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ABOUT THE AUTHORS:

The Environmental and Energy Study Institute (EESI): EESI is a 501(c)(3) nonprofit organization dedicated to promoting environmentally sustainable societies. EESI recently launched a national on-bill financing (OBF) initiative to help improve the energy efficiency of homes served by public utilities.

Collaborative Efficiency (CE): CE's main focus is on municipal utilities and electric cooperatives. CE helps consumer-owned utilities capture the benefits of energy efficiency through research and analysis and by supporting program planning and implementation. CE has been very involved in energy efficiency financing and residential retrofit programs and recently completed work on a study of electric vehicles.

Michigan Saves: Michigan Saves is a nonprofit dedicated to making energy improvements easier for all Michigan energy consumers. To accomplish this, Michigan Saves makes affordable financing and other incentives available through grants and partnerships with private sector lenders. They also authorize and monitor a network of contractors and recognize those with advanced training. Their current portfolio includes programs for residential, multifamily, commercial and municipal customers, and supports energy efficiency, geothermal and solar PV projects. For more information, visit www.michigansaves.org.

INTRODUCTION



Purpose of This Document:

The purpose of this document is to help electric co-ops and municipal utilities understand the advantages of on-bill financing (OBF) and the many pathways and resources available for launching an OBF program. Drawing on evaluations of existing OBF programs, surveys, and academic literature, the section below highlights the key benefits offered by OBF programs. Case studies profiling four OBF programs from around the country are provided—highlighting the reasons for launching an OBF program, key program design choices, and lessons learned. The last piece of this document is an overview of the topics covered in a forthcoming document: *A How-to Guide for Launching an On-Bill Financing Program*.

What is On-bill Financing?

Many building owners lack the funds needed to make energy-related investments, especially for the big-ticket items that can produce the greatest energy savings. High up-front costs and a lack of easily accessible financing are commonly cited as the key barriers to investments in energy improvements (Kapur et al., 2011). Rebate programs don't significantly alleviate this barrier. A residential whole house energy efficiency upgrade that includes insulation, building envelope upgrades, and HVAC improvements will often cost thousands of dollars. Residential solar arrays and commercial energy efficiency upgrades can be tens of thousands of dollars. Access to financing is essential for reaching large numbers of building owners and unlocking the many benefits of energy efficiency.

Over the past several decades, a range of financing tools has been developed with the goal of reducing the up-front costs for energy efficiency. OBF is a common financing tool. On-bill financing (OBF) is a financial collection mechanism in which financing for energy improvements is repaid by a utility customer—such as a homeowner or a commercial building owner—on the monthly utility bill.

As of January 2014, OBF programs were operating in nearly 25 states (SEEA Action, 2014). In some cases, a utility may not provide financing and instead just processes the loan payments that are then passed on to a lender. This is sometimes referred to as on-bill repayment (OBR). In this document we will use OBF as a broad term that includes OBR.

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Why On-Bill Financing?

Energy efficiency and renewable energy programs offer a myriad of benefits: lowering customer utility bills; reducing the need to build more large and expensive power plants and related infrastructure; making homes and businesses more comfortable; improving the environment; and helping utilities meet state and federal requirements. Allowing home and business owners to finance energy improvements gives customers the ability to immediately reap the benefits of living and working in a comfortable and energy-efficient environment while paying for the cost of the upgrades over time.

OBF offers the following additional benefits.

