

# **Decision Tool for Utility Managers:**

***Key considerations before investing in resource efficiency  
and rooftop solar through a tariffed on-bill program***

**January 2016**

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# Overview

## Introduction to Tariff On-Bill Investment

Tariffed on-bill programs provide a utility investment solution that offers all customers access to cost-effective energy upgrades using a proven cost recovery model that works for both the customer and the utility. A utility harnesses its tariff authority to make investments interested customers' businesses or home and recovers its costs on the customers' monthly bills through fixed charges that are less than the estimated savings, generating positive cash flow for the customer and net benefits for the utility.

Many types of utilities use tariffed on-bill investment programs — large, small, electric, gas, water, cooperative, investor owned, and municipal. In addition to being compatible with a diverse array of utility types, tariffed on-bill programs are also flexible and enable a wide range of efficiency upgrades — from high efficiency street lighting and commercial HVAC systems to solar hot water systems, water saving technologies, and home weatherization.

Successful tariffed on-bill investment programs:

- help customers invest in energy efficiency and/or roof-top solar in their homes and businesses,
- have the lowest participant cost, utility cost, and uncollectibles of any efficiency program,
- have the highest and most diverse customer participation, and
- allow the utility to recover its capital invested in efficiency and/or renewable installations.

Pay As You Save<sup>®</sup> (PAYS<sup>®</sup>) is a market-based system for tariffed on-bill investments in efficiency and other distributed resource solutions. Tariffed on-bill programs based on the PAYS<sup>®</sup> system include:

- HELP PAYS<sup>®</sup> offered by Ouachita Electric Cooperative in Arkansas
- Upgrade to \$ave offered by Roanoke Electric Cooperative in North Carolina,
- How\$mart<sup>®</sup> offered by Midwest Energy in Kansas,
- How\$martKY<sup>™</sup> offered by multiple electric cooperatives in eastern Kentucky, and
- Windsor Efficiency PAYS<sup>®</sup> and Green Hayward PAYS<sup>®</sup>, water saving programs in California.

## Purpose of This Decision Tool

### Evaluating whether to proceed with a Tariffed On-Bill (TOB) program

This Decision Tool is intended to help a utility manager determine whether a tariffed on-bill (TOB) program based on the Pay As You Save<sup>®</sup> (PAYS<sup>®</sup>) system is appropriate for his/her utility.

This is a pre-program design resource that covers a number of key considerations that warrant attention *before* beginning a program design process.

### Evaluating whether to proceed with a Standard Implementation Plan

If a TOB is deemed to be appropriate, this Decision Tool will also help a utility determine whether to structure its TOB program using a low-cost, standard program implementation plan or whether more extensive tailoring would be needed.

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**Decision Tool for Utility Managers:** Key considerations before investing in resource efficiency and rooftop solar through a tariffed-on-bill program

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## Using the Decision Tool

This Decision Tool is structured to raise key questions to consider before choosing to implement a tariffed on-bill program. The information provided is organized into sections as noted in the *Table of Contents*. There are questions at the end of each section to help utility managers determine if such a program would be suitable for the utility and the stakeholders with whom it engages on investments in efficiency. If a TOB program is found to be suitable, the Decision Tool also helps a utility explore whether a standard implementation plan or more customized approach would best serve its interests.

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# Introduction to Pay As You Save<sup>®</sup> (PAYS<sup>®</sup>)

Pay As You Save<sup>®</sup> (PAYS<sup>®</sup>) is a market-based system developed by the Energy Efficiency Institute, Inc. (EEI) that provides a platform for tariffed on-bill investment programs. Experience shows that customers, vendors, and capital providers using the PAYS<sup>®</sup> system will act in their own interests to produce unprecedented resource efficiency investment that also advances society's interest in low cost, local, clean energy resources.

Roanoke EMC's *Upgrade to \$ave* program in North Carolina is a TOB program using the PAYS<sup>®</sup> system. Here's the *Upgrade to \$ave* offer that Roanoke EMC is making to its members:

**"Upgrade to \$ave reduces your energy bills with upgrades that effectively cost you nothing. Here's how it works:**

**Energy saving upgrades are installed in your building, and you pay nothing upfront.**

**Once the work is completed, your Co-op pays for the installation. The Co-op puts a fixed charge on your electric bill that is significantly less than the estimated energy savings from these upgrades.**

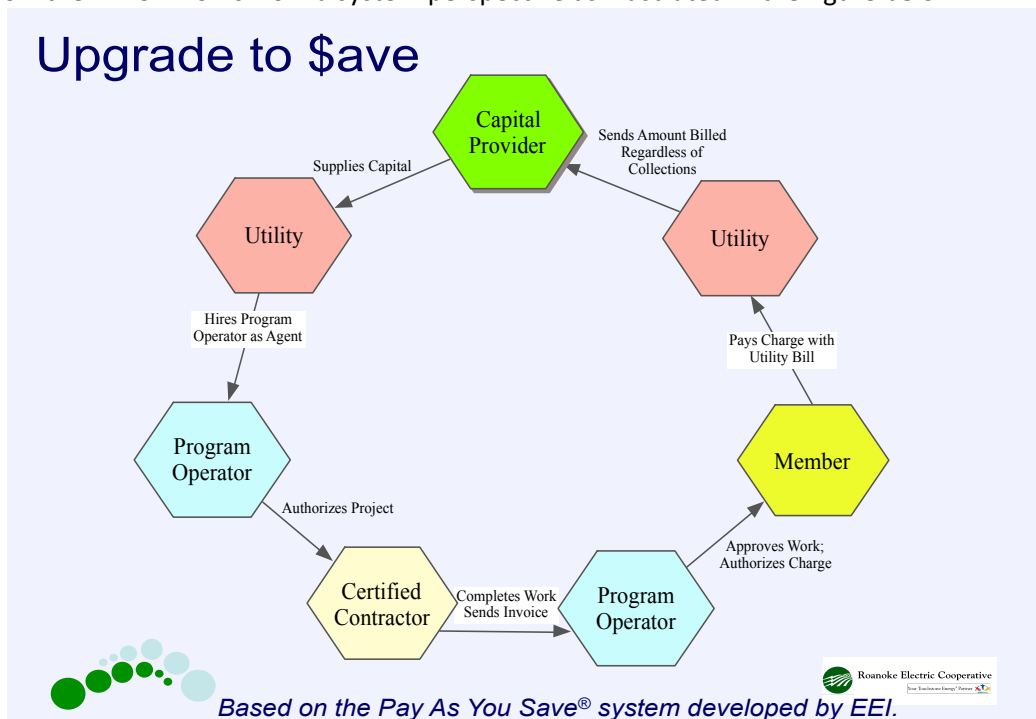
**Your utility bills go down without you having to spend a penny.**

**You have no loan, no lien, and no debt associated with this transaction; just lower utility bills.**

**Your payment obligation ends when the Co-op has fully recovered its costs at which point your utility bills will be even lower. At any time you leave the premises and have fulfilled your responsibilities, or if the upgrades fail, you did not damage them, and they are not repaired, your payment obligation ends."**

Programs based on the PAYS<sup>®</sup> system result in most customers saying "Yes" when they receive an offer like Roanoke EMC's. It gives these customers the chance to save money with resource efficiency and renewable energy installations. Because PAYS<sup>®</sup> programs have achieved exceptionally high offer acceptance rates—50% or higher—the PAYS<sup>®</sup> offer is called an "offer that works."

