

# On-Bill Financing for Energy Efficiency: Review of Programs to Date

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## Introduction

On-bill financing for energy efficiency has become a popular topic of discussion among many energy efficiency advocates in the past year. Generally, on-bill financing refers to a system through which utilities pay for energy efficiency improvements in a home, a business or a government facility, then recover their costs from participating customers as an itemized finance charge on the utility bill. On-bill financing programs have attracted still more attention because several such programs are structured with long repayment terms that exceed 15 years or more. As a result of these long repayment terms, participants in an on-bill finance program should realize an immediate net monthly savings because their monthly energy cost savings exceed their monthly financing charges.

This paper describes several existing on-bill finance structures, reviews the results of some of these programs, and discusses the lessons learned. At the outset, it is important to focus on the distinction between two broad types of on-bill financing programs. The two types of on-bill finance are those that either operate through traditional loans or function as a utility tariff on the utility bill.

- On-bill finance through a traditional business or personal loan. In this program type, a consumer owns the equipment and is liable to pay the full balance over the loan term. Customers who move still are liable to make payments on the loan or must pay off the full loan balance.
- On-bill finance as a utility tariff, (approved by a regulator in the case of state regulated utilities) on the utility bill. Under the on-bill tariff, regulators or other utility management determine that the financing charge is an “essential service.” That tariff pays for the up-front cost of an energy efficiency installation over time. Customers pay the financing charge only as long as they occupy the property. Upon moving into the property, a new occupant assumes the finance payment obligation.

This paper refers to and focuses on the latter as an on-bill approach. Four such on-bill tariff programs have been operating for several years; the earliest began in 2001 in New Hampshire, and two others began in 2007. These on-bill tariff programs have served the residential, commercial and local government sectors with financing products for energy efficiency, including solar hot water heaters. The diversity embedded within just these four programs shows that on-bill tariff structures have the potential to operate across several sectors and with several types of product types.

Broadly, most programs structure their repayment terms to be longer than a typical financing arrangement. Midwest Energy, for example, allows repayments over 15 years for residential customers, whereas the maximum financing term available to them through conventional financing is 10 years. Midwest Energy also allows commercial participants to meet their repayment obligations over 10 years, whereas a conventional finance product available to them would rarely extend beyond five years.

One reason the early-adopter utilities have been able to implement these flexible, nontraditional financing terms is that they have used their own funds or grant funds; traditional sources of capital may not allow such flexibility. In every case, the utilities have reduced their risk by invoking the threat of utility service disconnection for nonpayment of the financing charge. Although disconnection does not provide the utilities with any recoverable collateral (such as real estate on which they could foreclose), it does provide powerful leverage to increase assurance that property occupants will meet their financial obligations.

Each of the utilities also ties the repayment obligation to a metered location, allowing financing to transfer with occupancy and further enable long repayment terms. Several programs allow 1) the financing term to be adjusted, or 2) customers to reduce the amount financed by investing their own capital in the transaction. The programs, in some cases, also allow a lien to be filed on the property or require other types of disclosure so that any new occupant is informed about the financing obligation attached to the property. This combination of factors enables the programs to generally guarantee that monthly cost savings will exceed monthly financing charges.

This document reviews the on-bill tariff programs in two parts: 1) the established programs that have been operating for several years and 2) the new programs that have recently begun operation, starting either in mid-2009 or in 2010. It provides the results for each of these programs as well as a set of lessons learned from each based on interviews and discussions with program managers. The conclusion reviews the major lessons and offers perspectives on the important issues to be resolved before substantially increasing the scope and scale of on-bill tariff programs.

## Established Programs

Table 1 summarizes the major features of the four established programs. Since these programs began operation, several other on-bill tariff programs also have started. These are summarized separately later in the paper because little data yet exists to evaluate their results.

**Table 1: Established On-Bill Tariff Program Characteristics**

<b>Program</b>	<b>SolarSaver</b>	<b>SmartStart</b>	<b>SmartStart</b>	<b>How\$mart</b>
<b>Program Administrator</b>	Hawaiian Electric Company	Public Service of New Hampshire (PSNH)	New Hampshire Electric Cooperative (NHEC)	Midwest Energy Inc.
<b>Start Date/End Date</b>	2007 - 2009	2001-current	2001-current	2007-current
<b>Eligible Sector(s)</b>	Residential	Municipalities (including schools)	Commercial	Residential and Commercial
<b>Eligible Measures</b>	Solar Hot Water Heaters	Street lighting; lighting upgrades; HVAC	Air sealing; Insulation; lighting; HVAC	Insulation; Air sealing; HVAC
<b>Capital Source</b>	Utility Ratepayer Funds	Systems Benefits Charge	Systems Benefits Charge (SBC)	Utility Funds and Kansas Housing Resources Corporation
<b>Financing Term Maximum</b>	12 years	No more than ¾ of useful life of measures	No more than ¾ of the useful life of measures	Residential: 15 years or ¾ of the expected life of the measure, whichever is less; Commercial: 10 years
<b>Customer Charge Calculation</b>	Monthly customer charge will not exceed 2/3 of the projected energy cost savings, effectively guaranteeing monthly savings for the customer in all cases. Typical customer charge ranges from \$30-\$65.	Monthly customer charge will not exceed 2/3 of the projected energy cost savings, effectively guaranteeing monthly savings for the customer in all cases. In addition, customer pays a one-time fee of 5% to create a loss reserve fund to protect the utility against bad debt risks.	Monthly customer charge will not exceed 2/3 of the projected energy cost savings, effectively guaranteeing monthly savings for the customer in all cases. In addition, customer pays a one-time fee of 7% to create a loss reserve fund to protect the utility against bad debt risks.	Residential: 5.05%; Commercial: 6.6% In addition, a fee of 5% of project investment is added to the principal balance owed. Customer monthly charges will not exceed 90% of the projected energy cost savings.
<b>Disconnection for Non-Payment</b>	Yes	Yes	Yes	Yes
<b>Disclosure and Lien</b>	Property owner/landlord is required to agree to and sign a separate contract committing the property owner/landlord to disclose the obligation to successor customers at the location. Utility ordered to submit SSP agreement to land and title records in the Bureau of Conveyances of the State of Hawaii.	Property owner/landlord is required to disclose the obligation to successor customers at the location. If original owners chose an accelerated payment plan, the new customer has the choice to either assume accelerated plan or go to a standard payment plan.	Property owner/landlord is required to disclose the obligation to successor customers at the location. If original owners chose an accelerated payment plan, the new customer has the choice to either assume accelerated plan or go to a standard payment plan.	UCC fixture filing lien placed on property; disclosure of payment obligation required at sale.

