



Residential Energy Efficiency Financing

Key Elements of Program Design

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Introduction

Investing in residential energy efficiency is one of the key strategies to achieving our country's most important environmental goals. There is near universal agreement that there are widespread opportunities for cost-effective investments in this area. Unfortunately, several different types of market failures have prevented building owners from fully capturing these opportunities, including uncertainty of savings, inadequate information, lack of access to capital, and split incentives. State and local governments have appropriately reacted to these market failures with energy efficiency programs that offer technical assistance, rebates and incentives, and specialized mechanisms to finance residential energy efficiency investments. A well-designed residential energy efficiency financing program can help expand access to capital and smooth the way for increased energy efficiency program participation, especially if integrated with other energy efficiency program elements.

Over the past several years, there has been a robust discussion regarding best practices in implementing residential energy efficiency financing. This discussion is extremely important because program design is crucial to overcoming the current market failures in a cost-effective manner. Much recent attention has been focused on residential energy efficiency financing from the perspective of financial structuring and risk management. Analyses of this type have provided useful guidance on key issues such as how to access low-cost capital and mitigate the risk of unsecured loans. Yet comparisons across programs to date have typically focused on financing metrics, such as the costs of the financing provided, the average loan size, and the number of loans closed. In order to truly understand what drives the success or failure of energy efficiency financing programs, it is necessary to evaluate program design comprehensively. Often the programmatic elements of energy efficiency financing initiatives can be at least as important to their success as elements of financial structuring.

The purpose of this paper is to examine the aspects of energy efficiency financing programs that contribute to program uptake and successful implementation. The paper identifies 10 key aspects of program design, as follows:

1. Goals and Mission
2. Program Administration
3. Funding
4. Rebates and Incentives
5. Marketing, Education, and Outreach
6. Application Process
7. Contractor Support
8. Technical Assistance to Participants
9. Quality Assurance
10. Evaluation, Measurement, and Verification (EM&V)

These key program design elements were identified in collaboration with the project team, drawing upon decades of cumulative experience, as well as previous research, including a presentation prepared for the U.S. Department of Energy by project team member Richard Faesy on designing effective residential retrofit programs.¹ Our research confirmed that these ten program design elements typically played an important role in the success or failure of residential energy efficiency programs, including those that offer financing.

The paper focuses on how these ten key program design elements play out in seven residential financing programs around the country. In most cases, these programs were chosen because they had achieved a relatively significant level of participation, while also representing different program structures, scale, targeted improvements and depth of retrofits. The challenges that the programs faced, as well as the successes, were expected to yield insightful lessons, and this notion was kept in mind when the programs were selected. The seven programs examined included the following:

1. Clean Energy Works Oregon (CEWO)
2. Keystone HELP (Pennsylvania)
3. Energize Delaware
4. NYSERDA Home Performance with ENERGY STAR (“HPwES”)
5. SoCal Gas Home Energy Upgrade Financing
6. Center for Energy and Environment (Minnesota)
7. Massachusetts HEAT Loan

While the primary focus of this paper is on the program design elements listed above, basic program descriptions and key metrics are summarized in Appendix A.

It should be noted that while several of these programs have achieved a measure of success, the reality is that no residential energy efficiency financing program in the country has yet achieved a truly broad scale. This fact was highlighted in a recent paper published by the American Council for an Energy-Efficient Economy (ACEEE), which surveyed 24 energy efficiency loan programs across the country.² In that paper, analysts made the following observation:

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%.³

¹ Faesy, Richard, “Designing Effective Residential Retrofit Programs,” DOE Technical Assistance Program, U.S. Department of Energy, August 30, 2010.

² Hayes, Sara, et al., “What Have We Learned from Energy Efficiency Financing Programs,” American Council for an Energy-Efficient Economy, September 2011.

³ *Id.*, p. iv.

Of the two programs with participation rates above 3 percent, only one was a residential program, namely the Sacramento Municipal Utility District (SMUD) Residential Loan Program. The ACEEE paper characterizes this program as having a 16% participation rate among the utility’s residential customers, but this rate is somewhat misleading in that it appears to divide the cumulative total number of loans since 1990—84,000⁴—by the current existing number of SMUD residential customers—529,695.⁵ This number is difficult to compare across programs that have been running for a shorter time (fewer than 20 years). As an annual comparison, the SMUD program made approximately 2,000 loans in 2010, which is in roughly the same range (i.e., total loans per year) as the other programs examined in this paper.⁶ The essential point is that no residential energy efficiency loan program in the country has reached the magnitude of scale necessary to achieve visionary goals regarding resident buy-in to home energy improvement programs. Such results suggest that much more than financing alone is needed to reach these goals.

While acknowledging this status quo, it is still worth recognizing the accomplishments that some residential financing programs have realized. Throughout this paper, both the achievements and challenges of the programs examined are discussed as they relate to the 10 key factors identified above. Examples from the programs are used where appropriate to illustrate how these program design elements can play an important role in program outcomes.

A central theme to emerge out of our research is that these program design elements cannot be ignored when establishing a residential energy efficiency financing program or attempting to bring it to scale. Many of these elements are as likely to shape program outcomes as rates, terms, and financial structuring. In the rush to promote energy efficiency financing as a panacea with the potential to open up the floodgates to energy efficiency projects, there has been an overemphasis on deploying innovative structures, repayment mechanisms, and new sources of capital. While these factors are undoubtedly influence program uptake, their importance should not be overstated to the detriment of basic elements of strong program design. Ultimately, residential energy efficiency programs that include financing face many of the same challenges as residential energy upgrade programs that do not, and their success depends on integrating practical approaches to all of the issues laid out above. Just as a well-integrated rebate and incentive program is more likely to exceed its goals in terms of savings and participation, so too will a well-integrated financing program be more likely to achieve success. The

⁴ *Id.*

⁵ SMUD, Company Profile, <https://www.smud.org/en/about-smud/company-information/company-profile.htm>

⁶ Hayes, Sara, et al., “What Have We Learned from Energy Efficiency Financing Programs,” American Council for an Energy-Efficient Economy, September 2011, p. 12. The average annual loan volume over 20 years is somewhat higher, at around 4,200 loans per year. However, many of these loans may have supported simple equipment replacements, as opposed to whole-house retrofits. SMUD describes the program as one that encourages “customer ratepayers to replace high energy use equipment with more efficient models.” See, “Sacramento Municipal Utility District, Residential Loan Program and Eligibility,” <https://www.smud.org/en/residential/save-energy/rebates-incentives-financing/documents/Residential%20Financing%20Fact%20Sheet.pdf>.

remainder of this paper discusses the lessons that can be gleaned from the ways in which other residential energy efficiency financing programs have attempted to integrate these 10 key design elements into their own efforts.

