

Energy Efficiency through On-Bill Financing

I. Background

Energy efficiency is an excellent way to promote economic development in Berea. Utility expenditures represent a form of “leakage”—much of the money Bereans pay for electricity leaves the city and does not return. Reducing electricity costs not only reduces individual costs, it reduces leakage from the City.

For small businesses, less utility cost means less overhead and better operating margins. New business may be attracted to Berea by this promise of low utility costs. This may also contribute to a positive perception or community brand of Berea as promoting clean and sustainable energy.

Finally, this proposal for an on-bill financing program presents many direct employment opportunities. Auditors are needed to conduct energy audits. Contractors are needed to perform energy efficiency upgrades. Some of these skilled workers are already present in Berea. A pilot program could be the start of a lasting opportunity to employ even more Bereans in this promising field.

II. Development of an On-Bill Financing Pilot Program

A. Select Administrator

The City and Berea Municipal Utilities (BMU) will have the opportunity to partner with MACED, which has an energy efficiency pilot program under way and can provide technical assistance. BMU will be an integral part of any permanent program, so the City and BMU might consider appointing a BMU employee to be a liaison for the pilot program.

Several organizations have already provided assistance in the early stages of development of the program. These include MACED and Home Energy Partners.

The city should consider exactly how the pilot program should begin. One option is for the City and BMU to undertake the pilot program as turnkey with MACED. Or MACED could take on a more limited role, providing financing only, with BMU providing administrative services and contracting for audits. Based on MACED’s estimates from previous work, if the pilot program targets 25 residential units and 5 commercial units, administrative costs would most likely be less than \$10,000. The timeline for the pilot program could be as follows:

- Developed throughout 2012
- Implementation by January 2013
- Two-year pilot program completed by December 2014

This pilot will give the City and Berea Municipal Utilities the opportunity to evaluate the program, make modifications to accommodate BMU, and determine a future on-bill financing structure.

1. Content of Pilot Program

Depending upon city procedure, an RFP or RFQ may be required, or the pilot program could simply be negotiated. In either case, the following criteria should be considered:

- The qualifications of an individual to serve as an advisor to the City/BMU
- Proposed source of financing
- Schedule for developing program implementation milestones
- Plan for solicitation of both residential and business participants (opportunity for intern work)
- Plan for energy audits to identify:
 - Specific energy auditors to be employed
 - Cost of audits
 - Plan for subsidization of cost to low-income households
- Plan for completion of upgrades to includes:
 - Specific contractors to be employed
 - Detailed descriptions of potential upgrades
 - Cost of upgrades
 - Expected energy savings
 - Schedule for repayment
- Quantifiable goals

2. Assistant Administrator/BMU Liaison

This position will be particularly important if MACED is the lead organization. The City will need someone to serve as a liaison during the two-year pilot program. The liaison will work with the administrator of the pilot program and gradually assume responsibilities as the pilot progresses.

B. Financing

There are a variety financing options, both public and private. There is potential for some cooperation with the Berea Economic Development Team's Finance Committee. Data regarding the low default rates of existing on-bill financing programs should be useful in securing financing. Utility customers have a strong incentive to pay their bills—the fear of suspension of utility service. Existing on-bill financing programs have shown default rates below 2%.

1. Public Financing

Pilot program financing is available from MACED, which will already be involved as a technical advisor. This would reduce the number of stakeholders in the program, streamline the process, and reduce transaction costs.

2. Private Financing

Private financing offers the advantages of competitive bidding and distribution of risk. There is also potential for financing via a private “meta-business.”

C. Select Auditors and Contractors

Berea already has several local energy efficiency auditors and contractors capable of performing efficiency upgrades. Home Energy Partners is a local organization that could suggest potential auditors and contractors. One goal of the pilot program should be to identify auditors and contractors that the city would be interested in entering into a long-term relationship with.

D. Solicit Participants

Finding the right people to participate in the pilot program is a potentially very time consuming task that might lend itself to an internship program. An intern from Berea College or ECU could provide manpower to the City and BMU to research BMU records for high bills, identify the type of structure, cross reference with the PVA for approximate unit square footage, and conduct door-to-door surveys to determine household characteristics such as number of occupants and owner occupied or rental.

The City/BMU should begin to solicit participants for the program in Fall 2012. The earliest participants may come through word-of-mouth, as the program will need to be under way before a larger call for participants can be issued.

