Engaging Small to Mid-Size Lenders in the Market for Energy Efficiency Investment: Lessons Learned from the ACEEE Small Lender Energy Efficiency Convening (SLEEC)

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Executive Summary

Over the past decade or so, policymakers, utilities, energy efficiency advocates, and others have worked to deliver financing for energy efficiency improvements in the commercial, residential, and institutional sectors. While many efforts have relied on public dollars, in recent years the private sector has shown an increased interest in engaging in this market (Rockefeller Foundation and Deutsche Bank 2012; Freehling 2011). The Rockefeller Foundation and Deutsche Bank estimate that private-sector entities could invest more than $279 billion in energy efficiency across the buildings sector. Yet aside from investment in the federal and public sectors, actual growth in energy efficiency activity has been slow over the last few years and has yet to reach the scale of these impressive estimates.

Small to mid-size lenders are well positioned to help realize the full market potential of energy efficiency, particularly with small commercial customers. While larger financial institutions are playing a growing role in serving small businesses (Bank of America 2014), small to mid-size local lending institutions may offer some advantages to energy efficiency customers: they can connect borrowers to local resources like contractors, and they understand similar local projects. Further study may show that energy efficiency can become an important market niche for small lenders, sustaining their position in local markets.

Many entities have entered the market for energy efficiency lending, including Community Development Financial Institutions (CDFIs), mission-driven green lenders, local community and regional banks, credit unions, small commercial entities linked through utility programs (e.g.. Northeast Utilities' MassHeat loan program), and a handful of commercial entities and conventional local banks that are exploring the marketplace independently. Each type of lender may have a distinct motivation for exploring this space. For example, CDFIs may be driven by their mission to deliver financial services to underserved markets. Local commercial entities may anticipate that small commercial buildings within their communities will need energy efficiency improvements to meet building code requirements.

On October 18, 2013, the American Council for an Energy-Efficient Economy (ACEEE) and Energi Insurance Services, with support from the National Renewable Energy Laboratory (NREL), Argonne National Laboratory, and the U.S. Department of Energy (DOE) convened a group of key stakeholders to discuss opportunities for augmenting small bank and lender activity in the energy efficiency space.

This white paper captures key findings from the convening and places them within the context of current research and experience. It goes on to make recommendations to entities within the energy efficiency community to help increase small to mid-size lender activity in the market for energy efficiency financing.

Before the convening, ACEEE and Energi identified four key groups of obstacles and asked attendees to specify barriers they faced within these categories:

- Origination and demand
- Cash-flow validation

- Financial regulatory and reporting requirements
- Documentation and structural elements

Our discussion revealed the following points.

Lack of customers. By far the greatest obstacle identified by participants is a lack of customers actively seeking financing for energy efficiency investments. Lenders shy away from the energy efficiency market because they remain unconvinced that there is sufficient demand to justify their investment. One lender noted that in the commercial market, in particular, building owners, managers, and tenants need to be sold on the value of energy efficiency as an investment.

Our convening identified the following hindrances to demand for energy efficiency investments: perception of high transaction costs, competition with other investments, a lack of education on the availability and cost/benefit of energy-efficient products, and a lack of marketing for incentives. As a partial solution, benchmarking and disclosure of energy efficiency will likely play a role in driving future demand, and integrated program approaches offering a one-stop shop for customers may also be beneficial. However more insight is needed into how to change reactive customers into proactive customers. Growing the market for energy efficiency requires more than the availability of innovative products and lenders willing to lend. It requires a customer base. If customers are motivated to take advantage of the economic benefits of energy efficiency, efforts to expand offerings from small and mid-size lenders could be a stepping stone to a large-scale efficiency market.

Lack of standardized validation metrics. For efficiency loans to be a viable product at scale, both lenders and potential borrowers need to have confidence that projected energy savings will be realized. Participants in the convening frequently mentioned the need for validating energy savings to catalyze demand in both residential and commercial subsectors, but no consensus emerged on how to provide it. On the commercial side, cash flow is harder to validate as it is outside the scope of appraiser analysis. Documented good management of the building is a key indicator of whether a commercial customer will be a dependable steward of the loan.

Two schools of thought emerged on the importance of energy savings cash flows and associated underwriting practices. While some participants felt that security on energy savings cash flows makes a material difference, others insisted that energy savings cash flows are of minor importance. Delving more deeply into these two schools of thought may help us understand what is required to catalyze market activity.

Regulatory hurdles. Attendees offered insights on regulatory and reporting hurdles they faced in developing new lending products due to the evolving financial regulatory landscape. Several cited the culture of risk aversion in the regulatory world resulting from the financial crisis. It was noted that distrust between regulators and rating agencies poses a significant challenge. However attendees were also familiar with methods of risk assessment that that could help push loan products along, even in a risk-averse climate. In any case, we should engage financial regulators to familiarize them with the characteristics and benefits of energy efficiency lending products, and to help them develop safe, sound, and effective products.

Development and deployment of underwriting standards. Finally, several participants noted that many localized programs try to reinvent the standards wheel instead of complying with national best practices. This may be due to a lack of awareness around current best practices. Program designers and lenders need technical assistance. Possible vehicles include technical toolkits, continued meeting of the attendees as a working group, development of a larger SLEEC network, a document drop-box, and data sharing among working group members.

The energy efficiency community should collaborate with various types of small to mid-size lenders to encourage future market activity. Engaging customers is the most important piece of the puzzle. We should help lenders develop attractive products, particularly for traditionally underserved and challenging markets such as small commercial and multifamily customers.

Introduction

On October 18, 2013, The American Council for an Energy-Efficient Economy (ACEEE) and Energi Insurance Services, with support from the National Renewable Energy Laboratory (NREL), Argonne National Laboratory, and the U. S. Department of Energy (DOE), convened a group of stakeholders to discuss opportunities for augmenting small bank and lender activity in the energy efficiency space. The gathering was called the Small Lender Energy Efficiency Convening (SLEEC).

This white paper captures key findings from the convening, conducted under the Chatham House Rule,[2] and places them in the context of current research and experience. We make recommendations to entities in the energy efficiency community to help increase small to mid-size lender activity in the market for energy efficiency financing. We gave all meeting attendees and several other interested parties an opportunity to review this document. A list of meeting attendees and white paper contributors can be found in Appendix A.

More specifically, this report intends to:

- Identify barriers to mainstream participation in energy efficiency lending by small to mid-size banks
- Review active and relevant energy efficiency lending programs and identify the elements which make them successful
- Based on the discussion and input from the convening's community, make specific recommendations for activities and projects to help overcome these barriers and catalyze efficiency market activity
- Note any themes and lessons learned that may help future lending programs accelerate uptake and drive customer demand

This paper is intended to be read by policymakers, lenders active in or interested in energy efficiency, stakeholders within the energy efficiency value chain, and other influencers.

Over the past several years and perhaps even beginning in the last decade, interest has been growing in realizing a robust market for financing energy efficiency improvements (Freehling 2011). Policymakers would like to catalyze such investments to spur economic growth and development, produce energy cost savings, reduce emissions, and facilitate energy security (Vaidyanathan et al. 2013). In addition, these investments have proven to be low risk and have the potential to attract private-sector investment (Rockefeller Foundation and Deutsche Bank 2012). As a result, millions of dollars in stimulus funds from the American Recovery and Reinvestment Act of 2009 (ARRA), philanthropic funds, utility

[2] The rule states, "When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed."

ratepayer funds, and state and local energy efficiency funds have been leveraged to create innovative lending programs (Freehling 2011), and many efforts have been made to attract private-sector capital to help the market achieve its estimated $279 billion investment potential (Rockefeller Foundation and Deutsche Bank 2012).

Small to mid-size lenders could play a significant role in augmenting the market for energy efficiency lending, and they are particularly well positioned to serve harder-to-reach markets such as small commercial buildings. While larger financial institutions have a growing role in serving small businesses (Bank of America 2014), local lending institutions may offer some advantages to energy efficiency customers since they can connect borrowers to local resources like contractors and they are familiar with similar local projects.

Many entities have entered the market for energy efficiency lending, including Community Development Financial Institutions (CDFIs), mission-driven "green" lenders, local community and regional banks, credit unions, small commercial entities linked through utility programs (e.g., Northeast Utilities' MassHeat loan program), and a handful of commercial entities and conventional local banks that are exploring the marketplace independently. Northeast Utilities notes that a number of the lenders in its MassHEAT Loan Programs participate in order to attract and retain customers.

Many entities in the established energy efficiency community are well positioned and eager to help lenders grow their activities within this space and connect to customers. These entities include federal, state, and local governments, foundations, nonprofits, utilities, and private companies. We can help their efforts by understanding which policies, technical assistance, research, and financial assistance are most likely to help lenders and develop demand for efficiency services.

Overview of the Energy Efficiency Lending Market and Participant Perspectives

The Rockefeller Foundation and Deutsche Bank estimate that private-sector entities could invest more than $279 billion in energy efficiency across the buildings sector. This amount includes $182 billion in the residential sector, $72 billion in the commercial sector, and $25 billion in the institutional sector. They estimate such investment would generate more than $1 trillion in energy savings over 10 years and create 3.3 million jobs (Rockefeller Foundation and Deutsche Bank 2012). On the other hand, aside from investment in the federal and public sector, actual growth in energy efficiency activity has grown slowly in the last few years and has yet to reach the scale of these impressive estimates.

"Energy efficiency finance" is an umbrella term for an array of activities including financing for efficient homes, offices, and infrastructure; project finance for energy efficiency upgrades; and equipment leasing. For the purpose of classifying energy efficiency financing activities, Philip Henderson, senior financial policy specialist for the Natural Resources Defense Council (NRDC) and other convening attendees proposed the following framework:

1. Finance efficiency measures within conventional purchase and refinance loans
    - Securities backed by loans secured by high-efficiency houses or buildings. Expected energy expenses accounted for in eligibility
    - Additional funds to make needed efficiency repairs at purchase or refinance
    - Owner commitment to meet efficiency-maintenance standards (multifamily buildings)

2. Finance efficiency as an isolated event and loan
    - Secured and unsecured improvement loans
    - Utility on-bill loans tailored to certain building types
    - Energy services agreements

On the conventional lending side, there has been an increase in the number and size of leasing firms providing financing for advanced lighting, controls, and HVAC equipment (Kim et al. 2012). With the stabilization of the mortgage market, financing for efficient homes may be available to creditworthy borrowers (Ellsworth et al. 2013). Moreover, the Warehouse for Energy Efficiency Loans (WHEEL) plans to create a secondary market for energy efficiency loans by aggregating portfolios of residential second mortgages and unsecured loans and having partners such as Citi sell them to investors as investment-grade securities (NASEO 2012).