1. Goals and Mission

An important finding from this paper is that the more closely aligned a program is with the goal of increasing energy savings, the more likely the program is to approach program design in ways that promote savings as the primary aim. Of the programs examined, two in particular—Mass Save and NYSERDA’s Home Performance with ENERGY STAR program—were the most directly tied into broader energy savings programs and targets, and these programs tended to be more obviously structured in ways that promoted energy savings as the principal objective.

These two examples both represent residential energy efficiency programs that offer financing as one tool to increase energy savings by encouraging broader participation and deeper energy improvements. These programs are each part of larger energy efficiency portfolios, which are specifically designed to meet concrete energy savings targets. In Massachusetts, a residential financing option known as the HEAT Loan is offered as a component of Mass Save, the statewide brand name for all of the energy efficiency programs offered to Massachusetts customers. Mass Save represents a collaboration of many utilities, and these utilities also coordinate and administer the HEAT Loan program, although individual loan administration is supported by the participating lenders at no cost to the program. Mass Save programs are designed to achieve specific targets that include both electric and gas savings.⁷ Similarly, NYSERDA’s residential financing product is essentially a component of the broader Home Performance with ENERGY STAR program, which is designed to meet specific energy-savings targets.⁸ More recently, the HPwES program has been tied directly into overall energy-savings goals for the state, as NYSERDA has designated this program as one of those that will be used to help meet New York’s Energy Efficiency Portfolio Standard (EEPS) goals of a 15% reduction in electricity consumption by 2015 and a 14.7% reduction in natural gas consumption by 2020.

These portfolios (or specific programs within them) periodically undergo formal evaluation to determine what level of savings they have achieved and are regularly modified for the purpose of achieving additional savings. Administrators of both of these programs recognize that their goal is to encourage energy-savings improvements, and they accept that many participants may not want or need to take advantage of the financing offered in order to make those improvements. As long as improvements are being made and savings are being achieved, these programs consider themselves successful. To the extent that financing offered through these programs helps to promote the goal of scaling up the

⁷ Mass Save also includes targets for total benefits, including both energy and non-energy benefits. As a practical matter, the pursuit of non-energy benefits actually tends to increase energy savings, because it allows programs that do save energy but might not otherwise pass cost-effectiveness screening tests to be supported if they pass such screening when non-energy benefits are considered. Mass Save also sets targets for greenhouse gas reduction, which generally correlate positively with energy savings objectives.

⁸ For example, in NYSERDA’s five-year plan from 2006 – 2011, it set a concrete energy-savings goal for its HPwES program of 726,000 MMBtus. NYSERDA, “System Benefits Charge: Proposed Plan for New York Energy Smart Programs (2006 – 2011),” p. 5.6.

savings, program administrators consider the financing tools to be successful, as well. As one utility manager stated, “The focus is on selling the measures, instead of selling the loans.”⁹

Most of the other programs examined were created as stand-alone financing initiatives that were not incorporated into broader energy efficiency portfolios. Although all of these programs were designed on some level to encourage energy savings, they varied in the degree to which the goal of increasing savings influenced their program design. For example, Clean Energy Works Oregon, administered by a nonprofit established to run the program, encouraged comprehensive upgrades but also allowed as much as 49 percent of project costs to go toward non-energy measures. Moreover, this program, which had expressed a desire to integrate more fully with the statewide energy efficiency portfolio administered by the Energy Trust of Oregon, struggled to do so because it could not meet cost-effectiveness requirements that were largely based on energy savings projected per dollar spent. Another program, Keystone HELP, which was administered by a for-profit lender, faced an inherent tension between encouraging comprehensive energy savings and simply driving loan volume to maintain its own sustainability. In the case of SoCal Gas, its Home Energy Upgrade Financing program was implemented not as part of its portfolio of energy-saving programs, but simply as a “customer-service offering” for the convenience of residential energy consumers. In all of these cases, the fact that financing was offered separate and apart from programs explicitly judged by their ability to drive savings meant that the goal of increasing savings could more easily become blurred.

Takeaway for Policymakers: The more closely aligned a program is with the goal of increasing energy savings, the more likely it will be to approach program design in ways that promote savings as the principal aim. Financing products that are incorporated directly into broader energy efficiency portfolios with concrete savings targets are most likely to be directed toward saving energy as their primary objective.

2. Program Administration

Closely related to the goal of increasing energy savings is the importance of choosing an administrative entity to offer financing products that will promote this objective. The preceding discussion highlights some of the reasons that a utility or program administrator of a broader energy efficiency portfolio may be an appropriate choice in this regard. The tendency for these portfolios to be designed with concrete savings targets in mind and to be evaluated using savings achieved as a benchmark will likely ensure that financing products incorporated into these portfolios are designed as a means to help achieve savings goals rather than an end to promote in and of themselves.

⁹ Tilak Subrahmanian, Northeast Utilities (a Mass Save sponsoring utility), oral presentation to the Housing Development Fund Finance Working Group, September 13, 2012.

Our research suggests that even in those cases in which residential energy efficiency financing products are offered through entities besides energy efficiency program administrators, close coordination with program administrators is essential. Indeed, several of those programs that were not currently run by energy efficiency program administrators expressed a desire either to merge or coordinate more closely with energy efficiency program administrators in the state. For example, a former manager of the Clean Energy Works Oregon program noted that it had engaged in discussions with the Energy Trust of Oregon about the possibility of becoming incorporated into the Energy Trust's broader portfolio. Discussions had stalled around issues of cost-effectiveness, but the two entities continued to coordinate closely. The Energy Trust actually helped to design the Portland pilot program that launched Clean Energy Works Oregon as a statewide initiative and contributes a portion of the Clean Energy Works funding, and the Energy Trust's Executive Director serves on the Clean Energy Works Board of Directors. In addition, the Energy Trust's standard cash incentives are included in the instant rebates offered by Clean Energy Works.

Where there was little or no coordination with energy efficiency program administrators, there tended to be negative consequences that could potentially impact the likelihood of investments in energy-saving improvements. For example, in the Keystone HELP program, consumers were permitted to use all available rebates to reduce project costs, but actually applying for those rebates was left to consumers themselves with the help of their contractors. This lack of coordination potentially led to increased transaction costs (and increased project costs, if consumers did not secure project rebates) that could deter investments in deeper energy upgrades. Recognizing these potential disadvantages, another program that was run independently, the Center for Energy and Environment in Minnesota, noted that it would like to establish stronger ties with its local utilities, but thus far had gained little traction in its efforts to do so.

The involvement of an energy efficiency program administrator is certainly not an automatic guarantee that financing products will be successful. In order to be effective, a program administrator and its contractors must operate efficiently. Our research into the Energize Delaware program suggested that bureaucratic processes, including lengthy and multi-layered approvals of loan disbursements, led to contractor frustration and ultimately a suspension and re-examination of the financing products being offered. As this example demonstrates, even with the advantages that energy efficiency program administrators may bring, it is incumbent upon them to operate effectively to make financing tools practical and attractive to both contractors and consumers.