Source: Harcourt Brown & Carey, February, 2011

This section offers further insight into the programs summarized in Table 1. It provides details about the structure of the program and a summary of lessons learned obtained either through interviews with program participants or observers or from program evaluations.

### **Hawaii SolarSaver Program Summary**

The Hawaiian Electric Company, Hawaiian Electric Light Company and Maui Electric Company, providing service to 1.2 million residential consumers, proposed an on-bill tariff program in 2007 designed to eliminate the up-front costs of installing solar water heaters. This proposal was the direct result of Act 240 (SB 2957), enacted in 2006.<sup>1</sup> The Hawaii Public Utilities Commission (HPUC) approved the the SolarSaver pilot program (SSP) in 2007. The three-year pilot program lasted only two years because demand exceeded available funds, and the PUC decided to move all energy efficiency programs, including solar hot water programs, to a third-party administrator. The PUC felt that the third-party administration of efficiency programs was not easily compatible with a utility-operated efficiency financing program; therefore, it discontinued the program, but reserved the prerogative to restart it at a later date. The program ceased taking new applications at the end of Year 2.<sup>2</sup>

The SolarSaver program targeted single and multi-family residential buildings. Using ratepayer funds, the utility paid the upfront cost of the solar hot water systems, and participants' financing charges were included on their utility bill. The fixed payment amount and term (a maximum of 12 years) varied in order to ensure monthly customer savings.

### **Program Results**

The program attracted 616 applicants over its two-year life. Of those 616 applicants, the program rejected about 10 percent because of poor credit (based on poor utility bill payment history). A further 5 percent of the applicants dropped out of the program before the solar hot water heater was installed. The total approved 513 applications fell slightly short of the goal for installing 550 projects.<sup>3</sup>

Seventy-one percent of program participants in the second and final year of the program reported their monthly electric use (kWh) decreased.<sup>4</sup> Seventeen percent did not know if their electric use changed, 8 percent reported an increase, and 4 percent reported their ue

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<sup>1</sup> Information retrieved from [http://www.capitol.hawaii.gov/session2006/lists/acts\\_list\\_bybill.htm](http://www.capitol.hawaii.gov/session2006/lists/acts_list_bybill.htm).

<sup>2</sup>Docket 2006-0425 2009-04-09 Order denying HECO Cos Amendments to SSP Program. Dec. 31, 2008.

<sup>3</sup> Katherine Johnson, *2 Year Process Evaluation Report for SolarSaver Pilot Program* (Place: Johnson Consulting Group, Oct. 15, 2009); and Katherine Johnson, *1 Year Process Evaluation Report for SolarSaver Pilot Program* (Place: Johnson Consulting Group, Nov, 26, 2008).

<sup>4</sup> Ibid.

remained the same.<sup>5</sup> The program has experienced almost no defaults as of the writing of this paper.<sup>6</sup> Table 2 summarizes major programmatic results.

<b>Year</b>	<b>Installed Projects</b>	<b>kWh Saved</b>	<b>Defaults</b>
2007 - 2010	513	80%-90% of electric use associated with hot water.	0 in Year 1 and <1% in Year 2

Source: HECO, February, 2011.

### Lessons Learned

Hawaii conducted extensive reviews of its SolarSaver program during its two-year life. These reviews provide some useful lessons, described below.

### Financing Programs for the Rental Sector Pose Significant Challenges

The SolarSaver program managed to attract only 12 rental properties over its two-year life—five in Year 1 and seven in Year 2. Program evaluations from both years indicated significant challenges in reaching this sector and noted the need to develop a concerted marketing campaign for the rental market. Budget constraints prevented the program from fully implementing this recommendation, and rental property participation remained small. (Note that Hawaii’s experience in reaching the rental market sector differed from that of the Midwest Energy program, described below, which had better success in reaching this sector.)

The SolarSaver program originally was designed to focus on the rental sector. At the direction of the commission, however, it was opened both to rental and homeowner properties. Evaluators believed homeowners would have bought solar hot water heaters even if the SSP program had not been available and asserted that landlords/renters would not have done so. This disincentive for landlords or tenants to participate in a financing program is the result of the split incentive. This occurs when landlords, who do not pay energy bills, have no incentive to make capital improvements that reduce energy costs, and tenants, who neither own the property nor benefit from increased property values, have no incentive to make capital improvements. The evaluators recommended that the program refocus on the rental sector during Year 2. SolarSaver, however, continued to allow both rental and owner-occupied properties, but increased its outreach to the rental sector until funding became unavailable.

