Harnessing the Market to Create Energy Savings

An Energy Efficiency Financing Guide for State Policymakers

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Overview

Energy efficiency—due to its vital role in reducing energy costs, increasing energy security and helping states meet emissions targets—is becoming a central component in many state energy planning efforts.

Despite a strong economic case, efficiency has not reached its full potential, largely due to regulatory and market factors. Additionally, energy efficiency customers are often challenged to acquire the up-front capital investment needed to install efficient technologies, particularly when retrofitting existing buildings and industrial facilities.

While many states use established financing products for energy efficiency, more states are starting to explore how innovative financing mechanisms and improved terms on traditional financing products can overcome market barriers to energy efficiency.

This report outlines how a variety of state-initiated financing instruments can achieve broader energy efficiency implementation. It illustrates state roles in energy efficiency financing and details state legislative trends in this area.
Overcoming Barriers to Efficiency

Energy efficiency offers a range of benefits to consumers and states, including reduced energy bills, increased economic growth, decreased emissions and the avoided capital costs of building new power plants.

Lower energy bills, in turn, decrease the risk of loan defaults and improve property values, leading to stronger performance for financial products that cover efficiency improvements. Despite these benefits, lenders often lack sufficient data on the value of offering low-cost, accessible capital in the energy efficiency market. This, combined with rising consumer interest in energy efficiency, has created an increasing gap between demand for energy efficiency retrofits and available financing. State programs have proven to be very useful in bridging this gap by seeking to address many of the consumer, regulatory and market barriers to increased efficiency through innovative financing approaches.

Financing removes the up-front cost barrier for building owners by allowing them to repay energy efficiency improvements with the energy savings created by these projects—typically in a time period of two to 20 years. Many financing arrangements are tied to the property itself so that payments are transferred to the new owner in the event of a sale. Innovative new programs offer more flexibility than conventional products as a way to address split incentives—cases where rental property owner do not benefit from improvements since the renter pays the energy bills—by passing the costs of improvements to the beneficiaries of lower energy bills, i.e. renters.

Coordinated state efforts have the potential to streamline financing and project processes, energize private industry and build energy efficiency expertise. State programs can also consolidate energy savings data, quantifying the return on investment for state evaluators and prospective customers. One key to an effective program is to ensure that customers are aware of the program and its benefits through education and outreach to address the lack of knowledge about energy efficiency and financing opportunities.

Encouraging Energy Efficiency Financing

Many states are adopting aggressive energy savings targets or have established energy efficiency state standards. However, standards alone are not sufficient to drive the efficiency market and fail to address several barriers, including small program budgets and high up-front investment costs by customers. States can use financing tools to leverage limited budgets and overcome cost barriers in order to achieve energy savings goals.

States are exploring energy efficiency financing programs since attractive energy efficiency project financing tools are often not available without these state initiatives. While lenders may understand that energy efficiency investments are frequently wise business decisions, they are often unfamiliar with this type of financing and may not offer products that are attractive to building owners and decision makers in business and industry.

Many lenders are not taking the energy savings into account due to the lack of data or understanding of how much energy savings they can rely on for particular improvements. As a result, lenders may secure loans to borrower assets to mitigate their risk, but this may create unattractive terms for property owners and does not solve the major problem faced by many who would like to perform upgrades—lack of access to capital.

To expand efficiency project financing options and encourage lenders to participate in this market, state policymakers have employed a number of approaches, such as acting as a capital provider by providing revolving loan funds, enabling the use of innovative financing tools to enable property assessed efficiency financing and performance contracting, and creating credit enhancement, such as loan loss reserves. Loan loss reserves (LLRs), for example, can leverage significant amounts of private capital to finance energy efficiency despite limited budgets. Since state and federal finances are limited, programs that create opportunities for third party financiers to invest in energy efficiency projects can be particularly useful.
Non-State Actors and Energy Efficiency Financing

While states play a critical role in encouraging energy efficiency financing, many other actors, from commercial banks to local authorities, impact efficiency programs.