Takeaway for Policymakers: Choosing an appropriate program administrator is essential the success of residential energy efficiency financing tools. Administration by or close coordination with energy efficiency program administrators has a number of advantages, such as keeping the focus on energy savings and reducing both transaction and project costs. If energy efficiency program administrators are directly involved, it is incumbent upon them to operate effectively.

3. Funding

One of the important ways that residential energy efficiency financing can help to drive savings is by increasing the leverage of public funds to support energy-saving investments. As other researchers have noted, however, financing may not always be the best option for leveraging public funds. In “The Limits of Energy Efficiency Financing,” researchers Merrian Borgeson and Mark Zimring of the Lawrence Berkeley National Lab note that using a given amount of public funds for rebates may in some cases be as cost-effective as using them for interest-rate buy-downs or credit enhancements to support financing products. They use the example of \$2,500 in publicly available funds, which can be channeled toward rebates, buy-downs of a Fannie Mae energy loan from 14.99 percent to below 10%, or toward the creation of a loan loss reserve. They conclude that depending on the particular circumstances, the \$2,500 may in some cases be allocated as effectively toward rebates from a leveraging standpoint.

This example echoes another finding from our research, that program administrators should be given flexibility to allocate public funding in the most cost-effective way possible, whether to support financing products or other tools to drive demand for energy improvements. When financing products are integrated into broader energy efficiency portfolios, programs can decide how best to channel available funds to achieve the greatest level of energy savings.

In some cases, transitioning funds toward buy-downs may be cost-effective. For example, In Massachusetts, Mass Save program administrators were able to attract third-party capital at a relatively low cost of about 5% for up to seven years from local banks and credit unions.¹⁰ Given that the cost of capital starts out at this rate, the program is able to buy down the interest to a customer-facing rate of 0% at a reasonably low cost to the program. For certain customers, the 0% financing may help drive demand for additional energy-saving improvements. For example, one program manager noted that “reactive” customers who contact their contractors to replace broken heating equipment are often willing to go through a required Mass Save whole-house audit in order to obtain the attractive 0% financing that is available once an audit has been completed. In some instances, customers may act upon audit recommendations and install additional measures that they had not originally planned. To the extent that such financing encourages these additional investments, the money spent on buying down the capital to make it more attractive is well spent, although the true level of demand for additional savings is somewhat unclear. A 2010 summary of HEAT Loan results over the previous four years showed that 60% of HEAT Loan borrowers installed heating system replacements, while only about 15% installed weatherization measures. In addition, a 2010 evaluation of the Massachusetts Residential Retrofit and Low Income Programs quoted one program administrator employee as saying, “If someone is not already willing to [invest] the money in their home then a loan won’t really persuade them to do so.”

¹⁰ The actual cost of capital is set at Prime + 1% with a floor of 5%. Given low interest rates in recent years, the effective cost of capital for the program has remained at 5%.

These data points are perhaps not detailed or concrete enough to draw robust conclusions about the effectiveness of the low-interest HEAT Loan product in driving demand for energy-savings improvements. With better data, however, Mass Save administrators could determine whether the low-interest financing and associated buy-downs were the most cost-effective use of public funds and could adjust the allocation of funding accordingly. When publicly available funding is pre-partitioned into rebates, interest-rate buy-downs, and credit enhancements, as is typically the case when financing initiatives are not coordinated with other energy efficiency programs, there is generally less flexibility to allocate these resources in ways that are optimal based on all available evidence.

Takeaway for Policymakers: Public funding to drive demand for energy savings may be allocated most cost-effectively toward rebates and incentives or interest-rate buy-downs and credit enhancements, depending on the particular circumstances in a given market. Programs that integrate financing tools with other options for driving demand have more flexibility to allocate funds toward their optimal use based on all available evidence.

4. Rebates and Incentives

Rebates and incentives can help customers defray overall project costs and reduce loan and interest amounts. A common concern regarding financing programs, however, is that they may not be well integrated with rebate and incentive offerings available from utility and non-utility program administrators of traditional efficiency programs in a given jurisdiction. Lack of integration can lead to confusion and frustration on the part of customers attempting to integrate financing and incentives on their own, or on the part of contractors seeking to help their customers take advantage of both financing and other incentives. Lack of integration may ultimately lower demand for energy improvements if project and transaction costs are perceived to be too high.

Evidence from our research suggests that rebates and incentives tend to be most seamlessly integrated with financing options when both are offered by a single program administrator. For example, NYSERDA's financing product was established as an integral part of its Home Performance with ENERGY STAR program, which also offered other incentives that were built into the program alongside available financing. Rebates that were integrated into the program included a 10 percent reduction in the cost of certain high-efficiency measures up to \$3,000, as well as a contribution of up to 50 percent of the cost of approved upgrades for income-eligible customers.¹¹ About one third of HPwES participants took advantage of this assistance for income-eligible customers. Program managers also observed that customers taking advantage of the financing option tended to be at the lower end of the income

¹¹ Income-eligible customers receiving the assisted subsidy could not also receive the high-efficiency subsidy.

spectrum, suggesting there was significant overlap between the assisted subsidy track and those making use of project financing.¹²

By contrast, programs that operated independently of utilities typically had not attempted to integrate rebates and incentives as comprehensively. For example, staff of the Keystone HELP program, which is managed independently of any energy efficiency program administrator, indicated that while rebates and incentives can be combined with loans, it is up to the customer to apply for them with the help of their contractor.¹³

It is worth noting that NYSERDA has recently gone a step further by contracting with an outside party to develop an “optimization tool” that allows contractors to submit a single application to receive incentives from both NYSERDA and the Long Island Power Authority (LIPA), which operate home performance programs that together cover most all of New York State.¹⁴ No other administrator examined for this paper had made an effort to integrate not only its own incentives with loan offerings, but also those available through other sources. These efforts may aid NYSERDA in further achieving its goal of promoting energy savings by packaging as many available incentives as possible to drive down project costs for potential program participants.

Evidence from these programs suggests that rebates and incentives can best be integrated into energy efficiency financing programs when those incentives are offered by the same administrator that manages the financing initiative. This is particularly true when the administrator takes a hands-on approach to integration. As in NYSERDA’s case, an administrator that is proactive may even seek ways to build in additional rebates and incentives beyond those that it offers through its own programs.

Takeaway for Policymakers: Integrating rebates and incentives into a financing program is an important strategy in helping residents defray project costs and overcome barriers to participation. The process of combining loan offerings with other rebates and incentives may be most smoothly handled by a single, hands-on program administrator that implements both the financing and other incentive.