Here's how the PAYS<sup>®</sup> works from a system perspective as illustrated in the figure below:



With funds from a **capital provider** such as a public or private lender or its own operating reserves, the **utility** invests in targeted weatherization or renewable installations in customers' homes or businesses.

The utility establishes a **program operator**, either within the utility or by contracting with an outside entity, to implement the program and coordinate with both contractors and customers. An independent measure assessor or a **certified contractor** performs a site inspection, prices the job for the customer (co-op **member**), and makes a bona fide offer.<sup>1</sup> The member accepts the offer by signing an efficiency upgrade agreement and chooses its contractor to complete the work. The contractor completes the work and invoices the program operator, which makes sure the work was done correctly before authorizing the utility to (a) pay the contractor and (b) initiate cost recovery through a fixed TOB charge on the member's regular monthly bill.

The utility collects the regular payments from the customer until its costs are recovered, using the same collection process that applies to all tariffed charges. The utility makes regular payments to the capital provider based on an agreed-upon schedule, regardless of the revenues collected for its investments, which is similar to the standard terms of repayment for all corporate credit.

**Additional information:**

Attachment 1 provides a three-page summary, *Introduction to PAYS*<sup>®</sup>. Additional information is available at <http://www.eeivt.com>. Attachment 2 describes each of the key roles involved in the operation of a tariffed on-bill program in more detail.

## ***A. Is a tariffed on-bill (TOB) program a good fit for your utility?***

### **A.1 Key Differences Between a TOB and Other Types of Utility Efficiency Programs**

A TOB program differs from typical rebate and loan programs operated by utilities in two important areas: the utility relationship with program participants, and the type of customers who can participate.

Compared with typical utility efficiency programs, a program based on the PAYS<sup>®</sup> system requires a hands-on role for the utility or its program operator. TOB programs can also be implemented to serve any type of customer, whereas rebate and loan programs are effectively limited to those with cash on hand or a willingness to take on debt. These differences are discussed below to help you decide whether a TOB program is a good fit for your utility.

#### **A. Utility relationship with program participants**

Both loan and TOB programs for energy efficiency and renewable energy are designed to address the upfront cost barrier that remains after available rebates are applied. Most utilities considering TOB programs have previously operated loan programs in conjunction or are considering a loan program.

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<sup>1</sup> Utilities implementing a single upgrade program (e.g., high efficiency air source or ground water heat pumps) likely can estimate savings without sending a measure assessor to potential participants' homes.

Utilities offer these programs with customer service in mind, yet the approach to customer engagement in each is distinctly different. As with utility rebate programs, most utilities implementing loan programs take a hands-off approach to the transaction. Customers taking out loans choose how much to pay for resource efficiency upgrades without necessarily being aware of the cost effectiveness of the upgrades or the short-term financial impacts. Manufacturers, distributors and installers of the more efficient upgrades are responsible for addressing customer concerns, freeing the utility or its program operator from these responsibilities. The utility has no responsibility for installed products and workmanship once the upgrades have been approved and the contractors paid.

Tariffed on-bill programs are different because they require the utility or its program operator to take a hands-on approach. The PAYS® offer to participants is that “...if upgrades fail, you did not damage them, and they are not repaired, your payment obligation ends.” That’s why PAYS® provides a system of checks and balances to minimize the possibility of things going wrong. As a trusted and invested partner, the utility or its agent will be involved in resolving any concerns that arise during the term of the charges. This is true for issues involving the original participant as well as for any successor customers at that location until the utility recovers from that location all of its costs associated with installing the upgrades.

The utility has an ongoing relationship with and responsibilities to participants in tariffed on-bill programs since it bills and collects the tariffed payments for a set term. This term often spans ten years or more from completion of the work, extending until all costs are recovered. The PAYS® system ensures that participating customers save more than they pay, which in turn ensures that the program will produce the energy savings sought by both the utility and its customers. This hands-on involvement also ensures that the utility gets the cost recovery it needs to make this investment.

## **B. Type of customers who can participate**

Utility rebate and loan programs are usually marketed to customers with high bill complaints and those who are interested in resource efficiency. To participate, these customers need either to have cash available to pay for the upgrades after the rebate is deducted or have the ability and willingness to take on personal debt. Some customers, especially low- and moderate-income and fixed-income households, cannot do either.

TOB programs can be implemented to serve any type of customer, including renters, those with modest means, customers with no debt capacity, and those unwilling or unable to assume risks associated with a) failure of the upgrades or (b) relocation before they realize enough savings to offset their costs. TOB programs can also benefit municipalities, which need only to agree to a lower bill rather than seek voter approval to take on debt. Industrial and commercial customers also value a simple project approval process without a requirement to take on debt. To participate in a TOB program, a customer primarily needs to have sufficiently robust energy efficiency investment opportunities in their building to ensure that they get immediate net utility bill savings.

### **Question 1:**

***Based on these key program differences, do you think that a tariffed, on-bill (TOB) program structure will serve your utility’s goals and objectives?***

**Yes \_\_\_\_\_ No \_\_\_\_\_ *If yes, continue to #2 below.***

## A.2 Key Program Roles for Utility

The utility needs to fulfill three basic program functions: 1) program oversight; 2) outreach including initial customer and community contacts; and 3) financial management including securing capital, making program payments to the capital provider, and billing and collection of the tariffed charge.<sup>2</sup>

### Program oversight

While the utility may decide to hire a program operator to handle the day-to-day management of the program, the utility is ultimately responsible for making sure all of the pieces of the program are in place and for delivering results. It is critical to good customer relations that the engagement with customers and contractors is done well and that installed products meet or exceed customer expectations. Back office support from the utility or its program operator is a key to a good customer experience. While this work is largely invisible to the customer, it is essential to a successful TOB program.

