

## ON-BILL FINANCING: ENCOURAGING ENERGY EFFICIENCY



by  
Sylvia Zhang  
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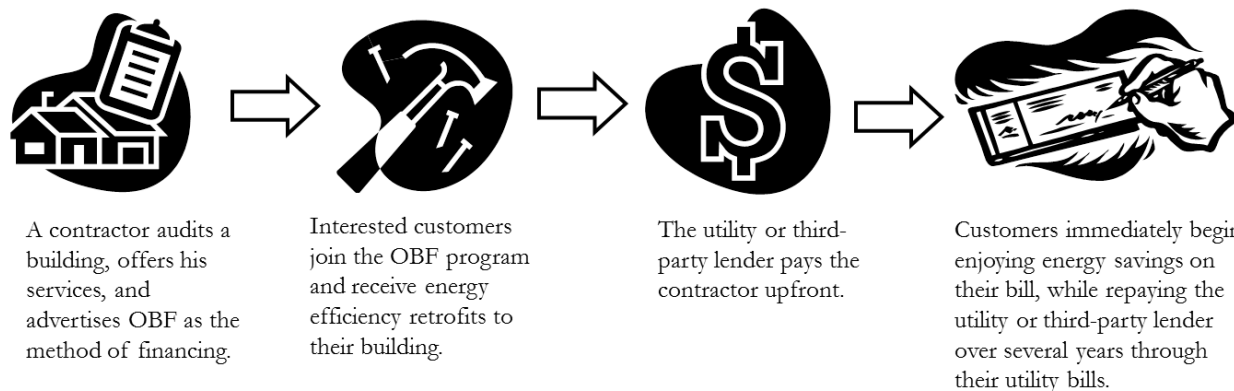
### SUMMARY

Buildings account for 41 percent of the United States' primary energy consumption.<sup>1</sup> One generally cost-effective way to decrease buildings' energy consumption is by improving building efficiency. However, the high upfront cost of efficiency improvements is often a barrier. To address this challenge, many states and utilities are exploring innovative financing mechanisms to make efficiency measures more financially feasible. On-bill financing is one such measure that has recently been gaining popularity.

On-bill financing (OBF) refers to a type of loan that can be used to invest in improving the energy efficiency of a building. The loan is paid back over time through

additional charges on the building's utility bill. This mechanism encourages building occupants and owners to invest in energy efficiency measures, which can decrease energy consumption and utility bills. OBF programs remove the barrier of high upfront costs because the administering utility or a third party covers the upfront cost, which the utility ratepayer then repays through an additional charge on his or her regular utility bill. Most OBF programs finance measures that will save electricity or gas by reducing the need for cooling, heating, lighting, or other energy uses. A small number of OBF programs also finance water efficiency measures. Figure 1 shows how a typical OBF program operates.

**FIGURE 1: A Typical OBF Program**



A number of features differentiate OBF from more traditional loans. The advantages and disadvantages of each of these characteristics are summarized in Table 1. Many programs focus on the concept of bill-neutrality, in which the loan repayment does not increase the customer’s monthly bill. This can occur if the energy efficiency installations allow the customer to decrease energy consumption (and therefore energy costs) enough to outweigh the monthly loan payment. Some OBF programs have the characteristic of being “tied to the meter,” meaning that responsibility for repayment lies with the current resident of the building, rather than with the person or company who instigated the financing. In certain cases, non-repayment of the loan will lead to a

shutoff of utility service, which deters defaults and makes on-bill financing more attractive for the loan provider. Many OBF programs feature a low or zero percent interest rate.

OBF programs vary by state and by provider, and each program has its own terms and process. Programs may be available to residential, commercial, industrial, and/or institutional customers depending on the state and utility policies. Administration of on-bill financing programs also varies; programs may be administered by the utility itself, a nonprofit organization, or a government entity. Initial investment capital for energy efficient installations can come from utility ratepayers, government grants, or

**TABLE 1: Summary of OBF Characteristics**

ADVANTAGES	DISADVANTAGES
<i>Repayment through the utility bill</i>	
Convenience to customer Enables tenants to make efficiency improvements where building owners are not encouraged to do so	Burden on administering utility
<i>Bill-neutrality</i>	
Customers will see reduction or no change in their bill Loans will not become additional financial burden	Difficult to ensure due to many variables that affect energy bills
<i>Tied-to-the-meter</i>	
Flexibility for residents who wish to move, renters, and temporary residents	Difficult to assess creditworthiness of new customer
<i>Utility disconnection as a consequence of non-repayment</i>	
Repayment is prioritized by customer, resulting in lower default rates	Raises issues of fairness and safety if customer cannot pay bill because energy savings were inaccurately projected
<i>Low or Zero Interest Rate</i>	
Higher demand among customers Simplicity and faster adoption rate by utilities	Programs are not financially self-sufficient

other funding sources. Each program may cover a different set of energy efficiency retrofits, such as insulation, upgrades of furnaces or water heaters, lighting, etc. In a growing number of states, utilities are being required by legislation to offer OBF or begin pilot programs. To learn more about individual programs and pieces of legislation, explore the C2ES [On-Bill Financing State Policy Map](#).