Further study would be required to more fully understand this issue, in part because one of the benefits of an on-bill tariff is its supposed ability to resolve the split incentive.

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<sup>5</sup> Ibid.

<sup>6</sup>Any discussion of defaults must take into account the age, or “seasoning,” of the financing in question. A young portfolio will not be expected to have many defaults. The Hawaii SolarSaver program and the Midwest Energy programs are only now beginning to be old enough to be able to demonstrate sufficient seasoning of the portfolio to show results that will be considered meaningful to most analysts.

## **Free Ridership Was an Issue of Concern to the Commission and Program Evaluators**

The Year 1 program evaluation noted that 36 percent of program participants said they would have purchased a solar hot water heater even if the SolarSaver program had not been available.<sup>7</sup> The Year 2 program evaluation noted that the free ridership statistic had fallen considerably in that year, in part as a result of a more concerted marketing campaign. In Year 2 of the program, only 11 percent of customers said they would have purchased a solar hot water heater if the program had not been available; most cited lack of money as a deterrent, which the SolarSaver program addressed. The free ridership concern during the first year of the program was one of two reasons cited by the Commission for suspending the program (the other, and probably more important, reason was a broader decision to move all efficiency programs to third-party administration).

## **Program Application, Servicing and Collections Were Challenging for the Utility**

Program administration in the first year caused complications for staff, customers and contractors. The application process required sign-off from and coordination among the utility, customer, contractor, State Bureau of Conveyances and, in some cases, the Department of Hawaiian Home Lands or other government assistance housing agencies. Notarization requirements for documents also delayed the application process, particularly for those living in low-income housing. This complex system led to delays in the application process, a critical determinant for customer and contractor satisfaction.

The evaluators recommended streamlining this process, and the Year 2 evaluation reported that the application process improved considerably, with far fewer sign-offs required from various agencies.

In Year 2, the program staff reported that, although the application process worked smoothly, payment tracking and collections issues had become challenging. Some customers chose to pay their energy bills through an automated system, while their SolarSaver program bill came separately through the mail. Some customers paid their energy bill and not their SolarSaver program bill. Evaluators recommended the program work with the utility's IT department to create new reports and assist with tracking and collections. Because the program was terminated, the utility did not have an opportunity to fully adopt these recommendations.

Although utility staff reported low delinquency rates, they expressed concern that future delinquency rates would increase, and that they were not fully prepared to track and collect these delinquent accounts. A further concern was that, although initial program applicants had passed underwriting criteria for a SolarSaver program, a future occupant of the home might not be as creditworthy.

## **Contractor Satisfaction Is Related to Streamlined Application Processes**

Contractors in Year 1 reported a high level of dissatisfaction with the complexity of the application process. High levels of staff turnover at the utility also created confusion and

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<sup>7</sup> Katherine Johnson, *1 Year Process Evaluation Report for SolarSaver Pilot Program*.

communication issues for contractors. Because of the streamlined application process in Year 2, contractors reported a high level of satisfaction and expressed disappointment that the Solar Saver Program was suspended.

### **Customer Satisfaction Is also Related to the Application Process**

Customers reported overall satisfaction with the SolarSaver program except for some concern about the cumbersome Year 1 application process. As with the contractors, satisfaction increased notably with a more streamlined application process.

### **Public Service New Hampshire Program Summary**

Public Service New Hampshire (PSNH) is an investor-owned utility that serves a total of 400,000 customers. PSNH offers an on-bill tariff to local governments that seek to implement energy efficiency projects. This program began as a pilot program approved on Nov. 29, 2001, and is not open to customers outside the local government sector. On Dec. 30, 2004, the NHPUC ended a pilot phase of its program and ordered the utility to continue offering the tariff-based programs.

The PSNH program, SmartStart, operates through a four-step process:<sup>8</sup>

- PSNH applies rebates for all eligible retrofit measures.
- PSNH finances the remaining costs associated with purchase and installation of approved measures.
- A SmartStart Purchase and Installation Charge, set at 2/3 of the monthly energy cost savings, is added to the municipal government's monthly electric bill. The term of financing is for not more than 3/4 of the useful life of the equipment installed. Program participants are guaranteed a net monthly savings.
- The new energy efficient equipment installed through this program pays for itself over time.

It is important to note that a financing program designed for a government entity is far different than one designed for a private entity. Government entities can assume long-term financing obligations, and do so as a matter of course. Lenders generally are willing to lend to government entities because, for the most, they are part creditworthy. The advantage of offering an on-bill tariff to a government entity is that the tariff is not considered to be debt to the government. Therefore, the government entity need not go through an authorization process that would be required for it to assume debt; such a process involves public hearings and may not be available if the government entity is near its debt limits. By using an on-bill tariff, the government entity simply continues to pay its utility bill at a rate that incorporates the efficiency tariff.

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<sup>8</sup> Ibid.

## Program Results

The PSNH program grew steadily from 2005 to 2009, and PSNH invested close to \$900,000 in the loan program in 2009. Those investments are projected to result in total bill savings to participants of \$3.25 million. New legislation enacted in early 2010 overall energy efficiency program budgets and the SmartStart program was substantially scaled back; new loans in 2010 were only at about one-quarter of 2009 levels.<sup>9</sup> Table 3 summarizes these program results.