5. Marketing, Education, and Outreach

Marketing and outreach are key aspects of any residential energy efficiency program, including those that incorporate financing components and those that do not. Assuming financing is a component of a residential energy efficiency initiative, an important factor to consider is what role the financing component should take with respect to the initiative’s marketing strategy. When financing is incorporated into broader programs that are principally designed to promote energy savings, loan products can be offered to some customers to make investments in eligible energy-saving measures

¹² Interview with John Ahearn, Program Manager, April 26, 2012.

¹³ Interview with Tessa Shin, Director, April 26, 2012.

¹⁴ “NY Optimization,” <http://credit.csgroup.com/webapps/nyserderda/ProgramHelp.html#nyopt>.

more attractive and affordable. When financing is offered as a stand-alone program, however, there can be a tendency to elevate the importance of loan volume for its own sake. In some cases, marketing efforts are designed to promote financing, instead of using financing as a marketing tool itself to promote energy-saving investments.

The programs examined for this paper that incorporated financing products into broader energy efficiency efforts tended to approach financing as a marketing tool to help drive additional savings, rather than as an end in itself. As previously noted, a manager for one of the utility sponsors of Mass Save stated explicitly, “The focus is on selling the measures, instead of selling the loans.” In addition, program administrators saw financing as a key tool to help promote energy-saving measures among specific customer segments that would be unable to afford the out-of-pocket costs of such investments. The Massachusetts program manager emphasized that one of the purposes of offering the HEAT Loan was to “provide financing for customers who would otherwise not qualify for financing.” In other words, a key objective of the loan product was to expand energy-saving opportunities to those customers who might have limited access to other affordable credit options. In addition to helping foster equitable opportunities for energy-saving installations, the financing product also was aimed at expanding total programmatic energy savings by helping bring in hard-to-reach customers.

A NYSERDA administrator echoed this sentiment in his comments about the financing component of that entity’s Home Performance with ENERGY STAR program. He noted that many of the program participants who took advantage of the financing product were in lower income brackets. He also expressed a desire to increase the percentage of program participants who took advantage of financing, specifically because this would mean that more customers at the lower end of the income spectrum were able to afford the investments as a result of the financing offered. Notably, NYSERDA also created a separate underwriting track to help encourage investments by those who could not qualify for financing under traditional underwriting criteria. In addition, it contracted with constituency-based organizations throughout the state to promote home energy upgrades and discuss financing options with local residents. While many of these efforts were driven by equity concerns, they also demonstrate how financing can be used as a tool to increase energy savings by putting energy efficiency investments within reach of customer segments that might not have other options to make such investments affordable.

By comparison, some financing initiatives that were administered separate and apart from any broader energy efficiency program tended to offer financing as a marketing tool to achieve other goals or to focus on marketing the financing as an end in itself. For example, Southern California Gas offered an energy loan product separate from its energy efficiency portfolio for the sake of customer convenience, while Keystone HELP tended to emphasize loan volume as a primary metric of success without analyzing whether its financing products actually drove deeper energy upgrades or expanded access to energy efficiency financing for those without other alternatives.

Takeaway for Policymakers: Financing can be used as an effective marketing tool to increase energy savings by encouraging deeper investments or expanding access to energy-saving opportunities among customer segments lacking other affordable options. When financing is incorporated into broader

energy efficiency programs designed to achieve savings targets, program administrators tend to treat financing as one tool to help them reach those goals. When energy efficiency loan products are not integrated with broader energy efficiency programs, there can be a tendency to use financing as a marketing tool for other objectives or to treat loan volume as an end in itself.

6. Application Process

In order to make energy efficiency investments attractive and scale them up, it is essential that it be as simple as possible from a customer perspective to apply for any financial assistance from a program administrator, whether it be a loan, rebate, or other type of incentive. One advantage of programs that offer financing as a component of broader energy efficiency portfolios is that the processing of applications for rebates and incentives along with that for loans tends to be simpler for customers seeking both.

Our research indicated that financing that was offered separately from broader energy efficiency programs tended to have difficulty integrating applications for rebates and incentives that could further reduce project costs and encourage deeper energy upgrades. For example, Southern California Gas outsourced its financing program to a separate administrator that was not involved in administering the utility's broader energy efficiency portfolio. In this case, even though the financing program was offered by a utility that also offered energy efficiency rebates, there were still significant coordination problems in processing rebate and financing applications together. A manager of the company acting as the financing program administrator stated that attempting to process rebates could cause significant delays in the loan application process because his company was simply not set up to handle rebates. He emphasized that processing buy-downs was much easier from their perspective and that buy-downs were "essentially the same thing." Putting aside the merits of this argument, it was notable that the lack of coordination between energy efficiency rebate programs and a financing program, even when both were ostensibly offered by the same utility, could lead to this level of disjointedness in the application processes for the different types of financial support.

Other financing initiatives that were offered separately from loan products also had difficulty processing rebates or simply did not attempt to do so. For example, the Keystone HELP program allowed customers to use rebates to reduce project costs, but required customers to apply separately for such rebates to their respective utility companies, sometimes with the help of contractors. Keystone HELP administrators did not have data on how many participants actually went through the process of applying for rebates separately, and it was unclear whether these increased transaction costs (and possibly increased project costs) may have discouraged any deeper energy-saving investments.

By contrast, programs that offered financing alongside rebates and incentives tended to have an easier time processing applications for these various types of financial support.

A related observation that emerged from the research had to do with the timing of the application for project financing. Some evidence suggested that programs that emphasized comprehensive home energy upgrades tended to defer the loan application process until after a whole-house energy audit had

been conducted and the resident had received a report detailing all upgrade recommendations. This was the case, for example, in both the Clean Energy Works Oregon program and the NYSERDA HPwES program. In these programs, the comprehensive energy audit was the customer's point of entry into the program, with financing coming later in the process. In other programs such as Keystone HELP and SoCal Gas, which tended to focus more on simpler, single-measure replacements, a financing application could be brought along by a contractor responding to a service call. One observer noted that as a result of this approach, Keystone HELP financing often supported more "reactive" improvements such as the replacement of burned out equipment.¹⁵ As this observer highlighted, such improvements may provide lower energy savings in the long run as compared to "proactive" home energy upgrades, which tend to be "higher-value, more comprehensive improvements."¹⁶ However, while savings may not be as deep with these financing-focused programs, they do target important "lost opportunity" windows that may not be available again for years.

Takeaway for Policymakers: Integrating the loan application process with other types of financial support, such as utility rebates, is another key programmatic element that should be considered in order to facilitate customer participation in home energy upgrade financing programs. In addition, the timing at which the financing application is introduced should correlate with the goals and objectives of the program. If the objective is to support comprehensive home improvements, then it may make sense to use the energy audit as the "point of entry" to the program and defer loan applications until a comprehensive audit report with recommendations has been received. However, successful programs may need to target both lost opportunity and early retirement/comprehensive upgrades in order to maximize savings and take full advantage of both situations to meet the program goals.