In general, existing OBF programs have been met with high rates of participation, high levels of customer

satisfaction, low default rates, and real energy savings. Successful programs save participating customers money and reduce energy use, which may lead to lower greenhouse gas emissions. Energy efficiency encouraged by OBF may also reduce peak loads or act as a cost-effective alternative to expanding infrastructure or generation. To learn more about the benefits of energy efficiency, refer to the [Residential End-Use Efficiency](#) page of the C2ES Climate Techbook.

## ■ OBF CHARACTERISTICS

### REPAYMENT THROUGH THE UTILITY BILL

On-bill financing programs vary widely by state and by provider, but the one feature that they have in common is that the loan is repaid, as the name implies, through the utility bill. There are many energy efficiency retrofit loan programs that are not repaid through the utility bill, but these are outside the scope of this brief. Loan repayment installments usually appear as a separate line item on the participating customer's utility bill. This feature is touted as a convenience to customers, because it spares them of having a separate bill to pay.

In addition, OBF tends to distribute costs appropriately. When considering energy efficiency retrofits on rented properties, the owner is usually burdened with the capital costs, while tenants benefit from the reduced utility bills. Therefore, unless the landlord is able to fully recoup the costs through increased rents, property owners who rent out their property are discouraged from making investments in energy efficiency retrofits. Since the payer of the utility bill benefits from energy savings of a retrofit, OBF aligns

financial interests by charging the cost of the retrofit to the payer of the utility bill.

### BILL-NEUTRALITY

Bill-neutrality, which is required by some OBF programs, occurs when the savings accrued by the decreased energy use as a result of the energy efficiency retrofits are greater than or equal to the monthly repayment amount. Bill-neutrality is important to participants of OBF programs because it means that their utility bill will decrease or not change.

Bill-neutrality comes with a host of advantages that make OBF attractive for customers, utilities, lenders, and policymakers. Customers are likely to see an immediate reduction in their utility bills, encouraging participation.

Since bill neutrality means there is no additional financial burden on the customer, even low-income customers or customers not eligible for traditional financing programs are able to participate. In addition, bill-neutrality means the loan should not affect the

#### BOX 1: BILL-NEUTRALITY IN SOUTH CAROLINA'S HELP MY HOUSE

*South Carolina's Help My House Pilot Program is one program that requires bill-neutrality. In this pilot program, 125 homes in the state were retrofitted with energy efficiency measures between June 2011 and February 2012. The program was administered by eight rural cooperatives in the state, and more than half of the homes were mobile homes.*

*The average loan size was \$7,684 and was offered at terms of 2.5 percent interest to be repaid in 10 years. Data from the pilot program show an average energy savings of 34 percent. After subtracting the annual loan repayment, the average participating household pockets a net savings of \$288 per year. Once the loan is paid off, the household will see annual savings of more than \$1,100 per year for the lifespan of the energy efficiency retrofits.<sup>2</sup>*

customer's ability to pay the utility bill or repay the loan, and may even improve the customer's ability to pay if the energy savings are greater than the loan repayment costs. This makes OBF attractive for the loan provider. In addition, requiring bill-neutrality constrains OBF programs to invest only in cost-effective measures and to direct limited funds toward those buildings that will most benefit from energy efficiency retrofits.

Most programs satisfy the bill-neutrality requirement if the projected energy savings are greater than or equal to the loan repayment, assuming that factors such as weather, energy prices, and the customer's energy use habits are constant or typical. Energy savings are usually

#### **BOX 2: LACK OF BILL-NEUTRALITY IN CLEAN ENERGY WORKS OREGON**

*For the Clean Energy Works Oregon program, bill-neutrality is not a prerequisite for giving out loans. One prerequisite of the program is that the retrofit will result in a minimum of 15 percent energy savings,<sup>3</sup> but the program does not limit the cost of the retrofits. Therefore, the cost of the retrofits could outweigh the energy savings. Based on data from the pilot program preceding Clean Energy Works Oregon, 90 percent of the participants would see a net increase in their bills for the first year of their loan, averaging \$420 if energy prices stay constant. However, once the loan is paid off, customers will achieve savings on their utility bills and they may see net savings sooner if there is even a modest increase in energy prices.<sup>4</sup>*

projected after energy audits are performed on the building, often integrating the use of building performance software that tracks and analyzes energy consumption. However, bill-neutrality cannot necessarily be guaranteed even if the loans have been designed with net savings as a goal, because the factors mentioned above all contribute to the fluctuation of energy bills. There is also the risk that the retrofits will not perform as well as projected. Therefore, very few programs actually guarantee decreases in the utility bill, even if they require bill-neutrality.

There are also programs that will ensure that technology performance problems with the retrofit will not compromise bill-neutrality. For example, if the retrofit measures do not perform as expected, Kentucky's

HowSmartKY program will arrange to have them fixed and defer loan payments until the problems are corrected. However, HowSmartKY does not guarantee bill savings if there is a change in energy usage behavior such as additional occupants or additional appliances.<sup>5</sup>

#### **TIED-TO-THE-METER**

Many OBF loans are "tied-to-the-meter" because they are repaid through the utility bill. This means that the responsibility of repayment of the loan is transferred along with the responsibility of paying the utility bill to the new occupant. Tied-to-the-meter financing is therefore sometimes recognized as a tariff rather than a loan because the repayment is attached to a utility meter or piece of property, rather than to an individual.

