The Road to Residential On-Bill Repayment

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ABSTRACT

One of the biggest hurdles to increase the adoption of deeper residential energy efficiency retrofits are customer's upfront costs. Most people recognize the value in energy efficiency but some are not willing or lack the ability to take on the additional costs for increasing their homes efficiency. The United Illuminating Company (UI), an electric distribution company headquartered in New Haven, Connecticut, has implemented a solution to the upfront cost barrier by offering a residential on-bill repayment financing program. This program brings together low interest financing provided by utility capital and the convenience of repaying that financing on the customer's utility bill. Since early 2000, the State of Connecticut has been interested in residential low interest on-bill repayment for cost-effective energy efficiency measures. Currently, there are few successful models of residential energy efficiency financing. UI was no exception. Therefore, this program was not created overnight by one entity. Many different stakeholders, with different ideas for a successful financing program, came together to shape the program as it is currently implemented. UI had to overcome many consumer lending, legal, system limitation and regulatory obstacles in order to implement a desirable and functional residential on-bill program. This paper will detail the steps UI has taken over the past years to achieve an active on-bill residential repayment program. Also detailed will be the current design and execution of this financing program both from the utility's perspective and from the customer's perspective.

Background

In 1998, The State of Connecticut created what is now called the Energy Efficiency Fund (EEF). The EEF was established to address Connecticut's increasing energy needs. The Energy Efficiency Board (EEB), originally called the Energy Conservation Management Board, was also created in 1998 to advise and assist the state's electric and natural gas utility companies in developing and implementing cost-effective conservation programs to meet Connecticut's changing and growing energy needs The Energy Efficiency Fund supports a variety of programs that provides technical assistance and financial incentives to help reduce the amount of energy used by Connecticut customers. The EEF is supported by the customers of two electric distribution companies, The Connecticut Light & Power Company (CL&P), The United Illuminating Company (UI), as well as three natural gas distribution companies, Connecticut Natural Gas (CNG), Southern Connecticut Gas Company (SCG) and Yankee Gas Services Company (YGS) through ratepayer charges on their respective utility bills (collectively "the Companies").

CL&P's service territory is 149 cities and towns across Connecticut with more than 1.1 million customers in a 4,400 square mile area. UI is an investor owned electric utility. UI's service territory of 17 towns includes approximately 305,000 customers in a 335 square mile area in Southern Connecticut. Both CL&P and UI provide energy saving services and products to its diverse customer base through the EEF programs. YGS serves approximately 202,000 customers in seventy-one cities and towns throughout the State. SCG services a total of 175,000 customers in 22 towns from Westport to Old Saybrook. CNG serves 160,000 customers in 23 towns, primarily in the greater Hartford area and in Greenwich. CL&P and YGS are owned by the same parent company, Northeast Utilities. UI, SCG, and CNG are owned by the same parent company, UIL Holdings Corporation.

The EEF funded programs are designed, implemented and administered by CL&P and UI in association with the natural gas utilities, and are accountable for the attainment of yearly performance goals approved by Public Utilities Regulatory Authority (PURA), formerly, the Department of Public Utilities, and the EEB, including the reduction of overall energy consumption, improving reliability and reducing energy costs. In order to reduce market barriers to energy efficiency, UI and CL&P, through the use of the EEF funding have implemented a Residential Financing program which includes such features as on bill repayment, below market interest rates, and a loan guarantees using EEF funds. Since the early 2000s the State of Connecticut has been interested in residential on-bill repayment. The state through the Public Utility Regulatory Authority (PURA) and the legislature made clear their desire for a residential loan program with an on bill repayment component. The desire for a residential on bill energy efficiency financing program is due to the fact that the State of Connecticut has a very successful on bill financing program for small business and municipal customers. This program has been very successful in getting customers to act on energy efficiency by removing a barrier to energy efficiency investments. The main appeal of this program is having the energy savings pay for the measures. The energy efficiency measures implemented usually have a collective payback of less than 48 months which is the maximum loan term. In order to make the customer cash positive and therefore more likely to implement energy efficiency the loan is normally created with a term longer than the payback period. This creates a cash positive situation as the dollar energy savings is higher per month than the loan repayment on the customer's monthly utility bill.