<b>Year</b>	<b>Projects</b>	<b>kWh Saved</b>	<b>Defaults</b>
<b>2005</b>	25	40,190,838	0
<b>2006</b>	37	16,024,840	0
<b>2007</b>	40	25,862,889	0
<b>2008</b>	46	13,962,390	0
<b>2009</b>	59	20,268,741	0
<b>2010: 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Quarters</b>	14	4,696,387	0
<b>Total</b>	221	121,006,085	0

Source: <http://www.puc.nh.gov/Electric/coreenergyefficiencyprograms.htm>, date.

## Lessons Learned

Overall program results offered several lessons.

### **As a Program focused on Local Government Borrowers, the Utility Perceived Minimal Risk for Long-Term Financing**

Unlike commercial or residential borrowers, local governments are stable and generally creditworthy because of their taxation powers. It is extremely rare for local governments to declare bankruptcy and, unlike homeowners or businesses, they do not move (thus avoiding the concerns about transferring payment obligations from one occupant to the next). In some respects, observers in New Hampshire reported that the utility did not see a major difference between tariff-type and other long-term financing; this fact added considerably to the utility's comfort level with the program.<sup>10</sup>

### **SmartStart Provides Energy Efficiency as a Service, Making it Attractive to Local Governments That May Have Difficulty Assuming New Debt**

<sup>9</sup> PSNH-11-22-10-112210 3rd Qtr 2010 Filing.

<sup>10</sup> Commissioner Clifton Below, New Hampshire Public Service Commission, personal communication with author, January 2011.

Local government entities often are required to complete complex processes to assume new debt. The SmartStart program, structured as a part of local governments' energy bills, did not require that they assume additional debt; the repayment was viewed as part of their electric service. This characteristic of the program makes it particularly attractive for local government entities.

### Default Rates Were Nil for this Program

As might be expected in a financing program in which the government is the borrower, default rates were nil.<sup>11</sup>

### NHEC SmartStart Program Summary

New Hampshire Electric Cooperative (NHEC) serves approximately 80,000 customers. It also offers an on-bill tariff type program, but focuses on commercial customers that seek to implement energy efficiency projects. NHEC's customer base consists of 30 percent residential and 70 percent commercial customers. As with the PSNH program that began in 2001 as a pilot program, the NHEC program also became more permanent on Dec. 30, 2004, when the NHPUC ordered the utility to continue offering the tariff-based programs.

The NHEC program is similar to PSNH's except that it focuses on the commercial market. SmartStart operates under a three-step process:

- NHEC finances the costs associated with purchase and installation of approved measures.
- A SmartStart Purchase and Installation Charge, set at 2/3 of the monthly energy cost savings, is added to the municipal government's monthly electric bill. The financing term is for not more than ¾ of the useful life of the equipment installed. Program participants are guaranteed a net monthly savings.
- The new energy efficient equipment installed through this program pays for itself over time.

### Program Results

The SmartStart program never achieved significant penetration in the NHEC service territory. Staff at NHEC did not perceive the program to be a major part of the utility's energy efficiency programs. Although no study exists to document this, interviews with NHEC staff indicated that some customers were reluctant to join the program because it required them to choose between a rebate covering 50 percent to 80 percent of the cost of typical efficiency measures and enrolling in the SmartStart program.

<b>Table 4: NHEC SmartStart Program Results</b>			
<b>Year</b>	<b>Projects</b>	<b>kWh Saved</b>	<b>Defaults</b>
2005	3	4,059,400	0
2006	3	6,524,360	0

<sup>11</sup>Energy Efficiency Institute Inc., *Status Report for Programs Based on Pay As You Save*® (Place: EEI Inc., Sept. 1, 2010).

2007	1	3,427,720	0
2008	4	3,372,015	0
2009	10	5,158,166	1
2010	0	0	0
<b>Total</b>	<b>21</b>	<b>22,541,661</b>	<b>1</b>
Source: <a href="http://www.puc.nh.gov/Electric/coreenergyefficiencyprograms.htm">http://www.puc.nh.gov/Electric/coreenergyefficiencyprograms.htm</a> , date.			

## Lessons Learned

### The Residential Sector Posed Challenges for this Program

The NHEC staff chose not to adopt this program for the residential sector because they were concerned about the challenges involved in transferring payment obligations from one home occupant to another. Although NHEC never actually developed a program for the residential sector, staff felt the commercial sector would pose fewer challenges. In addition, NHEC’s customer base consists mainly of commercial customers.<sup>12</sup>

### Low Application Levels Due to a Choice between Rebates and the SmartStart Program

NHEC required customers to choose between available rebates of 50 percent to 80 percent of measure costs or paying the full cost of measures through the SmartStart Program. Similar financing programs in other parts of the country often allow customers to take advantage of both the rebate and the financing, thus financing only the net, post-rebate cost of an energy efficiency project. Staff report this design structure appeared to limit customer interest in the financing program.<sup>13</sup>

### Kansas: Midwest Energy How\$mart Program Summary

Midwest Energy, a gas and electric cooperative utility, has 48,000 electric and 42,000 gas customers in western Kansas. Midwest Energy operates the How\$mart program to serve residential single and multi-family properties that are either owner-occupied or rental properties. The program also serves commercial customers. The program incorporates four fundamental elements:

1. Typically, there is no up-front capital from the customer.
2. The utility is repaid via a surcharge on the utility bill.
3. That surcharge will be less than estimated energy savings.
4. Repayment is tied via a tariff to the location, not the customer.