Banks and Credit Unions

Many states and local governments have partnered with banks and credit unions to provide the public and private sector with energy efficiency improvement financing. Credit unions, community development institutions and banks can be valuable partners depending on the program’s size and target markets. Credit unions have been great partners for residential efficiency programs since they offer very attractive terms and see these initiatives as serving their core missions. Credit unions also tend to be more engaged than commercial banks in the home performance retrofit market and generally have higher energy loan approval rates compared to commercial banks. The lack of available lenders has limited the success of some residential programs, however. Large commercial banks may be good partners for mature programs that need access to large pools of low-cost secondary market capital.

Utilities

Utilities know the technical side of energy efficiency and can be important partners in program design and customer adoption. Several states allow utilities to collect ratepayers’ fees, also known as system benefit funds that can be used to fund energy efficiency projects, which could include financing efforts. Since they often have substantial ratepayer-funded efficiency budgets, utilities can assist in direct provision of capital, on-bill financing and credit enhancement. Through on-bill financing, for example, utilities can guarantee loan repayment by allowing consumers to repay a loan via surcharges on their monthly utility bills. While utilities can be good partners in efficiency financing, they may be reluctant to engage in the lending business, which requires developing new accounting procedures and assuming a potential for added risk.

Local Governments

States are increasing the authorization for local governments to carry out energy financing programs with a variety of policies, including Property Assessed Clean Energy (PACE) financing, which allows municipalities to sell bonds in order to finance commercial and residential efficiency efforts. Many local governments have created energy efficiency incentives or credits, and some provide significant funds for energy efficiency financing. New York City, for example, has received funding from nonprofits and foundations to support energy efficiency financing in the city. Because of their smaller size, local governments are often well-suited to experiment with nontraditional approaches and alternative funding models. Eugene, Ore. used an intra-governmental loan to invest in energy efficiency upgrades for all municipal departments in the city. The city repaid the loan with energy savings within 10 years.

The options explored below are examples of state programs that were created to overcome barriers to energy efficiency financing in a number of different ways. Some are targeted towards larger commercial sector while others focus on increasing access for residential financing.

Legislative Tools to Promote Energy Efficiency Financing

States have a multitude of energy efficiency financing tools at their disposal, including bonds, loans, credit enhancements, energy savings performance contracting (ESPCs), LLRs, on-bill financing or on-bill repayment, Property Assessed Clean Energy (PACE) programs, mortgages and state energy banks. Several of these financing options require specific authorization or enabling legislation, and some are targeted at either the commercial or residential sector while others can work for both. Each financing strategy performs best in certain conditions and faces unique challenges. No singular financing tool can drive the energy efficiency market alone and states may harness the market most successfully by using an all-of-the-above approach.

Bonds

Local state and federal governments can leverage limited funds to support energy efficiency through bond programs. Bonds provide a stable investment that generates consistent interest, which can be directed into energy efficiency grant
or loan programs. Bonds serve as a common tool for states and can serve as a one-time or temporary funding source for projects that are limited in size or scope. States can issue municipal bonds for a specific energy efficiency project, a specific grant or loan program or a series of projects in public buildings. For example, Kentucky Senate Bill 153 in 2014 established a bond program and customer education initiative for energy efficiency projects in small and medium manufacturing facilities. Kentucky will reserve 10 percent of the state’s private activity bond cap for projects.

States and localities can issue bonds for on-bill financing or repayment programs (described below) or Property Assessed Clean Energy financing programs (described below). State, tribal and local governments have access to Qualified Energy Conservation Bonds (QECBs) through the U.S. Department of the Treasury. The Treasury subsidizes the issuer’s borrowing costs to help fund new or existing energy efficiency expenditures including public education programs, projects to reduce energy consumption in public buildings or implementing community energy efficiency programs.