- **OBF can make energy improvements extremely affordable:** There are many existing below-market financing options, but on-bill programs can be designed to make energy improvements even more affordable by offering lower rates and/or longer terms, making monthly payments so low that, in some cases, the bill savings are greater than the costs of repayment.
- **OBF programs that use utility bill payment history as an underwriting method can serve more customers:** While other clean energy financing tools typically use traditional underwriting criteria and may not be available or attractive to all customers (such as those with tarnished credit), many OBF programs use utility repayment history to assess creditworthiness—a feature of an OBF program that can extend program benefits to a wider range of customers. OBF programs that rely on traditional underwriting criteria reject about eight times as many applications as those that rely primarily on utility bill repayment history (SEEAAction, 2014).
- **OBF is a low-risk lending strategy for program administrators and lenders:** Program administrators offering on-bill loans (sometimes coupled with service disconnection for non-payment) may experience lower default rates compared to financing that is not repaid on the utility bill (SEEAAction, 2014). Evaluations of OBF programs currently in operation across the country show default rates are very low, between 0 and 3 percent, regardless of the metrics used to assess creditworthiness. Therefore, program administrators may be able to offer more attractive financing (e.g., lower interest rate, longer loan term, higher loan amount) than would otherwise be available, expanding the number of consumers that can qualify for improvements.
- **Improved customer ease and acceptance:** In addition to high up-front costs for energy improvements, lack of information and transaction costs are common project barriers. OBF programs can address these barriers by integrating the improvement and payment process into each customer's existing billing and customer services relationship with their energy provider. In addition to the convenience of repayment on the monthly utility bill, OBF leverages the existing billing relationship between consumers and utilities.
- **A solution for landlords, tenants, and other short-term occupants:** OBF programs can be structured to tie the obligation to the meter so it can be assigned to subsequent occupants; this is enticing to those who are interested in making improvements but may expect to move soon. OBF programs can also provide motivation to landlords who don't want to take on the financing of energy improvements because the benefit will not accrue to them (i.e., landlords who don't pay the utility bills may not want to invest in energy efficiency improvements because the tenant pays the utility bill and the landlord sees little to no financial benefit).
- **Off-balance sheet treatment:** In the commercial sector, on-bill programs that are structured as a tariff tied to the utility meter—rather than a loan—may enable participants to treat the tariff as part of the utility service, which could be treated as an operating expense under standard accounting principles. This enables customers to fund improvements without increasing their debt to income ratio, a metric scrutinized by lenders and investors.

Customer Spotlight: How On-Bill Financing Improves Quality of Life

Mark and Sara Borkowski live with their two young daughters in a century-old, 1500-square-foot house in Rutland, Vermont. Mark drives a school bus, and Sara works as a special education teacher; the cost of heating and cooling their house through the year consumes a large fraction of their combined income. Last summer, however, persuaded by Green Mountain Power, the main electric utility in Vermont, the Borkowskis decided to give their home an energy makeover. In the course of several days, coordinated teams of contractors stuffed the house with new insulation, put in a heat pump for the hot water, and installed two air-source heat pumps to warm the home. They also switched all the light bulbs to LEDs and put a small solar array on the slate roof of the garage.

The improvements cost the couple \$15,000, but they say the amount of money they'll save each month will cover their loan payments, which will be rolled into to their monthly Green Mountain Power bill. Before the makeover, from October of 2013 to January of 2014, the Borkowskis used 3,411 kilowatt-hours of electricity and 325 gallons of fuel oil. From October of 2014 to January of 2015—after making the energy-efficiency upgrades—they used 2,856 kilowatt-hours of electricity and no oil at all. The Borkowskis reduced the carbon footprint of their house by 88 percent in a matter of days, and at no net cost increase. Furthermore, the Borkowskis are more comfortable than they were before the energy improvements. "My daughter's room has always been really cold in the winter, super hot in the summer," says Sara. "Now, you can really feel a difference in my daughter's room for sure."

-Except from *Power to the People*, by Bill McKibben.



CASE STUDIES

The following section profiles four OBF programs—two electric cooperative programs and two municipal utility programs from across the country. These four programs are highly distinct; one program was started to better meet the energy efficiency needs of low-income customers, while another is primarily being used as a tool to meet the goals of a municipal climate action plan. The OBF programs (profiled below) finance everything from basic weatherization measures to solar PV arrays and electric vehicle charging equipment. One program has been in operation since 1983 and another was launched just a few years ago. The programs have utilized a range of different capital sources—bonds,

grants, and utility capital—and offer interest rates from zero to five percent. These case studies illustrate the great deal of flexibility that program administrators have as they approach the design of an OBF program, and indicate that OBF is a tool that can help municipal utilities and co-ops meet a range of different goals. One common thread across all four of these case studies is that OBF programs are a low-risk way to overcome barriers to energy efficiency and better serve end users.