7. Contractor Support

The programs examined for this paper substantiated the view that providing support to approved contractors was a key element in successful program management. Contractors served as the primary link between customers and the programs at the installation phase of all programs, and in many cases they took on an expanded role that included aspects of marketing, education, and technical assistance. Given contractors' vital roles in moving the energy upgrade process forward and maintaining customer satisfaction, programs were generally willing to invest time and resources to supply contractors with the tools they needed to be successful. It should be noted, however, that such investments often required programs to devote a portion of their budgets to contractor support.

The need to provide adequate support to contractors was strong in those programs that relied upon contractors as their primary network for marketing and outreach. In the case of Keystone HELP, which

¹⁵ "Driving Demand for Home Energy Improvements," Lawrence Berkeley National Laboratory, September 2010, p. 100.

¹⁶ *Id.*

treated contractors as “part of the sales team,” a key element of the contractor relationship was simply maintaining regular and open lines of communication. Program staff reported staying in touch with the contractor network frequently by phone, email, quarterly events, and through industry conferences. In addition, the program administrator, AFC First, operated the “Green Energy Training Center,” an instructional program for contractors that offered courses in home performance basics, Building Performance Institute certification courses, and other classes, as well.

While this level of support might be expected in a program such as Keystone HELP in which contractors essentially were relied upon to market the program to customers, substantial contractor support was observed in other programs, as well. For example, in the case of Clean Energy Works Oregon, the program employed a Contractor Account Manager whose responsibilities included conducting training in the field at job sites and in contractors’ offices. The program also offered “business support programs” to enhance contractors’ business success and ability to reach more customers.¹⁷ In NYSERDA’s case, the program did not hire specific personnel to provide in-person contractor support, but it did establish a contract with an outside party to develop an extensive website with numerous resources specifically designed to help contractors interact more easily with the HPwES program. The site offered webinars, guidebooks, brochures, and other resources, including access to the “optimization tool” described above in Section 4 that allowed contractors to enter a single project into one database and apply for multiple incentives from both NYSERDA and LIPA.

As noted above, efforts to support contractors are not free, but it is likely that the expenditure helps to ensure that contractors will continue to participate in the programs, serve as a program sales force and provide better services to their customers. As such, contractor support is a prime example of the kind of programmatic element that should be integrated into energy efficiency financing initiatives in order to facilitate their success.

Takeaway for Policymakers: Contractors are a key ingredient in the success of most programs. In contractor-origination models, they are effectively part of the sales team. Even in other models, however, contractors need adequate resources, training, and support, all of which requires appropriate funding in order to integrate these elements into an energy efficiency financing program. Policymakers should bear this in mind when establishing energy efficiency financing programs and be sure to provide adequate financial support for contractor assistance.

¹⁷ “Contractor Account Manager, Clean Energy Works Oregon: Job Description,” <http://dev.cleanenergyworksoregon.org/jobs/details/contractor-account-manager/>.

8. Technical Assistance to Participants

Even the most streamlined residential energy efficiency programs can sometimes be confusing and complex. This complexity exists for both the energy efficiency programs as well as the additional elements of financing. Traditional energy efficiency programs are complex enough without a financing component, but adding financing on top can create a whole host of issues for customers. Participants will have questions on anything from how the loan application process works to what types of measures they can install. Providing customers with adequate technical assistance to guide them through the process of the receiving an energy audit (for whole-house retrofits), working with a contractor to make physical improvements, and taking out any necessary financing can be essential to ensuring successful customer participation from start to finish. At the same time, technical assistance to customers can be expensive from a programmatic standpoint, particularly if additional staff or third parties are brought on specifically to play this role. Thus, the benefits of technical assistance to customers must be compared with programmatic costs in order to strike the right balance in terms of the ideal model of technical assistance to adopt.

With the help of large grants, some programs have been able to contract with outside parties to provide valuable technical assistance to customers beyond what they hear from the contractors with whom they may be working. In the case of Clean Energy Works Oregon, for example, all participants receive advice from an independent “Energy Advisor,” who reviews the home energy audit report and the home energy remodeling bid, and also provides a quality control inspection once the remodel is complete. The Oregon program has a contract with more than 15 Energy Advisors around the state who provide this service, and the program provides training to these individuals. Those familiar with this aspect of the program, however, have indicated that it is very expensive,¹⁸ ranging up to about \$500 to generate a completed customer application.¹⁹ Thus far, this program element has been supported by the initial U.S. DOE Better Buildings Neighborhood Program grant that the program received, which has allowed the outside technical assistance from Energy Advisors to continue. Yet program administrators are aware that the grant will eventually be depleted and are looking for ways to cut back on technical assistance costs. Similarly, NYSERDA has experimented with the town of Bedford, also a Better Buildings Grantee, to provide technical assistance to customers through an analogous “Energy Coach” model. Thus far, a similar level of technical assistance has not been possible in other locations. Program staff have indicated that they are exploring what role the Community Based Organizations that currently market the program might play, but the costs may be prohibitive and these individuals also do not have specialized training in energy efficiency.²⁰

Given the cost implications of providing technical assistance to customers through independent sources, a number of the programs examined relied primarily on contractors to play the principal role in guiding

¹⁸ Interview with Aaron Berg, former CFO of Clean Energy Works Oregon, April 19, 2012.

¹⁹ <http://www1.eere.energy.gov/buildings/betterbuildings/neighborhoods/pdfs/d1-villota.pdf>

²⁰ Interview with John Ahearn, Program Manager, April 26, 2012.

customers through the energy upgrade and financing process. This compromise further supports the need, as described in more detail above, to provide adequate resources to contractors so that they can address any issues a customer might raise. Some programs indicated that the resources they provide to contractors may be of use in this regard. For example, NYSERDA noted that it had contracted with an outside entity to provide support to contractors and that the field staff of this organization might be in a position to provide some assistance if a customer raised an issue that a contractor was not able to address fully. As highlighted earlier, such a contract still requires some level of budget expenditure that must be supported. However, devoting some amount of additional resources to contractor support may represent an appropriate intermediate allocation in order to promote adequate technical assistance to customers without spending unsustainable sums.

While contractors can serve as a lower-cost technical assistance choice for programs, some customers may also seek an objective check on what the contractor tells them. This can be mitigated somewhat with clear public or utility backing of the program in order to provide assurance to customers that a trusted or respected organization is standing behind the program to ensure that contractors themselves are trustworthy.

Takeaway for Policymakers: Technical assistance to program participants can be a key component in addressing customer concerns and ensuring successful participation in residential energy efficiency programs, including financing programs. While the costs of providing hands-on, independent technical assistance through third parties may not always be sustainable, there may be intermediate options available through program contractors that help to support adequate customer assistance without overspending. These options will still require some level of financial support and quality assurance in order to be integrated into a comprehensive financing program.