III. Implementation of the Pilot Program

A. Select Participants

The project will begin in earnest in January 2013, when the first audits and upgrades are performed.

1. Factors to consider when choosing participants

- Source of electricity and heating (e.g., all electric, or electric and gas)
- Total electricity usage
- Potential for energy savings

- Bill payment history

2. Methods for choosing participants

- Evaluate utility bills for potential inefficiencies
- Residential participants informed via volunteers or interns
- Commercial participants solicited via city liaison
- Information made publicly available via the internet

B. Perform Audits

Energy audits identify the necessary energy efficient upgrades. Audits may be paid for in a number of ways:

- By the participant
- Via existing or newly developed incentives
- Subsidized by the city, based on need

Once the audit is completed, the participant chooses the upgrades he or she wishes to install. Consultation with the administrator or some other advisor might be useful.

C. Complete Upgrades

The City/BMU contracts for upgrades with one of the approved contractors. Typical upgrades include:

- Insulation
- Leak repair, caulk
- HVAC upgrades
- Smart utility meters

D. Payment

1. City Obligation

The City/BMU pays the contractor for the work from money provided through financing at a rate to cover costs. BMU/City tracks the re-payments, collecting funds from all program participants to repay the financier from the initial financing investment.

2. Participant Obligation

The participant's repays over time to BMU via an additional charge on the utility bill. A lien could be placed on the property while the payment obligation exists; the lien

will encourage prompt payment and notify any potential future buyers of the existence of the charge and the energy upgrades. The program obligation stays with the building, rather than the participant.

IV. Program Review

A thorough review would evaluate two years of data collected during the pilot program. Two years is the minimum time necessary to account for seasonal variation in energy use and weather variability.

A. Data Collection

There are a number of means available to collect data. Each method has its own advantages and disadvantages in terms of cost, reliability, and comprehensiveness of data. Several data collection methods are possible.

1. Recordkeeping and Data Mining

The city and the utility will have much of the needed data at hand. Detailed records should be kept throughout the pilot program. Records should include information about pre-program energy use, building size, occupants, and upgrades undertaken. After participation, data should be collected about energy use and bill payment. This data can be collected from all participants throughout the pilot program for minimal cost using only utility bills.

2. Participant Surveys

Participant surveys are another relatively inexpensive way to gather data about all participants. A survey should be required that includes the following information, at a minimum:

- List of all upgrades performed
- Total cost of upgrades
- Electricity usage before the upgrades
- Electricity usage after the upgrades
- Any incentives utilized during the program
- Total amount of utility bill before and after
- Amount of on-bill charge for upgrades

Self-reported data may result in inexact estimates and incomplete information. If time and resources permit, follow-up interviews or site visits may be able to supplement data collected via surveys. Survey data can also be checked against data mined from utility bills.

3. Electricity Monitors

Electricity monitors are a reliable way to collect more complete data about energy usage. The program should monitor the energy use of as many participants as possible—electricity monitors such as those available from The Energy Detective cost as little as \$200. Data should be collected for an entire year at a minimum. A full year of data will provide valuable information about peak usage and overall energy savings.

Representative participants should be chosen carefully. Both residential and commercial participants should be monitored. Factors to consider when selecting monitoring candidates should include:

- Size and energy needs of participant
- Energy use before upgrades
- Upgrades undertaken
- Likelihood of complete and reliable data collection

B. Review

Analysis and review of data collected during the pilot program is of paramount importance. Review should consider both how individuals are engaging with the program and how the program is progressing as a whole.

1. Individual Review

The review should determine how individual participants use the program, and how their experiences can be improved upon. An individual analysis should consider the following:

- Participant satisfaction
- Which of the auditors recommendations were used
- Which recommendations were not used, and why
- Whether cost and time estimates were met
- Any incentives used
- Total cost of upgrades
- Total energy savings
- Estimated schedule for full repayment

2. Program Review

At the program level, the analysis should consider:

- Who is participating in the program

- Whether quantitative targets are met
- Whether available incentives are adequately utilized
- Performance of auditors and contractors
- Adequacy of loan arrangement
- Default rate
- Cause of defaults

C. Evaluate future On-Bill Financing for BMU

The program should monitor and verify services received in the pilot program and track utility savings.

Once BMU establishes a permanent on-bill financing program of its own – the BMU liaison can provide administration or BMU can hire turn-key administrative services for the program. The City or BMU could hire additional employees as needed, or outsource. Permanent financing would need to be secured, possibly through a bond issue. A revolving loan fund should be established to recycle re-payments of initial investments for energy improvements and continue to support additional loans. The ultimate goal of a revolving loan fund is for the program to become self-sustaining.