### Outreach

Because the utility has access to meter data and customer information, the utility has a key role in identifying which customers are likely to have cost effective savings opportunities. While this outreach will certainly involve direct contact with the targeted customers, it will also likely involve community contacts to provide more general background information about the program and prepare customers to hear about a new type of offer.

### Financial management

Financial management of a successful TOB program includes sourcing capital for upgrades and harnessing the utility's core capability to bill and collect regular payments from customers.

First, the utility needs to secure capital to pay contractors and suppliers for approved installations. Possible sources include the utility's regular lender, the utility's reserves that are available for long-term investment, private sources including banks, and the USDA Rural Utilities Service's Energy Efficiency & Conservation Loan Program (EECLP). Attachment 3 has additional information about EECLP.

Second, regardless of the capital source, the utility will need to guarantee repayment to the capital provider or to its own general fund, and that is why the utility also needs to be assured of cost recovery regardless of collections from participating locations. There are good options for mitigating this risk, and the cost recovery rate reported by utilities with tariffed on-bill programs is above 99.9%, which is often better than the recovery rate for accounts receivable for electricity sales.

To recover its investments in the upgrades, the utility needs to bill customers for the TOB charges and collect their regular payments for the required term. Once the regular charge is established for a location based on the upgrades installed in that building, the fixed payment amount does not change. However, the term may change to accommodate any missed payments or repair expense at that location to keep the upgrade functioning. Since the obligation to pay the charge is attached to the meter not to an individual, a TOB program does not involve a loan to the customer or any liens or personal debt. Successor customers at the location where energy saving upgrades are installed continue

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<sup>2</sup> The utility TOB charge to the meter location where certified energy saving upgrades have been installed.



to enjoy the program benefits while they remain bound by the tariff obligations until the utility's cost recovery is complete or the obligation to pay ends.

## **Question 2:**

***Do you think that your utility would be willing to fulfill these three roles?***

**Yes \_\_\_ No \_\_\_      *If yes, continue to #3 below.***

## **A.3 Addressing uncollectible payments**

Utilities charge off some amount of outstanding accounts receivable every year. This is the amount that is deemed to be uncollectible, and it is typically less than 1%. Tariffed on-bill investment programs in energy efficiency and distributed renewable energy also can result in some fraction of accounts receivable not being recovered. Charge-offs can result from missed customer payments, upgrade failure without possibility of repair (resulting in the utility stopping billing before all installation costs can be recovered), or extended vacancy at a location.

To date, because of the checks and balances built into all programs based on the PAYS<sup>®</sup> system, utilities implementing PAYS<sup>®</sup>-based programs have experienced higher than normal customer payment rates with minimal program-associated charge-offs. Some utilities have established loan loss reserves of up to 5% of program investments. Some utilities have elected to incur charge-offs by waiving tariffed on-bill charges for customer service purposes, rather than choosing to enforce approved tariff terms and agreements.<sup>3</sup> Total program charge-offs in all of the sixteen TOB programs based on the PAYS<sup>®</sup> system operating in six states has been less than 0.5 percent of the more than \$20 million invested in energy saving upgrades.

The combination of rigorous quality standards for Certified Contractors, oversight by a Program Operator, and the ability to repair upgrades have resulted in these low uncollectibles. Careful screening of program-eligible upgrades and the use of Contractor Agreements and its associated requirements have helped to minimize charge-offs from investments made through tariffed on-bill programs. Finally, telephone and on-site inspections by the Program Operator and contractor financial penalties for failure to meet program standards are design features that minimize customer dissatisfaction and the possibility of charge-offs.

In addition, the cost effective investments made by the utility through the tariff on-bill program are essential services for which the utility already has established methods of collection. To ensure similarly high payment rates for a TOB program, a utility needs to follow its normal collection protocols including disconnection for non-payment, which can include using the services of credit and collections agencies to address delinquent accounts. Missed payments may be recovered by extending the payment term at the project location in accordance with the model tariff as long as the upgrades are still functioning. Any TOB-related charge-offs will be collected from all ratepayers the same as any other utility charge-offs.

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<sup>3</sup> Midwest Energy waived TOB charges for homes obtained through foreclosure (since there was no disclosure from the previous owner) and the Town of Windsor waived charges in one case when a homeowner allowed a local contractor to remove program upgrades in response to an unrelated problem.

### Question 3:

**Would your utility agree to treat collection of TOB charges on customers' bills the same as its other billed charges, including using disconnection for non-payment?**

Yes \_\_\_\_ No \_\_\_\_ *If yes, continue to item A4 below.*

## A.4 Regulatory Considerations

### Tariff approval

Unregulated utilities: Most electric cooperatives and municipal utilities are able to establish tariffs under the authority of their oversight boards. It is common for these boards to require that the terms of a tariff need to be cost based, non-discriminatory, and fair. Model language for an opt-in tariff for energy efficiency upgrades can be obtained from the Energy Efficiency Institute, Inc. and working examples can be found from existing TOB programs.

Regulated utilities: Tariffs for all investor owned utilities and some electric cooperatives are regulated by the state's Public Utilities (or Public Service) Commission ("Commission"). Regulated utilities seeking Commission approval of TOB programs can benefit from precedents set by Commissions in other states. In New Hampshire, Kansas, Hawaii, and Kentucky, Commissions opened dockets for proposed TOB program tariffs. Many of these precedent-establishing orders are available on the Energy Efficiency Institute, Inc.'s (EEI) website, eeivt.com, under the Pay As You Save® tab.

In the process of approving opt-in tariff terms for energy efficiency, oversight boards and Commissions alike have expressed interest in topics such as disconnection for non-payment, tying cost recovery to the meter rather than an individual, and engaging with successor customers. Each of these is discussed below.

### Authority to disconnect for non-payment of TOB charges

No utility with a tariffed on-bill program for energy efficiency has reported disconnecting a participant for non-payment, yet having the authority to do so is a critical part of a tariff for essential utility services as noted above.

All states allow disconnection for non-payment (DNP) for essential services provided by distribution utilities, though statutes and utility regulations differ among states. For example, some states do not permit DNP during the heating or cooling season. Other states may have different rules for customers with medical conditions where termination of service may be harmful to the health of a member of the household. However, at some point in all states, failure to pay for essential services can result in DNP.

New Hampshire Public Utilities Commission (NHPUC) was the first Commission to approve a TOB program based on the PAYS® tariff. In its Order #23758, the NHPUC ruled that it had the power to permit charges to run with the meter and to disconnect for non-payment.