The characteristic of being tied-to-the-meter may be beneficial to some customers, especially renters or temporary residents, because they would only be responsible for paying the loan installments as long as they are living in that building and receiving the benefits of the efficiency investment. In the OBF context, loans that are tied-to-the-meter are also termed transferable. Owners of rental property may also find tied-to-the-meter loans beneficial because the cost of the retrofits will always be carried by the tenants. Over time, as energy prices increase and/or the loan is paid off, the retrofits would add value to the property.

In cases when loans are tied-to-the-meter, some issues can arise around debt repayment. Many OBF programs do not require traditional credit checks to determine if a customer is eligible for a loan. Instead, administering utilities will often use bill repayment history as a measure of a customer's creditworthiness. However, while the customer initiating the loan may have a good bill repayment history, the incoming customer who takes on the loan may not. For this reason, administering utilities sometimes perceive tied-to-the-meter loans as a liability. (See Box 3: California's Nontransferable On-Bill Loans).

Oregon, New York, and Hawaii have passed legislation requiring OBF to be tied-to-the-meter. These states require the OBF customer to notify incoming residents or owners of the property about the loan repayment until the loan is repaid in full or discharged.<sup>6, 7, 8</sup>

### **BOX 3: CALIFORNIA'S NONTRANSFERABLE ON-BILL LOANS**

*California legislation requires investor-owned utilities (IOUs) to offer OBF to nonresidential customers, but does not require loans to be tied-to-the-meter. Therefore, Californian IOUs have decided to prohibit OBF loans to be tied-to-the-meter because they might not legally be able to enforce transferability. Nonresidential OBF loans provided by Californian IOUs must be paid in full when the account is closed.<sup>10</sup> As of 2012, this has not limited the repayment success of the California nonresidential OBF program. Out of the 600 loans made so far, the default rate is less than 1 percent.<sup>11</sup> This may be because customers that are nonresidential (i.e. municipal, commercial, or industrial) are likely to stay in one location for a longer period of time, limiting the effect a tied-to-the-meter provision may have.*

### **BOX 4: GEORGIA'S NATURAL EXPERIMENT – TARIFFS AND LOANS**

*The OBF pilot programs funded by the Georgia Environmental Finance Authority (GEFA) offered both transferable and nontransferable loans. The two loan programs produced similar results in terms of success and participation. All loans had identical terms: they were limited to \$5,000, offered at 0 percent interest, and must be repaid within 5 years. Traditional credit checks were replaced with a 12-month or longer history of good standing with the utility. Municipal electric providers offered an "On-Bill Tariff" program which was tied-to-the-meter, while municipal gas providers offered an "On-Bill Loan" program that offered nontransferable loans. The two programs began with \$700,000 each in funds from GEFA. Results from the tied-to-the-meter and nontransferable programs were similar. The tied-to-the-meter program exhausted its funds in 8 months, and GEFA increased the funds by \$400,000 because the program "performed very well." The non-transferable loan program exhausted its initial funds after 11 months, received additional funding of \$250,000, and the provider (Municipal Gas Authority of Georgia) plans to expand it to a multimillion program because of high municipal demand.<sup>9</sup>*

## **UTILITY DISCONNECTION AS A CONSEQUENCE OF NON-REPAYMENT**

Since OBF loans are a part of the customer's utility bill, some states have allowed utilities providing OBF to disconnect electric and/or gas service to a customer that does not pay the loan installment, just as if the customer failed to pay the regular utility bill.

New York, South Carolina, and Hawaii have authorized utilities statewide to shut off service to customers who fail to pay an installment of an OBF loan.<sup>12, 13, 14</sup> The public utilities commissions (PUCs) of Kentucky and New Hampshire have also authorized utilities to disconnect service to customers participating in the pilot programs of How\$martKY or PAYS®, respectively, who fail to pay the monthly installment of the loan.<sup>15, 16</sup> The California PUC has authorized utilities to shut off service to nonresidential customers who have defaulted on their loan charges.<sup>17</sup>

Preserving electricity and gas services are usually a high priority for customers. Therefore, the threat of utility disconnection due to nonpayment encourages timely payment and protects against default. Consequently, OBF becomes more attractive for the loan providers because the default rate is much lower than that of traditional loans. For instance, the default rate of San Diego Gas & Electric's (SDG&E) nonresidential OBF program as of 2011 is less than one percent, compared to the two to three percent default rate of traditional lines of consumer credit that year.<sup>18</sup> SDG&E made over 900 loans worth \$20 million, and only seven loans representing \$99,000 have defaulted. Newer OBF programs in California administered by SoCalGas and Southern California Edison have zero percent defaults as of September 2011.<sup>19</sup>

As discussed previously, it is possible that an OBF loan will actually increase the customer's utility bill, especially if the energy efficiency retrofits do not function as projected. Therefore, if the customer is unable to pay the bill because it increased as a result of the loan payment, utility disconnection due to nonpayment could raise issues of fairness and safety.

## **LOW OR ZERO INTEREST RATES**

OBF loans are most often offered at low or zero interest rates. Low-to-no interest rate programs increase the likelihood of bill-neutrality and therefore increase the probability of customer participation, but may reduce the

financial viability of the program. Table 2 lists a few examples of OBF programs that offer loans at interest rates lower than a standard home equity rate, which is one avenue traditionally used by homeowners to finance home upgrades. At the time of writing, most home equity interest rates in the United States range from 4.5 to 7 percent.