The Companies in June 2010 began a pilot residential financing program and ended in May 2011. This pilot program was run as a component of the Home Energy Solutions program. Home Energy Solutions is the Companies' flagship residential retrofit program serving all existing residential structures including single and multi-family properties. A Home Energy Solutions assessment is done to identify comprehensive cost effective energy conservation opportunities in residential properties and educate and communicate these opportunities to the homeowner. The assessment also provides initial diagnostic testing and evaluation of these residences. In addition to testing and evaluation services, cost-effective measures including blower door guided air sealing, duct sealing, installation of CFLS, domestic hot water measures, and pipe insulation are installed as part of the Home Energy Solutions assessment.

The Companies contracted with a third party, AFC First Financial, to run this pilot program. This program offered loans for energy efficient insulation, HVAC equipment, water heating systems, duct sealing, air sealing, heat pumps, and windows. The interest rates on these loans were originally 0%, later changed to 2.99%, for comprehensive projects for loan amounts from $7,000 to $20,000 and 2,99% later changed to 4.99% for comprehensive projects from $2,500 to $6,999 and for single measure projects. The interest rates were moved to the higher percentage rates due to budget constraints. The minimum loan amount was $2,500 with a maximum loan amount of $20,000. The maximum loan term was 10 years which the majority of customers chose as their loan term. These loans were unsecured and had a traditional repayment method of a separate bill paid to AFC First Financial. AFC First Financial did the loan origination, closing and servicing and also took on all bad debt risk for these residential loans.

Customers were approved based on credit score and were required to have a Home Energy Solutions assessment completed prior to having the energy efficient measures placed in their home. The interest rates were bought down from a market rate of 15.99% to 0%, 2.99% and 4.99% using the EEF. This program was very well received with over $15.5M in loans being completed for over 1,350 customers. This program brought an estimated 250,000 annual kwh savings, 180,000 annual ccf savings and over 100,000 annual oil gallons savings collectively for the participating customers.

This pilot residential program was very well received by the HES contractors, the Companies' customers, and the installation contractors. This pilot showed there was demand in Connecticut for residential energy efficiency financing and that a good financing model will increase the ability of customer's to implement energy efficiency in their residences. This was a great program to introduce financing to the HES community but due to cost-effectiveness and a directive from PURA to have on bill repayment this program needed to be replaced.

Design Phase

The Companies recognized that on bill repayment for residential customers would not be as simple as the pilot residential financing program was to implement. Lending to residential customers comes with strict lending laws, high risk and few cost-effective measures. A lot of research of consumer lending laws and review of other national residential energy efficiency financing programs was done to determine best practices to implement a loan program for Connecticut residents.

After the Companies had studied other residential energy efficiency finance models, The Companies needed to make many decisions on how to run a new on residential financing program featuring on bill repayment. UI and CL&P currently administer the Small Business/Municipal loan program in house but commercial customers are an easier customer class to finance. The laws around business lending are not as prohibitive as the laws around residential lending. UI decided to largely mimic the successful Small Business/Municipal loan model. CL&P chose to have a third party, Connecticut Housing Investment Fund (CHIF) run their program. Neither UI nor CL&Ps decision made it an easy program to design many details still needed to be decided upon by the Companies as it is a directive from PURA to have both companies offer similar programs.

The Companies began trying to figure out what type financing program may work in Connecticut by looking at what was already being done by other utilities. The Companies researched meter-tariff programs. The meter-tariff program works in that the customer implements energy efficiency in their residence then the lender, which could be the utility or a third party, pays the contractor for those measures then the repayment is done through a tariff on the customer's meter which will be paid back as part of the customer's monthly utility bills. The loan is attached to the meter not the customer, therefore, if the original customer moves out or sells their residence the loan will be transferred to the new owner or renter. The benefit of the energy efficiency measures stay with the meter and the payment for those measures also stays with the meter. The benefits of the reduced utility charges are truly used to pay for the energy efficiency measures. Under this type of loan program non-payment of the tariff would lead to the customer being shut-off. The Companies felt this would create confusion when a customer went to sell a property and if the new owner was not made aware of this tariff that might lead to non-payment of the tariff. The other aspect that made meter-tariff unattractive was the need to shut off a customer for non-payment. PURA also did not like the sound of shutting off customers for nonpayment of non-utility charges. The Companies chose to do a more traditional loan program with the loans being made to a customer based on their creditworthiness and not attached to the meter.