Two other residential programs, Pennsylvania's Keystone Help program and the New York State Energy Research and Development Authority (NYSERDA) on-bill recovery program, have conducted secondary market transactions.[3] On the project finance side, niche products focused on project financing for energy efficiency upgrades have made their way to market, including on-bill financing and repayment, and Property Assessed Clean Energy (PACE) products. Stimulus funds from the American Recovery and Reinvestment Act (ARRA), philanthropic funds, utility ratepayer funds, and state and local energy efficiency funds have been leveraged to create innovative new lending programs (Freehling 2011).

The market for energy efficiency financing serves a variety of subsectors. This paper will focus primarily on financing for energy efficiency in the buildings sector. We subdivide the buildings sector based on ownership as follows:

- *Commercially owned*. Apartments, industrial, office, residential, hotel, and multifamily residential (5+ units) (ULI 2014). References in this report to commercial buildings or projects may mean any of these building types.
- *Publically owned*. Public sector and federally-owned buildings including municipalities, universities, schools, and hospitals (the MUSH sector)
- *Residential*. Single-family or small multifamily residential (1-4 units)

[3] The NYSERDA transaction would not have been possible without credit enhancement from the Clean Water State Revolving Fund.

While multifamily buildings are technically residential, they are often owned and managed like commercial multi-tenant properties. Therefore multifamily properties typically encounter barriers similar to those faced by commercial office buildings, particularly involving split incentives and decision making.[4] Thus many lessons learned apply to both these subsectors (Bell, Sienkowski, and Kwatra 2013).

Small to mid-size lenders serve a variety of customers in the buildings sector and are in some ways well positioned to reach subsectors that face unique challenges in accessing capital for energy efficiency products and services. These markets include small businesses, multifamily properties (both market-rate and low- and moderate-income), and low- and moderate-income residential. In addition, several types of small lenders like CDFIs have access to philanthropic capital and focus on underserved markets and projects for community development (Freehling 2011).

MARKET PARTICIPANTS

A variety of institutions fall into the category of small to mid-size lender. Federal financial regulators define a small bank as an institution with assets of less than $1.160 billion (Federal Reserve 2011). However not all lenders are technically banks. Some utilities can lend, as can government entities and socially responsible investors. SLEEC attendees were entities who self-define as small to mid-size lenders, and the term "lenders" in this report includes organizations of several types.

Different types of lenders are positioned to serve varied target markets. The following table, adapted from one devised by Joel Freehling of Chicago Bridge and Iron (CB&I), presents the types of lenders active in the energy efficiency market, notes their risk tolerance, and describes the types of lending activity that align with their primary business interests.

[4] An analysis of split-incentive barriers can be found in Appendix B.

Table 1. Types of lenders for energy efficiency

Lender type	Type	Risk profile	Primary motivations
Regulated institutions	Banks Credit unions	Risk averse	Assets and liabilities Customer acquisition
Mission-based lenders	CDFIs SBA CDCs	Risk tolerant	Outputs Stories Innovation Energy savings
Private capital	Loan companies Leasing companies Private equity Venture capital	Risk tolerant	Return Growth
Utilities	Direct lending Indirect (fund capital) Pass-through	Risk tolerant	Energy savings Customer satisfaction Meeting mandates and/or attaining incentives
Government	State/local funds development authorities	Risk tolerant	Economic development Energy savings
Socially responsible investors	Foundations Investment funds	May be risk tolerant	Leverage Innovation Energy savings

Source: Adapted from Freehling 2013

MOTIVATIONS OF LENDERS

The lenders who participated in the SLEEC had a variety of motivations for lending for energy efficiency. Mission-driven lenders included CDFIs who regarded the community benefits of energy efficiency as a primary motivation for energy efficiency lending. In their view, energy efficiency improvements reduced operating costs and increased the affordability of both single-family and multifamily properties. They also cited sustainability as an important community development goal. Some saw synergies between providing access to energy efficiency investments and their affordable housing mission. One lender mentioned that energy efficiency provided economic development opportunities for those historically excluded from the market.

Many of these mission-driven participants have capitalized their loans using funds dedicated to energy efficiency. For example, ARRA funds (typically used in loan-loss reserves) gave lenders a unique opportunity to engage in this market. Two participants also leveraged funds from Bank of America's CDFI lending program. One attendee expressed concern that private-sector investors might not pick up the slack to enable this type of lending in the future.

Non-mission-driven lenders were motivated by potential profitability, customer demand and satisfaction, and the ability to incorporate a market niche into their portfolio. One participant insisted that energy efficiency could be a component of a sustainable business model, citing a statistic that 5% to 10% of residential customers would make energy efficiency improvements. In some cases, lenders provided capital for energy efficiency

improvements, but they did not typically establish different lending criteria for these improvements.

Another non-mission-driven lender mentioned that while their institution was profit-driven, they aimed to make every loan improve the sustainability of the community. Based on evidence from engineering reports, they found lending for energy efficiency to be the most cost-effective way to reach this goal.

Motivations for supporting energy efficiency among utilities included meeting regulatory requirements, obviating investment in new generation, and enhancing customer satisfaction. A participant speculated that energy efficiency might mitigate the risk of power failure during a natural disaster and thus constitute an investment in grid resiliency.

COMMERCIAL SECTOR OBSERVATIONS

Regulated institutions. Larger regulated institutions' activity in the commercial sector will likely be focused on low-risk projects. In some cases that may exclude customers like small businesses and less creditworthy Class B and Class C office owners. Credit unions may be an exception, but their role may be limited until we have more reliable data on energy savings from energy efficiency projects. Regulated institutions may also indirectly finance energy efficiency through commercial mortgage products and refinancing, but to date little has been done to quantify the size and impact of this market activity.

Mission-based lenders. These entities may take on riskier projects, but they may also have limited access to capital. Small Business Administration Certified Development Companies (SBA CDCs) may be uniquely positioned for work with small businesses, but communication between the SBA and the energy efficiency community has been limited. DOE, NREL, and Argonne National Labs are currently working to engage the SBA on this front. CDFIs (some regulated) may also be active in providing products to underserved segments of the small business sector.

Private capital. Private capital may be leveraged to recapitalize programs that bundle loans for sale on the secondary market. On the residential side, the Pennsylvania State Treasury and NYSERDA have sold bundled loans to investors. Kilowatt Financial and Citi have established a $100 million debt facility of energy efficiency loans, and Joule Assets, a private equity firm, also has a $100 million fund available. Recapitalization has not yet occurred in the commercial sector, but it is likely that smaller commercial projects can be bundled like residential projects.

Utilities. With their direct customer relationship, utilities are in a strong position to influence energy efficiency purchasing decisions. They also may have a variety of forms of available capital to subsidize efficiency activities. Utilities may act either as a conduit for lenders to reach efficiency consumers or, in some cases, as a direct lender. Most commercial utility programs focus on small-business lending, and they have had some success in generating energy savings and minimizing delinquencies and default.

Government. State and local governments are uniquely positioned to fund infrastructure projects, which lie just outside the scope of this report. These entities can also form public-private partnerships with private-sector entities or utilities for mixed-use development projects. Sometimes municipalities, port authorities, and a variety of other agencies such as state treasuries, housing authorities, and clean water agencies have unique bonding authority, which can help capitalize large-scale energy efficiency projects. At the federal level, SBA loan programs could play an important role in energy efficiency lending for small businesses.

Socially responsible investors. Several philanthropic funds have been engaged in lending for energy efficiency, either directly or through credit enhancement for direct lenders. A number of other philanthropies that focus on economic development and energy conservation are well positioned and potentially open to providing credit enhancement to energy efficiency lending programs. On the residential side, philanthropies focus on lending for low-income multifamily energy efficiency projects (which often share characteristics with commercial office projects).

RESIDENTIAL SECTOR OBSERVATIONS

Regulated institutions. Regulated institutions most often finance energy efficiency indirectly through loans and mortgage refinancing for creditworthy borrowers. Some also make energy-efficiency-specific loans. The emergence of the residential unsecured loan through newer institutions like EnerBank and Greensky shows private-capital interest in energy efficiency.

Mission-based lenders. CDFIs are uniquely positioned to lend to underserved markets such as low- and moderate-income (LMI) households, an activity which regulated institutions may perceive as riskier. These lenders typically develop innovative products that make their way to mainstream lending over time. Many CDFIs are also working to develop solutions for multifamily, particularly low-income.

Private capital. The residential sector has seen two successful sales of energy efficiency lending products to the secondary market. In March 2013, the Pennsylvania Treasury sold nearly 4,700 loans from the Keystone HELP program for a projected total of $31.3 million. In August 2013, NYSERDA leveraged a State Revolving Fund program for water projects as a credit enhancement to secure an AAA rating, and released $24.3 million in Residential Energy Efficiency Financing bonds (NYSERDA 2013).

In other current efforts to leverage private capital, Kilowatt Financial and Citi have established a $100 million debt facility of energy efficiency loans, and Joule Assets also has a $100 million fund. The WHEEL program creates a secondary market for clean energy loans by purchasing unsecured residential energy efficiency loans from participating programs. The loans are combined and split into diversified pools to support rated asset-backed notes sold to capital market investors (NASEO 2012).

Utilities. Utilities can also leverage their direct customer relationship for the residential sector. Rural cooperatives in particular have had success in providing on-bill loans to residential customers. We see a general trend of state and utility residential lending programs moving towards a public-private capital model where credit support or interest rate buy-downs support private capital sources.

Government. Government is unlikely to lend directly to the residential market. However some federal efforts, such as the USDA Rural Utility Service (RUS) program and Fannie Mae's Energy Loan Program, fund programs that lend directly to consumers. State and local governments have also played a role in setting up energy efficiency funds.

Socially responsible lenders. Socially responsible lenders are also more likely to fund or credit-enhance efficiency programs or direct lenders than to finance consumers directly. For example, a joint venture of three Bank of America entities—CDFI Lending, the Global Environmental Group, and the Bank of America Charitable Foundation—provides capital to ten CDFIs to lend for energy efficiency improvements in order to test innovative models.