Low or zero interest rates make projects more cost-effective for the customer, lowering the total payment due for a given sized loan. Therefore more homes would qualify for a bill-neutral retrofit, contributing to higher participation rates by customers. A comprehensive report on California’s nonresidential OBF programs found that

zero percent financing, along with required bill-neutrality, was integral to the success of the programs.<sup>20</sup>

The disadvantage of low or zero interest rates is that they are much less likely to be financially self-sufficient. Therefore, OBF programs with low or zero interest rates usually require external sources of funds (discussed below), or are a larger financial burden on the administering utility. A balance needs to be struck between making the program cost-effective and appealing for customers but also a worthwhile endeavor for the administering utility or third-party lender, without relying too heavily on public funds.

**TABLE 2: OBF Programs with Low or Zero Interest Rates**

STATE	PROGRAM	INTEREST RATE
California	Nonresidential programs offered by IOUs	0%
Georgia	Residential programs offered by GEFA	0%
New Jersey	Natural Gas SaveGreen Project	0%
Connecticut	Small business and municipality programs offered by Connecticut Light & Power, United Illuminating	0%
South Carolina	Help My House Pilot Program	2.5%
Kansas	How\$mart® Residential program offered by Midwest Energy	3%
New York	NYSERDA Residential programs	3.49%

**BOX 5: EFFECT OF HIGH INTEREST RATE ON OBF IN THE UNITED KINGDOM**

*The high-interest rate loans offered by the United Kingdom’s OBF program, called the Green Deal, likely contributed to its very low participation rate.<sup>21</sup> Green Deal loans are offered at interest rates of about 7 percent, higher than most mortgages rates in the UK.<sup>22</sup> More than 38,000 home audits were made under the Green Deal from its re-launch in January 2013 until June 2013,<sup>23</sup> showing that there is significant interest in the program. However, as of June 2013, only four households have signed finance plans, with about 240 additional plans pending.<sup>24</sup> This is a meager number compared to the UK government’s goal of retrofitting 10,000 homes by the end of 2013.<sup>25</sup> The gap between the number of assessments made and the number of solidified plans indicates there is significant interest in OBF but that customers have found a high interest rate to be a significant deterrent to full participation in the program.*

## ■ SUPPORT FOR OBF

### FUNDING

All OBF programs require an infusion of capital to get started, which can come from government or private sources. Additionally, low or zero interest loans need continuous external funding to remain viable.

Federal funds currently provide significant support for OBF programs. The American Recovery and Reinvestment Act of 2009 (ARRA) was the source of \$5 million for the OBF pilot programs overseen by the Georgia Environmental Finance Authority (GEFA).<sup>26</sup> Another source of funding came through the Rural Energy Savings Program Act of 2012 (S. 2216), which amended the Farm Security and Rural Investment Act of 2002 to allow the use of U.S. Department of Agriculture (USDA) funds for zero or low interest OBF loans.<sup>27</sup> For example, South Carolina's Help My House pilot program was funded by a \$740,000 loan from the USDA's Rural Utility Service (RUS). Help My House was the first energy efficiency initiative to receive funding from the RUS, but the USDA is considering broadening its investment in such programs.<sup>28</sup>

State funds also provide significant support for OBF programs. Oregon's OBF legislation authorizes the State Department of Energy to draw money from existing state funds (e.g., Small Scale Local Energy Project Loan Fund or Energy Project Bond Loan Fund) to invest in OBF programs, and created the Energy Project Supplemental Fund in the State Treasury.<sup>29</sup>

A small surcharge added to all ratepayers' utility bill may be another source of capital. Some states require funds to be collected this way, while some individual utilities do so without government direction. For example, OBF programs in Connecticut draw funds from the state's Energy Efficiency Fund, which is funded by a variety of sources, including general state funds, ARRA, and a surcharge of a few mills (tenths of a cent) per kilowatt-hour on utility customers.

Although uncommon, some OBF programs may be funded by private foundations. The Mountain Association for Community Economic Development, which administered the pilot program How\$martKY, received a \$1 million low-cost loan from the Ford Foundation, as

well as supplemental funds from the Mary Reynolds Babcock Foundation, the Rockefeller Brothers Fund, and other foundations to initiate How\$martKY.<sup>30</sup>

Funds are often utilized by establishing a revolving loan fund, which is a source of money that is replenished by the repayment of the loans it has financed. New York's OBF programs, administered by the New York State Energy Research and Development Authority (NYSERDA), are financed by the Green Jobs-Green NY Act Revolving Loan Fund. Hawaii passed a bill (SB 1087) in July 2013 that created the Hawaii Green Infrastructure Special Fund, a revolving loan fund which finances OBF programs.<sup>32</sup>