**Loans**

Loans allow states to deploy capital from grants, bonds or other funds through a number of structures depending on a state’s goals or resources. Secured loans—where a loan is supported by collateral, such as a property—benefit large projects that require low-interest rates or long payback periods. Energy efficient mortgages (described below) and PACE loans are both forms of secured loans. Unsecured loans benefit small projects or projects with higher interest rates, as they are only supported by a borrower’s creditworthiness. Leases or lease-to-purchase agreements, where a borrower uses but may not necessarily own equipment, are valuable for commercial or industrial customers that may have debt constraints. Government entities may have the ability to aggregate leases through a master lease or pooled leasing in order to negotiate lower interest rates, such as with Virginia’s Master Equipment Leasing Program for energy efficient equipment at state agencies and institutions.

Revolving loan funds, provide states and borrowers with a self-sustaining finance model where loan repayments and interest payments replenish the pool of available financing. Several states used the seed capital provided through the American Reinvestment and Recovery Act (ARRA) Energy Efficiency and Conservation Block Grants for new or existing revolving loan funds.

For example, the Energize Delaware Home Energy Loan Program provides qualifying Delaware homeowners with low rate loans that can finance energy improvements. To qualify for loans and available energy rebates, however, the program requires homeowners to first have an energy audit performed by a pre-approved contractor. Loan interest rates are lowest, starting at 3.9 percent, for projects with the largest expected energy savings and go up to 6.9 percent for smaller projects with less projected energy savings. The loan payback period is up to 10 years.

Texas’ LoanSTAR Revolving Loan Program was supplemented with ARRA funds, after its 1989 establishment with petroleum violation escrow funds. The program finances energy retrofits for state buildings, as well as public schools, hospital facilities, colleges and universities. The base fund of the program grows through interest payments, which are set to recover the cost of administering the program. As of January 2014, the program provided over 237 loans, totaling more than $395 million and has achieved an estimated total energy savings of over $419 million. Because the retrofits are for public facilities, the energy savings benefit taxpayers by reducing building operating costs.

**Credit Enhancements**

States can also employ credit enhancement techniques—such as loan loss reserve funds (LLRs), subordinated debt and loan guarantees—to reduce lender risk, allowing them to offer lower rates, longer terms and less restrictive underwriting to borrowers. Loan loss reserves reduce lender risk by providing first loss protection in the event of loan defaults. A 5 percent LLR for example, allows a private lender to recover up to five percent of its portfolio of loans.
from the LLR. A $20 million private capital fund, for example, would need a $1 million public LLR to provide 5 percent coverage and leverage public dollars 20:1. By reducing lender risk, they incentivize lenders to participate in programs and to offer better loan terms and conditions.14

State and local governments may provide loan guarantees to cover defaults, or they may use designated funds to support loan loss reserves to reduce lender risk. In Washington state, the Community Energy Challenge Loan Program provides loan reserve resources, generally administered by local governments, to provide 7.5 to 10 percent of the loan amount to enhance borrower credit.15 As the value of energy efficiency lending is demonstrated with robust performance data through time, states may be able to reduce or eliminate the size of LLRs.

**Energy Savings Performance Contracts**

An Energy Savings Performance Contract (ESPC), also known as a guaranteed energy savings contract, is a partnership between an energy savings company (ESCO) and a government agency or entity to finance and implement energy efficiency improvements.16 ESCOs are businesses that implement energy efficiency projects and have a contractual obligation to guarantee energy savings. Once possible projects are identified—typically through an energy audit—they are often financed through tax exempt municipal leases, revolving loan funds or bonds. The financing costs of the energy efficiency improvements are repaid through the monthly energy savings. If the project fails to create the guaranteed energy savings, the ESCO pays the difference in repayment costs. When savings exceed the guarantee, many states allow public entities to retain the savings to help incentivize energy efficiency improvements. Many states provide contract support and information on approved ESCOs to select from. States may also ensure that public entities that pursue energy efficiency improvements do not face funding reductions based on their energy savings.