CURRENT EFFICIENCY LENDING PRACTICES

Current lending practices discussed in this paper include (1) the financing of efficiency measures within conventional purchase and refinance loans and (2) financing them in an isolated event and loan. Several non-lender participants in the SLEEC stressed the potential energy savings and business impact of regularly incorporating energy efficiency into conventional purchase and refinance transactions. Opportunities they cited include the SBA 504 loan program (suitable for small businesses),[5] and increased adoption and visibility of the Fannie Mae Green Refinance Plus program (for multifamily affordable housing).[6]

Table 2 summarizes the convening's discussion of both kinds of energy efficiency financing, successful program elements, and the needs and challenges of lending in each market.

[5] http://www.sba.gov/category/navigation-structure/loans-grants/small-business-loans/sba-loan-programs/real-estate-and-eq

[6] https://www.fanniemae.com/multifamily/green-initiative-financing

Table 2. How lenders are financing energy efficiency

Market	Successful elements	Needs and challenges
Residential (single family)	· Underwriting homeowner credit history · Lender holds junior lien on property	· Verification of energy savings · Realtors do not want to be on the hook for verifying energy savings. Utilities may play a role since they want their customers to brag about their energy savings. · Contractor development · Technical assistance for lenders · More widespread adoption of unsecured lending programs · Uncertainty as to whether first mortgagees allow subordinate secured financing.
Commercial	· Non-real-estate energy efficiency loans underwritten as commercial loans · Incentivizing appraisers to read energy reports (e.g., commission for closing a deal)	· Education of landlords and building owners · Cannot do a 15-year unsecured loan · Real estate market: no equity for commercial projects · Most institutional projects only available for owner-occupied buildings · Verification of energy savings · Energy savings insurance (e.g., Energi's product) · Contractor development · Benchmarking
Multifamily	· Integrating program solutions (e.g., Energy Savers) · Free energy audit of whole building plus report and recommendations · Subordinate financing secured by real estate	· Education of landlord and building owners · Peer marketing network · Savings guarantees (e.g., Boston Community Capital): borrower does not take on debt until energy savings are proven for two years. · Contractor development · Small loan size may not attract financial institution investment. · Benchmarking · Verification of projected savings and underwriting to those savings · Monitoring and tracking of energy usage for two years post-retrofit

The content of this table is based solely on findings from the October 18 convening and is not a comprehensive listing of successful program design elements, needs, and challenges. The list of needs and challenges does not imply consensus among meeting attendees.

In reviewing this framework, Chris Kramer of Energy Futures Group also suggested the following points:

- Link financing to energy efficiency goals and programs
- Choose an administrator with energy efficiency targets
- Use program funds wisely
- Integrate rebates and financing
- Promote upgrades, not loans
- Tie intake process to energy efficiency goals
- Provide ample contractor support

- Offer technical assistance to customers
- Focus on quality assurance
- Evaluate savings and volume (Kramer and Faesy 2013)

One reviewer noted that insurance products can drive up the cost of the project and impact the return on investment and potential contractor sale.

WHAT DOES A SUCCESSFUL ENERGY EFFICIENCY PROGRAM LOOK LIKE?

Determining whether an energy efficiency program is successful depends on how success is defined by the program and the evaluator. Success is subjective. Factors such as location, building stock, target customers, and goals can all play a role in defining success. However our discussion with lenders did uncover some key elements that drove customer participation.

Based on discussions throughout this project and items described by AFC First's Peter Krajsa (see Krajsa 2013 and Appendix C for the original Krajsa figure), the following elements are generally seen as critical to a successful energy efficiency program. It should be noted that AFC First products have a specific residential target market, and results may not be generalizable to all energy efficiency loan programs.

Strong contractor network. A network of contractors to perform the work, or in some cases source deals and develop projects, is essential. Krajsa stresses the importance of qualifying contractors to meet the program's standards for financial and ethical stability, and points out that "Contractors are also the marketing drivers on point of purchase finance programs. They become the most cost-effective method of marketing the program to consumers as well as for delivery of the end product." Making sure contractors are able to sell both the technical side of project and the financial offering to fund improvements should increase program uptake.

Streamlined loan origination procedures. As Krajsa states, "financing programs cannot be complicated. If a program involves too much red tape, consumers and contractors will often take a path of least resistance." For maximum program uptake, the loan must be simple. Loan origination procedures for any building segment should be consistent, straightforward, and well defined for the consumer.

Effective underwriting and loan servicing. Another factor Krajsa identifies as key to program acceptance is simple, fair, consistent, and effective loan underwriting in order to mitigate losses and promote program sustainability.

Installed improvements qualification. Monitoring improvements should begin immediately after installation to ensure quality control and consistency with system design.

Post-retrofit monitoring. Verification that all measures are working appropriately is necessary for the lender and the customer, and to help increase customer confidence in the value of the product. The resulting data will also give lenders a basis for making additional lending decisions and encourage securitization and a secondary market for energy efficiency loans.

INTEGRATED PROGRAM APPROACH

A key theme in our discussions was the value of an integrated program approach, i.e., a program that offers energy audits and energy efficiency solutions for a specific building type with prearranged financing and retrofit options. While the lender itself need not vertically integrate to provide all services in the energy efficiency value chain, the integrated approach means that from a customer perspective, the program offers easy options for each step in the process. Multiple stakeholders (e.g., government, utility, lender, nonprofit) may have to work together to provide the solution, but the result is a one-stop shop for the customer.

Integrated programs target a specific building type so that the engineering and financing solutions meet the specific needs of a single type of owner. This focus narrows the list of potential energy conservation measures and helps create consistent portfolios of homogeneous projects.

Integrated programs involve a seamless transaction process. Every activity in the process, from energy audit to financing, incentives, and project execution, should be limited and consistent. For example, financing options should be tailored to the building type and ownership structure, and the program should consider how the financing may impact the project size and scope. Each step should be integrated with the others; they should fit together without gaps or overlap. Suppliers and service providers work together. Next steps should be laid out for the building owner at every decision point. This way of working minimizes the chances of projects falling through the cracks and makes the process as simple as possible for the customer.

In addition to involving integration, we found that many effective energy efficiency programs feature partnerships between market participants. Entities that are not well positioned for direct lending may develop attractive products, facilitate effective program implementation, or provide capital for energy efficiency lending and partner with organizations best suited for origination.

Here are a few case studies from the convening and advance webinars that provide examples of how lenders are currently lending to various markets and adopting integration as a means of deploying capital. This is not a comprehensive list of best practices or gold-standard approaches.

Bank of America's CDFI Lending Program

In 2011, Bank of America introduced a $60 million program to provide loans and grants to CDFIs for energy efficiency lending. Ten lender participants have implemented programs and originated loans. The program is working with EnergyScoreCards, a subsidiary of Bright Power, Inc., to collect pre- and post-retrofit data to measure program outcomes. More details on participants and funding can be found in Appendix C.

Craft3

Craft3 is a mission-driven CDFI and a current participant in Bank of America's CDFI lending program (see Appendix C). They lend to both commercial and residential customers. In the energy efficiency space, they are well known for their role in the Clean Energy Works Oregon's (CEWO) and Community Power Works residential loan programs.

Craft3 uses different underwriting standards for their energy efficiency loans that allow them to lend to less traditionally creditworthy customers. By considering a customer's historical utility bill repayment, Craft3 can provide low-cost loans to residential consumers with FICO scores greater than 590.

Craft3's program success serves as a testament to the low-risk nature of lending for energy efficiency, yet as they seek to achieve liquidity, they observe that the private sector has been slow to act on energy efficiency. Key program statistics are shown below, and the full table of loan experience is found in Appendix C.

Table 3. Craft3 Loan Portfolio Summary

Elements	Data
Number of active loans	1,920
Value of loans outstanding	$24,177,638
Average interest rate	5.00%
Median individual outstanding loan amount	$11,723.00
Percentage of loans past due (+60 days)	Under 1%
Cumulative write-offs to date	$101,014
Current problem assets (not charged off)	$102,337

Calculations on past-due loans are only available by state; thus an exact calculation for the portfolio is not available. *Source:* Zimmerman 2013.

AFC First

AFC First is a regulated financial institution that lends primarily for energy efficiency. They classify their business model as contractor driven, and they have a network of over 5,000 contractors nationwide. Their target market is middle-market homeowners. They are well known for their role in the Keystone HELP program, as well as for being the originator and servicer for the WHEEL program.

Northeast Utilities Heat Loan Program

Northeast Utilities has a distributed lending model called the MassHEAT program where eligible residential customers can receive a subsidized no-interest loan for up to $25,000 for energy efficiency improvements, choosing from a network of over 50 financial institutions and following a standardized loan process. Participating financial institutions also provide for multifamily, and it is likely that this model would work well for small business lending.

Lender participants in the Northeast Utilities distributed lending model cite the program's ability to attract customers as a key benefit of their participation. They are able to manage their own interest rate risk, and observed default rates have been well under 1%, lower than other forms of consumer credit. (See Appendix C for a graph of default rates.) Based on current market conditions, lenders are currently earning 1% above the prime rate for these loans, compared to 0.25% with the Federal Reserve (Phillips 2013).

Boston Community Capital

Boston Community Capital's model consists of guaranteeing energy savings for affordable multifamily housing.[7] They provide a complimentary energy audit and guarantee the first two years of energy savings prior to requiring the borrower to assume responsibility for the loan. Boston Community Capital works with owners, senior lenders, and contractors. A convening participant commented that this mezzanine layer of financing stabilizes loans and manages risks, but that this approach was only worthwhile for larger loans.

Energy Savers Program from Elevate Energy (formerly CNT Energy) and Community Investment Corporation

ELEVATE Energy and Community Investment Corporation's Energy Savers program is a sector-specific integrated program that has seen over $15.7 million in loans made for energy improvement projects in 151 multifamily buildings with 5,423 units in the Chicago area. Community Investment Corporation is a mission-driven CDFI lender and active participant in the Bank of America CDFI program. The lending activity represents approximately 40% of the units retrofitted through the Energy Savers program, with the balance of the retrofits paid for by owners' own funds or other financing—for a total of 39,069 units in 978 buildings receiving energy audits and 16,744 units in 405 buildings retrofitted. The program is used both for isolated energy improvements and routine purchase and refinance rehabilitation transactions. Energy Savers has resulted in more than 4 million gas therms saved, 11 million kilowatt hours (kWh) saved, more than 31,000 metric tons of CO_2 emissions saved, and more than 500 jobs created. Energy Savers provides the building owner with a no-cost, no-obligation energy audit of the property; a written report with recommendations, projected costs and savings, and payback periods; access to low-interest (3%) fixed-rate financing; construction oversight/monitoring; and performance tracking post-retrofit (Corso 2013). Table 4 provides some program statistics

[7] Boston Community Capital was not present at the October 18 convening; however, their program was heavily discussed.