In its Order in Docket No. 07-MDWG-784-TAR, the Kansas Corporation provides an in depth discussion of the issues involved in DNP. It ruled: "*...that the How\$mart™ program is reasonable and should be approved as a tariffed service, and that disconnection for non payment is appropriate.*"

Other orders also address this issue. For example, in its June 29, 2007 Order No. 23531, Hawaii's Public Utilities Commission noted on page 35 of its order that disconnection for non-payment is sound public

policy: “Indeed, by paying for the solar water heating (SWH) system on their utility bills, the participating customers are effectively paying for electricity because the SWH systems result in electricity savings. Therefore, the commission finds that the disconnection of service for non-payment of the SWH system charges results in sound public policy.”

Finally, the Kentucky Public Service Commission introduced additional reasons for approving DNP for TOB programs. In PSC Order 2010-00089, the Commission approved the TOB program because it was a voluntary tariff and only 90% of the savings were allocated to pay back installation costs.

### **Tying the obligation to the meter**

Tying the obligation for cost recovery to the meter, rather than a person, assures participants pay only as they save. An essential element of TOB programs based on the PAYS® system is that the utility recovers its investment through a tariffed on-bill charge assigned to a meter, not to an individual customer.

There are a number of unique benefits to tying the payment obligation to the meter (or location):

- Since the utility’s investment is not a loan, there is no debt assigned to the customer or the building owner. This allows credit-constrained customers, especially municipal and business customers, to proceed with energy efficiency upgrades by opting into the tariff rather than taking new debt on their balance sheet.
- Any customer who authorizes installation of energy efficiency upgrades is obligated to pay only while (s)he is benefitting from the upgrades and complying with the program rules. When a customer vacates the premises, the successor customer receives the benefits and pays the program charges.
- The tariffed charge obligates a bill payer to pay for upgrades that benefit the occupants at a location at which upgrades have been installed. In a building where a tenant pays the utility bills, the tariff binds the renter, not the owner. This enables TOB programs to provide program benefits to rental customers.

### **Disclosure to successor customers**

The building owner is the only party to all transfers of occupancy at a site, whether by selling the property or by leasing or renting it. In the states where Commissions have already approved TOB programs based on the PAYS® system, the programs have bound the building owner to notify the next owner or utility customer of the benefits and obligations of the installed efficiency upgrades and tariffed charges. The same is true for utilities offering an opt-in tariff under the authority of an oversight board rather than a Commission.

The PAYS® system includes a short notification document that building owners use to explain the terms of the tariff to successor customers at a site. The system also includes a new customer notification that utilities can use to welcome customers that open a new account at an upgraded site.

Notice to purchasers of buildings can also be facilitated by affixing notice of the obligations to the water and electrical service panels (or entrances) and the heating and cooling systems, based on the assumption that any purchaser of a building would inspect at least one of these locations.

Even if any of the methods of notice are not successful, the tariff is still binding, and the utility is still in a good position to field inquiries from new customers puzzled by the fixed charge on their bill. When the

utility has explained to a successor customer that their bill is lower than it would have been absent the upgrades, customers have commonly agreed to assume the savings and pay the charges.

#### **Question 4:**

***Having reviewed these regulatory considerations and your utility's tariff approval process, do you think that your utility would be successful in seeking approval for a tariffed, on-bill investment program?***

Yes  No  *If yes, continue to Part B below.*

### ***B. If a tariffed on-bill program is a good fit, will a standardized implementation plan work for the residential sector of your utility?***

Operating a TOB investment program requires an implementation plan. The utility may include commercial and residential customers in the same tariff while the implementation plans may be different. Due to the diversity in types and sizes of commercial loads, the implementation plan for the commercial sector will need to be customized. In contrast, the similarity in types and sizes of residential loads make it possible to proceed with a standardized implementation plan. The Standard Implementation Plan for a TOB program based on the PAYS system is best suited for residential energy efficiency and rooftop solar programs.

This part of the Decision Tool is designed to assist utility managers in deciding whether a standardized implementation plan for a TOB program will work for your utility, or whether it would benefit from a customized implementation plan. The Standard Implementation Plan provides all of the program operation steps, agreements, forms, worksheets, and tools needed for implementation.

#### **B.1 Timeline for Implementation**

A utility should anticipate that 5 to 6 months, excluding regulatory approval by a Commission, will be required to implement a TOB program using a standardized implementation plan. This is the typical time horizon that spans from the point at which a utility decides to move forward with a standardized implementation plan to investing in the first building upgrades under the tariff. The standard implementation plan leads the utility through a deliberate process of integration that involves engaging key stakeholders, such as customers and local contractors. Experience to date has shown that attempting to shorten this timeline will instead most likely create delays that will actually lengthen the development time and push back the start date for the program.

#### **Question 5:**

***Is your utility willing to undertake a 6-month process to prepare for successful launch of a TOB program?***

Yes  No  *If yes, continue to item B2 below.*

## B.2 Program Design Considerations

### Target market

#### Eligible sectors

TOB programs can serve any type of customer. The investments with the most lucrative returns are likely to be found at sites with the largest difference between energy usage in the shoulder seasons (spring and fall) and the heating and cooling seasons. Among commercial customers, municipal customers may value the opportunity to participate in a TOB program the most because they do not need to take on new debt or increase budgets and therefore do not require voter approval in order to benefit from the cost effective upgrades.

A standardized implementation plan is available from EEI for a residential target market. Utilities that want to target primarily municipal or commercial customers would benefit from a customized implementation plan.

#### Customer eligibility

The PAYS® system is designed so that *any customer* with sufficiently cost effective resource efficiency investment opportunities in their building or rental unit can participate in a TOB program. The utility's investments are protected by disconnection for non-payment and the ability to extend the term of program charges to recover missed payments or to effect repairs on failed upgrades.

Because the utility's prospects for cost recovery do not depend on the creditworthiness of the customer, disqualifying customers using standard credit checks does not benefit the utility. To date, no utility implementing a TOB program has required credit checks for participants, which involve additional program costs with no additional benefit.

Limiting program participation to only those customers whose accounts are in good standing prevents customers who are having trouble paying their bills from lowering those bills without taking on new debt. Because the PAYS system provides customers with immediate net savings, current utility costs associated with late or partial payments and DNP should also be reduced. Nevertheless, several utilities have required review of existing customers' bill payment histories to determine eligibility for their TOB programs.

#### Project qualification: Building condition

While a *customer* may be eligible to opt into a TOB program, the *building* that they seek to upgrade may not qualify. Most utilities prohibit installations at buildings not likely to be habitable or suitable for the building's purpose for the duration of TOB charges. If a building needs major structural repairs, like a new roof, then it is not a good site for investing in a long-lived energy efficiency upgrade. Some utilities partner with local agencies to help customers access other programs so that both structural repairs and efficiency upgrades can be installed at a site.