A decision that needed to be made at the beginning of the on bill program design was what the source of the capital will be for these loans. When the Companies went out for RFP for the pilot program the question was asked if any of the bidders had an interest in having on the utility bill repayment method as part of the initial program. None of the bidders were interested in this option. The Companies had also asked a variety of financial contacts whether there was any interest in providing capital for an on bill repayment program. None of those asked were interested in giving up the loan servicing on these types of loans. One of the reasons given for lack of interest is that lenders want that monthly contact with the customer through the loan servicing. For some that contact could bring other business from that customer. For example a customer opens a bank account or takes out another type of loan. Another reason cited is the relative limited history of on bill repayment programs. Therefore, on bill programs seem risky for these lenders as it is not proven due to lack of history. Since no third party was interested the Companies needed to find their own source of capital. CL&P had unspent 2010 EEF funds and asked for permission from PURA to use those funds as the source of capital for the residential on bill program. UI did not have significant unspent EEF funds and got approval from PURA and UI's executives to use shareholder capital for this program.

Now that the source of capital was found, the Companies needed to decide whether these loans should be secured or an unsecured loan. The benefits of a secured loan is that the loan is collateralized by an asset, usually a home or a car for which in the case of a default the lender may gain possession and sell the asset to recover all or part of the defaulted loan amount. Secured loans tend to have lower interest rates due to the lenders ability to take possession of an asset upon default. Unsecured loans, which are not collateralized by an asset, usually have higher interest rates. Unsecured loans are usually approved based on credit score, debt to income ratios, and other risk factors. A benefit to unsecured loans is that they can be almost instantaneously approval/denial depending on the underwriting criteria. A secured loan takes longer to approve/deny due to the fact that the securing asset must be appraised to make sure there is sufficient value to secure the amount of the loan. The Companies chose to do an unsecured loan program. Unsecured works better for the Companies because the approval/denial is quick and the Companies do not have the resources or expertise necessary for asset recovery for delinquent loans. Also, the loan amounts would not be of a high enough value to justify collateralizing them. It would not be perceived well for a utility company to be taking possession of or putting liens on customer's assets.

Another concern in designing the on bill finance/repayment program was making sure all the legal requirements around these types of transactions were and will be complied with for each loan. The Companies are not in the habit of financing residential loans and therefore lack expertise in this area. The Companies both decided to outsource this function to a third party, Connecticut Housing Investment Fund (CHIF). CHIF as a non-profit lending institution has the expertise to make sure the laws and regulations governing these types of transactions are fully complied with for each loan. This meant that CHIF would run the loan application process, including approvals and denials, and the loan closing process for both the Companies.

The Companies needed to decide the parameters of the program. The Companies saw the success of the pilot and decided to keep the interest rates at 2.99% and 4.99% but the rates would not be based on comprehensive or the loan amount but are dependent on the measure being financed. The loan term was kept at a maximum length of 10 years. The minimum loan amount remained at $2,500 and the maximum remained at $20,000.

The next design step was whether there will be an off the bill repayment option. UI decided all loans under this program will only have on bill repayment. CL&P decided to offer their customers a choice of on bill or off bill repayment. Currently, CL&P is experiencing 60% of customers choosing to repay their loan through the on bill option. This decision impacted how servicing would be handled. For UI servicing would be handled in house for these loans and CL&P is having CHIF service their off bill loans and CL&P is servicing their on bill loans unless the loan becomes delinquent. Upon a delinquency, the loan will be removed from the customer's CL&P bill and will be pursued as an off bill loan by CHIF. CHIF will be handling the collections for these loans for CL&P while UI is handling the collections in house by their credit & collections department. A problem faced by both companies is how to deal with partial payments by customers under this program. The Companies and PURA agreed that partial payments will always be applied to the utility charges first and the loan second. The bad debt risk is maintained by the EEF. In UI's case when a loan is deemed uncollectible the loan will be written off and the EEF will reimburse UI for any bad debts to make the utility whole. For CL&P these loans are using EEF capital and therefore are written off through the EEF if a loan is deemed uncollectible.