9. Quality Assurance

Quality assurance procedures can help to ensure customer satisfaction with energy efficiency upgrades and protect the long-term reputation of an energy efficiency program. In an ideal world, all work would be independently inspected by a qualified third party to verify proper installation. As with many other program design elements, however, funding limitations often place restrictions on the amount of quality assurance that can be integrated into a given program. As a result, most programs examined for this paper compromised by conducting inspections of a portion of completed work. These inspections were typically completed by third parties, who provided both the expertise and the independent viewpoint to determine whether installations had been performed correctly.

One exception to the spot inspection methodology was the Clean Energy Works Oregon program. In that program, all homes received a quality control inspection from the same energy advisor who was responsible for explaining the results of the participants' energy audit report and reviewing contractor bids with the customer individually. By the time the work was completed, the customer had typically developed a strong relationship with the energy advisor and trusted that individual to perform a thorough quality-control inspection. Moreover, the energy advisors themselves were given the responsibility of signing off on contractor work. This program represents perhaps the ideal

methodology in terms of quality control procedures but at a cost. As described earlier, however, the program benefited from a large federal grant that supported these activities, which were not feasible in other programs. When evaluated, we will learn whether these expenses for the Energy Advisor model can be justified in terms of additional program participation rates and savings.

The spot-check compromise was the most common technique employed as an alternative. NYSERDA, for example, maintains a contract with an outside party to inspect 15 percent of all HPwES projects. The Keystone HELP and SoCal Gas programs also spot check completed work, while the Center for Energy and Environment spot checks insulation jobs. As with other programmatic features, these programs strive to strike an appropriate middle ground between program objectives and budget limitations. As noted previously, these compromise positions still require adequate funding to support, a fact that policymakers should consider when establishing financing programs that seek to integrate key elements of program design. These same considerations of quality assurance cost and oversight exist for traditional energy efficiency programs as well as financing programs.

It is worth noting that in addition to spot-check inspections, some programs had established quality assurance procedures to prevent contractors from making false claims that could lead to customer disappointment and detract from the reputation of the program. The SoCal Gas program, in particular, placed a fair amount of emphasis on the code of conduct that all contractors were required to adhere to, as well as a “blanket purchase agreement” that contained language regarding contractor conduct and false representations.²¹ The program also established a formalized customer complaint process that provided a venue to address any serious customer concerns. Ultimately, contractors could be removed from the program through this process if it was found that they had committed a serious violation of the code of conduct, though program staff indicated that remediation was more typical.²² This example points to the fact that there may exist some relatively low-cost methods, in addition to spot-checks, to enhance quality assurance procedures and bolster customer trust in a given program.

Takeaway for Policymakers: Quality assurance procedures represent an important program design element that can help to ensure that measures are installed properly and customers are satisfied. Budget constraints may limit the extensiveness of quality control, but intermediate methods such as spot-inspections may offer an acceptable balance. In some cases quality assurance can be enhanced through low-cost options such as codes of conduct and grievance procedures, but these methods do not substitute for physical inspections. If spot inspections are to be integrated into quality assurance procedures, adequate funding must be allocated to support this program element.

²¹ Interview with Jim McLain, President and CEO, Viewtech Financial Services, May 4, 2012.

²² *Id.*

10. Evaluation, Measurement, and Verification

Collecting data on energy savings is an important program element for several reasons, such as providing a basis for program improvement and convincing lending institutions that energy efficiency financing can be a viable and attractive investment strategy. Data collection also has an important role to play in scaling up customer participation. As noted in the introduction, customer participation in all of the programs examined, and in other energy efficiency financing programs nationwide, has been relatively low. One reason for this may be that customers continue to be skeptical as to whether projected energy savings will actually materialize. Collecting data and evaluating program outcomes could provide a credible basis for program marketers to describe to potential participants the relationship between savings projections and savings outcomes, though this explanation would need to be caveated to account for any inherent uncertainties in future projections. If customers became convinced that savings projections were sufficiently accurate overall to justify the financial risk of investing in upgrades, some might be more inclined to avail themselves of energy efficiency financing opportunities.

Despite this rationale, most programs examined for this paper did not closely track actual energy savings. This observation was consistent with findings in the ACEEE paper mentioned in the introduction, which noted, “Most programs surveyed don’t measure or track energy savings that result from financed efficiency projects.”²³ One exception was NYSERDA. Program staff indicated that five percent of the overall budget for its HPwES program was devoted to evaluation, measurement, and verification (EM&V). Staff noted that the program had tapped into this budget to engage a consultant in performing a program billing analysis.²⁴ Although program staff offered to share the results of this analysis, they were not yet available at the time of this writing. Mass Save also regularly devoted part of its energy efficiency portfolio budget to evaluation, with the most recent three-year plan allocating 3.2% of total program administrator costs toward evaluation for electric programs, and 4.3% of the budget toward evaluation for gas programs. Thus far, Mass Save had not conducted a detailed evaluation of HEAT Loan results specifically, but some results were incorporated into evaluations of broader residential efficiency programs. Clean Energy Works Oregon also had engaged a consultant to perform an evaluation of that program, but it was less clear what the scope of the evaluation or the timing would be. Other programs such as Keystone HELP and SoCal Gas indicated that they made some high-level deemed savings estimates but had not tracked actual savings. Interestingly, even the mission-driven nonprofit Center for Energy and Environment, which was founded to bring energy efficiency savings to the community, noted that it tended to conduct less tracking of actual energy savings and focus more on

²³ Hayes, Sara, et al., “What Have We Learned from Energy Efficiency Financing Programs,” American Council for an Energy-Efficient Economy, September 2011, p. 4.

²⁴ Interview with John Ahearn, Program Manager, April 26, 2012. This billing analysis will presumably provide a reasonable estimate of actual savings, but likely not the actual savings itself, which can be challenging to accurately measure.

tracking loan repayments.²⁵ However, most ratepayer-funded energy efficiency programs do have EM&V programs in place to track projected vs. estimated savings. In instances where the financing program is part of an energy efficiency program, there is an opportunity to evaluate the financing program in order to quantify savings as part of the EM&V efforts.

While tracking actual energy savings may be a useful strategy in helping to increase demand and expand participation in energy efficiency financing programs, it should also be recognized that such tracking can require substantial investments of time and money. Given these impediments, it may be possible to encourage programs to find a middle ground, such as evaluating a representative sample of participants or spacing out evaluations over a period of several years. As with other intermediate solutions, however, even this strategy would require adequate funding to go forward.