### Target energy saving upgrades

The PAYS® system is designed so that a utility can invest in *any upgrades* that produce sufficient net savings for participants while allowing the utility to recover its costs. A customized implementation plan can target energy saving upgrades for any type of customer. The standardized implementation plan for a residential program can be used to install:

**Whole house energy upgrades:** These upgrades are likely to qualify for a tariffed charge at any utility and will vary with weather, residential energy rates, labor rates, negotiated upgrade prices, and housing types and conditions. Tariffed on-bill programs providing whole house energy upgrades in Kansas and rural Kentucky have had average installation costs of around \$7,500 per home.

The standardized program assumes most customers will qualify for an Energy Star Certified air-source heat pump that meets the 2014 most-efficient criteria, offering participants and the utility the most savings possible.

Typically, participants need utility incentives and/or rebates equal to \$1,750 to \$2,000 per home or they will need to pay upfront copays to make projects qualify for the tariff.

As of 2015, the only viable way to qualify whole house energy saving upgrades for a TOB program is with a quality, on-site cost effectiveness analysis tool. Licenses to a recommended cost effectiveness analysis tool tailored to the standardized TOB program implementation plan can be purchased by utilities that purchase the Implementation Plan.

**Single-measure upgrades:** Solar water heaters, photovoltaic panels, or heat pumps (either for single homes or community ground water systems) can be offered as a single-upgrade program for the standardized residential program. The only TOB program to date that has included renewables has been Hawaii’s SolarSaver pilot, which offered solar hot water heaters. The challenge inhibiting wide-scale replication of TOB renewable programs is that many renewable energy upgrades are not sufficiently cost effective to qualify for a PAYS® program. It is possible that the declining technology costs, decreasing transaction costs, and harnessing the value of renewable energy to a utility can make more of these upgrades sufficiently cost effective to be desirable to a TOB program customer.

## Program scale

Whereas customized programs can be of any size providing there are sufficient cost effective projects, the standardized program is designed to be implemented in multiples of 200 participants per year. One full-time staff member overseen by management and provided with office support easily can oversee 200 whole house energy upgrades or single-upgrade projects each year. Using this benchmark, the standardized implementation plan guides utilities to think in terms of the number of 200-participant increments it wants serve each year.

The table below estimates the annual capital requirement for a utility to invest in energy saving upgrades for 200 homes per year. This capital is for purchase and installation of energy saving upgrades. It does not include program start-up costs.

	<b>Whole house energy upgrades</b>	<b>Single Upgrade Programs</b>
Annual Participants	200	200
Est. Participant Investment	\$7,500	\$6,000 - \$10,000
Annual Capital Requirement (excluding operations)	\$1.5 million	\$1.2 – 2.0 million
Duration of Tariffed Charges	10 years	10-15 years

## Benefit streams

Utility investments in resource efficiency will help participating customers eliminate wasted energy and realize lower utility bills while they also gain the benefit of more comfortable and affordable homes and business buildings. In addition, the utility and its members will benefit from lower energy procurement costs, lower demand charges, and improved customer satisfaction scores. System benefits include reduced or deferred investment in power plants and improvements to transmission and distribution assets. The investments may also help the utility achieve voluntary or required resource efficiency targets. Additionally, a tariffed on-bill program that generates new investment in the local economy will also yield local job creation as well as economic development benefits as customers recommit their savings to more productive purposes.

All of these benefits can be quantified, and it is important to take them into account in the implementation of a tariffed on-bill program. In particular, the avoided cost of peak demand charges at the wholesale level can be substantial. These benefit streams provide the basis for a utility's decision to pay for (A) costs associated with offering the program and (B) incentives to program participants up to a level at which the utility still gains a positive net benefit.

## Start-up & operation costs

Start-up costs are the one-time costs required to develop and initiate a TOB program. They include the cost for the Implementation Plan and licensing of intellectual property, which is dependent in part on the utility size. They also include legal review of the IP and the program in the context of the utility's state law and regulatory environment.

Other factors to consider include use of the recommended cost effectiveness analysis software (if required), training, and adjustments to billing and management systems. Some utilities implementing whole house energy upgrade programs will choose to purchase building energy efficiency analysis tools (e.g., blower doors, pressure pans or duct blasters, and possibly an infrared camera). It is recommended that utilities implementing TOB programs have staff knowledgeable about the proper use of this equipment and capable of verifying third party staff performance and test results.

Integration of an efficiency investment program with the utility's billing and information system is an essential component of implementation planning. Integration plans vary by utility, and manual processing remains an option for relatively small programs (i.e. less than 200 participants per year). Utilities considering enhancements to their billing and information systems can easily integrate requirements for a tariffed on-bill program as part of the enhancement project.

Start up costs also include a staffing plan and training. Utilities are in the best position to determine their costs to maintain one full-time person overseen by management and provided with office support to manage approximately 200 whole house energy upgrades or single upgrade projects each year. During the implementation phase, the utility can decide on implementing the program with its staff or retaining the services of a third party program operator.

As discussed above, participants who volunteer for the program will likely generate benefits that are greater than the ones that they will enjoy as immediate net savings. These benefits are an important resource for covering start-up and operation costs for a program that is producing benefits for the utility and non-participants. Trying to recover start-up costs from residential participants harms participants, non-participants and the utility. Adding these costs would make few upgrade packages cost effective for participants that would diminish the scale of the benefit streams that could be enjoyed by all.

## Question 6:

**Considering the program design considerations above, is your utility interested in pursuing this standardized program approach?**

Yes \_\_\_\_ No \_\_\_\_

**If you are interested in either a standardized or customized approach, continue to item B3 below.**

## B.3 Preliminary Financial Analysis

### Evaluating targeted upgrades

Before investing in a tariffed on-bill program, the utility should review preliminary cost effectiveness results for energy upgrades that the utility is interested in implementing in their service area. The purpose of this analysis is to evaluate the cost effectiveness of investing in targeted upgrades, such as installing insulation or high efficiency heat pumps.

The utility should make sure that eighty percent (80%) of the estimated annual savings based on current rates will cover the annual TOB cost recovery charges. The inputs to this preliminary analysis include:

- the utility's current retail rates
- estimated costs for targeted upgrades
- estimated savings attained by those upgrades
- value of rebates or incentives for those upgrades
- the utility's cost for capital used to pay the upfront costs for these upgrades
- maximum cost recover period if less than 80% of the estimated life of upgrades

A utility that already has an on-bill loan program will likely have the data necessary for this preliminary analysis already in hand. Others may want to seek assistance from EEI or another source of support in order to identify the specific energy upgrades that would likely be cost effective in their local market conditions.