Appendix A, on page 15, provides a summary of key metrics and characteristics for the programs profiled below.



Midwest Energy's How\$mart Program

Midwest Energy, located in central and western Kansas, is an electric and gas cooperative that serves 48,000 electric customers and 42,000 gas customers. Midwest has one of the longest running tariff-based OBF programs in the country called How\$mart.

How\$mart was launched because—despite a long track record of investments in energy efficiency programs and services—most Midwest members were not making meaningful energy efficiency upgrades due to high first costs and a lack of access to affordable financing. This was especially the case among rental and low-income member segments where, over the course of several years, Midwest employees would often audit the same structure more than once, making the same efficiency improvement recommendations because measures were never implemented (ACEEE, 2008). Energy performance contractors, facing the same market barriers, also consistently asked Midwest Energy to offer energy efficiency finance options to members. In order to address these challenges, Midwest launched the How\$mart program as a pilot in 2007, and later expanded the program to the entire Midwest service territory in 2008 for both residential and commercial members.

As long as all measures are deemed cost-effective, the How\$mart program requires no up-front capital from building-owners. Efficiency improvements are paid for through a surcharge on the utility bill that is tied to the location—not to the individual customer. Because How\$mart is a tariffed utility service, this gives Midwest the ability to disconnect for non-payment.

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Members often learn about How\$mart after they contact Midwest regarding bill concerns or complaints. Contractors are also a strong marketing force for the program. After a member contacts the program and Midwest confirms that the member is current on their utility bill payments (the only underwriting criteria for the program), the next step is a high-level screening of energy usage. In most cases, this leads to a comprehensive on-site audit and a list of recommended efficiency improvements, estimated costs, and projected energy savings. There is no charge for the audit if the member decides to participate in the program. Next, members solicit participating contractors to provide bids. Once a bid is finalized—including the total costs of the improvements and estimated utility bill savings—the How\$mart monthly charge is calculated. This surcharge is the repayment mechanism that allows Midwest to recover the cost of the efficiency measures plus the cost of capital. The current interest rate for residential customers is 3 percent over 15 years; for commercial customers it is 4.5 percent over 10 years.

To date, the How\$mart program has conducted 2,200 audits that have resulted in 1,411 energy efficiency upgrades (primarily in the residential sector), producing total energy savings of 3.1 million kWh of electricity and 385,745 therms of natural gas. The total loan value of the program is approximately \$8.2 million.

Although a major impetus for the creation of the How\$mart program was to overcome market barriers faced in rental and low-income markets, the program struggled to serve this demographic initially. According to Brian Dreiling, Manager of Energy Services at Midwest, part of the problem is that low-income members often have such high-energy bills that they cannot stay current with their bill payments and, as a result, cannot qualify for the program. In response to this issue, How\$mart recently partnered with the federal weatherization program so that there could be more coordination regarding efficiency efforts. “We don’t want to duplicate efforts. For example, the federal weatherization program is conducting the audits for many of our low-income members and we are happy to use their audit results. When the low-income weatherization program can cover the cost of some of the efficiency upgrades—it reduces the risk to Midwest,” said Dreiling. As a result of this partnership, as well as more targeting marketing and outreach to landlords and rental companies, the annual number of participants that are low-income or renters has increased to roughly 20 percent.



South Carolina's Central Electric Power Cooperative Help My House Program

South Carolina's Central Electric Power Cooperative, Inc. (CEPCI) provides wholesale power to the state's 20 member cooperatives and conducted a successful on-bill financing pilot program which launched in 2011. The program allowed 125 single-family and manufactured homes in eight cooperative service territories to perform whole house improvements—with no up-front costs or traditional credit checks—through low-interest 10-year loans that would be paid back on the members' bills. More than 95 percent of participants reported that they were more satisfied with their co-op after participating in the pilot.