How\$mart asks customers to participate in a free energy efficiency audit in order to identify which combination of insulation, HVAC and other measures to install, and also to estimate the likely energy and cost savings. Although Midwest Energy does not guarantee the savings, it allows customers to participate in the program only if projected monthly financing charges on the utility bill are 90 percent or less than the projected energy savings. To reduce the amount financed and achieve the 90 percent goal, Midwest Energy

<sup>12</sup> Craig Snow, New Hampshire Electric Cooperative, telephone interview with author, Jan. 18, 2011.

<sup>13</sup> Craig Snow, New Hampshire Electric Cooperative, telephone interview with author, Feb. 16, 2011.

allows customers to pay cash for some energy efficiency.

The finance product is offered at a 4 percent embedded cost of capital to the customer, consisting of 8 percent capital from the utility and 0 percent capital provided through the Kansas Housing Resources Corporation (KHRC). Customers also pay a \$200 fee to cover efficiency audit costs if they do not proceed with measures recommended in the audit and enroll in the How\$mart finance program. Midwest Energy applies this fee to the consumer's bill over four months (\$50/month), and applies the fee six months after the audit is conducted.

Midwest Energy does not conduct a full credit check of its customers using an outside credit agency; instead, it requires only that participants be current on their utility bills. The utility does, however, include the option of disconnecting customers for nonpayment of the How\$mart charge. Midwest Energy did not initially incorporate any lien into its program, but discovered this was an important consideration because it provided some certainty that, upon transfer of property ownership, the new owner would be aware of the How\$mart obligation.

### Program Results

How\$mart has been one of the more successful on-bill financing programs in the country; it achieved significant market penetration in a small service territory. This success is likely due in part to the strong utility and staff commitment to the program; the utility's energy audit program was in place before How\$mart began. In addition, the program has adjusted to challenges. Staff willingness to impose a lien to ensure that new premise occupants would be notified of the How\$mart charge is one example of this flexibility.

The program also is unique among the nation's financing programs in its penetration of the rental housing market; approximately 13 percent of participants are renters. Although this percentage is higher than other financing programs, it does not yet match the proportion of renters in the Midwest Energy service territory. Staff note that some landlords have been reluctant to allow Midwest Energy to enter their property due to concerns that the utility would identify safety or other violations. Table 5 shows the results of the program as of the end of 2010.

<b>Year</b>	<b>Projects</b>	<b>kWh Saved</b>	<b>Therms Saved</b>	<b>Defaults</b>
2007-2010	532	929,516	138,983	<1%

Source: Michael Volker, Midwest Energy, e-mail communication with author, Jan. 18, 2011.

### Lessons Learned

#### **It Has Taken Longer than Expected to Implement Due to Customer and Contractor Delays**

It takes time for customers to decide to engage in a project and for contractors then to schedule that project. Midwest Energy staff reported that early expectations about the

pace of the program had to be adjusted to take into account these delays.

### **It Has Been More Difficult than Expected to Ensure that New Tenants or Property Owners Receive Sufficient Notice of the Surcharge**

Midwest Energy staff reported that one early difficulty with the program was related to notification of new occupants of a facility to which a How\$mart charge was attached. As noted above, this is one reason that Midwest Energy began to place a lien when customers enrolled in the program.

### **Expenses Occurred when Customers Received an Audit but Chose not to Participate in the Program**

As is the case with many energy efficiency programs that involve energy audits, Midwest Energy found that some people requested an audit but did not proceed with the recommended measures. As a result, Midwest Energy set a \$200 fee for those that use the audit but do not install efficiency measures through the financing program.

### **Rental Properties Remain a Challenge**

Although the How\$mart program successfully engaged more rental properties than other finance programs around the country, staff at Midwest Energy note that homeowners still dominate, and the proportion of renters in the program does not match the proportion of renters in the service territory as a whole. Staff note that some landlords have been particularly reluctant to participate, perhaps due to concerns that the utility will discover safety violations that require repair.

## **New Programs**

In addition to the existing programs described above, several new on-bill tariff programs have begun during the past 18 months. Because these programs are new, little data has been produced to enable a thorough evaluation. Table 6 describes three new programs, and brief descriptions follow.