### Evaluating an investment program

In addition to confirming that the local conditions will support cost effective investments in targeted energy upgrades, utilities also should consider the aggregate effect of those investments on the overall business. The inputs to this preliminary analysis include:

- inputs to the preliminary analysis for targeted upgrades above
- utility's cost of power supply
- value of all utility benefit streams generated by the upgrades (e.g. peak demand reduction, etc.)
- estimated number of customers that would opt into the program when operating at scale



A utility may have the data necessary for this preliminary analysis already in hand. Others may want to seek assistance from Meister Consulting Group or another source of support in order to evaluate the cost effectiveness of a tariffed on-bill program for the utility.

### **Question 7:**

***Based on your preliminary financial analysis are there sufficient upgrades likely to be cost effective and does the investment program justify operation of a standardized tariffed on-bill program?***

Yes \_\_\_\_\_ No \_\_\_\_\_ ***If yes, continue to item B5 below. If no, contact EEI to discuss alternatives.***

## **B.4 Generic Implementation Steps**

### **Residential sector**

If you have gotten through this Decision Tool and answered “yes” to all the questions, it’s likely that a standardized residential TOB program will work for your utility. The following implementation steps are likely to be included in an Implementation Plan for a standardized residential TOB program:

- 1. Addressable market.** Decide on the type of program that makes the most sense for your utility: single upgrade, whole house energy upgrade focusing on heat pump technology, solar hot water, or roof-top photo voltaic panels.
- 2. Eligible investments.** Identify investments in upgrades that can meet utility goals and provide immediate net savings for customers.
- 3. Identify customers in priority market segment.** Identify those customers most likely to see immediate cash flow improvement from the targeted investment in efficiency.
- 4. Seek management approval to develop a program.** Secure management and Board approval to pursue a TOB program. Attachment 4, a model tariff, may be helpful in seeking Board approval.
- 5. Seek tariff approval.** Approve a voluntary tariff to recover costs for investments (e.g., Attachment 5). If a State Commission approval of tariffs is not required, this step can be deferred until after step 10.
- 6. Source capital.** Identify the most appropriate source of low-cost capital and apply for it.
- 7. License a TOB system or develop alternative.** The system should include all agreements and forms and an implementation plan comparable to that available with a PAYS license.
- 8. Legal review.** Complete a legal review of tariff, contracts, forms, etc. to ensure compliance with state and local requirements, and to ensure the utility has a clear understanding of the agreements that underpin the PAYS system.<sup>4</sup>
- 9. Adopt policies and protocols.** Institute the policies and protocols recommended in the TOB system.

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<sup>4</sup> While the PAYS system has been reviewed by legal teams in six states, the authors recommend utilities work with their legal counsel prior to undertaking a tariffed on-bill investment program.

- 11. Engage local workforce and suppliers.** Identify local contractors and suppliers who can best provide the products and install them with consideration for cost, quality and reliability.
- 12. Identify competitive price points.** Establish competitive fixed prices for the targeted investments.
- 13. Select tools for cost effectiveness analysis.** Identify the simplest and lowest cost method for assessing whether these investments are appropriate for specific customers.
- 14. Establish a basic upgrade package.** Set-up cost effectiveness analysis software with rates, upgrade costs, and incentives to ensure a basic package will provide immediate net savings to participants.
- 15. Set up IT systems.** Work with customer service and bill staff to integrate investments in the TOB
- 16. Sign agreements with program partners.** Select a third-party program operator, if needed. Sign agreements with contractors and, if desirable, product suppliers.
- 17. Train implementation team.** Identify and train staff who will operate this program, contractors who will provide services, and customer service staff who will respond to participants' questions.
- 18. Announce program launch.** Use low cost marketing (e.g., press releases, bill stuffers, website and social media) to introduce the TOB program so that those customers in the target market segment who are contacted for participation are likely to have heard of the opportunity in advance.
- 17. Market the program.** Begin marketing investment opportunities to high users.

## Commercial sector

The utility may include commercial and residential customers in the same tariff while the implementation plans may be different. The utility can use a separate customized implementation plan tailored to more diverse and larger loads in the commercial sector while still using the standardized implementation plan for the residential sector. The customized implementation plan for commercial customers will largely follow the same implementation steps set forth above .

## For more information, contact:

**The Energy Efficiency Institute, Inc.**

*165 Goodsell Point  
Colchester, VT 05446  
(802) 879-8895*

# Attachment 1: Introduction to PAYS<sup>®</sup>

## Financing Distributed Energy Upgrades

### *Pay As You Save<sup>®</sup> and PAYS<sup>®</sup> Opt-In Tariff Model*

*PAYS is a utility investment solution that offers all customers the option to access cost effective energy upgrades using a proven cost recovery model for both the customer and utility.*

Wherever the grid reaches today, utilities have achieved near universal access by recovering investments through an agreement with customers called a *tariff*. Champions of distributed energy solutions don't enjoy tariff authority, which has led to the use of alternatives such as loans or leases. While the distributed energy technologies are scalable, financing instruments used today are not, and many customers are effectively locked out of these investments.

***Most financing solutions and incentive programs today are not scalable or do not reach key market segments.***

PAYS enables a more cost effective way to invest in distributed energy solutions by leveraging the utility business model. It reduces the dependence on incentives and subsidies to cover costs, lowers risk across the value stream, expands the addressable market, and improves performance among providers.

***How it works:*** The utility invests in cost-effective energy upgrades like better building efficiency and rooftop solar. The utility pays the installer, so the customer pays nothing upfront for the upgrades they choose. Using a tariff, the utility puts a fixed charge on the monthly bill that is significantly less than the estimated savings generated by the upgrade - so the customer enjoys immediate and sustained positive cash flow. Until the investment is recovered, the tariff for the PAYS charge automatically transfers to future customers at that site.

***Several utilities are already demonstrating remarkable results.*** Thus far, sixteen utilities in six states have led the way, especially in reaching market segments that are hard to serve with traditional financing: renters, moderate-income households, multifamily buildings, and municipal customers. PAYS clears the biggest barriers and expands the addressable market because tariffs do not depend on banks, consumer loans or property liens.

***Compared to typical debt-based programs, experience shows that investments based on an opt-in tariff have a bigger impact for four reasons:***

- All customers with bill payment history in good standing are eligible for utility investment. As a result, the addressable market is double the size of third party finance solutions.
- When customers receive upgrade offers with the PAYS value proposition, they accept more than half of the time, which is 5 times the typical rate.