Colorado initiated its ESPC program in 1988 with its Commercial and Public Buildings Program in Performance Contracting. The program is being used as an important tool to cut the state’s energy use 20 percent by 2020.17 A performance contracting professional from the Colorado Energy Office works with clients from state or local government agencies and provides technical assistance. Once a contract is negotiated, the Energy Office supports the improvements, as necessary, and provides annual reviews of energy savings.19 As of June 2014, the program supported over 182 active or completed projects, leveraging $447 in capital construction funds.19 By providing support to public entities entering ESPCs, the Colorado Energy Office has helped enhance the success of the program and encouraged agencies to explore ESPCs as a way to create energy savings.

While all 50 states, the District of Columbia and Puerto Rico have legislation that enables ESPCs, programs can vary significantly in their degree of support for ESPCs. States continue to expand and revise their programs. For example, Colorado enacted legislation in 2014 permitting small or rural communities to aggregate energy efficiency projects to better attract ESCOs and financing.

**On-Bill Financing and Repayment**

On-bill financing allows property renters and owners, in both the residential and business sectors, to engage in energy efficiency improvements that are paid for over time via charges on their utility bill. These programs overcome the up-front cost barrier presented by many efficiency improvements, increasing access for middle and low-income customers, renters, residents of multifamily properties and small businesses. While energy efficiency financing may be appealing for owners that occupy their properties, many landlords lack incentives to pursue financing because they do not pay utility bills. State action that allows rental property owners to participate in energy efficiency programs can help expand the effectiveness of financing.

On-bill financing programs may require “bill-neutrality,” meaning energy efficiency savings on monthly bills must be greater or equal to a customer’s loan payments. This approach allows customers to upgrade efficiency at no added cost, since they save more in energy costs than they pay for the on-bill finance costs. For example, the South Carolina “Help My House” Rural Energy Savings Program Pilot led to a 34 percent reduction in energy use for residential program participants and resulted in average annual savings of $288 per home—the total savings after loan payments.20 Default rates have been found to be between zero and 2 percent—lower than with other loans—making them lower risk for lenders.21 On-bill financing programs
can also be arranged to use utility bill repayment history to underwrite upgrades, allowing customers with poorer credit scores to access financing. Some programs have increased their impact by bundling on-bill financing with marketing, technical assistance, energy audits, rebates and tax credits, use of prescreened contractors for services and post-installation inspections for quality assurance.

On-bill financing programs use seed capital from revolving loan funds, public benefits funds, utility shareholder funds, grants or private investors. Programs then operate as either loans or tariffs. On-bill tariffs keep the financial obligation with the property. If the property is sold or rented, the tariff payments will simply transfer to the new owner or renter. Because many states do not classify on-bill tariffs as loans, these programs are subject to less complicated laws and regulations. Connecticut’s Small Business Energy Advantage program is an on-bill loan program that is co-administered by Connecticut Light and Power and the United Illuminating Company, both Connecticut utilities. Financing is provided to small business and industrial customers through the Connecticut Energy Efficiency Fund, a public benefits fund. Financed energy improvements are paid through surcharges on business’ utility bills, and the program provides loan loss reserves and permits utility disconnection as a means of credit enhancement. In 2011, the program’s default rate was less than 1 percent of total loans. Most projects range in size from $8,000 to $12,000 and are financed over 24 to 36 months. The program provides additional incentives, including access to a zero percent interest rate for qualifying customers and incentives to subsidize a portion of the energy efficiency projects.

Many states are also exploring on-bill repayment programs. While on-bill financing refers to programs that utilize ratepayer, utility shareholder or public funds, on-bill repayment programs leverage private, third-party capital for financing. Banks, credit unions or financial institutions provide the loan capital and repayments are displayed on utility bills. This approach allows third-party institutions to take care of administrative functions, while utilities only need to process payments. On-bill repayment can also be sole sourced or open sourced—programs in New York and Oregon use a single source of capital while Hawaii is developing an open source model where banks and investors compete for customers.