In the comprehensive "whole house" approach, all of the energy efficiency measures were evaluated as part of the same system. Participating homes received a combination of air sealing, duct sealing and repair, HVAC upgrades, and insulation improvements. Evaluation of the pilot program found that the average reduction in electricity was 34 percent and the monthly energy savings exceeded the monthly loan repayment by \$288 per year. Peak loads in the pilot homes dropped by about the same percentage as total energy use, so load factor impacts were nearly nonexistent. If load control switches were deployed, load factor impacts would have been positive.

Loan capital for the pilot came primarily from a U.S. Department of Agriculture loan—supplemented by South Carolina co-op funds—and totaled \$740,000. EESI assisted with the design and implementation of the pilot project, working in cooperation with The Electric Cooperatives of South Carolina (ECSC), the association representing the state's 20 distribution co-ops; and Central Electric Power Cooperative, the co-op's wholesale electric service provider.

Evaluation of the pilot program found that the average reduction in electricity was 34 percent and the monthly energy savings exceeded the monthly loan repayment by \$288 per year.

The co-ops did not require participants' credit to be checked, but did ensure strong electric bill payment history. Customers could borrow up to \$15,000 with a 2.5 percent interest fee, and—in the case of non-payment—disconnection by the co-op was allowed. This pilot program also allowed transferability of loans; however, for a one-year pilot, the option was not a major factor in deployment.

Lindsey Smith, Vice President of ECSC, shared that the participating co-ops had different levels of resources that they could contribute to the pilot program: "Some had auditing staff that could work on the program, and others needed assistance with making phone calls to interested members. We left it up to the co-op to determine what assistance they wanted from ECSC and CEPCI." ECSC and CEPCI developed the marketing materials for the program, coordinated with the third-party loan administrator, and managed funds. After the pilot program was completed, ECSC has continued to provide support services to the co-ops that continue to offer the OBF program; last year, the program issued \$1.1 million in loans.





City of Tallahassee Utilities: Energy Efficiency Loan Program

The City of Tallahassee Utilities (Florida) has been running a successful on-bill financing program since 1983. The program has enabled the utility's customers to perform energy efficiency retrofits and other energy projects to their homes with no up-front costs. Over the program's lifetime, it has loaned \$130 million for 17,000 retrofits, averaging 550 retrofits and \$4 million in loans each year. This translates into an 18 percent participation rate among 97,000 utility customers.

The utility raised several million dollars in capital for the program before and after its launch through the utility's ratemaking process. When setting the rates for the following year, the utility would set rates higher than its forecasted need, creating an overage. These overage funds were used to capitalize the on-bill loan fund.

Customers may borrow up to \$10,000 (\$20,000 if solar PV or cool roofs are included) at a 5 percent interest rate plus 1 percent processing fee, which help build the revolving loan funds. The loans are then repaid through the monthly utility bill as a differentiated line item over 5 years (10 years if solar PV or cool roofs are included). The utility's loan is secured with a property lien recorded at the County Courthouse, and the loan must be paid in full if the house is sold – the debt is not transferable. The default rate for the on-bill program has been very low, at about 1 percent.

Eligible upgrades include HVAC replacement, appliances, clothes washers, weatherization measures, pool pumps, room ACs, water source heat pumps, and electric vehicle home charging stations. Free home energy audits are available, but not required for participation.

A key to the program's success is the participation of trained contractors and installers, as there is minimal direct program marketing from the utility.