#### ***Existing portfolio performance***

Programs based on PAYS have invested more than \$20 million in resource efficiency. Cost recovery exceeds 99.9%, with reported losses of less than 0.1%.

For the two largest weatherization programs implementing PAYS:

- Average investment per site \$7,000 – includes > \$1,000 incentives or customer copayments.
- Average energy savings reported is 25%.
- Customer satisfaction for participants is reported above 95%, far above general customer base.
- Customers reached include those in market segments that are hard to serve, including renters, multi-family, and municipalities.

- When customers do accept, the projects they undertake are much larger because the terms are more attractive and there is little risk from participating.
- Finally, the investment is more secure because utility collections have a charge-off rate that is approximately 10 times lower than the national average for consumer lending.

***The results of efficiency investments are compelling, yielding average energy savings of 25%.*** Utility regulators in NH, HI, KS, and KY have already approved tariffs based on the PAYS system. (The utility branded names for those programs include PAYS<sup>®</sup>, Smart \$tart, Solar\$aver, How\$mart<sup>®</sup> and How\$mart KY<sup>™</sup>.) Roanoke Electric in North Carolina has also launched a program this year based on PAYS called Upgrade to \$ave, and three water utilities in California run water and energy saving programs based on the PAYS system as well.

## Core Elements & General Terms and Conditions for PAYS programs

- Customers voluntarily choose to opt into a tariff that allows a utility invest in upgrades at a site and recover its costs on the bill.
- Cost recovery charges at most implementing utilities has been equal to or less than 80% of the estimated savings, generating immediate net savings to the customer.
- Cost recovery period is not more than 80% of the estimated useful life of the upgrade.
- The utility will only make investments that are cost-effective with the terms above, but the customer can make an upfront payment to cover the cost premium of upgrades that are not cost-effective under current rates.
- The utility may use any source of capital to make the investment, including third-party capital where permitted.
- The investment is tied to the meter, not to the customer, so the cost recovery charge transfers automatically to successor customers at that location.
- Energy and water efficiency are considered essential utility services, so the customer can be disconnected for non-payment.
- Capital provider is assured repayment in full by the utility regardless of the actual collections from customers.
- If upgrades stop working for no fault of the customer, the cost recovery charge ends until the efficiency improvement is repaired.
- If repairs are necessary or a property were to remain vacant for a period of time, the term of the tariff may be extended to ensure full cost recovery to the utility.
- The utility may harness multiple benefit streams to pay incentives that help more upgrades meet the threshold for cost effectiveness and qualify for the tariff.
- The utility can cover charge-offs from a variety of sources, including a dedicated loss reserve or from all customers the same as other uncollectibles.
- Utilities capture multiple value streams, including avoided demand charges and avoided energy procurement, to strengthen their balance sheet while lowering customer bills.

## **Attachment 2: Program Roles**

The key roles in a TOB program include:

### **Utility**

The utility will provide three basic program functions: 1) oversight; 2) outreach including initial customer and community contacts; and 3) financial management including securing capital, making program payments, and billing and collection of the PAYS tariffed charge<sup>5</sup> from customers.

### **Capital Provider**

A capital provider (e.g., RUS' EECLP funds, internal utility funds, or a third party capital provider) provides funds to pay the upfront costs for projects. The best situation is that the Utility only has to repay the Capital Provider(s) for capital drawn as it is needed. Additionally, if the first year of payments can be interest only, the utility will collect principal and interest payments from participants but will only repay itself or its lender interest. Interest only payments during the first year provides the cash flow that allows utilities to delay imposing tariffed charges until the customer is likely to receive savings (e.g., the start of heating or cooling seasons).

### **Program Operator**

A Program Operator is responsible for day-to-day program operations including marketing, project approvals and contracts, and program data collection and reporting. A utility or a third party can fulfill this role.

### **Measure Assessor**

A Measure Assessor, who could be staff or an employee of a utility or third party program operator or an employee of a Certified Contractor, determines (A) which buildings are likely to be habitable and or serve their purpose for the duration of tariffed charges and (B) which upgrades will produce sufficient savings to provide immediate positive cash flow for customers. For single upgrade programs (e.g., heat pumps, solar hot water heaters, or photovoltaic panels), an onsite Measure Assessor is not required because a simple bill history analysis should allow for a cost effectiveness analysis without a site visit.

### **Certified Contractors**

Only Certified Contractors may install program upgrades. The certification process should include an interview and references check by the utility or program operator. Selected contractors must sign the Contractor Agreement and agree to abide by all program rules.

### **Certified Suppliers**

Utilities can consider whether some program upgrades should be obtained by RFPs to secure high quality products and low prices. Examples of such products would be high cost program upgrades such as heat pumps or solar systems.

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<sup>5</sup> The utility authorized charge at the meter location where certified energy saving upgrades have been installed.

## Target Customers

Direct marketing to the utility's highest using heating and/or cooling customers can yield high quality investment opportunities. While all customers may be eligible to participate, by contacting only high users, the utility is likely to reach participants with the best opportunities for sufficient savings to offset all costs and provide immediate positive cash flow.

## Property Owners

Customers do not need to be the property owner in a tariffed on-bill program. However, customers must obtain the signature of property owners on an Owner Agreement.

# Attachment 3: Introduction to the Energy Efficiency and Conservation Loan Program (EECLP)

The Rural Utilities Service (RUS) within the U.S. Department of Agriculture offers Treasury rate loans to non-profit utilities that serve rural areas. Most of the 600 utilities that tap this source of capital are electric cooperatives. Treasury rate loans are the lowest cost source of unsubsidized capital in the American economy<sup>6</sup>, and RUS is authorized to commit up to \$5 billion per year nationally.

In 2014, RUS expanded the uses of its Treasury rate financing by launching EECLP (“E-clip”). For the first time, RUS was able to finance investments in clean energy at customer sites with the same Treasury rate loan facility that it has deployed for several decades to finance power plants, poles, and wires. EECLP specifically recognizes tariffed on-bill programs as an eligible financial structure, one that is distinct from consumer lending.<sup>7</sup>

## What investments are eligible?

Eligible purposes for the funds include distributed generation using renewable energy, building energy upgrades, smart grid technologies, combined heat and power, demand response, projects that serve non-electrical energy uses, and more. It can finance “any investment that could improve the energy performance of a utility customer.”

## How large is the program?

The Rural Utility Service in USDA has the authority to provide more than \$5 billion per year in low cost financing to electric utilities.

## How does the program work?

EECLP allows an eligible utility to borrow money at Treasury rates in order to make cost-effective investments in energy efficiency and renewable energy upgrades to its own facilities as well as to *properties owned by the customers it serves*. Utilities either use an opt-in tariff or a loan as their financial instrument, and both methods are forms of on-bill financing.