Twelve states have enacted legislation to authorize public benefit funds for capital, to create pilot programs or to require utilities to offer on-bill financing or on-bill repayment. Public benefit funds are funds created through surcharges on utility bills for efficiency improvements. Utilities in an additional 19 states administer on-bill financing programs although there has been no legislative action to create these programs. Figure 1 shows states that have on-bill financing enabling legislation and utility-run on-bill financing programs.
Property Assessed Clean Energy Programs

Property Assessed Clean Energy (PACE) programs allow governments—usually cities and municipalities—to provide financing for energy efficiency improvements that building owners pay back through property tax assessments. Assessments typically last from five to 20 years and are often financed through public municipal bonds or private lenders, frequently secured with a senior lien on the property, giving PACE assessments priority above other liens.25 As a result, they are very secure for the investor. Many states allow the lien to be transferred to a new owner when the property is sold. One of the benefits of the PACE model is that it is built from a municipal financing model that has long been used for spaces that serve the public good, such as street paving, parks, water and sewer systems, or municipal street lighting.

Establishing a PACE program typically requires the state legislature's authorization, except in local control or “home rule” states. Legislation comprises a number of elements including: stating a program’s purpose, authorizing bonding authority to local governments, prescribing eligible projects or sectors, establishing minimum and maximum thresholds for borrowing and determining loan-to-value ratios. Established at municipal, multi-county or state levels, programs can vary greatly in their financing structure and program procedures.26

PACE loan amounts are typically based on the tax capacity of the property rather than the traditional approach of a property owner’s credit. PACE financing is an alternative to a traditional loan, and the timing of payments are aligned with timing of benefits. Since programs typically require that projects be cost-effective, energy savings equal the amount of the loan payments or exceed it. Many programs require that building owners be current in property taxes and have no delinquencies for at least the past three years, not be in bankruptcy and have a mortgage in good standing.

Residential and commercial PACE assessments operate differently. For example, many residential PACE assessments take priority over secured loans, such as mortgages, with senior lien status. Controversy has emerged due to concerns that the PACE assessment subordinates the residential mortgage lender’s security interest in the financed property.

As a result, the Federal Housing Finance Agency (FHFA) issued a statement in July 2010 advising the federal government’s mortgage financiers, Fannie Mae and Freddie Mac, which hold or issue more than half the nation’s mortgages, from purchasing property on which PACE financing has placed a first lien.27

While some states have worked to establish a second lien status for residential PACE assessments, many state statutes explicitly require senior lien loan status for PACE financing, stalling many residential PACE programs. Although programs that place a lien that is subordinate to the home mortgage are permitted under the FHFA rule, this makes the programs more complicated to implement and greatly decreases the security of the assessment. Currently, residential PACE programs are implemented in four states: California, Florida, Missouri and New York. Oklahoma and Vermont have passed legislation to downgrade PACE from senior lien to junior lien. Maine offers residential programs without holding a lien against properties. Commercial PACE programs are unaffected by the FHFA rule, as the borrower is typically required to receive the initial lender’s consent before taking on additional liability through PACE financing.28

In 2010, Maine enacted legislation authorizing local governments to establish PACE programs. Municipalities can opt to have Efficiency Maine, which received $30 million from the Department of Energy’s Better Buildings Neighborhood Program, to initialize the program or to administer their PACE programs. Efficiency Maine has established a $20.4 million revolving fund for residential PACE. Because the program provides residential loans with a lien junior to a home mortgage, it has been able to operate within the FHFA ruling. Homeowners repay the PACE loans through separate billing statements at fixed loan rates of 4.99 percent. In the program’s first 18 months, the program had administered 273 residential loans, totaling more than $3.4 million.29

PACE legislation has been enacted in 31 states and the District of Columbia, and 12 states and the District of Columbia have active programs. Figure 2 illustrates state activity. Legislation has focused on authorizing local governments and municipalities to administer PACE programs and on expanding PACE assessment eligibility.
Energy Efficient Mortgages