Tallahassee's on-bill loan program has no income eligibility requirements or traditional credit checks. Instead, residential participants must have one year of good bill payment history. A customer's eligibility to participate in the loan program is determined in part by the "utility credit rating" for that customer's utility account. A perfect Tallahassee Utility credit rating is 1,000 points, and most customers have that score. Points are deducted for late payments, returned checks, unfulfilled payment plans, and cut-offs for nonpayment. Points can be earned back with each on-time monthly payment. Late payments cost 200 points per incident, which requires 24 months of on-time payment to completely earn back. Generally, a score of 800 is required for loan eligibility; if the customer's payments are made via Bank Draft, a score of at least 499 is required. Loans are denied for any applicant that has declared bankruptcy or faced foreclosure within the past seven years.

For rental properties, retrofits can be financed through loan payments on the meter of the property owner's primary residence. Participation among manufactured housing communities has been low, likely due to the home ownership requirement.

A key to the program's success is the participation of trained contractors and installers, as there is minimal direct program marketing from the utility. When a customer calls a contractor to replace a broken HVAC system, for instance, the contractor informs the customer about the on-bill financing program. If the customer decides to participate, the contractor has them sign the promissory note, detailing the interest rate and terms. The utility then pays the contractors once the energy efficiency retrofits have been installed at the customer's property and the final inspections have been passed.



Eugene Water and Electric Board Energy Efficiency Loan Program

The Eugene Water and Electric Board (EWEB), the electrical municipal utility of Eugene, Oregon, has operated an on-bill financing program since 1995. Their Energy Efficiency Loan Program (EELP) offers five distinct zero-percent interest energy efficiency loan packages for residential utility members. The loans are repaid as part of the recipient's utility bill. A separate commercial EELP program has a four-percent interest rate, which subsidizes the residential zero-percent interest rate.

The EELP finances the following upgrades and installations: water heater, pool water heater, weatherization, heat pump and duct sealing (ductless heat pumps are also eligible), and new high-performance window installation. Each loan package has a \$4,000 maximum loan amount, which must be repaid in five years. A participating customer can combine multiple loan packages for a maximum possible loan of \$20,000. Successful loan applicants are also eligible for a \$600 cash discount for domestic water heaters a rebate of \$0.40 per square foot for insulation. The EELP program complements the existing rebates.

The original source of capital for the program was a \$200,000 seed allocation from utility revenues with additional capital from conservation bond refinancing. Today, EWEB's loan pool is a "fixed" revolving fund replenished by loan repayments. Additionally, EWEB uses the borrowing authority of its own utility loan to borrow capital for the program.

Customer participation in the EELP has doubled since Eugene's city council approved a Community Climate and Energy Action Plan in 2010. This plan aims to reduce energy consumption and community-wide greenhouse gas emissions. From its start in 1995 through 2010, 1,156 loans were financed, but in 2014 alone, 1,000 residential loans were approved.

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Eligibility for the residential and commercial programs is based on ownership. The property owner is responsible for the loan payment through the utility meter once work is completed. Eligible properties are: detached single-family dwellings, duplexes, triplexes, and quads. For multi-family rental properties of four units or more, EWEB provides a \$4,000 loan for the first rental unit, and \$500 per additional unit for a cap of \$20,000.

For the loan underwriting, EWEB factors in both credit score and one year of bill payment history. To determine approval for the loan program, EWEB employs a matrix that takes into account the customer's FICO scores plus the EWEB credit. There is no minimum credit score to qualify, but rather a range of scores depending on the customer's bill payment history. EWEB retains the authority to shut off service for non-payment of the on-bill loans. The delinquency rate is under 1 percent for the life of the program. Additionally, loans secured through a property lien—filed through Lane County offices—are issued to the individual, and not attached to the meter.

EWEB has a contractor administrator who maintains an approved-contractors list that is shared with EELP loan recipients when selecting a contractor. EWEB attributes high participation and satisfaction rates to word-of-mouth among contractors and customers.

