range of sources. In some states funding was provided by the state via a legislative mandate or collected via a charge on utility rates. Some programs are privately funded by participating financial institutions. In many cases program funding is a combination of both public and private sources. For example, public funding may be used to buy down interest rates for loans provided by private institutions such as banks and credit unions.

The programs surveyed with the largest origination budgets (i.e., the total dollar amount of loans issued during the life of the program) were the Sacramento Municipal Utility District (SMUD) (\$447.4 million), Southern California Home (\$300 million), and Texas LoanStar (\$296.3 million) programs. Further we found that:

- Only one program required all loans to be secured though most programs do require a credit review and many offer a secured loan product.
- Default rates were very low ranging from 0–3% (cumulative).
- Loan application approval rates averaged approximately 76% though there was a wide range across programs with several programs reporting approval of 100% of applicants.
- Most programs do not base project approval on measureable energy savings though most have pre-approved measures. Some programs link the loan repayment to energy savings by requiring that savings exceed loan repayment amount. This can effectively limit the types of measures that will qualify for approval as all programs have repayment time limits.

<sup>1</sup> Based on a price of electricity of 11 cents per kilowatt hour

<sup>2</sup> Based on a price of natural gas of \$11.20 per thousand cubic feet of gas

- Participation rates are generally low across programs. The percentage of total customers in the classes served by programs compared to the total number of program participants reveals that only two of the programs surveyed had rates that exceeded 3% of the customers targeted by the programs and more than half of the programs had participation rates below 0.5%. These two were SMUD and Connecticut Light & Power's Commercial & Industrial Financing (CL&P CI) and Small Business Energy Advantage (CT SB) programs.

We found that very little data on energy savings data is available. Although energy savings are rarely reported, those that we were able to find fall within a similar range of 12–17% of annual energy use for the eligible customer class served by the utility or utilities participating in the program. Table A5 in Appendix A provides reported savings data.

Based on our research we were able to make some general observations. Key findings include:

- Most programs are not penetrating the market of potential customers;
- Some residential programs have high rates of application decline;
- Residential loan program participants tend to be “reactive;”
- Project bottlenecks sometimes occur due to burdensome and inflexible program requirements;
- Minimum program size can attract additional lenders;
- Good loan terms don't assure the success of a program;
- The housing market crash has tightened the lending market;
- Some programs with interest rate buy-down have found the costs to be high; and
- There is a lack of uniform criteria for evaluating credit of small businesses and institutions.

A key purpose of efficiency loan financing programs is to maximize the energy savings achieved with the program's limited resources. Energy savings can be maximized when programs implement a large number of projects (“broad participation”) and when each project achieves significant energy savings (“deep retrofits”). No single program design element can guarantee the success of a program. Program characteristics that may play a role include program design, eligible measures, audit requirements, points of access by customers to program, incentives, length of program duration, utilization of one-stop contracting, sophistication and extent of marketing strategy (including use of trade ally and neighborhood partners), trustworthiness and credibility of program sponsor, skills and sophistication of program contractors, and quality assurance procedures, to name a few. In order to expand the scope of these programs to a larger audience, we make several recommendations to achieve broad participation in these programs such as:

- Budget for and invest in ongoing marketing of the program;
- Simplify the loan application process;
- Offer attractive loan terms;
- Design the program for a target audience; and
- Consider on-bill financing

In order to maximize energy savings we make several recommendations for achieving “deep retrofits” including:

- Require whole house energy audit to educate consumers about all cost-effective options;
- Package loan programs with utility incentives and rebates;
- Require additional complementary measures to reach beyond the “reactive” market;
- Tier program benefits (such as loan terms) to incentivize greater energy savings; and
- Train participating contractors to ensure the credibility of the program and the achievement of energy savings.

Additional detailed results including appendices summarizing our quantitative results and individual program summaries are included in the full report.