Table 4. CIC loan portfolio summary

Program Statistics - 2008 through Dec. 13, 2013		
	Buildings	Units
Applications	1,174	45,288
Audits	978	39,069
Retrofits	405	16,744
Gas therms saved	4,018,560	
kWh saved	10,883,600	
metric tons CO2e from gas & electricity saved	31,301	
Jobs created	500	
CIC Loans	$12,897,506	

Source: Corso 2013

PERSPECTIVES ON ENERGY-EFFICIENCY-SPECIFIC FINANCING MECHANISMS

Approximately half of the lenders who participated in the convening use traditional lending approaches for energy efficiency, while the other half use energy-efficiency-specific financing mechanisms such as PACE financing and on-bill repayment. Participants agreed that these targeted products are best suited to niche market segments. Here are some examples of successful applications that were discussed.

PACE

The following description of Property Assessed Clean Energy is adapted from Vaidyanathan et al. 2013. Property Assessed Clean Energy (PACE) enables municipal governments to offer a bond to investors, and subsequently to loan the money to consumers and businesses for energy efficiency improvements. The loans are repaid through an annual assessment on the borrower's property tax bill. The mechanism originated in Berkeley, California in 2008 and has since been adopted by 31 states and the District of Columbia (PACENow 2014). PACE legislation overcomes several recognized barriers to the adoption of energy efficiency: high first costs, high transaction costs involved in identifying and financing projects, and payback times that often exceed expected occupancy.

In addition to bond-financed models, privately-funded models may be of specific interest to small lenders. Individually-funded models match projects to individual funders. In the turnkey financing model, the program administrator works with a single lender to provide a one-stop shop (Managan and Klimovich 2012).

PACE offers advantages in that it:

- Involves longer terms (often up to 20 years) that allow financing of energy saving measures with longer paybacks, and deep retrofit projects
- Applies to the commercial sector (office, multifamily, and co-ops)
- Resolves the multi-tenant split-incentive issue (multifamily)
- Serves individuals who have incomes that are too high to qualify for weatherization assistance, but credit ratings that are too weak to qualify for traditional loan products (residential)

The residential PACE models discussed were second-lien models; however, California and Florida have developed or are in the process of developing robust first-lien models with the homeowner taking the potential risk of an adverse action from the FHFA.

As an example, the DC PACE program launched in 2012 with a $5 million commitment from a regional bank. The program is also set up to work with and actively seeks other capital providers. In June 2013, the program closed its first deal, a $340,000 energy upgrade project on an affordable multifamily complex in southeast Washington, DC (James 2013). While the DC program is just getting started, other programs have seen respectable transaction volume, including the Clean Energy Finance and Investment Authority's (CEFIA) Connecticut PACE program, which has closed over 49 deals (James 2013). While the PACE mechanism is making steady progress, local governments should keep trying to drive demand to ensure continued success.

On-bill Financing and On-bill Repayment

There was limited discussion at the convening about on-bill financing and repayment, but it was agreed that their purported ability to act as a credit enhancement and lower default rates might help serve customers with low credit scores. Some lenders in the room were unfamiliar with on-bill financing as well as with PACE, and they felt it would be useful to have access to introductory information on these topics.

A recent ACEEE report describes on-bill financing in these terms:

> On-bill financing (OBF) allows utility customers to invest in energy efficiency improvements and repay the funds through an additional charge on their utility bill. If structured properly, an on-bill program can substantially improve access to financing and its cost. In many cases, energy savings are sufficient to cover the monthly payments for the financing, so that the total monthly charge on utility bills is less than or equal to the preinvestment amount. Capital for on-bill programs comes from a variety of sources, including utility ratepayer funds, public benefit funds, and third-party financial institutions. Programs capitalized through third-party financial institutions, often referred to as on-bill repayment programs, have recently started to emerge and are becoming more popular. (Vaidyanathan et al. 2013)

One example of an OBF program is offered by three California investor-owned utilities (IOUs): Pacific Gas & Electric (PG&E), Southern California Edison (SCE), and Sempra Companies, including San Diego Gas & Electric (SDG&E) and Southern California Gas (SCG). The IOUs use a revolving loan fund of rate-payer money to make 0%-interest loans on energy efficiency improvements for nonresidential customers. OBF is offered in addition to and does not compete with the companies' existing rebate/incentive programs. Loans of $5,000 to $100,000 with repayment periods up to 60 months are available to commercial customers who meet minimum payment history screening criteria. Government agencies

may qualify for loans up to $250,000 with loan periods of up to 120 months.[8] Loan repayment terms are based on expected savings. Payments are fixed regardless of realized savings. Energy savings are not currently guaranteed (PG&E 2014).

Results to date for three of the IOUs (PG&E, SDG&E, and SCG) are presented in Table 5. Data were not available for SCE.

Table 5. OBF loans

	PG&E	SDG&E	SCG
Number of loans	512	1,329	48
Amount	$24,081,353	$38,751,822	$2,576,334
Repayments	$6,724,933	$22,396,194	$1,223,158

Source: PG&E 2014. Compiled by Yakubov 2014.

The IOUs are also working on a number of pilot programs for on-bill repayment using third-party funds, which will allow for financing of a broader range of projects for additional customers (PG&E 2014).

Energy Efficiency Lending Barriers

In advance of the convening, ACEEE and Energi identified four groups of obstacles and asked attendees to specify barriers they faced within these categories:

- Origination and demand
- Cash-flow validation
- Financial regulatory and reporting requirements
- Documentation and structural elements

ORIGINATION AND DEMAND

Throughout the meeting, there was a consensus that demand posed a substantial barrier to augmenting activity in the market for energy efficiency finance. This was characterized by one attendee as "inertia." The point was made that building owners and managers need to be sold on energy efficiency. In the residential context, when given options for an appliance or a structural upgrade to a home, a homeowner may not independently decide to invest in the most energy-efficient option. This indicates that energy efficiency is not the primary concern of the purchaser. Hindrances to demand for energy efficiency investments may include a perception of high transaction costs, competition with other investments, a lack of

[8] In situations that present a "unique" opportunity for energy savings, some government agency projects may qualify for up to a $1 million loan at the IOU's sole determination.

education on availability and cost/benefit of energy-efficient products, and a lack of marketing for incentives.

Proactive vs. Reactive Customers

It was generally agreed that financing is intended to serve customer demand for a purchase or investment, and lenders should seek to finance services that customers want. Peter Krajsa segmented the market into two categories: proactive and reactive customers. Proactive customers actively seek efficiency for its environmental and cost-saving benefits, while reactive customers want to replace measures and equipment that are broken or not functioning properly and only factor in efficiency as a secondary consideration. This analysis pertains to single-family residential customers, but in some cases it may also apply to commercial customers. Table 6 presents the distinction.

Table 6. Proactive vs. reactive energy efficiency customers

Factor	Reactive customers	Proactive customers
Customer characteristics	Characterized by an immediate need for ANY repair or installation	Characterized by project foresight, engagement, and a deeper dedication to efficiency
Cost of typical repairs or installations	$3,000-$15,000	Larger than $15,000 based on project. May be whole-home.
Size of EE improvement market	Vast majority	Small minority
Time sensitivity	Project must be completed ASAP.	Timelines individual to projects
Work plan developer	Contractor	Owner and contractor (potentially tenant, if applicable)
Financing needs	Longer-term, lower rates than what is available from banks	Lower rates can incentivize action.
Willingness to accept a lien	Customers are unwilling.	Borrower may or may not have adequate equity for a loan.
Potential best practice	Unsecured point of purchase loan program	Home/Building Performance with ENERGY STAR with an energy audit

Source: Krajsa 2013

A better understanding of consumer behavior when it comes to considering an energy efficiency investment can help lenders market potential products and services. One lender specifically mentioned the need for "consumer motivation research" to explore what causes residential and commercial consumers to hesitate or move forward on investing in energy efficiency. Banks and contractors could use findings to target customers efficiently.

Two questions remain open: Can reactive customers become proactive customers? and Can program design elements and/or loan characteristics drive that change?

Emergency Upgrades in Residential vs. Commercial

An overwhelming majority of upgrades are purchased during a homeowner emergency: an appliance breaks down, a tree strikes an attic, and so forth. The demand for upgrades simply as an update is significantly smaller, though updates could possibly be integrated into other upgrades such as a new roof or kitchen. Although residential customers often need emergency replacements for failed equipment, they may not demand energy efficiency as a feature of those replacements.

Commercial building owners and managers, on the other hand, may be more apt to choose an energy-efficient option during an upgrade to appliances or building structure, if only because newer equipment tends to be more efficient. Commercial building operators may have different operational constraints and priorities than homeowners.

Lack of coordinated data

One major hindrance that surfaced in the discussion was a lack of coordinated consumer data across the board, particularly energy usage data and consumer credit data. In the cases where the data exist, they must be delivered and disseminated more effectively.

While accessing and disclosing account-level consumer energy-usage data can be technically and legally complicated, commercial whole-building performance data may be available in the real estate market through the Multiple Listing Service. A utility representative mentioned that whole-building energy-usage data could be estimated by an appraiser and confirmed by the utility which holds the data. Realtors would not be responsible for gathering the information, only for presenting it.

There was some discussion as to whether building performance was appropriately valued in the appraisal process. Many in the room wondered why there was no "CarFax for buildings" available on the market. The implication was that existing building labeling programs such as LEED and ENERGY STAR™ were not sufficient to influence customers to make investments in efficiency. Some asserted that better information on building performance and benchmarking could help drive demand in commercial markets. Major cities including Chicago, Los Angeles, and New York continue to pass energy benchmarking ordinances which are generally agreed to be a first step in driving demand for efficiency improvements.

The convening identified a variety of existing data sources for building performance, loan performance, and project performance, including the EDF Investor Confidence Project and the DOE Building Performance Database.[9] Increasing the visibility of these initiatives could be useful. Their low profile confirms the need for what one participant called the streamlined delivery of available data.