**Table 6: Summary of New Program Characteristics**

<b>Program</b>	<b>Efficiency Kansas</b>	<b>Georgia How\$mart</b>	<b>Kentucky How\$mart</b>
<b>Program Administrator</b>	Multiple cooperative utilities partnering with the Kansas Energy Office (KEO); potential expansion to investor-owned utility partnership.	Habersham Electric Member Cooperative (a Georgia cooperative utility).	Multiple cooperative utilities partnering with Mountain Association for Community Economic Development (MACED)
<b>Start Date</b>	2009-current	2009-current	2010-current (in pilot phase)
<b>Sector(s)</b>	Residential and Small Commercial	Residential	Residential and Small Commercial
<b>Eligible Measures</b>	Thermal envelope improvements and mechanical systems (renewables may be considered in the future).	Heat pumps; windows, doors; water heaters; ductwork, vents, etc.; insulation; caulking; heat pump water heaters; lighting.	Residential: Air sealing; HVAC; insulation Commercial: Includes all residential options plus lighting.
<b>Capital Source</b>	\$37 million in American Recovery and Reinvestment Act of 2009.	ARRA and Georgia Environmental Facilities Authority.	<i>Current funding sources:</i> \$500,000 from MACED cash on hand. \$1 million low-cost loan from the Ford Foundation to MACED to support the on-bill pilot program, subject to the tariff model being approved by the Commission. <i>Potential funding sources:</i> MACED indicated it has signed a contract with the Kentucky Housing Corporation for \$300,000 in operating funds. MACED also has outstanding requests with the U.S. Department of Treasury Community Development Finance Institution (CDFI) and a stimulus grant filed through the Kentucky Department for Energy Development and Independence.
<b>Financing Term</b>	15 years	5- or 10-year term	Residential: 75% of the estimated life of the measure or 15 years, whichever is less. Commercial: maximum term of 10 years.
<b>Interest Rate Program Fees</b>	0% + utility monthly fee of between \$1 and \$2.	0% financing for up to \$5,000 (5-year term), 5% financing for >\$5,000 (10-year term). No program fees.	3%. Fee of 5% of project cost, capitalized into the amount financed.
<b>Disconnection Right?</b>	Yes	Yes	Yes
<b>Disclosure/Lien</b>	Utilities are required to file a UCC or Notification of Meter Charge on the title. The utilities also must notify new customers of the meter charge when they become new customers. Landlords must notify future tenants of these charges.	Restrictive Covenant Filed	Landlords and owners are contractually obligated to disclose the EE agreements to prospective tenants and/or purchasers of the property. Utilities must file a UCC filing on the title. The utilities also must notify new customers of the meter charge when they become new customers.

### Georgia: How\$mart Program Summary

The Georgia How\$mart Program, serving Lumpkin, White, Rabun, Habersham, Hall and Stephens counties, began in January 2009 and provides an on-bill tariff or energy efficiency improvements based on the energy savings resulting from these improvements. The energy savings should offset the cost of financing for the customer. The Habersham Electric Membership Corporation administers this program; its responsibilities include program administration, origination and collection processes.

American Recovery and Reinvestment Act (ARRA) funds provide loan capital along with additional funding from the Georgia Environmental Facilities Authority.

The utility bases the collection process on its established collections processes for overdue electric bills. The loan payment for the How\$mart program supersedes the electric payment; if a customer makes a partial payment, the loan amount is paid off first. This is unusual among many utility-based financing programs that often require any consumer payments first cover energy charges.

### Program Results

To date, the How\$mart program has closed more than 300 loans totalling \$1.8 million.<sup>14</sup> The Georgia, How\$mart program had a rapid influx of requests for participation and too few staff to handle the number of energy audits needed. Because staff were not prepared, some delays occurred. As with most utilities, Habersham had little expertise with financing programs, including origination and servicing. Table 7 shows early results of the program.

<b>Year</b>	<b>Projects</b>	<b>kWh Saved</b>	<b>Defaults</b>
2009-2010	300	Estimated 1,440,000	< 1% due to foreclosures

Source: Curt Arulf, Manager, Engineering Services, Habersham Electric Membership Corporation. E-mail communication with author, Dec.13, 2010.

### Kansas: Efficiency Kansas Program Summary

The Kansas Corporation Commission established the statewide Efficiency Kansas Program for homes and small businesses on July 15, 2009. All Kansas residents can participate in the program, provided 1) their home or small business is located within the state, 2) they are deemed creditworthy by participating utilities or banks, and 3) the home is in need of energy conservation and efficiency improvements (proposed improvements must meet program guidelines).

Two methods exist for eligible Kansans to access the Efficiency Kansas financing—through partner lenders or through utilities. Lenders throughout the state offer Efficiency Kansas loans. For residents whose electric and/or natural gas utility is an Efficiency Kansas

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<sup>14</sup> Curt Arulf, Manager, Engineering Services, Habersham Electric Membership Corporation, e-mail communication with author, Dec. 13, 2010.

partner, improvements can be financed through the utility as a meter-tied program (loan payments are made on the utility bill).

The Kansas Energy Office decided to promote an on-bill financing program for several reasons:

- Repayment tied to the meter and structured as a part of the utility bill, rather than as a personal loan, appeared attractive to consumers.
- Consumers preferred the convenience of making financing payments on the utility bill.
- On-bill tariff programs remove split incentives for the landlord/tenant situation.
- On-bill tariff programs engage utilities in reducing energy use throughout the state.<sup>15</sup>

The Kansas Energy Office (KEO) administers the overall program, but the 16 participating utilities provide oversight of their own programs. Each utility or lender originates the financing.

#### Program Results

The utilities that participate in the program range in size from 50,000 customers (Midwest Energy) to several thousand customers (most of the municipal utilities). Efficiency Kansas currently is recruiting more partner utilities because the KEO believes this will contribute to program success. The two largest electric utilities, Westar Energy and Kansas City Power and Light, have submitted applications to offer the program. Since they are regulated utilities, however, they must go through a regulatory process with the Kansas Corporation Commission, which may take until January and February 2011, respectively.

To date, 102 loans have closed (75 through utilities, 27 through private lenders), and 400 audits have been approved. Audits include a detailed report (Energy Conservation Plan), a diagnosis of the current status of a home or small business, and a prescription for improving energy efficiency and safety. The audit also includes project costs. After they receive an audit, participants can take several months to decide to pursue a project. Since a \$100 audit program began August 30, the KEO believes that many audits will result in projects and new financing. To date, loan expenditures have been \$750,000 and expenditures to subsidize energy audits total \$80,000. Table 8 summarizes these early-stage results.