RESOURCES

Resources to Help Launch OBF Programs

As municipal utility and co-op leaders and administrators consider offering an OBF program, several key questions are likely to arise—ranging from how to capitalize your OBF program to ensuring that there are enough energy performance contractors in or near your service territory to successfully run your program. For this reason, a forthcoming document—*A How-to Guide for Launching an On-Bill Financing Program*—will provide detailed guidance on the following topics:

- **Program Design:** Guidance for developing the scope of your program through goal-setting, assessing barriers to program goals, developing participation requirements, selecting eligible measures, and assessing available program administrative resources.
- **Program Financing:** Financial considerations that program administrators will need to evaluate regarding capitalizing an OBF program, assessing the creditworthiness of potential participants, selecting a loan or tariff financing structure, and procedures for addressing nonpayment or transfer of property.
- **Program Administration:** Best practices for administering an OBF program, including suggestions about how to define a target market and execute a marketing and outreach strategy, develop and manage a network of local energy performance contractors, select an energy audit tool, develop data management protocols and an evaluation, measurement and verification (EM&V) strategy, and determine if a third-party firm is needed to provide administrative support for your program.

EESI Can Help!

The Environmental and Energy Study Institute (EESI) provides free assistance to utilities interested in OBF programs: conducting needs assessments, guiding specific program design, helping to identify and secure program funding, assisting with program implementation and troubleshooting, and more.

EESI's experienced project team understands the special needs of both co-ops and public utilities. Most team members worked with the South Carolina co-ops on their OBF pilot program, "Help My House" (see p. 08). EESI's staff has also worked with utilities on OBF programs in Iowa, Kansas, Michigan, North Carolina, and Washington.

For more information, visit www.eesi.org/OBF or contact OBF@eesi.org

Appendix A

Summary of the Key On-bill Financing Programs

Program	City of Tallahassee Utilities: Energy Efficiency Loans	Eugene Water and Electric Board (EWEB) Energy Efficiency Loan Program	South Carolina's CEPCI Help My House Program	Midwest Energy's How\$mart Program
Meter attachment feature	Line item billing with disconnection for non-payment	Line item billing with disconnection for non-payment	Line item billing with disconnection for non-payment	Line item billing with disconnection for non-payment
Market	Residential and small commercial. Landlords can make loan payments on meter of primary residence.	Residential, small commercial, and multifamily. Rental units are eligible, but loan is with owner.	Residential, single-family, and and manufactured homes.	Residential and commercial.
Launch date	1983	1995	2010	2007
Capital source details	Utility rate making was used to create a revolving loan fund.	Utility revenues and conservation bond refinancing were used to create revolving loan fund. EWEB also uses its own utility loan borrowing authority to borrow capital for the program.	Primarily from U.S. Dept. of Ag. REDLG Loan; supplemented by SC co-op funds.	Utility capital and REDLG Loan.
Credit enhancement	None	None	None	None
Transferability	No. Loans are not transferable and are due upon sale of the property. Loans are secured with a property lien recorded at the county.	No. Loans are not transferable and are due upon sale of the property. Loans are secured with a property lien recorded at the county.	Yes.	Yes. Surcharge on the utility bill that is tied to the location, not to the individual customer.
Underwriting	One year of strong utility bill payment history; no bankruptcy or foreclosures within past seven years.	Credit scores and one strong year of utility bill payment history.	Bill payment history was checked	Member must be current on their utility bill payments.
Disconnection for non-payment	Yes	Yes	Yes	Yes
Rate	5% plus 1% processing fee	0% for residential loans, 4% for commercial	2.50%	Residential - 3.0% Commercial - 4.5%
Max term	Five years (ten years for solar and cool roofs)	Five years	10 years	Residential - 15 years Commercial - 10 years Lighting - 7 years
Max amount	10,000 (20,000 for solar PV and cool roofs)	\$20,000 by combining several smaller loans	\$10,000-\$15,000	90% of the estimated energy savings during the duration of the charge.
Default rate	1%	<1%	<1%	<1%
Total lifetime loan value	\$130 million	\$50 million	\$1.1 million	\$8.2 million
Total lifetime participants	17,000	12,500	125	1411
Annual loan value	\$4 million	\$2-4 million	\$1.1 million	\$1.2 million

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