[9] http://www.eeperformance.org/. http://energy.gov/eere/buildings/buildings-performance-database.

Similarly, credit data could help identify the customer segments to whom energy-efficient products and services, as well as loan products, could be most effectively marketed. Examples of credit data include loan performance tracking, default rates, and savings and performance over time. It was noted that some lenders and programs struggle to identify appropriate lending products to serve their target markets. Access to better data would help that effort. For example, the MI Saves loan program was able to use blind individual credit data to design the program and target the market (Corso 2013).

CASH-FLOW VALIDATION

The second major area of concern identified was cash-flow validation. Cash-flow validation entails verifying the veracity of energy savings estimates in order to underwrite loans. Attendees frequently mentioned the need for validation of energy savings, but no clear consensus emerged on its role in advancing the market. A majority believed that cash flow validation could catalyze demand in both the residential and commercial subsectors.

Market participants differ in the relative importance they place on project or loan performance. As expected, project-level participants including contractors, auditors, and building owners, consider energy savings performance of high significance.

Credit history is the primary indicator of whether a residential customer will be a good steward of his or her loan, with cash flow being an additional consideration. One attendee affirmed that free household cash flow indicates a low rate of default. Yet his company, which offers on-bill unsecured financing to households, does not examine cash flow.

On the commercial side, cash flow is harder to validate, as it is outside the scope of appraiser analysis. Documented good management of the building itself is a key indicator of whether a commercial customer will be a dependable steward of the loan. One lender mentioned that building managers who track energy usage data can usually be counted on to pay back their loan.

Attendees indicated that validating the energy savings in an investment was a best practice for marketing energy efficiency investments to both residential and commercial customers. To make the loan more appealing to the consumer, lenders may underwrite the savings validation into the loan. Two lenders illustrated the benefit of underwriting the savings through this example:

> Underwriting expands our market if we can turn it into money. The biggest hurdle is the down payment. If I can reduce the amount of cash someone needs to bring to the table, if I can bring equity, is that more effective in marketing the loan? I can say to the borrower: "Come in with $10,000 instead of $20,000." When you talk real dollars to individuals, the light goes on.

On the commercial side, the largest concern was that actual post-closing savings would be less than underwritten savings.. One lender mentioned that in order to sell an energy efficiency investment, a savings validation as well as validation of maintenance and

replacement, is a necessity. The convening also discussed whether energy savings were material to debt servicing coverage, and whether energy savings data were often self-reported. There was no consensus on these issues.

On the single-family residential side, a participant mentioned that it is difficult for many lenders to underwrite an energy efficiency loan. Instead, innovative loan products may be used to market to single-family homes. On-bill loans for energy efficiency upgrades were frequently mentioned as a best practice. Lenders who participate in the on-bill market claim that the default rate is lower than those associated with other loan products. This may be due to the threat of service discontinuation. (In the most robust and lender-friendly on-bill repayment programs, the penalty for not paying the utility bill is that services are discontinued.) Nevertheless, one attendee raised a concern about on-bill financing, noting that while there has been research on default rates, there is insufficient information on delinquency rates. High delinquency rates could lead to cash flow issues on the loan performance side and dissuade lenders from participating in such programs.

Lenders agreed that loan repayment is ultimately their primary concern and expressed varying opinions on how important they considered energy savings cash flows. Two schools of thought emerged regarding the importance of energy savings cash flows and associated underwriting practices:

1. *Security on energy savings cash flows makes a material difference.* These lenders place a priority on understanding and verifying energy savings measures and cash flows. They also may consider energy savings cash flows as an expense reduction in net operating income (NOI) when underwriting loans.
2. *Energy savings cash flows are secondary and of minor importance.* These lenders typically underwrite a loan for efficiency measures as they would any other credit-based loan, without any consideration of the energy savings cash flows.

Researchers could delve more deeply into these two schools of thought to reach a better understanding of what is required to catalyze market activity.

Financial Regulatory and Reporting Requirements

There has been a fair amount of research on the impact of utility regulatory environments on the delivery of energy efficiency. We should take a closer look at the financial regulatory landscape as it impacts lending for energy efficiency improvements.

At the federal level alone, many new entities with oversight responsibility for financial institutions may impact the market for energy efficiency but may not be familiar with its unique characteristics and benefits. These entities are listed in Table 7.

Table 7. The federal financial regulatory landscape

Agencies	Office of the Comptroller of the Currency (OCC)
	Consumer Financial Protection Bureau (CFPB)
	The Federal Reserve Board of Governors (FRB)
	National Credit Union Administration (NCUA)
	State-level financial regulators
Rules and regulations	Truth in Lending Act (TILA)
	Equal Credit Opportunity Act (ECOA)
	Real Estate Settlement Procedures Act (RESPA)
	Fair Credit Reporting Act (FCRA)
	Lender licensing
	Loan officer licensing
	Fair lending
	Unfair and deceptive acts and practices laws
Rules of key players operate like regulations	Appraisal standards
	Underwriting guidelines
	Ratings agencies
	Title insurance
	Standard agreements and forms
Banks have additional requirements	Community reinvestment
	Safely and soundness
	Basel (capital sufficiency and liquidity)
Consumer loans and residential mortgages have added protections	Multiple disclosure requirements
	Ability to pay requirements
	Local/state foreclosure protections & processes

This table does not reflect the landscape at the state level, which varies significantly across the country.
Source: Henderson 2013.

Philip Henderson of NRDC posed the following questions, which reveal potential regulatory hurdles for specific energy efficiency lending practices (Henderson 2013b):

If the loan will stay with the meter as a utility charge,

- For residential loans, is there a recorded instrument?
- Was existing lender consent required?
- Is a loan agreement required with the purchasers?
- Does lack of payment of the on-bill loan result in turning off the electricity?

If the utility will share information on a customer's energy expenses with the lender,

- Will it come in the form of a credit report?
- How can permission be documented?

Can we use bill neutrality as a substitute for testing the borrower's ability to pay?

- Consumer Financial Protection Bureau (CFPB) regulations
- HOEPA regulations
- Is it rescindable if the energy estimate is wrong?

Can contractors be deputized as loan officers?

- Are UDAP claims possible?
- Is there lender responsibility for negligent work?

Is the loan secured by utility service shut-off in the case of non-payment?

- Is this subject to local foreclosure laws?
- Will investors agree to the local rules on non-shut-off?
- What happens at the property scale?

The Dodd–Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank), which was passed in July 2010, changed the financial regulatory landscape. For one thing, it closed loopholes in the regulation of the shadow financial services industry. Its provisions have caused some uncertainty on both the residential and commercial side. New credit rating provisions have likely posed challenges in securing investment-grade credit ratings for bundled energy efficiency loan products. Changing banking supervision requirements can impose indirect compliance costs on small to mid-size lenders seeking to expand their business models. Finally, Dodd-Frank nudged forward international accounting convergence activity, which was initiated under the American Competitiveness and Corporate Accounting Act of 2002, commonly known as Sarbanes-Oxley. This activity could eliminate the use of operating leases, a structure that commercial entities could previously use to finance energy-efficient equipment (Bell, Rogers, and Russell 2013).

Attendees described additional regulatory and reporting hurdles they faced in developing new lending products. Several cited the culture of risk aversion in the regulatory world resulting from the financial crisis. It was noted that distrust between regulators and rating agencies posed a significant challenge. However attendees were also familiar with methods of risk assessment that could help push loan products along even in a risk-averse climate. One lender mentioned that due to his institution's firm stance on documentation, regulation was not the biggest barrier they faced.

An additional complication for lending in the energy efficiency space is the relationship between the financial and the utility regulatory landscapes. Most participants agreed that these two realms are isolated from one another and communicate sparingly, a situation that leads to rule complication and lending challenges. Uncertainty in regulation results in uncertainty in costs, and participants cited the anticipated high costs of regulatory compliance as a barrier to innovation.

Certain financial institutions that are under conservatorship are not permitted to create new loan products, but may only enhance preexisting products. Many of the participants in the convening were smaller depository institutions or lending companies. They mentioned that size matters: it is hard to deviate from conventional lending when there is only a small portfolio to work from. Institutions can run their own pilots and get creative about developing capital when they have a large portfolio capacity.

Still, regulation remains important for the protection of consumers from abusive lending practices. Regulation can even enhance opportunities for efficiency lending such as incorporating energy costs into mortgage underwriting.

Several participants noted that many local programs try to reinvent the standards wheel instead of complying with national best practices, in some cases due to a lack of awareness

of those practices. Program designers and lenders need ongoing technical assistance, perhaps in the form of technical toolkits, continued meeting of the attendees as a working group, development of a larger SLEEC network, a document drop-box, and data sharing among working group members. To the extent that technical assistance and sharing of information are already in place, they should be publicized and distributed through networks trusted and accessed by the lenders.

Specificity on which topics should be included in technical assistance was limited, and some follow-up is required. The lenders agreed that what is most important is compiled data presented in a standard format. They would like to pull the data into their in-house databases and code it for their own modeling.

Lessons Learned and Themes

Several key themes and findings emerged from the discussion. They were first reported in an ACEEE blog post that followed the meeting (Bell 2013).

Non-mission-driven lenders are drawn to energy efficiency because they view it as an opportunity to create a sustainable business model. One participant cited a statistic that 5-10% of residential customers will at some point make energy efficiency improvements (Krajsa 2013). They also view energy efficiency lending as a largely untapped market and see a high potential to develop a market niche.

Mission-driven lenders are drawn to energy efficiency by the potential impact of energy savings within their communities and among their low- and moderate-income customers, particularly those in multifamily housing. Some cited an alignment with their affordable housing mission.

Integration is necessary to connect available capital with demand. The energy efficiency community and consumers need to demonstrate demand for, and show the success of, energy efficiency products and services. Existing demand can be channeled by integrating partners throughout the energy efficiency value chain, as described in the section above called "Integrated Program Approach." Lenders should not seek to sell loans for energy efficiency but instead to finance services that consumers already want. Connecting lenders with active participants in the community, including energy audit firms and contractors, could catalyze additional market activity.