One of the hardest decisions made by the Companies was what energy efficiency measures should be covered under this loan program. With a directive that programs be cost-effective the list of covered measures could not be as generous as the pilot program. During the pilot, many energy efficiency measures were financed at the reduced interest rates. The pilot allowed electric, gas and oil/propane measures to be financed at the same reduced interest rates. An issue in Connecticut is the lack of funding for fossil fuel energy efficiency. Currently only electric and gas customers pay into the EEF and therefore PURA requires that these funds be used to save electricity and gas with small exceptions for fossil fuels, mainly for low income customers. A cost-effectiveness analysis was completed for a variety of efficiency measures based on savings, cost of the reduced interest rate, and the cost of rebates for which the measure was eligible. Based on the analysis the Companies realized a two tier interest rate structure based on the measure would be necessary. Measures qualifying for 2.99% had enough savings to make them cost-effective at the 2.99% rate and measures qualifying for 4.99% were not cost-effective at 2.99% but are cost-effective at 4.99%. The following two tables show the current measures financed at 2.99% and 4.99% for the residential financing program.

Qualifying Measures and Requirements for 2.99%

Measure	Efficiency Requirements	Additional Criteria
High Efficiency Insulation For Natural Gas or Electric heated homes	• Ceilings with less than R-30 insulation must install a minimum of R-19 and the final R-value of the ceiling must be equal to or greater than R-38 • Walls that have no insulation or an R-value of 4 or less must install a minimum of R-13	• Insulation applies to above grade walls or ceilings as part of the homes conditioned envelope • Basement ceilings, below grade walls, or insulation installed within interior walls do not qualify • Accepted insulation materials: fiberglass batts, blown-fiberglass, cellulose, dense pack cellulose, spray foam or rigid foam or rigid spray foam products
ENERGY STAR® Ductless Heat Pumps	• Ductless Heat Pump must be AHRI rated and ENERGY STAR qualified • Must meet or exceed: 14.5 SEER, 12 EER, 8.2 HSPF	• Must meet Energy Efficiency Fund equipment performance criteria for the $1,000 incentive level • Must be installed in a zone that has electric resistance heat as the primary source of heat
ENERGY STAR Electric Heat Pump Water Heaters	• Must meet or exceed: Energy Factor (EF) of 2.0 or greater	• Replacement of an operating electric resistance hot water heater with ENERGY STAR Electric Heat Pump Water Heater
ENERGY STAR Tankless Natural Gas Hot Water Heaters	• ENERGY STAR Tankless Natural Gas Water Heater 0.82 EF or greater with Electronic Ignition • High Efficiency Indirect Water Heater attached to a natural gas ENERGY STAR qualified boiler (90% AFUE or greater)	• Replacement of an operating hot water heater

Qualifying Measures and Requirements for 4.99%

Measure	Efficiency Requirements	Additional Criteria
ENERGY STAR Central Air System	• Must meet or exceed: 14.5 SEER, 12 EER, for split systems: 14 SEER , 11 EER for single packaged systems	• Replacement of an operating Central Air Conditioning system • Participate in Energy Efficiency Fund High Efficiency Heating and Cooling System Rebate • Must meet the Energy Efficiency Fund Quality Installation and Verification Program criteria
ENERGY STAR Air to Air Heat Pump	• Must meet or exceed: 14.5 SEER, 12 EER, 8.2 HSPF for split systems: 14 SEER , 11 EER, 8.0 HSPF for single packaged systems	• Replacement of an operating heating system • Participate in Energy Efficiency Fund High Efficiency Heating and Cooling System Rebate • Must meet the Energy Efficiency Fund Quality Installation and Verification Program criteria
ENERGY STAR Natural Gas Furnaces and Boilers	• Furnace: AHRI rated 95% AFUE with Air Handler Performance Level EAE of 2% or lower • Boiler: 90% AFUE or greater with temperature reset or purge control	• Replacement of an operating heating system
Windows (Natural Gas and Electric heated homes only)	• Must have: ENERGY STAR • U-factor < or = 0.30	• Must replace single-pane (no storm) windows • Applies to existing window(s) part of the primary building envelope only

Implementation Phase

Once the design phase was completed the Companies needed to turn to the challenge of the practical implementation of the residential financing program. Billing system changes needed to be done to accommodate the addition of these loans to customer bills and the collection of the payments from customers. Contracts needed to be signed between the Companies and CHIF, the third party vendor in charge of most of aspects of the residential financing program. Marketing materials needed to be created to notify HES vendors, contractors and customers about the financing program. Direct communication through meetings involving, the Companies, HES vendors, other contractors and CHIF was done to make all parties aware of the changes for the current financing program and to introduce CHIF as the third party vendor.