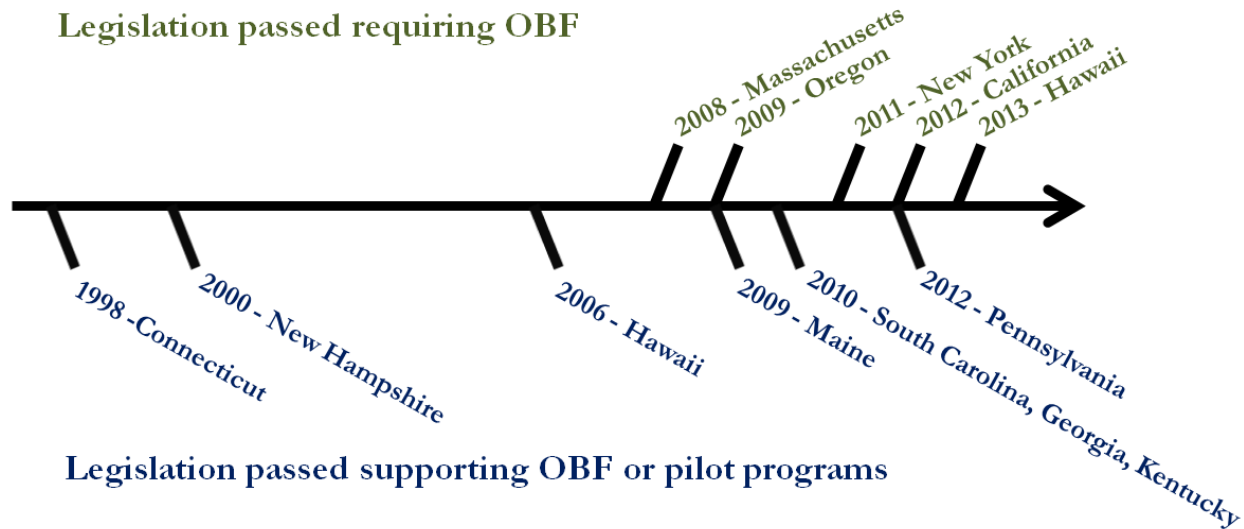
### LEGISLATION

While the popularity of OBF has recently surged, it is actually not a new financing mechanism. State legislation supporting OBF appeared as early as 1998 and 2000, in Connecticut and New Hampshire, respectively.<sup>33, 34</sup> Between 2008 and 2013, ten more states passed some sort of legislation regarding OBF. Figure 2 provides a timeline of state OBF legislation.

#### BOX 6: HAWAII'S TRANSITION FROM A PILOT PROGRAM TO A LONG-TERM PROGRAM

*In 2007, the Hawaii PUC established a pilot program called SolarSaver to be administered by Hawaiian Electric Company, Hawaii Electric Light Company and Maui Electric Company. SolarSaver was a bill-neutral, tied-to-the-meter OBF program offered to residential customers at zero percent interest for up to 12 years. It was only available for the installation of solar hot water heaters. The program was slated to run for three years, but demand was so high that available funds were consumed by the end of the second year. A total of 513 projects were installed, and the default rate was less than 1 percent. In participating households, the solar hot water heaters saved 80 to 90 percent of the electric use associated with heating water. Although there was some dissatisfaction with the complex application process at the beginning of the pilot, contractor and customer reactions turned overwhelmingly positive by the second year of the program.<sup>31</sup> Following the success of SolarSaver, in February 2013, the Hawaii PUC ordered the state's IOUs and the Kauai Island Utility Cooperative to offer OBF to residential and small-business customers.*

**FIGURE 2: Timeline of OBF Legislation**



As of July 2013, six states require utilities to offer OBF in some capacity: California, Oregon, New York, Hawaii, Massachusetts and New Hampshire have passed laws or issued public utilities commission orders that require utilities statewide (usually only large or investor-owned utilities) to provide an OBF program. Program specifications, such as loan terms, program size, and customer eligibility vary from state to state.

Connecticut, Georgia and South Carolina have passed laws or issued public utilities commission orders that authorize and/or support the implementation of OBF state-wide, but do not require any utilities to offer OBF programs. These include policies that remove legal barriers to offering OBF or establishing funds for OBF programs.

The PUCs of three states – Kentucky, Maine, and Pennsylvania – have ordered the establishment of pilot OBF programs or commissioned research or working groups to analyze the feasibility of OBF programs. Figure 3 maps the states that support OBF. The C2ES [On-Bill Financing State Policy Map](#) provides an interactive

version of this figure.