Energy efficient mortgages (EEM) account for a home’s energy efficiency directly into the mortgage terms, allowing the borrower to qualify for a larger secured loan to help finance energy saving measures in a better, more energy efficient home. While EEMs are traditionally used to purchase a home that is already energy efficient, Energy Improvement Mortgages (EIMs)—mortgages for homes that will have future efficiency improvements made—are often included as a subset of EEMs. Benchmarking has helped develop reliable standards for these mortgage programs.

Congressional legislation established an EEM pilot program in 1992 in five states: Alaska, Arkansas, California, Vermont and Virginia. This evolved into a national pilot in 1995 and the program remains active through Federal Housing Agency administration. While energy efficient mortgages are predominantly administered at the federal level, several states have taken initiative to encourage EEMs through legislation or regulations. California enacted Assembly Bill 984 in 2013, which authorizes grants for homebuyers utilizing the federal EEM program. Colorado enacted House Bill 1105 in 2013, requiring the state’s Energy Office to fund energy savings mortgages that finance newly built energy efficient homes and improvements to existing residences.

State Energy Banks

State energy banks are public-private partnerships that combine public funding with private capital and expertise to promote energy-efficient technology and lower the cost of investments. Energy banks—also known as green or resilience banks—are public or quasi-public institutions that provide an array of financing tools, including bonds, loans, on-bill financing or on-bill repayment, PACE financing, credit enhancements and co-investing.

State energy banks can serve to consolidate and coordinate existing energy efficiency programs that may be housed across various departments, programs or authorities, allowing a state to deploy a cohesive financing strategy. States have the authority to determine eligible projects and sectors, the financing tools available, project guidelines, sources of initial capital and the goals of the bank. Energy banks can be tailored to meet states’ specific energy or environmental goals. Energy banks require initial public funds, such as state funds, federal grants, system benefits charges, foundation grants, private investments or bonds. Banks typically use a lending model—as opposed to a grant model—to establish revolving capital that can lead to financial sustainability. The statewide scale of investments make technology more competitive, drives down projects costs and helps overcome market barriers.

Connecticut, New Jersey and New York have established energy banks. Maryland enacted study legislation for a state energy bank in 2014. Connecticut established the nation’s first energy bank in 2011 when the legislature con-
solidated the Connecticut Clean Energy Fund and other state programs to establish the quasi-public Connecticut Energy Finance and Investment Authority (CEFIA). CEFIA is funded with both private and public capital, including proceeds from the Regional Greenhouse Gas Initiative (RGGI), commercial electric bills, federal funds and grants, and private capital. The bank coordinates state energy finance programs and has a mandate to enable efficiency improvements in at least 15 percent of single-family homes by 2020. CEFIA’s 2013 annual report states the authority has invested more than $220 million, creating 1,200 jobs and avoiding 250,000 tons of greenhouse gas emissions. The bank has a leverage ratio of 10:1, where every public dollar invested corresponds to $10 of private investments. In May 2014, the bank achieved a new level of financial sustainability through securitization of a bundled portion of its commercial Property Assessed Clean Energy (PACE) loans to a finance company.

**Conclusion**

Energy efficiency is playing a larger role in reducing energy consumption, energizing the economy, meeting environmental goals and enhancing energy security and resiliency. As a result, energy efficiency financing is becoming increasingly important, as are efforts to extend available capital, expand the scale of current programs and increase public-private collaboration. As policymakers continue to innovate with new financing programs and as programs become more established and familiar to the banking industry, energy efficiency financing could play an increasingly critical role in meeting growing energy demand.

**NCSL Resources**


**Additional Resources**

- Database of State Incentives for Renewables and Efficiency: http://www.dsireusa.org/
Notes


9. Sara Hayes et al., What Have We Learned From Energy Efficiency Financing Programs?