Validation of cash flow from energy efficiency improvements remains a concern for energy-efficiency-specific lending products, though non-mission-driven lenders are more likely to focus on loan repayment than on verifying energy savings. Concerns about cash-flow validation may be mitigated, in part, by increased awareness of existing data projects and products. In addition, lender activity may be supported by public-sector and philanthropic credit enhancements (e.g., loan-loss reserves, grants, and co-participation) and private-sector enhancements (e.g., insurance).

A good deal of excellent publicly available information exists about energy efficiency and market opportunity targeted toward lenders. Although potentially useful, it is not necessarily reaching its intended audience.

RECOMMENDATIONS FOR CATALYZING MARKET ACTIVITY

Participants in the convening were also asked to identify specific policies, technical assistance, research, and private-sector actions and projects that could help augment the market and catalyze activity. Below is a high-level list of the activities identified. Many of these recommendations apply to a broad range of financial institutions, while some, particularly those involving technical assistance, may be of most value to small lenders specifically. A top priority for small lenders was improved access to SBA loan products.

Policy

Policy recommendations include the following:

- Promote the SAVE Act and administrative rulemaking.[10] Factor energy use into assessments of ability to pay debt obligation.
- Write letters of support for energy efficiency loan underwriting approaches
- Require energy performance data through benchmarking and disclosure, equipment information, and financial performance.
- Engage and network financial regulators to familiarize them with the characteristics and benefits of energy efficiency lending products, and to help them develop safe, sound, and effective products.
- Enact legislation that establishes credit enhancements in the form of loan loss reserves and guarantees, or loan funds that can be leveraged to serve these purposes.
- Establish measurement and verification as a mandatory standard for government program participation.
- Make upgrades mandatory at the time of sale or transfer.

Some utility-related policies could indirectly increase market activity, e.g., decoupling, the expansion of cost sharing, shareholder incentives, and so on.

Technical Assistance

Technical assistance to lenders can catalyze market activity and support increased and streamlined energy efficiency lending. Strategies include direct project-level assistance, data

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[10] As explained in Vaidyanathan et al. 2013, "The Sensible Accounting to Value Energy (SAVE) Act would improve the accuracy of mortgage underwriting used by federal mortgage agencies by requiring federal loan agencies to include projected energy costs when reviewing financing for a house, reduce the amount of energy consumed by homes, and facilitate the creation of energy efficiency retrofit and construction jobs (IMT 2011). These efforts could result in more accurate mortgage values on properties that are more energy efficient (Plautz 2011). The SAVE Act addresses only utility energy costs; transportation costs should be included as well, not only to increase location efficiency but to open up the housing market and to make home loans less likely to default."

tools and standardization, and improved access to existing information. These efforts are particularly important to small lenders who are unfamiliar with the energy efficiency landscape. The following items were specifically mentioned:

- Standardize data collection programs and automated modelling tools. Review existing resources and identify best practices. Place current resources into a one-stop shop.
- Establish standard methods for energy efficiency information collection including data on financial, equipment, project, and building performance.
- Document energy efficiency challenges and needs by market segment:
    - Single-family residential
    - Small commercial and industrial
    - Medium commercial and industrial
    - Large commercial and industrial
    - Multifamily
    - Specialty (gas stations, data centers, hotels, and so forth)
    - Municipalities, universities, schools, and hospitals (MUSH)

  Consider location, asset class, and ownership model.
- Estimate transaction costs and total project costs by financing mechanism.
- Conduct education on existing standards such as the Building Energy Performance Assessment (BEPA).[11]
- Establish a document portal.

Research

Recommendations for research include the following:

- Analyze the AFC First Dataset and other program lender datasets that contain information about loan performance for energy efficiency.
- Write a field guide to consumer lending laws. This may be of particular value to small lenders who may not have the same resources for compliance as larger financial institutions.
- Conduct randomized controlled trials (RCTs) on energy efficiency loan programs and product components, including marketing.[12]
- Conduct consumer market research (including market segmentation) on motivations for investing in energy efficiency improvements.
- Review underwriting standards and security sought for energy lending programs.
- Study the impact of credit enhancements on ROI.

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[11] For more information see Leipziger 2103.
http://www.imt.org/uploads/resources/files/ComparingBuildingEnergyPerformanceMeasurementFINAL.pdf

[12] RCTs are studies in which participants are chosen at random to receive treatment interventions or a placebo. They are the gold standard for impact assessment, and allow for rigorous measurement of purported causal interactions (Karlan and Appel 2012).

Financial Assistance

Recommendations for financial assistance include:

- Promote incentives, including free or discounted energy assessments and audits, project subsidies, and tax credits or deductions for energy improvement investments.
- Establish credit enhancement from public- or private-sector sources, including loan loss reserve funds, co-participation funds, and energy performance insurance.
- Improve access to SBA loan products.

Next Steps and Leveraging the Small Lender Convening Network

Attendees expressed a great deal of interest in continuing the conversation and building on the network created through the convening. Lenders saw value in exchanging lessons learned with their peers. There was some preliminary discussion on how to organize working groups to roll out and test projects and solutions. Further discussion is required on how to keep the network active and engaged.

Organizations that are well positioned to support ongoing activities include: DOE, National Labs, NRDC, the Institute for Market Transformation (IMT), Environmental Defense Fund (EDF), Clinton Climate Initiative (CCI), the Equipment Leasing and Financing Association (ELFA), the American Bankers Association (ABA), the Opportunity Finance Network (OFN), the Center for Financial Services Innovation (CFSI), and the utilities and other entities that have actually operated programs successfully.

Additional Conclusions

There appear to be numerous opportunities to augment the participation of small to mid-size lenders in the market for energy efficiency investments. Mission-driven lenders are already active in the residential and commercial markets, including the multifamily residential and the small-business subsectors. Integrated program approaches have been particularly successful, and technical assistance across sectors to encourage these approaches could have a significant impact.

Regulated institutions are showing greater interest in this space, but uncertainty surrounding credit risk and project risk continues to be a barrier. There is evidence to suggest that cash flow validation through better data and insurance products will be instrumental in advancing the market.

While the relatively modest levels of commercial and residential energy efficiency activity are often blamed on a lack of capital, our research and discussions suggest that that is oversimplified. While some subsegments of the market may lack designated capital, many investors with ample capital are eager to finance energy efficiency. The real issue may be the lack of capital used for energy efficiency offerings that meet customer demand. We should not assume that shortfalls in capital deployment or program uptake are due to funding constraints.

Demand is by far the most challenging barrier to energy efficiency financing. Lenders shy away from this market because they remain unconvinced that there is sufficient demand to justify their investment. Benchmarking and disclosure will likely drive some demand, but we need more insight into how to change reactive customers into proactive customers. Growing the market for energy efficiency requires more than innovative products and lenders willing to lend. It requires a customer base. If we can convince customers to take advantage of the economic benefits of energy efficiency, that will be a win-win for consumers and lenders.

The energy efficiency community should collaborate with various types of small to mid-size lenders to encourage future market activity. Engaging customers is the most important piece of the puzzle. We should help lenders develop attractive products, particularly for traditionally underserved and challenging markets such as small commercial and multifamily customers.

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Appendix A: Summary of Convening Proceedings and Participants

On October 18, 2013, The American Council for an Energy Efficient Economy (ACEEE) and Energi Insurance Services, with support from the National Renewable Energy Laboratory (NREL), Argonne National Laboratory, and the United States Department of Energy (DOE) convened a group of stakeholders to discuss opportunities for augmenting small bank and lender activity in the energy efficiency space.

The purpose of the convening was to identify and evaluate resources that could assist small to mid-size lenders initiate or ramp up energy efficiency lending activities. Such lending activities could include loan products specifically designed for energy efficiency projects, as well as methodologies for underwriting traditional capital improvement loans that recognize energy efficiency's projected impact on building net operating income. A secondary purpose of the meeting was to begin to build a network of like-minded institutions to share experiences, lessons learned, and resources to augment activity in this space.

At the meeting, the group discussion focused on brainstorming potential solutions to address identified barriers, and increase small bank energy efficiency lending by developing both breakthrough solutions and incremental changes that could have an impact within two or three years. The meeting agenda can be found in Appendix B.

The meeting was conducted under the Chatham House Rule which states, "When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed." Therefore key insights discussed in this paper have not been attributed to their source without the source's express permission.

It is important to note that participation in this convening was by invitation, and that some findings and opinions may not be representative of the entire energy efficiency lending community.

The meeting was attended by:

Elena Alschuler, U.S. DOE (observer)
Doug Baston, North Atlantic Energy Advisors
Casey Bell, ACEEE (facilitator)
Abby Corso, ELEVATE Energy
Angela Ferrante, Energi Insurances, Inc. (focal person)
Philip Henderson, Natural Resources Defense Council (NRDC)
Virginia Hewitt, ACEEE (notetaker)
James Finlay, Wells Fargo
Ian Fischer, Clean Energy Solutions
Joel Freehling, CB&I
Peter Krajsa, AFC First Financial
Bill Peterson, New Resource Bank

Geoffrey Phillips, Northeast Utilities
Louisa Plotnick, Clinton Climate Initiative
Tammy Romero, Fannie Mae
Glenn Schatz, U.S. DOE
Derek Smith, Clean Energy Works Oregon
Jeffrey Teucke, Everbank
Jim Wheaton, Community Investment Corporation
Adam Zimmerman, Craft3

The following were not able to attend the meeting in person and participated by phone:

Jeff Ball, Friendly Hills Bank
Leah Guzowski, Argonne National Lab
Bob Hendron, NREL
Rois Langner, NREL
Jon Levey, GreenChoice Bank
Ralph Muhlesein, Argonne National Lab
Frank Ownes, Thompson Partners
Keaton Smith, Iberia Bank

The following contributed to this paper:

Doug Baston, North Atlantic Energy Advisors
Abby Corso, ELEVATE Energy
R. Neal Elliott, ACEEE
James Finlay, Wells Fargo
Alfred Griffin, New York Greek Bank
Chris Kramer, Energy Futures Group
Michael Mittleman, MJM Consulting
Geoffrey Phillips, Northeast Utilities
Ben Taube, Access to Capital for Entrepreneurs
Jim Wheaton, Community Investment Corporation
Frank Owens, Thompson Partners
Cindy Merzon, CenCal Business Finance Group
Yuri Yakubov, PG&E