#### **NON-LEGISLATIVE MOTIVATION TO OFFER OBF**

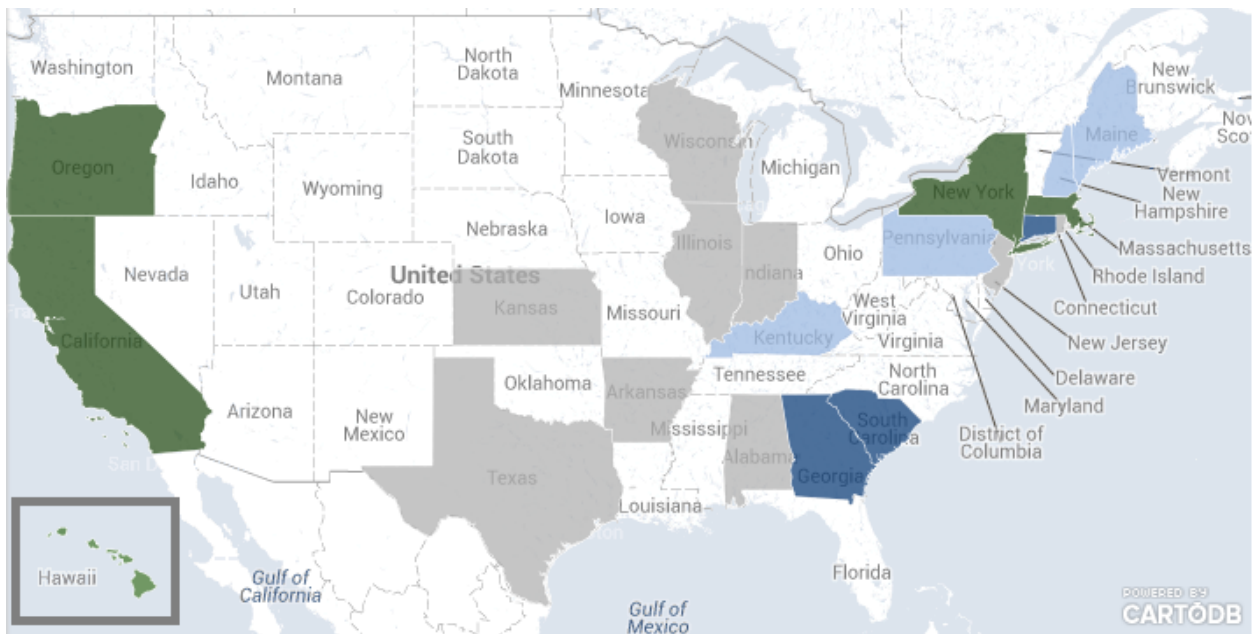
In addition to growing support for OBF policies, there are a number of utilities that offer OBF without any direction from local or state government. This phenomenon may exist because OBF programs are a cost-effective method of demand-side management. By removing the upfront cost of investing in the energy efficiency of customers' buildings, utilities benefit from decreased peak loads and thus reduce generation costs or power-purchasing costs. Restrictions on building new power plants, strained electric grid infrastructure, and spiking peak loads due to extreme weather may all drive utilities to encourage demand-side energy efficiency through OBF. Rising energy rates and more extreme temperatures will motivate customers to look for alternatives to their heating and cooling needs, and may drive interest in OBF programs. Job creation in the construction sector is another benefit of OBF programs, since the programs drive investment in building retrofits.



## BOX 7: INDEPENDENTLY OFFERED OBF – KANSAS HOW\$MART

Midwest Energy, a gas and electric cooperative serving western Kansas, operates an extensive OBF program called Kansas How\$mart without any direction from state or local government. Commercial and residential customers, including multi-family properties, are eligible. Loans are tied-to-the-meter and are offered at 3 percent interest to residential customers and 4.5 percent interest to commercial customers.<sup>35</sup> Bill-neutrality is not guaranteed, but is designed for – i.e. financing is only offered if the cost will be 90 percent or less than the projected energy savings. As of 2012, How\$mart has financed 755 gas and electric projects; participants have saved 1.7 million kilowatt hours per year and a total of 210,000 therms.<sup>36</sup> In 2012, the How\$mart program received a \$1 million loan from the USDA Rural Economic Loan Program, which makes loans to support job creation efforts, business development and economic growth in rural communities.<sup>37</sup>

**FIGURE 3: Map showing On-Bill Financing State Policy**



- State-Required On-Bill Financing (5 States)
- State-Supported On-Bill Financing (3 States)

- Preliminary On-Bill Financing Policy (4 States)
- On-Bill Financing Offered by Individual Utilities (9 States)

## ■ BARRIERS TO IMPLEMENTATION AND SUCCESS

Even with incentives and legislation supporting OBF, there are barriers to its implementation and success. These barriers include overcoming the administrative problems that come with establishing new programs,

reaching a critical mass of participation, and finding a balance between an enticing and a sustainable interest rate.

Utilities in general have little experience with finance,

and therefore may struggle to administer OBF programs. Even when utilities are willing to administer OBF programs, they face a host of initial barriers to setting up a successful system. An administering utility needs to modify its billing or payment system, manage the financing system itself or through third-party lenders, hire staff to specialize in loans, coordinate with other incentive systems, and liaise with contractors.<sup>38</sup> These processes take investment and time, sometimes as long as the span of an entire pilot program. If an administering utility has difficulty getting the components of an OBF program online, it may negatively affect the experience of its customers and the contractors installing the retrofits. This may derail a program in its early stages, or stifle its popularity in future years. For instance, the United Kingdom's national OBF program, called the Green Deal,

has struggled to take off, in part due to the slow adoption by energy companies that are supposed to provide the program. Only one of the large energy companies in the country has launched a program, while some of the others are struggling with integrating the IT systems needed to offer the Green Deal.<sup>39</sup> This delay in the launch of the national program has frustrated those in the construction industry and may have stalled the momentum of interest in the customer base.<sup>40</sup>

OBF programs need to reach a critical mass of participation to be successful. Otherwise, the impact they make will not be large enough to be worth the utility's effort to sustain it. Intelligent program design is vital to a strong participation rate.