## What is the application process?

Applications to participate in the EECLP program are on a rolling basis. There are no deadlines. RUS has a two-stage application process that involves (1) approving each program that a utility would like to implement and (2) reviewing a loan application to finance the program.

## What is the fastest way to secure EECLP financing?

Replicating successful programs used by other utilities is the fastest way to get started. Both North Arkansas Electric Cooperative and Roanoke Electric Cooperative have offered to share their business plans, which were the first two approved for EECLP financing totaling \$10 million. North Arkansas Electric Cooperative and Roanoke Electric developed their business plans, received approval, and had their loan applications approved in approximately 90 days.

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<sup>6</sup> In the Spring of 2015, the annual rate charged for these funds was less than 2.5%.

<sup>7</sup> See Section 1710.405 of the Federal Register for discussion of Eligible Financial Structures.

## Where can more information about the EECLP rule be found?

The full text of the Federal Register announcement with the final rule for EECLP is here:

[http://www.rurdev.usda.gov/SupportDocuments/UEP\\_EE\\_FinalRule.pdf](http://www.rurdev.usda.gov/SupportDocuments/UEP_EE_FinalRule.pdf)

For further inquiries, RUS recommends contacting its General Field Representatives stationed in each state.



# Attachment 4: Model Tariff

*Revised edition based on Ouachita RECC filing October 15, 2015*

- 1 **Eligibility:** Eligible on an optional and voluntary basis to any cooperative member who takes service under any rate schedule for energy efficiency improvements (upgrades) where the cooperative provides electric service to the structure. It shall not be a requirement that the structure be all-electric.
- 2 **Participation:** To participate in the Program, a member must: 1) request from the cooperative an analysis of cost effective upgrades, 2) agree to the terms of the cost effectiveness analysis fee as described in Section 3.4, and 3) review the Efficiency Upgrade Agreement described in Section 3.1, and implement any project that does not require an upfront payment from the member.
- 3 **Energy Efficiency Plans:** The cooperative will have its Program Operator or approved energy efficiency contractor perform a cost effectiveness analysis and prepare an Energy Efficiency Plan (Plan), identifying recommended upgrades to improve energy efficiency and lower power costs.
  - 3.1 **Incentive Payment:** The cooperative may make an incentive payment for program participation that is less than or equal to the value of the upgrades to the cooperative.
  - 3.2 **Net Savings:** Recommended upgrades shall be limited to those where the annual Program Service Charges (Service Charges) as described in section 6, including program fees and the cooperative's cost for capital are no greater than 80% of the estimated annual benefit from reduction to members' annual utility charges based on current rates in electricity and/or gas costs.
  - 3.3 **Copay Option:** In order to qualify a project for the Program that is not cost effective, Members may agree to pay the portion of a project's cost that prevents it from qualifying for the program as an upfront payment to the contractor. The cooperative will assume no responsibility for such upfront payments to the contractor.
  - 3.4 **Cost Effectiveness Analysis Fee:** If the cost of the cost effectiveness analysis exceeds the value to the cooperative of upgrades accepted by members for installation, the cooperative will recover from participants the portion of the cost for the analysis that is greater than the value of the upgrades to the cooperative. The utility will not recover costs for the analysis if the Energy Efficiency Plan concludes that proposed upgrades are cost effective only with a copay. The cooperative will recover all of its costs for the analysis at a location from a member who declines to install upgrades identified in an Energy Efficiency Plan that does not require a copay.
  - 3.5 **Existing Buildings:** Projects that address upgrades to existing buildings deemed unlikely to be habitable or to serve their intended purpose for duration of service charges will not be approved unless other funding can effect necessary repairs.
- 4 **Approved Contractor:** Should the member determine to proceed with implementing The Plan, the cooperative shall determine the appropriate monthly Program Charge as described below. The member shall sign the Agreement and select a contractor from the cooperative's list of approved contractors.
- 5 **Quality Assurance:** When the energy efficiency upgrades are completed, the contractor shall be paid by the cooperative, following on-site or telephone inspection and approval of the installation by the cooperative or its Program Operator.
- 6 **Program Service Charge:** The cooperative will recover the costs for its investments including any fees as allowed in this tariff through monthly Service Charges assigned to the meter at the location where upgrades are installed and paid by members occupying that location until all cooperative costs have been recovered. Service Charges will also be set for a duration not to exceed 80% of estimated life of the upgrades or the length of a full parts and labor warranty, whichever is less and in no case longer than twelve years. The Services Charges and duration of payments will be included in the Efficiency Upgrade Agreement.

- 6.1 **Cost Recovery:** No sooner than 45 days after approval by the cooperative or its Program Operator, the member shall be billed the monthly Service Charge as determined by the cooperative.
- 6.2 **Termination of Service Charges:** Once the cooperative's costs for upgrades at a location have been recovered, the monthly Service Charge shall no longer be billed, except as described in Section 7.
- 6.3 **Extension of Service Charges:** As described in Section 7 or for any other reason, if the monthly Service Charge is reduced or suspended, once repairs have been successfully effected or service reconnected, the number of total monthly payments shall be extended until the Services Charges collected equal the cooperative's cost for installation as described in Section 6.2. The duration of Service Charges will also be extended if there are missed payments and the current occupant is still benefitting from the upgrades in order for the cooperative to recover its costs to install upgrades at a location.
- 6.4 **Tied to the Meter:** Until cost recovery for upgrades at a location is complete or the upgrades fail as described in Section 7, the terms of this tariff shall be binding on the metered structure and any future member who shall receive service at that location.
- 6.5 **Disconnection for Non-Payment:** Without regard to any other Commission or cooperative rules or policies, the Service Charges shall be considered as an essential part of the customer's bill for electric service, and the cooperative may disconnect the metered structure for non-payment of Service Charges under the same provisions as for any other electric service.
- 7 **Repairs:** Should, at any future time during the billing of Service Charges, the cooperative determine that the installed Upgrades are no longer functioning as intended and that the occupant, or building owner if different, did not damage or fail to maintain the upgrades in place, the cooperative shall reduce or suspend the Service Charges until such time as the cooperative and/or its contractor can repair the upgrade. If the upgrade cannot be repaired or replaced cost effectively, the cooperative will waive remaining charges.

If the cooperative determines the occupant, or building owner if different, did damage or fail to maintain the upgrades in place, it will seek to recover all costs associated with the installation, including any fees, incentives paid to lower project costs, and legal fees.

The Service Charges will continue until cost recovery is complete.