Appendix B: Split Incentives in Diverse Owner-Tenant Models

Ownership model	Challenges
Owner-occupied	Building owners may not have the credit needed for capital-intensive system upgrades. An owner needs proof that the savings from a retrofit outweigh the costs and effort.
Multi-tenant office. Tenant pays utilities.	An owner's incentive is diluted because upgrades often do not translate to increased rents. Even base building upgrades are worth more to tenants since tenants are often paying for their share of the base building costs. Tenants want payback of tenant-financed upgrades in their own space to be less than the lease term to recoup their investment, and tenants must have the owner's approval to renovate the space. A green lease (described later) could be a helpful solution, but takes time. Many owners do not want to draw up a new contract until the previous contract ends. These issues are potentially multiplied over the number of tenants.
Multi-tenant office. Owner pays utilities.	An owner needs to invade tenant space to perform upgrades beyond the base building. Owners may pursue base building upgrades if they recognize the value and intend to own the building for a long period of time. Depending on the owner's investment horizon, measures with longer payback periods may not be pursued. Owners typically wait until the tenant's lease is up to renegotiate the lease to include construction in the tenant space. Cost savings need to be renegotiated in tenant rents.
Multifamily. Families pay utilities.	Typical 1-year leases discourage tenants from investing in large-scale energy efficiency upgrades to space they do not own. After tenants agree to allow upgrades and construction in their residences, tenants would then need to convince owners to allow upgrades to the building. Base building upgrades are dependent on the owner's investment horizon.
Multifamily. Owner pays utilities.	Simple upgrades in common spaces may be more attractive to owners, but issues occur when owners need to invade tenants' residences to perform some major upgrades. This may require breaking leases, which could have legal ramifications. Owners may need to pay a fee to tenants, which could change project economics.
Owner-occupied	Building owners may not have the credit needed for capital-intensive system upgrades. An owner needs proof that the savings from a retrofit outweigh the costs and effort.
Multi-tenant. Tenant pays utilities.	An owner's incentive is diluted because upgrades do not translate to increased rents. Even base building upgrades are worth more to tenants since tenants are often paying for their share of the base building costs. Tenants want payback of tenant-financed upgrades in their own space to be less than the lease term to recoup their investment, and tenants must have the owner's approval to renovate the space. A green lease (described later) could be a helpful solution, but is costly and takes time. Many owners do not want to draw up a new contract until the previous contract ends. These issues are potentially multiplied over the number of tenants.
Multi-tenant. Owner pays utilities.	An owner needs to invade tenant space to perform upgrades beyond the base building. Owners may pursue base building upgrades if they recognize the value and intend to own the building for a long period of time. Depending on the owner's investment horizon, measures with longer payback periods may not be pursued. Owners typically wait until the tenant's lease is up to renegotiate the lease to include construction in the tenant space. Cost savings need to be renegotiated in tenant rents.

Ownership model	Challenges
Multifamily. Families pay utilities.	Typical 1-year leases discourage tenants from investing in large-scale energy efficiency upgrades space they do not own. After tenants agree to allow upgrades and construction in their residences, tenants would then need to convince owners to allow upgrades to the building. Base building upgrades are dependent on the owner's investment horizon.
Multifamily. Owner pays utilities.	Simple upgrades in common spaces may be more attractive to owners, but issues occur when owners need to invade tenants' residences to perform some major upgrades. This may require breaking leases, which could have legal ramifications. Owners may need to pay a fee to tenants, which could disrupt business.

Source: Bell, Sienkowski, and Kwatra 2013

Appendix C: Findings from Advance Webinars

Prior to the October 18 convening, several industry experts presented webinars on some current topics of interest related to the discussion of augmenting small lender activity for energy efficiency. These presentations were intended to provide attendees with a common level understanding of some recent developments and key debates surrounding the topics. The following information, figures, and tables provide additional detail on participant programs detailed in the webinars.

Northeast Utilities

Figure C1. Process for obtaining a MassHEAT residential loan. *Source:* Phillips 2013.

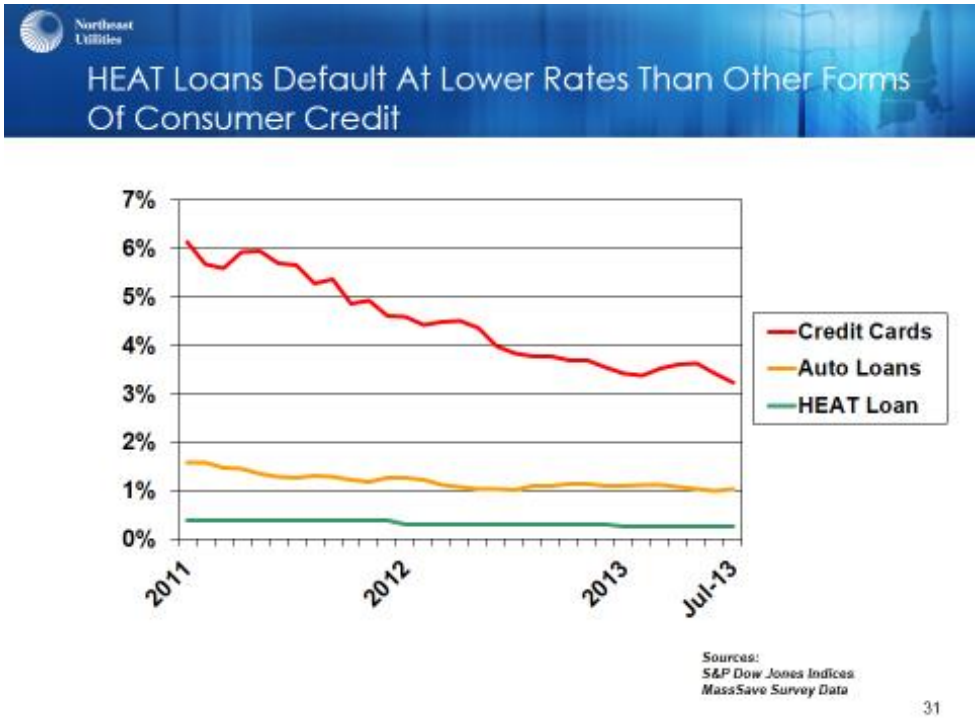

Figure C2. Default rates for MassHEAT residential loans. *Source:* Phillips 2013.

Bank of America CDFI Lending Program

Bank of America Energy Efficiency Finance Program

Program Objective

To provide catalytic resources to CDFIs that are working on innovative financing programs for energy efficient retrofits in low- and moderate-income communities. The four components of the Bank of America Energy Efficiency Finance Program are:

Grants:	$5 million in total. Grants of $500,000 per program participant, paid over two years (2011 and 2012).
Loans:	$55 million in total. Loans to program participants range from $5 million to $8 million. Loans at 1% interest rate and for terms as long as ten years.
Data:	CDFIs are working with EnergyScoreCards to collect utility data and monitor post-retrofit energy and water consumption against pre-retrofit performance.
Knowledge:	Bank of America is working with Opportunity Finance Network (OFN) to share knowledge and experiences of this program via webinars and at national CDFI conferences in 2011, 2012, 2013, and 2014. Program results will be published.

Program Participants

Boston Community Loan Fund
Community Investment Corporation
CRAFT3
Enterprise Community Loan Fund
National Development Council/ Grow America Fund
IFF
Low Income Investment Fund
Opportunity Finance Network (to grow capacity of other CDFIs)
Self-Help
The Reinvestment Fund

Bank of America 1

Figure C3. Bank of America CDFI lending program. *Source:* Brusiloff 2013.

Craft3

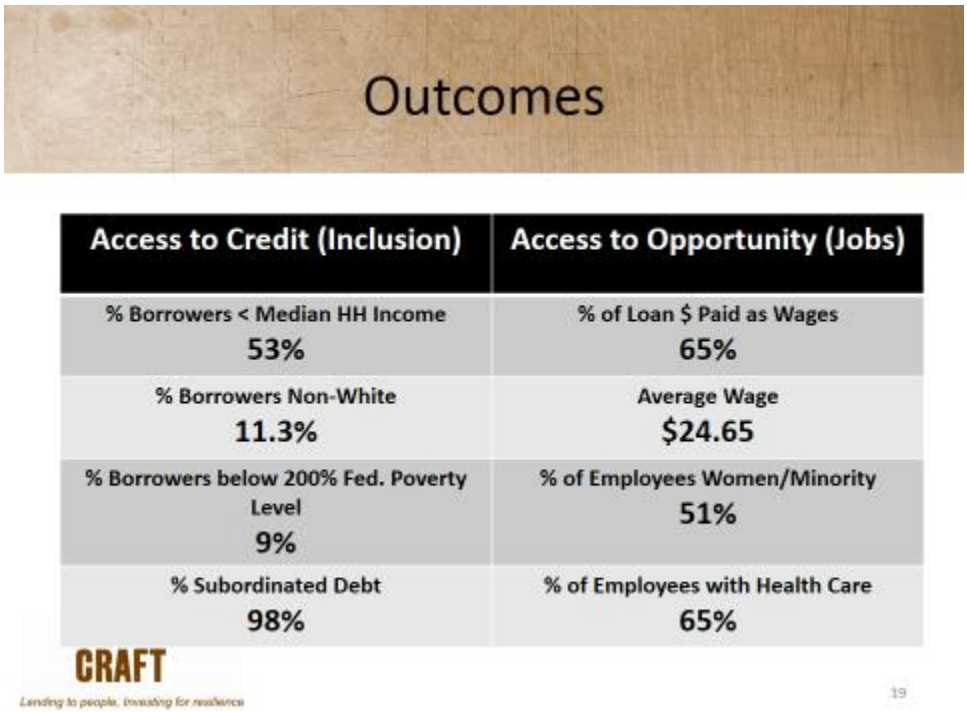

Figure C4. Craft3 lending outcomes. *Source:* Zimmerman 2013.

Table C1. Craft3 loan portfolio summary

Characteristics	Oregon	Washington	Total
Number of active loans	1,690	230	1,920
Value of loans outstanding	$21,313,413	$2,864,225	$24,177,638
Average interest rate	5.13%	4.22%	5.00%
Median loan individual outstanding loan amount	$11,840.00	$11,042.23	$11,723.00
Median monthly loan payment amount	$87.76	$143.28	$91.42
Median number of payments made by active borrowers	17	2	15
Average number of payments made by active borrowers	18	3	16
Percentage of loans past due (+60)	1.03%	0%	NA
Cumulative write-offs to date	$101,014	0%	NA
Current problem assets (not charged off)	$95,401.00	$6,736.00	NA
Total criticized assets	1.17%	0%	NA

Source: Zimmerman 2013

AFC First

Many lenders view a lack of demonstrated demand for energy efficiency lending products as a barrier to providing products and services. Better understanding consumer behavior when it comes to considering an energy efficiency investment can help lenders better understand demand, and market potential products and services effectively. Webinar presenter Peter Krajsa provided some insights into key elements of successful residential programs as shown in figure C5.