#### **BOX 8: NEW HAMPSHIRE ELECTRIC CO-OP'S FAULTY OBF PROGRAM DESIGN**

*One example of faulty program design is New Hampshire Electric Co-op's (NHEC) commercial OBF SmartSTART program. This program faced very low participation rates – only 21 customers over 6 years. When NHEC customers were interested in energy efficiency retrofits, they had to choose to either receive rebates of 50 to 80 percent of the retrofit costs or to pay the full cost through OBF. This design structure limited customer interest in SmartSTART because customers overwhelmingly chose to receive the rebates.<sup>41</sup> In contrast, most other programs are designed to coordinate between rebates and OBF, thus allowing the customer to finance the remaining cost of the retrofits after taking advantage of available rebates. SmartSTART is no longer being offered by the utility.<sup>42</sup>*

## **CONCLUSION**

On-bill financing is an innovative and effective way to encourage investment in building efficiency. Although not all OBF programs are alike, many of them require bill-neutrality, are tied-to-the-meter, allow utility service disconnection for nonpayment, and/or offer loans at low or zero interest. These characteristics have been integral to the success of these programs with customers. Although there are some barriers to the implementation of OBF programs, OBF has gained a foothold in a number of states, usually starting with pilot programs that serve a few hundred homes, businesses, or institutions. The first wave of states has begun to require utilities to offer OBF. OBF will likely continue to gain popularity with customers looking to save on their energy bills, utilities looking for cost-effective demand-side management, and policymakers looking to achieve the public benefits of energy efficiency and to support the clean energy economies in their states.



The Center for Climate and Energy Solutions (C2ES) is an independent nonprofit organization working to promote practical, effective policies and actions to address the twin challenges of energy and climate change.

## ■ ENDNOTES

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- <sup>1</sup> Energy Efficiency & Renewable Energy. 2012. “Buildings Energy Data Book, Chapter 1: Buildings Sector.” US Department of Energy. <http://buildingsdatabook.eren.doe.gov/ChapterIntro1.aspx>.
- <sup>2</sup> Central Electric Power Cooperative. 2013. “Help My House Loan Pilot Program: Program Design and Results.” [http://www.cepci.org/assets/HelpMyHouseBrochure\\_June2013.pdf](http://www.cepci.org/assets/HelpMyHouseBrochure_June2013.pdf)
- <sup>3</sup> Clean Energy Works Oregon. 2013. “The Bid Process: Your Roadmap to Comfort and Energy Savings.” <http://www.cleanenergyworksoregon.org/the-bid-process/>
- <sup>4</sup> Clean Energy Works Oregon. 2013. “FAQ.” <http://www.cleanenergyworksoregon.org/faq/>
- <sup>5</sup> Mountain Association for Community Economic Development. 2013. “Customer’s frequently asked questions.” <http://www.maced.org/howsmart-FAQ.htm>
- <sup>6</sup> Oregon Legislative Assembly. 2009. “Enrolled House Bill 2626.” <http://www.leg.state.or.us/09reg/measpdf/hb2600.dir/hb2626.en.pdf>
- <sup>7</sup> New York State Assembly. 2011. “A08510 Summary.” [http://assembly.state.ny.us/leg/?default\\_fld=&bn=A08510&term=2011&Summary=Y&Actions=Y&Votes=Y&Text=Y](http://assembly.state.ny.us/leg/?default_fld=&bn=A08510&term=2011&Summary=Y&Actions=Y&Votes=Y&Text=Y)
- <sup>8</sup> Energy Efficiency Institute, Inc. 2013. “Docket No. 2011-0186, Decision and Order No. 30974.” [http://eeivt.com/wordpress/wp-content/uploads/2013/02/Dkt-2011-0186\\_On-Bill-DO\\_Closes-Docket.pdf](http://eeivt.com/wordpress/wp-content/uploads/2013/02/Dkt-2011-0186_On-Bill-DO_Closes-Docket.pdf)
- <sup>9</sup> Schroer, Andrea. 2012. “NASEO On-Bill Financing Programs.” Georgia Environmental Finance Authority. <http://www.naseo.org/data/sites/1/documents/committees/financing/notes/2012-02-02-Schroer.pdf>
- <sup>10</sup> The Cadmus Group, Inc. 2012. “California 2010-2012 On-Bill Financing Process Evaluation and Market Assessment.” [http://www.calmac.org/publications/On\\_Bill\\_Financing\\_Process\\_Evaluation\\_Report\\_2010-2012.pdf](http://www.calmac.org/publications/On_Bill_Financing_Process_Evaluation_Report_2010-2012.pdf)
- <sup>11</sup> Ibid.
- <sup>12</sup> New York State Assembly. 2011. “A08510 Summary.” [http://assembly.state.ny.us/leg/?default\\_fld=&bn=A08510&term=2011&Summary=Y&Actions=Y&Votes=Y&Text=Y](http://assembly.state.ny.us/leg/?default_fld=&bn=A08510&term=2011&Summary=Y&Actions=Y&Votes=Y&Text=Y)
- <sup>13</sup> South Carolina General Assembly, 2010. “A141, R148, S1096 Status Information.” [http://www.scstatehouse.gov/sess118\\_2009-2010/bills/1096.htm](http://www.scstatehouse.gov/sess118_2009-2010/bills/1096.htm)
- <sup>14</sup> Energy Efficiency Institute, Inc. 2013. “Docket No. 2011-0186, Decision and Order No. 30974.” [http://eeivt.com/wordpress/wp-content/uploads/2013/02/Dkt-2011-0186\\_On-Bill-DO\\_Closes-Docket.pdf](http://eeivt.com/wordpress/wp-content/uploads/2013/02/Dkt-2011-0186_On-Bill-DO_Closes-Docket.pdf)
- <sup>15</sup> Public Service Commission of Kentucky. 2010. “Case No. 2010-00089.” [http://psc.ky.gov/PSCSCF/2010%20cases/2010-00089/20101216\\_PSC\\_ORDER.pdf](http://psc.ky.gov/PSCSCF/2010%20cases/2010-00089/20101216_PSC_ORDER.pdf)
- <sup>16</sup> Public Utilities Commission of New Hampshire. 2001. “Order No. 23,851.” <http://www.puc.state.nh.us/Regulatory/Orders/2001ORDS/23851e.pdf>
- <sup>17</sup> Public Utilities Commission of California. 2012. “Rulemaking 09-11-014.” <http://docs.cpuc.ca.gov/efile/RULINGS/157047.pdf>
- <sup>18</sup> S&P Dow Jones Indices. 2013. “S&P/Experian Consumer Credit Default Composite Index.” <http://www.spindices.com/indices/specialty/sp-experian-consumer-credit-default-composite-index>
- <sup>19</sup> The Cadmus Group, Inc. 2012.
- <sup>20</sup> Ibid.
- <sup>21</sup> Goodall, Chris. 2011. “The Green Deal: failure is almost guaranteed.” Carbon Commentary.