The Companies in conjunction with CHIF needed to come up with process for customers to follow to participate in the residential financing program. First the Customer has a HES assessment completed. During the HES visit the contractor may, if the home has energy inefficiencies, give the customer information on energy efficiency measures that will save energy in their residence. The contractor may provide this information at the time of the visit or may due a follow-up call or visit with the additional energy saving measure information. When and if the customer decides to move forward with implementing measures and wants to participate in the financing program offered through the Companies and supported by the EEF, the customer would apply to CHIF. The application can be submitted online or over the phone. If the customer is approved, the customer can go ahead and get the energy efficiency measures implemented. Once the energy efficiency measures have been completed, the customer notifies CHIF that the work is done and that the contractor is ready for payment. CHIF sends the customer the loan closing documents. The customer signs and sends back the closing documents. CHIF closes the loan then cuts a check to the contractor for the amount due. The customer then repays the loan based on the agreed terms through their monthly utility bill or through an off bill mechanism depending on if the customer has that option available and chose that option.

With CHIF running the loan application, approval/denial process, loan closing and loan funding the Companies get involved after the loan is completed from the customer's perspective depending on whether they are doing on bill repayment. For UI when a loan is funded by CHIF, CHIF then notifies UI. These loans are currently funded with utility capital therefore UI purchases the loans from CHIF once the loans are funded. The loans are purchased semi-monthly by UI. Once the loan is purchased by UI, UI's customer billing department is notified and sets up the loan on the customer's account based on the terms of the loan the customer agreed to in their loan closing documents. When a CL&P customer loan is funded, CL&P is notified and their customer billing department set up the loan on the customer's account based on the terms of the loan. For both companies, after the loan is setup on the customer's bill it will be a line item on a monthly basis for that customer for the term of the loan, typically 120 months. If the customer decides to pay off the loan early it will be cleared from their account once paid in full. If the loan becomes delinquent UI will pursue the collection of the loan. If the loan becomes written off the EEF through a loan loss reserve will make UI whole for the delinquent balance of the loan. If a CL&P customer loan becomes delinquent it is removed from the customer's bill and sent back to CHIF for collection. Currently there have been no delinquent loans for UI or CL&P under this program.

Conclusion

Residential financing is a risky market and lenders are currently shying away from on bill repayment programs. A variety of stakeholders in Connecticut came together to create, support, and manage a residential financing program that will be appealing to customers. All involved have the goal of reducing Connecticut's energy consumption and believe this financing model is one tool to encourage residential customers to move forward with implementing energy saving measures. Currently the program is ramping up as HES vendors, contractors and customers are getting familiar and comfortable with the financing program. Beginning in March 2012, a pilot 0% special offering was launched for qualified insulation-only improvements which can include air and duct sealing. This special offer is for loans of $1,000 to $2,500 with a maximum loan term of 36 months. The Companies have seen month over month increases in applications and funded loans. As of May 2012, this program has resulted in over 70 loans collectively funding $750,000 worth of energy efficiency measures.

Next Steps

Connecticut through the EEF, legislature, utilities and other stakeholders are always looking for ways to improve the financing offer for residential customers. The current program is working but all involved hope it can be expanded to include more measures. One way to expand the program is to find a solution to include fossil fuel measures. Currently Connecticut does not have a mechanism to fund fossil fuel conservation efforts. Fossil fuel customers do not pay into the EEF only electric and natural gas customers contribute. This limitation leaves fossil fuel measures off the table for the below market interest rates of this financing program. Many parties are interested in having fossil fuel measures covered for energy efficiency. There have been and continue to be efforts made to create a funding mechanism for these measures. When fossil fuel funds become available this would expand the financing as fossil fuel measures would then be eligible for the below market interest rates of this financing program as long as the measures are cost-effective. The residential financing program needs to be continually monitored and updated to make sure it is meeting the objective of encouraging homeowners to install energy efficient home improvements to achieve deeper energy savings.