Takeaway for Policymakers: There are a number of reasons to integrate measurement and verification of actual energy savings into the design of energy efficiency programs. Perhaps the most important of these is the possibility of convincing potential customers to have greater confidence in the frequency with which savings projections will typically cover loan obligations.²⁶ From a customer perspective, verification of actual energy savings will be more valuable than data on loan repayments. Analyzing actual savings data can be expensive, but there may be middle-ground strategies that can provide useful information at a lower cost. Even these intermediate methods, however, would require sufficient funding to become part of program design.

²⁵ Interview with Sheldon Strom, President, May 15, 2012.

²⁶ Efficiency Vermont uses “Success Stories” (i.e., testimonials) with actual savings to sell their Home Performance with ENERGY STAR program. See http://www.encyvermont.com/for_my_home/ways-to-save-and-rebates/energy_improvements_for_your_home/home_performance_with_energy_star/success_stories.aspx

Conclusion

The attractiveness of the energy efficiency financing concept—that financing can reduce the up-front costs of energy efficiency investments—has sometimes created a temptation to assume that simply offering attractive financing terms will overcome all obstacles to investments in energy-efficient improvements. The foregoing discussion demonstrates that this is a misconception. A whole host of basic program design elements are essential to the success of energy efficiency financing products, just as many of these elements are critical to residential energy efficiency programs as a whole. These elements are needed because they address many of the other key barriers that hinder investments in energy efficiency. Whether it is the need to provide rebates or other strategies to overcome market failures besides access to capital, to conduct additional marketing and outreach activities, to provide adequate support to contractors and program participants, to conduct quality assurance, or to demonstrate the link between savings projections and actual outcomes, a wide range of basic programmatic elements shape any given residential energy efficiency financing product and impact its ability to advance broader energy efficiency goals.

As highlighted throughout the text, integrating these key elements into program design often requires some source of financial support. If funding allocated toward the establishment of financing programs is earmarked only to be used as loan capital, loss reserves, or rate buy-downs, then program administrators will be severely restricted in their ability to carry out some of the fundamental tasks that can make or break a program. When budgets are constrained, compromise solutions can frequently be found that will allow program administrators to fulfill at least some of these responsibilities at a lower cost. Such intermediate strategies, however, still require a budgetary commitment. Traditional energy efficiency programs already cover many of these costs or may already be performing some of these functions. As such, the cost of extending these key programmatic elements to an integrated financing product will not be as great as developing them for a stand-alone financing program.

The conclusion that programmatic elements beyond attractive financing terms can be important ingredients of success is once again consistent with the findings of the ACEEE study, which reported that even some programs offering below-market interest rates still experienced low numbers of project applications.²⁷ As researchers concluded, “Programs must be ‘sold’ to borrowers” with a good deal of program marketing, even when the financial terms represent a “good deal.”²⁸ This paper augments the ACEEE findings by explicating some of the other key elements that may impact program uptake. Ultimately, however, the conclusion of this paper can still be summarized by the words of the ACEEE analysts: “Good loan terms don’t assure the success of a program.”²⁹ Stated in the positive, integrating

²⁷ Hayes, Sara, et al., “What Have We Learned from Energy Efficiency Financing Programs,” American Council for an Energy-Efficient Economy, September 2011, p. 6.

²⁸ *Id.*, p. 6.

²⁹ *Id.*, p. iv.

an attractive financing offering with key program design elements into a well-designed energy efficiency program is the most effective way of advancing energy efficiency goals.

Appendix A: Program Summaries

	CEWO	NYSERDA	Keystone	Delaware	SoCal Gas	MN CEE	HEAT Loan
Summary	Statewide nonprofit, grew out of Portland pilot. BPI contractors perform work. Various lending partners.	Financing to support HPwES program, focused on whole-house retrofits performed by BPI contractors.	Contractor originates, AFC First acquires and sells to PA Treasury. Two whole-house products (unsecured/secured) and two single-measure products (ESTAR/Advanced). Mid-income target (max \$150K).	Tied to HPwES program administered by ICF, w/AFC First financing. HPwES program currently suspended. Offered two options: Standard (single measures), and Performance. (whole house, 20% savings).	Fannie Mae Energy Loan program, offered through Viewtech Financial. Contractor originates at time of sale, Viewtech acquires, sells to Fannie Mae.	Several loan programs administered by nonprofit, not tied to state or utility. Offerings vary by location within state. Largest is 0% Community Energy Services loan in Minneapolis.	As part of MassSave, provides customers the opportunity to apply for a 0% loan from participating lenders to assist with the installation of qualified energy efficient improvements in their homes.

	CEWO	NYSERDA	Keystone	Delaware	SoCal Gas	MN CEE	HEAT Loan
Source of Capital	Partnerships with local lenders, plus \$20 DOE grant. Written into Energy Trust re-bid.	\$60 million from RGGI for financing, plus SBC funds from EE Portfolio Standard (EEPS) initiative.	\$20 million from state treasury; buy-downs/loss reserve from Env Prot Dept, plus returns.	ARRA funding that went through state treasury.	Fannie Mae.	Low-interest program-related investments (PRIs) from foundations, plus returns.	Over 50 local community banks and credit unions.
Overview of Lending Activity	Goal of 6,000 per year in 3 years (by end of 2013). Portland program reached 500 homes.	6,800 HPwES jobs in 2011, of which 30% used financing (typically lower-income customers).	Over 7,000 btwn 2006 & 2010 (about 1,400/yr).	Launched in 2011. Didn't get far off ground before suspension, though initial interest strong.	Most recent numbers 1998 – 2008: 1,320 loans (about 120 loans per year).	Varies by program. About 1,100 loan per year in Twin Cities metro area.	Over 3,500 loans in 2011, with total loan volume over \$30,000,000.

	CEWO	NYSERDA	Keystone	Delaware	SoCal Gas	MN CEE	HEAT Loan
Participant Eligibility	<ul style="list-style-type: none"> ◦ Restricted to certain counties ◦ Owned and occupied by participant ◦ Built before 1993 ◦ Single-family detached ◦ Not on natl historic registry ◦ UW: credit score, utility bill pymt history ◦ Audit must project 15% savings 	<ul style="list-style-type: none"> ◦ Own or lease 1-4 unit bldg ◦ On-bill: must be customer of participating utility ◦ Primary UW: FICO 640 (higher for self-employed), DIR <50%, no bankruptcies/ foreclosures/ repos for 7 yrs. ◦ Alternative UW looks at mortgage & utility pymts. 	<ul style="list-style-type: none"> ◦ Owners of 1-2 unit primary residence located in PA ◦ Must make less than \$150K per year. 	<ul style="list-style-type: none"> ◦ Must be participant in Delaware HPwES program. ◦ Owner of a separately metered, detached or attached single-family residence ◦ “Good credit and the ability to replay are required” ◦ All income levels 	<ul style="list-style-type: none"> ◦ Owners of primary residence or vacation home ◦ Good credit and the ability to repay are required ◦ All income levels 	<ul style="list-style-type: none"> ◦ Varies by program. For Community Energy Services (and similar Rochester program): Single family owner-occupied residences. ◦ No maximum income limit. 	<ul style="list-style-type: none"> ◦ Owners of one-to-four-family residences.