<b>Year</b>	<b>Projects</b>	<b>kWh Saved</b>	<b>Defaults</b>
2009-2010	102	Estimated >330,000	0

Source: Nickie Lee, Efficiency Kansas Team Leader, Kansas Energy Office, e-mail communication with author, Dec. 14, 2011.

<sup>15</sup> Nicole Lee, Kansas Corporation Commission, personal communication with author, February 2011.

### **Kentucky: How\$mart Program**

On Feb. 26, 2010, Big Sandy Rural Electric Cooperative Corporation, Fleming-Mason Energy Cooperative Inc., Grayson Rural Electric Cooperative Corporation, and Jackson Energy Cooperative filed an application seeking approval of an on-bill financing pilot program to encourage customers to implement energy efficiency measures. The joint applicants will partner with the Mountain Association for Community Economic Development (MACED) to operate and fund the Kentucky How\$mart Program. On Dec. 16, 2010, the pilot program application was approved.<sup>16</sup> (Further information on this program is available at <http://www.maced.org/howsmart-overview.htm>.)

### **Oregon: Clean Energy Works Portland Program (CEWP)**

Oregon enacted HB 2626, the Energy Efficiency and Sustainable Technology Act (EEAST) in 2009. The law allows Oregon utilities to operate on-bill tariffs for residential and commercial energy efficiency and renewable energy projects. The CEWP pilot program in Portland already was well along in planning a program for on-bill repayment; it did not include on-bill tariff. An on-bill repayment limits the utility's responsibilities to putting a finance charge on the customer's bill and collecting payments; loan origination, capital provision and other functions are conducted by a third-party lender. On-bill finance, on the other hand, remains another variant under which the utility uses its own capital to fund loans; CEWP will not use this structure.

CEWP decided to begin its program without the on-bill tariff, but retained the option to later use an on-bill tariff once administrative rules are finalized. CEWP felt that on-bill repayment was sufficient for its initial needs. CEWP stated:

“Historically utility bills have a very low default rate of 1-2%. They also constitute the most widespread and established payment mechanism for energy services. In the case of energy efficiency, the charge to the homeowner is essentially for avoided energy instead of energy delivered, but the service is the same. For these reasons, utility on-bill repayment can provide a logical and stable repayment arrangement for energy efficiency loans.”<sup>17</sup>

The utilities' responsibilities are to 1) provide CEWP with utility bill history for loan underwriting criteria; 2) add a line item to the utility bill; 3) collect payments (if a customer is 90 days past due, the on-bill repayment account is closed, and the customer must deal directly with the CEWP fund manager); 4) transfer payments to the CEWP fund manager; and 5) close out accounts. Utilities receive \$5 for providing utility bill history and approximately \$5 per loan per month for costs associated with utility pass-through of loan repayments.

CEWP customers have the option to transfer payment obligation to a new occupant through an arrangement in which either party pays an \$850 transfer fee to the fund

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<sup>16</sup> Nina McCormack, Strategic Initiatives Director, MACED, e-mail communication with author, Dec. 16, 2010.

<sup>17</sup>Blue Tree Strategies, *Clean Energy Works Primer - A Snapshot of Innovation and Collaboration in Portland Oregon-Draft* (Portland: Blue Tree Strategies, Oct. 12, 2010).

manager. The \$850 fee covers administrative costs to underwrite the new occupant and to close and reopen accounts. No such transfers occurred during the pilot program.

(Information on EEAST and CEWP can be found at:

<http://www.oregon.gov/ENERGY/LOANS/EEAST/> and

[http://www.cleanenergyworksportland.org/.](http://www.cleanenergyworksportland.org/))

### South Carolina

On March 9, 2010, South Carolina enacted Bill 1096, authorizing electricity and natural gas providers to engage in financing agreements for installation of energy efficiency and conservation improvements.<sup>18</sup> Financing costs are recovered through charges on customer utility bills.

Central Electric Power Cooperative Inc. in Columbia, S.C., currently is working on a strategic plan for a pilot program targeting the residential sector, which makes up 90 percent of its load. It has secured funding for the pilot program and is in the process of hiring a consultant.

### Challenges

A number of challenges remain for on-bill tariff structures, based on experiences of programs operating to date. Because many of the pilot programs have been small, most of the challenges have been less critical. They may/will become more important, however, as utilities and others attempt to serve more customers and devote larger amounts of capital to the programs.

### Transfer of Payment Obligation Remains a Concern

One key element of on-bill tariff programs that serve the nongovernmental sector is the ability to transfer from one occupant to the next the obligation to pay the finance surcharge. This structure allows longer payback terms that, in turn, allows low monthly payments so program participants realize a net cash benefit from the first day of program participation. Several programs have found this transfer of payment obligation to be challenging, however, or of concern.

- Hawaiian Electric Company representatives expressed concern about this as an issue going forward.
- Public Service New Hampshire limited its program to the government sector, in part because governments tend not to move or change occupancy.
- The Oregon program has so far chosen to allow transfer of payment obligation, but only after the new occupant is fully underwritten and pays an \$850 fee.

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<sup>18</sup> Information retrieved from [http://www.scstatehouse.gov/sess118\\_2009-2010/prever/1096\\_20100309.htm](http://www.scstatehouse.gov/sess118_2009-2010/prever/1096_20100309.htm) on Feb. 15, 2011.