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<http://www.carboncommentary.com/2011/12/12/2203>

<sup>22</sup> Carrington, Damian. 2013. "Green deal in danger of becoming a middle class subsidy." The Guardian. <http://www.guardian.co.uk/environment/damian-carrington-blog/2013/jun/25/green-deal-energy-efficiency-cashback>

<sup>23</sup>Pitt, Vern. 2013. "First Green Deal figures revealed." <http://www.building.co.uk/sustainability/sustainability-news/first-green-deal-figures-revealed/5056917.article>

<sup>24</sup> Ibid.

<sup>25</sup> Murray-West, Rosie. 2013. "Green deal: No homes benefit six months after launch." <http://www.telegraph.co.uk/finance/personalfinance/consumertips/household-bills/10145604/Green-Deal-No-homes-benefit-six-months-after-launch.html>

<sup>26</sup> Georgia Environmental Finance Authority. "ARRA Energy Information." <http://www.gefa.org/Index.aspx?page=476>

<sup>27</sup> U.S. Government Printing Office. 2012. "S. 2216 (IS) – Rural Energy Savings Program Act." <http://www.gpo.gov/fdsys/search/pagedetails.action?packageId=BILLS-112s2216is>

<sup>28</sup> United States Department of Agriculture. 2012. "News Release – Release No. 0241.12." <http://www.usda.gov/wps/portal/usda/usdahome?contentid=2012/07/0241.xml&contentidonly=true>

<sup>29</sup>Oregon Legislative Assembly. 2009. "Enrolled House Bill 2626." <http://www.leg.state.or.us/09reg/measpdf/hb2600.dir/hb2626.en.pdf>

<sup>30</sup>Appalachia Funders Network. 2013. "How\$martKY." <http://appalachiafunders.org/howsmartky/>

<sup>31</sup> Harcourt Brown & Carey. 2011. "On-Bill Financing for Energy Efficiency: Review of Programs to Date." Environmental Defense Fund.

<sup>32</sup> Hawaii State Legislature. 2013. "SB1087 SD2 HD3 CD1." [http://www.capitol.hawaii.gov/measure\\_indiv.aspx?billtype=SB&billnumber=1087](http://www.capitol.hawaii.gov/measure_indiv.aspx?billtype=SB&billnumber=1087)

<sup>33</sup> Connecticut General Assembly. 1998. "Substitute House Bill No. 5005: Public Act No. 98-29. An Act Concerning Electric Restructuring." <http://www.cga.ct.gov/ps98/Act/pa/1998PA-00028-R00HB-05005-PA.htm>

<sup>34</sup> Public Utilities Commission of New Hampshire, 2000. "Order No. 23,574." <http://www.puc.nh.gov/Regulatory/Orders/2000ords/23574e.pdf>

<sup>35</sup> Midwest Energy. 2009. How\$mart® Q&A Sheet. <http://www.mwenergy.com/documents/howsmart/QA.pdf>

<sup>36</sup> Midwest Energy. 2012. "Midwest Energy's How\$mart Program Receives \$1 Million USDA Loan." <http://www.mwenergy.com/news.aspx?id=90>

<sup>37</sup> Ibid.

<sup>38</sup> The Cadmus Group, Inc. 2012.

<sup>39</sup> Harvey, Fiona. 2013. "Green deal mired in legal and IT problems." The Guardian. <http://www.guardian.co.uk/environment/2013/jun/27/green-deal-energy-efficiency-wall-insulation>

<sup>40</sup> Ibid.

<sup>41</sup> Harcourt Brown & Carey. 2011.

<sup>42</sup> Energy Efficiency Institute, Inc. 2013. "Status Report for programs based on the Pay As You Save® (PAYS®) system." <http://eeivt.com/wordpress/status-reports/>