	CEWO	NYSERDA	Keystone	Delaware	SoCal Gas	MN CEE	HEAT Loan
Measure Eligibility	<ul style="list-style-type: none"> ◦ Measures identified on the CEWO Eligible Measures Document ◦ Includes insulation, air and duct sealing, space heating, hot water 	<ul style="list-style-type: none"> ◦ Determined to meet HPwES guidelines. ◦ SIR greater than 1.0 (expected savings over weighted useful life of each upgrade of must be greater than its cost). 	<ul style="list-style-type: none"> ◦ Unsecured: air sealing post-blower door test required; point system for other measures, most points for insulation ◦ Secured: 25% rating decrease (HERS > 100) or 15% (<100) 	<ul style="list-style-type: none"> ◦ Standard path: list of qualifying single measures (insulation, windows/doors, air/duct sealing, hot water, HVAC with specs) ◦ Package must exceed 20% projected savings 	<ul style="list-style-type: none"> ◦ Eligible measures include “most energy improvements and related work” ◦ Rate on some measures has been bought down by SoCal gas (e.g., furnaces/oilers) 	<ul style="list-style-type: none"> ◦ Varies by program, but typically wide range including air sealing, insulation, HVAC, and water heating 	<ul style="list-style-type: none"> ◦ Must obtain a Mass Save Home Energy Assessment and install qualified efficiency measures recommended by a Mass Save representative.

	CEWO	NYSERDA	Keystone	Delaware	SoCal Gas	MN CEE	HEAT Loan
Rate	Interest rates and terms vary among lending partners. Range from 5.5% to 6.25%, with most set at 5.99%.	Unsecured Option: 3.99% Fixed Rate (3.49% if automatic payments). On-bill option: 2.99% Fixed Rate (interest may be tax-deductible)	Whole House Loans: -Unsecured: 2.99% -Secured : 3.875% to 6.375%, based on home's equity and loan term. Subsidized rates available in certain locations.	Standard: 6.99%. Performance: 3.99%	Fannie Mae rate: 14.99%. SoCal Gas has historically bought this down to 9.9% to target certain Energy STAR measures.	Varies by program. ◦ Community Energy Services: 0%. ◦ Statewide Home Energy Loan Program: 2.99 (shorter term) or 4.99 (longer term) ◦ Other programs vary	Rate to customer is 0%. (This is bought down by the program from rate charged by capital providers, which is set at 1% above prime with a floor of 5%.)

	CEWO	NYSERDA	Keystone	Delaware	SoCal Gas	MN CEE	HEAT Loan
Term	Loan terms vary among lending partners but can be as short as 1 year or as long as 20 years depending on the amount of the loan and the lender.	Unsecured Option 5, 10, or 15 years; may not exceed weighted useful life of measures. On-Bill Option: Same as Unsecured Loan, but in addition, monthly loan installment payment amount may not exceed 1/12th of estimated annual energy savings.	Whole House Loans: -Unsecured CAPP Loan: 3, 5, or 10 year term -Secured Whole House loan: 10, 15, or 20 year term	Up to 10 years	Terms range from one to ten years. Twelve (12) year financing is available for ENERGY STAR measures.	Varies by program: ◦ Community Energy Services: 12 - 36 months ◦ Statewide Home Energy Loan Program: 12-36 months (shorter term); 37 – 120 months (longer term) ◦ Other programs vary	Up to 7 years.

	CEWO	NYSERDA	Keystone	Delaware	SoCal Gas	MN CEE	HEAT Loan
Loan Amount Restrictions	Varies by lender. -Craft3: \$1,000 - \$30,000 -Umpqua: \$1,000 - \$5,000 (short term/low rate); \$5,001 - \$20,000 (longer term/higher rate). -SOFCU and Pacific Crest: unsecured up to \$20,000; secured: \$20,001 - \$30,000	Up to \$13,000 per household, up to \$25,000 if the payback period is 15 years or less	Whole House: Unsecured CAPP: \$1,000 - \$5,000 Secured Whole House: \$5,000 - \$35,000 Single Measure (all): \$1,000 - \$25,000	\$1,000 - \$20,000	\$2,500 - \$20,000	Varies by program. ◦ Community Energy Services: up to \$10,000 ◦ Statewide Home Energy Loan program: up to \$10,000 (shorter term); up to \$20,000 (longer term) ◦ Minnesota Fix-Up loan: up to \$35,000.	Up to \$25,000.

	CEWO	NYSERDA	Keystone	Delaware	SoCal Gas	MN CEE	HEAT Loan
Security	<p>Varies by lender.</p> <ul style="list-style-type: none"> ◦ Craft3: No appraisal/ no equity required, but secondary lien placed on title. ◦ Umpqua: unsecured/ no appraisal/ no equity; UCC 1-A placed on title. ◦ SOFCU and Pacific Crest FCU: smaller projects (>20K) unsecured with UCC 1-A placed on title; larger projects (\$20 - 30K) secured with home equity (appraisal required) Subordinate 	<p>Unsecured option: Unsecured.</p> <p>On-Bill Option: -Requires a mortgage to be signed and filed by NYSERDA to provide notice to any subsequent purchaser of the property -The mortgage is not subject to any fees or NYS recording tax and is subordinate to any current or future mortgage on the property</p>	<p>Whole house loans: one unsecured option and one secured option (1st, 2nd, or 3rd lien)</p>	Unsecured	Unsecured	<p>All program loans secured by junior mortgage on the property. Required by state agency, though CEE previously did unsecured loans and is in discussions with the state agency about going back to unsecured.</p>	<p>Depends on the capital provider. Most loans are unsecured. Some lenders file junior liens.</p>

	CEWO	NYSERDA	Keystone	Delaware	SoCal Gas	MN CEE	HEAT Loan
Repayment Mechanism	<ul style="list-style-type: none"> ◦ In most cases, payment goes directly to lender. ◦ On-bill option offered by Craft3 to customers of participating utilities in certain counties. 	<p>Unsecured option:</p> <ul style="list-style-type: none"> -Repaid directly to NYSERDA's loan servicer through monthly statement billing or monthly electronic payment. -Non-assignable upon sale of property. <p>On-Bill Option:</p> <ul style="list-style-type: none"> -Repaid through a NYSERDA Loan Installment charge on your utility. <p>Remaining portion can be transferred upon sale with proper notice.</p>	Fixed monthly payments for all loan types processed through AFC First.	Fixed monthly payments processed through AFC First.	Fixed monthly payments processed through AFC First.	Fixed monthly payments paid directly to MN CEE.	Payments made directly to capital provider.