V. Threshold Questions

In the early stages of development of the pilot program, the following threshold questions may be useful:

- What is the Potential?
 - Housing stock
 - Businesses
 - High utility bills
- Who are the Stakeholders?
 - City of Berea
 - Berea Municipal Utilities
 - Kentucky Utilities
- What are the Goals?
 - Decrease energy use
 - Reduce “leakage”
 - Decrease peak demand
 - Lower bills
 - Assist those in need
 - Reduce commercial overhead
 - Attract businesses with competitive energy rates
 - Promote employment
- What is the Timeline?

- Data collection – summer internship program?
- Pilot – January 2013?
- How is it Organized?
 - 3 Parties: City, BMU, technical advisor
 - Who is lead?
 - Physical location?
 - Manpower and division of labor?
- How is it Financed?
 - Public or private
 - Who hold notes?
 - Remember: very low default rates of existing on-bill financing programs

Benefits & Challenges On-Bill Financing for Berea

BENEFITS

Benefits to Berea's Economy

- **Leakage is reduced** – A key component of Berea's current economic development process is the minimization of leakage; that is, economic resources that leave the Berea economy. BMU's energy charge, which goes to Kentucky Utilities, represents leakage out of Berea. On-bill financing (OBF) will reduce that leakage.
- **Potential resource flow to the local community** – Energy savings realized by residential and commercial customers who participate in OBF represents additional dollars that can flow to local businesses.
- **Improved operating margins** – businesses that participate in OBF will reduce their overhead, allowing them to move additional dollars into improving their businesses and/or moving additional dollars into the local economy.
- **Jobs growth** – residential and commercial energy audits and subsequent upgrades to building shells, HVAC and other energy-consuming equipment will require human resources; additional jobs that, by their very nature, must remain local.

Benefits to Rate Payers

- **Reduced expenditures** – Reduces the percentage of income that flows to electric rates.
- **Increased comfort** – Upgrades to housing envelopes and HVAC results in a more comfortable home with a lower energy usage.
- **No barriers to financing** – Ability to qualify for credit – as with a standard loan – is a non-issue since financing is attached to the electric bill. Participation in OBF is contingent on bill-payment history. This opens energy efficiency upgrades to many residents with limited incomes.

- **Lowered transaction costs** – Financing is at rates that are lower than prevailing loan rates. Also, paperwork, credit checks, etc. are minimized. Loan overhead costs are minimized relative to those of commercial lenders.
- **No “up-front” money required from ratepayer** – In the current MACED pilot, upgrades are treated as utility capital improvements paid for by the ratepayers without raising rates. They are tariffed to the meter, and the total cost (including financing) is more than covered by the energy savings brought about by the installed improvements.
- **Promotes accessibility to rental units** – Since costs of upgrades are billed to the meter, it is not person-specific. Instead, it is address-specific.

Benefits to Berea Municipal Utilities/City

- **Reduced Peak Demand** – Envelope sealing, upgrading HVAC, etc. will reduce peak demand.
- **Defaults are reduced** – OBF focuses on those addresses where energy-efficiency improvements will result in lower overall electricity billings. Lower bills equal fewer defaults.
- **High bill complaints** – These complaints will be one means of identifying those who might qualify for OBF. Efficiency upgrades will reduce bills and BMU will be seen in a positive light for its efforts to help customers reduce their costs.
- **Learning from the pilot** – By doing the pilot with MACED, BMU and the City would learn whether a more extensive on-bill financing program was viable and in the best interest of BMU, the City and the rate-paying citizens of Berea.

CHALLENGES

Concerns about BMU staffing capacity

- **Updating software programming** – What would be involved in modifying accounting software to track and bill OBF charges?
- **Money transferral** – what would be involved as far as transferring funds?
- **Identifying participants** – Contingent on how pilot tasks are split up between MACED and BMU, BMU may have some responsibility for identifying potential customer participants, and/or identifying auditors and contractors who would perform the various energy efficiency improvements.
- **Tracking measurement & verification**– what are the demands and solutions to tracking actual kWh reductions and city peak kW gains and progress in building out upgrades to qualifying properties?
- **Other?**

Concerns about defaults?

- What are the experiences of other utilities?
- Tariff vs. loan model?

- Other?