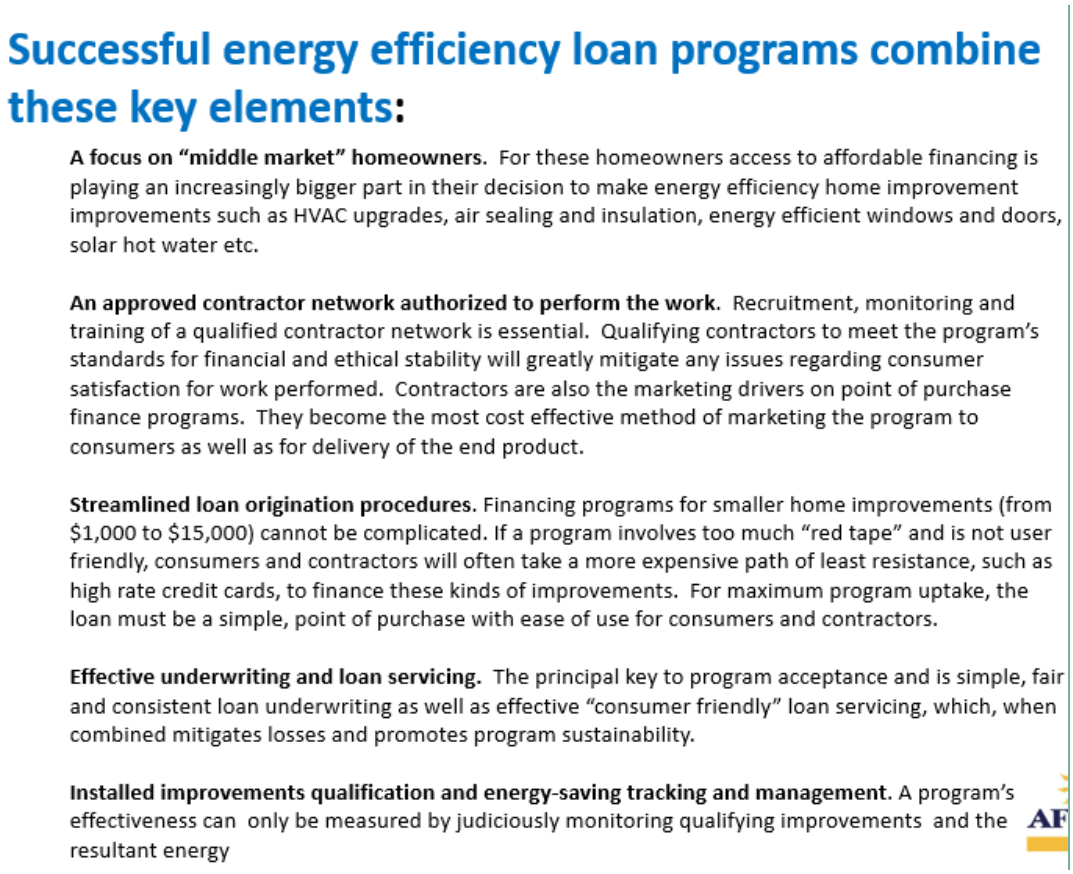

Figure C5. Elements of successful residential programs. *Source:* Krajsa 2013.

It is likely that, with the exception of the first point, many of these findings also apply to the small commercial market.

Appendix D: Advance Inquiry Summary

Prior to the October 18 convening, Energi Insurance Services distributed an e-mail inquiry to 23 anticipated lender participants to assess the participating lenders' current activities in the efficiency market. Nine recipients responded. Given the limited sample size and bias, this cannot be considered a scientific inquiry, and we cannot generalize key findings to the broader community of lenders that lend for energy efficiency. However, participant responses did help to inform some of the questions we asked in the meeting, and proved insightful, if anecdotal.

The majority of responding lenders were financial institutions with under $5 billion in assets, and included mission driven lenders as well as community banks and other commercial lenders. All of these respondents were active in the energy efficiency lending space, with loan volumes ranging from $5 million to $100 million. Additionally, most respondents ranked efficiency as a high or very high priority for their organization, indicating that a fairly significant proportion of our current network is active in this space and likely to be able to provide lessons learned.

When asked to rank barriers to lending for efficiency on a scale of how prohibitive they were, we received relatively even votes for the preliminarily identified barriers of origination issues, cash flow validation, financial regulatory, and document/loan structure. These barriers have been discussed in our convening findings. Survey participants noted that some of the specific key constraints were: time and expense in underwriting projects and verifying savings, demand for energy efficiency loans, loan collateral and first mortgagee cooperation.

The responses also referenced resources that lenders found helpful. These included documentation tools, external credit enhancements, lender education, and strategic partnerships and program integration with local stakeholders. Also of note was the fact that the majority do, in fact, consider energy savings in some manner when underwriting a loan that incorporates efficiency measures.

The following is a copy of the questions, along with answer choices, given to participants two weeks in advance of the October 18 convening.

1. **What is the current asset size of your lending institution?**
    - Less than $5 billion
    - $5 - $10 billion
    - More than $10 billion

2. **What type of lending institution do you represent?**
    - Commercial lender
    - Savings and Loan
    - Credit Union
    - CDFI
    - "Green" (mission-driven) lender

- Community bank
- Regional bank
- State Bank
- Large Financial Institution
- Other

3. **Do you currently participate in energy efficiency lending?**
   - Yes
     - If yes, what is the approximate volume of loans that include efficiency measures?
   - No

4. **What level of priority would you assign energy efficiency-related lending within your business model? Please explain**
   - Very high
   - High
   - Neutral
   - Low

5. **Evidence suggests four key groups of barriers to small bank energy efficiency lending. Please indicate the extent to which each of the following is a barrier to your energy efficiency lending activities on a scale of 1-4. 1) Highly prohibitive barrier, 2) Somewhat prohibitive, 3) Mildly prohibitive, 4) Not a barrier**
   - Issues underlying origination and demand
   - Cash flow validation (e.g. engineering analysis, trust in savings)
   - Financial regulatory and report requirements
   - Documentation and structural elements (e.g. loan and guarantee contracts, insurance)
   - Other barrier(s)

6. **Which barrier poses the greatest challenge to your institution, or in your experience? (Fill in the field)**

7. **Have you encountered any useful resources for dealing with any of the above barriers? Please describe one or two of the most valuable resources. (Fill in the field)**

8. **Do you consider future energy savings cash flows in underwriting a loan that incorporates energy efficiency improvements?**
   - Yes
   - No
   - N/A

9. **If you do consider energy savings in underwriting decisions, how do you treat the energy savings?**
   - N/A
   - Source of repayment

- Expense reduction
- Building NOI
- Non-quantitative
- Other (please specify)

10. **What topics are you hoping to cover at this meeting? What would you like to see the group accomplish? (Fill in the field)**

11. **How interested are you in participating in follow-on activities and collaborating with other institutions and participants at the table?**
    - Very Interested
    - Interested
    - Neutral
    - Non Interested

Appendix E: Meeting Agenda

Small Lender Energy Efficiency Convening

ACEEE OFFICES ▪ Washington, DC ▪ October 18, 2013

Objective: To obtain feedback from small to mid-size lenders on barriers and opportunities in lending for efficiency.

8:00 am to 9:00 am
Coffee and Pastries

9:00 AM – 9:30 AM Meeting Convenes
Welcome, Introductions, and Meeting Guidelines
Casey Bell, *ACEEE* (Facilitator)

- Logistics
- Roundtable introductions
- Chatham House rules

Meeting Objectives
Angela Ferrante, *Energi* (Focal Person)

9:30 AM -- 10:30 AM Facilitated Discussion
Key Question 1: How does energy efficiency fit into your business model?

- What compelled you to consider lending for energy efficiency?
- Are you looking for the potential to expand your activities in this space?
- Are there things you want to learn about energy efficiency that might help grow your business or better serve your customers?

10:30 AM – 11:00 AM Networking Break

11:00 PM – 12:00 PM Facilitated Discussion
Key Question 2: How are you currently lending for energy efficiency investments?

- Do you see energy efficiency as part of your general consumer lending portfolio or as a targeted product?
- What practices have you adopted to make energy efficiency lending work for you?
- Are there lessons learned from your experience with efficiency lending that could be useful to other institutions? Why or why not?
- Are you leveraging SBA loan programs for energy efficiency projects?
- What percentage of loans go to the Small Building and Small Portfolio sector (SBSP)? Are small lenders uniquely positioned to serve this market?

12:00 PM – 1:00 PM Lunch

Lunch

1:00 PM – 2:30 PM Facilitated Discussion
Key Question 3: Research suggests four key issue areas, to what extent do you believe the following inhibit lending for energy efficiency?

- Issues underlying origination and demand (connecting contractors/projects with lenders, incorporating financing options into energy efficiency marketing)
- Cash flow validation (technical resources, engineering analysis, trust in savings, etc.).

- Financial regulatory and reporting requirements (capital requirements, compliance with consumer lending laws)
- Documentation and structural elements (standardized loan agreements, guarantee contracts and insurance contracts, loan vs. leases)

For consideration:

- **Are there barriers we have failed to identify?**
- **Does this characterization of barriers encourage a boutique view of financing for efficiency when we should be looking at lending more holistically?**

2:30 PM – 3:00 PM Networking Break

3:00 PM – 4:15 PM Facilitated Discussion

Key Question 4: What policy interventions, technical assistance or support, research, or private sector products could assist in removing key barriers and catalyze market activity in this space?

- What additional support or resource (general or specific would assist your EE lending activities?

Key Question 5: Which key stakeholders are in the best position to provide the solutions we have listed?

For consideration: How can we leverage this network to ramp-up energy efficiency lending activity?

4:15 PM – 5:00 PM Loose Ends, Next Steps and Adjournment

Wrap-up and Next-Steps

Casey Bell, *ACEEE*

- Highlights and Key Points
- Whitepaper Timeline and Milestones
- Questions