- Midwest Energy found this issue to be challenging, but eventually became comfortable with the transfer of payment obligation if it filed a lien requiring disclosure at time of sale.

Therefore, while transfer of payment is a challenge to effective program design, solutions exist to resolve it.

### **Capital Supply Will Pose New Challenges**

Programs that have operated thus far have relied on capital provided through the utility or on grant funds from several sources. Such capital sources are an ideal way to fund these programs because they are much more flexible and allow longer loan maturities and lower interest rates than traditional capital sources. If on-bill tariff programs are to begin serving significantly larger numbers of customers, they may need more capital than utilities and grant funders can provide; third-party investment capital may become a prerequisite. Structures to attract third-party capital, however, may need to place greater emphasis on underwriting criteria, collateral, disconnection and other program elements. These issues will require further exploration.

### **Disconnection May not Be Allowed by Utility Regulatory Commissions**

Since on-bill tariff programs generally do not assume a first lien position for security, they often rely instead on the threat of disconnection for nonpayment of the financing charge to encourage full and current payment. Outside investors that might provide capital for this type of program also will likely find the disconnection option to be an attractive way to encourage payment.

The Midwest Energy program faced initial resistance from the state utility Consumer Advocate because of concern about disconnection provisions. Informal discussions the authors have had with consumer advocates in other parts of the country reflect this concern about using the possibility of disconnection for nonpayment of a nonenergy charge. The overall concerns about disconnection policies are likely to present problems for future on-bill tariff programs.

### **Clarification Is Needed about How Federal and State Lending Regulations Apply to Utility Finance Programs**

Consumer lending laws such as the federal Truth in Lending Act have not been applied to date to on-bill tariff programs or to the utilities that operate them. A legal analysis should be conducted with regard to application of any federal or state lending regulations to utility finance programs.

## **Conclusions**

This review of on-bill tariff programs indicates a great deal of interest now. This may be especially true, given the early-stage success of programs such as Midwest Energy's HowSmart program in the residential market and the initial successes of the HECO SolarSaver Program and the PSNH municipal program. The following conclusions are

should be particularly relevant in evaluating of the success of larger-scale future on-bill tariff programs.

### **On-Bill Tariff Structures Have Been Popular with Consumers and Contractors**

Working with on-bill tariff structures generally has been easy for contractors and consumers, providing streamlined repayment systems that are well-integrated with other utility rebates and audit programs. It is important to note two things.

- Program administrators need to pay attention to details to keep on-bill tariff structures simple. The Hawaii SolarSaver program faced several challenges during its first year because it required many levels of approval.
- This paper does not include a comparison of how customers and contractors view on-bill tariff structures with how they perceive other financing structures. Further analysis might be necessary to understand whether the tariff itself is popular, or whether other features of the program that can be duplicated through on-bill repayments (such as in the Portland CEWP program) may be just as effective.

### **Support for On-Bill tariffs among Utilities Is not Universal**

Support for the on-bill tariff structure among the utilities is not universal, even among those that operated such programs. Midwest Energy staff found the program works well for them, but HECO staff remained concerned about ongoing issues of servicing loans they held on their books. Convincing many utilities to participate in on-bill tariff programs will remain a challenge.

### **Cooperative Utilities Seem to Have Been the most Appropriate Early Targets**

In light of the reluctance of some utilities to participate in on-bill tariff programs, it is worth noting that cooperative utilities have championed such . This may be due in part to the fact that cooperative utilities often are smaller not subject to the full regulation investor-owned utilities experience. This suggests that, at least for some transitional period, it may be useful to pilot new on-bill tariff programs with cooperative utility partners—or with publicly owned utilities that have similar self-governance structures There is no reason, however, that, with proper regulatory approval, an investor-owned utility could not engage in such a program.

### **Renters in Some Areas Have Taken Advantage of the Program**

On-bill tariff programs in the Midwest Energy area appear to have successfully solved the split incentive problem for renters, although program staff noted they would prefer to include more renters. Further research into why the Hawaii SolarSaver program could not penetrate the rental market would be useful, and some analysis of the experience of new programs in this regard also will be informative.

### **On-Bill Tariffs May Be Especially Appropriate for Certain Government Entities**

Only one on-bill tariff program—Public Service New Hampshire—has so far operated to exclusively serve government entities. This program appeared to be able to generate a

steady increase in demand until other factors forced it to scale back. In many respects, an on-bill tariff is ideal for government entities because 1) investors generally feel comfortable providing capital to this sector because of its financial stability; 2) it does not require that on-bill tariff programs address the transfer of occupancy, since government facilities generally do not move; and 3) it is attractive to the government entities because they can undertake capital improvements without assuming debt, which is often a cumbersome process.

### **Because Programs Are New, It Is Premature to Consider Overall Default Rates**

Default rates for existing on-bill tariff programs have been low to nonexistent. It will be important to watch the pattern of defaults or late payments over the next several years, however. Defaults and charge-offs for consumer loans often follow a pattern of early low defaults followed by some increase in defaults over time. Although the on-bill tariff may not technically be a loan, it nonetheless shares some characteristics of a loan; it will be critical to observe this “seasoning” effect on the on-bill tariff.

Further, for commercial or rental properties, in particular, it will be important to observe how change of occupancy influences default rates. At this point, only a few properties have changed hands, and the effects of the transfer of occupancy have yet to be observed.